Base Load Power Hub (BLPH)

F&G FIELD EQUIPMENT

MANUFACTURERS RECORD BOOK (FINAL DOSSIER)

Document Number: 1724000821-QC-DB-00006

Document Class: 2

02	18/03/2025	Accepted for Construction (AFC)	L. Pizzigati	M. Ossani	S. Montanari
01	07/02/2025	Issue for Review (IFR)	L. Pizzigati	M. Ossani	S. Montanari
00	28/11/2024	Issue for Review (IFR)	L. Pizzigati	M. Ossani	S. Montanari
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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Base Load Power Hub (BLPH)

F&G FIELD EQUIPMENT

MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - INDEX

Document Number: 1724000821-QC-LIS-00007

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
ROSETTI MARINO S.p.A. Delegato Lloyd's Quality Control Dept.	07/11/24

Document Class: 2

02	22/10/2024	Accepted for Construction (AFC)	L. Pizzigati	M. Ossani	S. Montanari
01	02/09/2024	Issue for Review (IFR)	L. Pizzigati	M. Ossani	S. Montanari
00	25/07/2024	Issue for Review (IFR)	L. Pizzigati	M. Ossani	S. Montanari
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1	
2	
3	
4	

DESIGN DOSSIER

LIST	**SEC #1.1**	**Sh 7 of 657**
1724000821-MD-LIS-00001 - SUPPLIER MASTER INDEX REGISTER (SMIR)	1.1.1	Sh.7 of 657
1724000821-COM-LIS-00011 - SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's)	1.1.2	Sh.12 of 657
DRAWING	**SEC #1.2**	**Sh 16 of 657**
1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	1.2.1	Sh.16 of 657
PROJECT PROCEDURES AND SPECIFICATION	**SEC #1.3**	**Sh 42 of 657**
1724000821-QC-ITP-00002 - INSPECTION AND TEST PLAN	1.3.1	Sh.42 of 657
1724000821-QC-PRO-00005 - FACTORY ACCEPTANCE TEST PROCEDURE	1.3.2	Sh.57 of 657
1724000821-IN-MAN-00010 - TECHNICAL OPERATING AND MAINTENANCE MANUAL	1.3.3	Sh.82 of 657
DATA SHEETS	**SEC #1.4**	**Sh 348 of 657**
1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS	1.4.1	Sh.348 of 657

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CERTIFICATION DOSSIER

DOCUMENTATION	SEC #2	Sh 403 of 657
1724000821-IN-LIS-00008 - VENDOR ASSET AND TAG REGISTER	2.1	Sh.403 of 657
1724000821-IN-LIS-00009 - ATEX REGISTER	2.2	Sh.412 of 657
SIL CERTIFICATE COLLECTION	2.3	Sh.556 of 657
ATEX CERTIFICATE COLLECTION	2.4	Sh.571 of 657
CERTIFICATE OF CONFORMITY	2.5	Sh.572 of 657
TEST REPORT	2.6	Sh.587 of 657
SINGLE COMPONENT MANUALS COLLECTION	2.7	Sh.654 of 657
INSPECTION RELEASE NOTE	2.8	Sh.655 of 657

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Base Load Power Hub (BLPH)

F&G FIELD EQUIPMENT

SUPPLIER MASTER INFORMATION REGISTER

Document Number: 1724000821-MD-LIS-00001

Document Class: 3

ROSETTI MARINO	
1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED
NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.	
Sign	Date
V. Barratta	11-06-2024

00	27/05/2024	Issue for Information (IFI)	M. Alessandrini	M. Ossani	S. Montanari
Rev.	Date	Description	Prepared	Reviewed	Approved

FORES ENGINEERING

File: 1724000821-MD-LIS-00001-00.xlsx

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SH.	DESCRIPTION	REVISIONS							
		00							
1	Cover	X							
2	Table of Contents	X							
3	Revision / Change Log / Hold List	X							
4	References	X							
5	SMIR	X							

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Revision / Change Log

Rev.	Description
00	Issue for Information (IFI)

HOLDS LIST

No.	Description
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2.	
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SMIR - REGISTRO DOCUMENTI / *SMIR - SUPPLIER MASTER INFORMATION REGISTER*

	Ordine n°/*order nr.*	1724000821		Fornitore/*Supplier*:	FORES ENGINEERING										
	data / *dated:*	18/04/2024		Codice F./ *S. Code:*	C.F./P.IVA 02178650400										
	Commessa / *Job:*	224D10		Indirizzo/ *address* :	Via Secondo Casedei 12 - 47122 Forli										
	Descrizione / *Description*	F&G FIELD EQUIPMENT		Persona di riferim./ *contact person:*	Matteo.Ossani@fores.it										
	Macrofase / *Phase*														

Pos.	Document nr. Client (1)	Doc Client Rev. (1)	Document nr. Internal	Document nr. Internal Rev. (2)	Document nr. Supplier (3)	Doc Supplier Rev. (3)	Titolo Documento / *Document title* (4)	Disciplina / *Discipline* (5)	Blocco Classe / *Class Block (6)*	Docum. Format (7)	first issue date (8)	Third Party Approval (I/A)	KEY Document Ingegneria	Documents subject to liquidated damages	Document Approval (I/A)
							CONTROL DOCUMENTS								
1	1724000821-MD-LIS-00001	00	1724000821-MD-LIS-00001	00	224D10-DDL-PM-LIS-00001	0	SUPPLIER MASTER INDEX REGISTER (SMIR) -FIRE AND GAS FIELD EQUIPMENT	INS		A4	31/05/2024				I
2	1724000821-QC-ITP-00002	00	1724000821-QC-ITP-00002	00	224D10-DDL-QUA-ITP-00001	0	INSPECTION AND TEST PLAN (A4 sheets) - FIRE AND GAS FIELD EQUIPMENT	QUA		A4	31/05/2024				A
3	1724000821-IN-DA-00003	00	1724000821-IN-DA-00003	00	224D10-DDL-FG-DA-00001	0	GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	INS		A3	28/06/2024				A
4	1724000821-IN-DS-00004	00	1724000821-IN-DS-00004	00	224D10-DDL-FG-DS-00001	0	INSTRUMENT DATA SHEETS - FIRE AND GAS FIELD EQUIPMENT	INS		A4	14/06/2024				A
5	1724000821-QC-PRO-00005	00	1724000821-QC-PRO-00005	00	224D10-DDL-FG-PRO-00001	0	FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	INS		A4	19/07/2024				A
							CERTIFICATES								
6	1724000821-QC-DB-00006	00	1724000821-QC-DB-00006	00	224D10-DDL-QUA-DB-00001	0	MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - FIRE AND GAS FIELD EQUIPMENT	CERT		A4	30/09/2024				A
7	1724000821-QC-LIS-00007	00	1724000821-QC-LIS-00007	00	224D10-DDL-QUA-LIS-00001	0	MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - INDEX - FIRE AND GAS FIELD EQUIPMENT	QUA		A4	19/07/2024				A
8	1724000821-IN-LIS-00008	00	1724000821-IN-LIS-00008	00	224D10-DDL-FG-LIS-00001	0	VENDOR ASSET AND TAG REGISTER - FIRE AND GAS FIELD EQUIPMENT	DATA		A4	30/09/2024				A
9	1724000821-IN-LIS-00009	00	1724000821-IN-LIS-00009	00	224D10-DDL-QUA-LIS-00002	0	ATEX REGISTER - FIRE AND GAS FIELD EQUIPMENT	QUA		A4	30/08/2024				A
							SPARES & MAINTENANCE DATA								
10	1724000821-IN-MAN-00010	00	1724000821-IN-MAN-00010	00	224D10-DDL-FG-MAN-00001	0	TECHNICAL OPERATING AND MAINTENANCE MANUAL - FIRE AND GAS FIELD EQUIPMENT	INS		A4	30/08/2024				A
11	1724000821-COM-LIS-00011	00	1724000821-COM-LIS-00011	00	224D10-DDL-FG-LIS-00002	0	SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's) - FIRE AND GAS FIELD EQUIPMENT	INS		A4	30/08/2024				A

Notes:

(1) Numero documento Cliente
Document number assigned by final Client
(2) Numero documento interno
Document number internal
(3) Numero documento Fornitore (assegnato dal Fornitore)
Document number assigned by Supplier
(4) Assegnare il Titolo del documento (assegnato dal Fornitore)
Fill in the document title (to be assigned by Vendor)

(5) Specific are la disciplina (compilato da Rosetti)
Quality dep., Expediting. Dep., Commissioning dep., Engineering dep.
(6) Blocco Classe: Specifica, Disegno, Report, Data Sheet, etc. (compilato da Rosetti)
Procedure, list, drawing, data sheet, etc. (to be filled by Rosetti)
(7) A4, A3, A1 (compilato dal Fornitore)
A4, A3, A1 (Supplier)
(8) Data prevista per l'emissione del documento (compilato dal Fornitore)
Foreseen date for the first issue (Supplier)

Base Load Power Hub (BLPH)

FIRE AND GAS FIELD EQUIPMENT

SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's)

Document Number: 1724000821-COM-LIS-00011

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

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Sign	Date
V. Barratta	31-10-2024

Rev.	Date	Description	Prepared	Reviewed	Approved
01	22/10/2024	Accepted for Construction (AFC)	E. Balestri	M. Ossani	S. Montanari
00	09/10/2024	Issue for Review (IFR)	E. Balestri	M. Ossani	S. Montanari

FORES ENGINEERING

File: 1724000821-COM-LIS-00011-01.xlsx

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Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01						
1	Cover	X	X						
2	Table of Contents	X	X						
3	Revision / Change Log	X	X						
4	SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's)	X	X						

File: 1724000821-COM-LIS-00011-01.xlsx

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

File: 1724000821-COM-LIS-00011-01.xlsx
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ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's) - FIRE AND GAS FIELD EQUIPMENT					
The document relates to	HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)				Contract: CW-I-WP4-2023-05	
Project ID	123A90	Doc. n°	1724000821-COM-LIS-00011	Rev.: Issued for review	Rev. Date: 22-Oct-24	Status: IFR / Class: 2

The equipment consists of the following units/components

1 Tag no.

2 Tag description

Supplier: FORES ENGINEERING srl | PO Number: 1721002632 | PO description: FIRE AND GAS FIELD EQUIPMENT | Contact name: MRS MATTEO OSSANI

Address: VIA SECONDO CASADEI 12, 47122 Forlì, ITALY | Supplier telephone no: +39.0543.813811 | Contact mobile no:

E-mail: Fores@fores.it | WEBSITE http://www.fores.it/

General Information:

3 Manufacturer model/type no.

4 Manufacturer serial no.

5 No. of units

6 Quantity of parts FITTED / INSTALLED per unit/component

	Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certificate Type (if applicable)	Certificate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
				Project Datasheet no.	Project Detail dwg. no.	Item ref.																	
	7	8		9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	24	SMOKE DETECTOR ZETTLER MR601TEx	1724000821-IN-DS-00004	1724000821-IN-DA-00003		FR110 "Bayblend" fire resistant												MR601TEx	ZETTLER	0	1	
2	49	GAS DETECTOR HYDROGEN Dräger Polytron® 8200 CAT DQ	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												Polytron® 8200 CAT DQ d S	Dräger	0	1	
3	9	GAS DETECTOR ULTRASONIC Dräger Polytron® 8900 UGLD	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												Polytron® 8900 UGLD d S 4-	Dräger	0	1	
4	3	GAS DETECTOR OXYGEN Dräger Polytron 8100 EC d S 4-	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												Polytron 8100 EC d S 4-	Dräger	0	1	
5	22	FLAME DETECTOR FGD FlameSpec FLS-UV-IR-AS11	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												FlameSpec FLS-UV-IR-AS11	FGD	0	1	
6	21	PUSH BUTTON MEDC SM87PBL MANUAL FIRE ALARM	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87PB	MEDC	0	1	
7	20	PUSH BUTTON MEDC SM87PBL PUSH BUTTON TO SIS	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87PB	MEDC	0	1	
8	13	GAS FLASH BEACON (AMBER) MEDC SM87LEDS	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87LEDS	MEDC	0	1	
9	13	FIRE FLASH BEACON (RED) MEDC SM87LEDS	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87LEDS	MEDC	0	1	
10	17	SOUNDER MEDC DB3B	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												DB3B	MEDC	0	1	
11	32	PUSH BUTTON DPDT CONTACT EATON GHG 432	1724000821-IN-DS-00004	1724000821-IN-DA-00003		Polyamide												GHG 432	EATON	0	0	
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BASE LOAD POWER HUB (BLPH)

GENERAL ARRANGEMENTS INCLUDING

DETAIL DRAWINGS, NAME PLATE DRAWINGS,

WIRING DIAGRAM, HOOK-UP

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
V. Barratta	23-01-2025

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
FRONT PAGE

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

	DRAWING NO.	SHEET	REV.
A3	1724000821-IN-DA-00003	001	03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
16/659

File Name : 1724000821-IN-DA-00003 Rev. 03

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
03	001	FRONT PAGE	
03	002	SUMMARY and GENERAL NOTES	
03	003	HIGH PERFORMANCE OPTICAL SMOKE DETECTOR	
02	004	HIGH PERFORMANCE OPTICAL SMOKE DETECTOR - TAG	
02	005	HYDROGEN POINT DETECTOR / PIPE MOUNTING	
03	006	HYDROGEN POINT DETECTOR / PIPE MOUNTING - TAG	
02	007	HYDROGEN POINT DETECTOR / WALL MOUNTING	
02	008	HYDROGEN POINT DETECTOR / WALL MOUNTING - TAG	
02	009	HYDROGEN ULTRASONIC LEAK DETECTOR / PIPE MOUNTING	
02	010	HYDROGEN ULTRASONIC LEAK DETECTOR / PIPE MOUNTING - TAG	
02	011	OXYGEN POINT DETECTOR / PIPE MOUNTING	
02	012	OXYGEN POINT DETECTOR / PIPE MOUNTING - TAG	
02	013	FLAME DETECTOR / 2" PIPE MOUNTING	
03	014	FLAME DETECTOR / 2" PIPE MOUNTING - TAG	
02	015	MANUAL CALL POINT (MANUAL FIRE ALARM) (RED)	
02	016	MANUAL CALL POINT (MANUAL FIRE ALARM) (RED) - TAG	
02	017	MANUAL CALL POINT (PUSH BUTTON TO SIS) (YELLOW)	
02	018	MANUAL CALL POINT (PUSH BUTTON TO SIS) (YELLOW) - TAG	
02	019	GAS FLASH BEACON (AMBER)	
02	020	GAS FLASH BEACON (AMBER) - TAG	
02	021	FIRE FLASH BEACON (RED)	
02	022	FIRE FLASH BEACON (RED) - TAG	
02	023	SOUNDER	
02	024	SOUNDER - TAG	
02	025	PUSH BUTTON DPDT CONTACT	
02	026	PUSH BUTTON DPDT CONTACT - TAG	

GENERAL NOTES

1: All dimensions and elevations are in millimeters (mm), unless noted otherwise.

2: All materials not listed in the tables of each device (like installation accessories & bulk) is out of Fores scope of work.

3: All bulk materials (screws, nuts, bolts, etc.) for F&G devices installation is out of Fores scope of work.

4: All cables reported in the document are out of Fores scope of work.

5: Name plates supplied loose. The plate will be attached through steel wire or screws.

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
SUMMARY and GENERAL NOTES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 002

REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
17/659

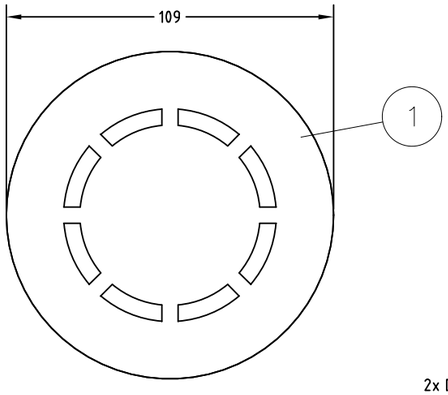
File Name : 1724000821-IN-DA-00003 Rev. 03

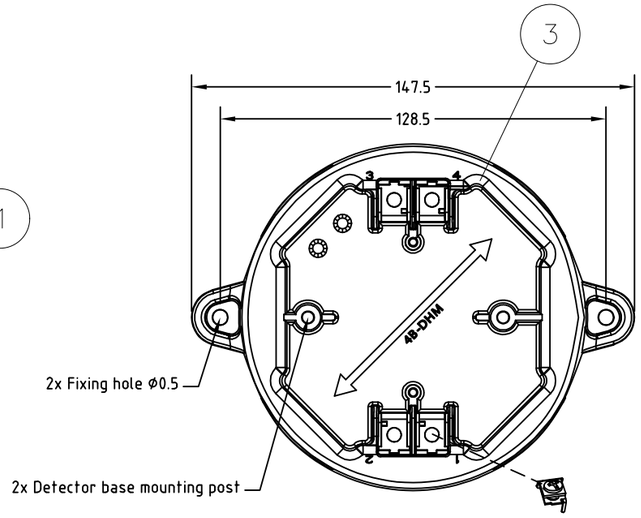
HIGH PERFORMANCE OPTICAL SMOKE DETECTOR

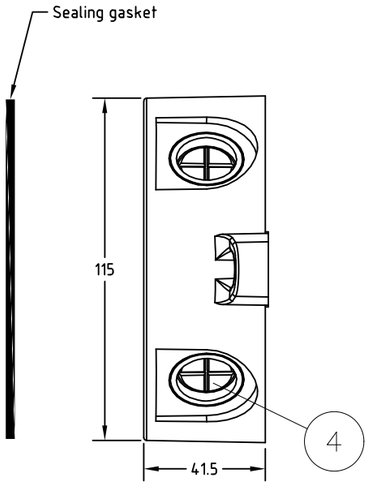
ITEM	DESCRIPTIONS	NR
1	Smoke Detector, ZETTLER MR601TEx	1
2	MUBEx Detector Base, ZETTLER	1
3	Deckhead Mounting, ZETTLER 4B-DHM	1
4	Cable Gland M20 Ex eb Polyamide	2
5	Stainless Steel Name Plate	1
6		
7		
8		
9		
10		

INSTALLATION QUANTITY

24

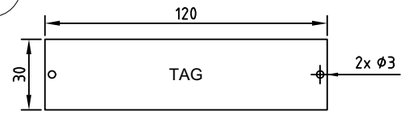




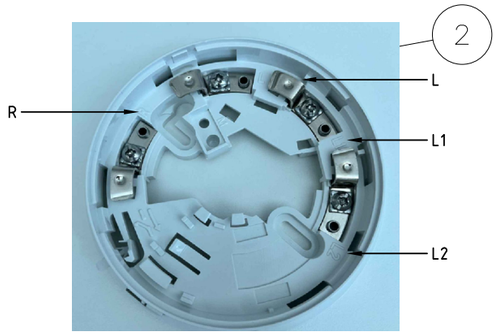


5

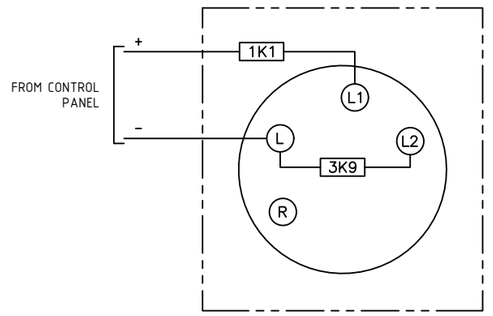
STAINLESS STEEL
NAME PLATE DETAILS



NOTE 5



WIRING



FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HIGH PERFORMANCE OPTICAL SMOKE DETECTOR

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 003 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
18/659

File Name : 1724000821-IN-DA-00003 Rev. 03

HIGH PERFORMANCE OPTICAL SMOKE DETECTOR – TAG

POS.	TAG NUMBER
1	950-SDZ-04201
2	950-SDZ-04202
3	950-SDZ-04203
4	950-SDZ-04207
5	950-SDZ-04208
6	950-SDZ-04209
7	950-SDZ-04213
8	950-SDZ-04214
9	950-SDZ-04215
10	950-SDZ-06201
11	950-SDZ-06202
12	950-SDZ-06203
13	950-SDZ-04204
14	950-SDZ-04205
15	950-SDZ-04206
16	950-SDZ-04210
17	950-SDZ-04211
18	950-SDZ-04212
19	950-SDZ-04216
20	950-SDZ-04217
21	950-SDZ-04218
22	950-SDZ-06204
23	950-SDZ-06205
24	950-SDZ-06206

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HIGH PERFORMANCE OPTICAL SMOKE DETECTOR – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 004 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
19/659

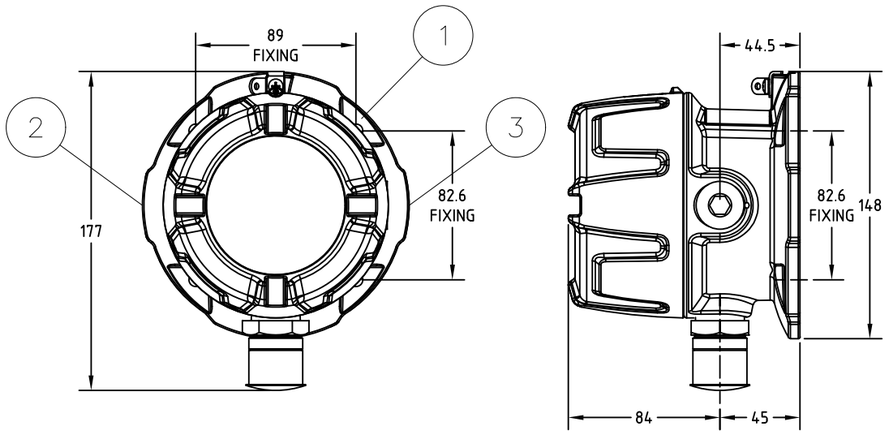
File Name : 1724000821-IN-DA-00003 Rev. 03

HYDROGEN POINT DETECTOR / PIPE MOUNTING

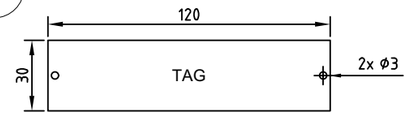
ITEM	DESCRIPTIONS	NR
1	Hydrogen point detector, DRÄGER Polytron 8200 CAT DQ d S 4-20/HART	1
2	Reducer 3/4" NPT - M20 Ex d AISI 316	2
3	3/4" plug Ex d AISI 316	1
4	Pipe mount bracket kit Polytron 5000/8000 series, DRÄGER	1
5	Sun and weather protection kit Polytron, DRÄGER	1
6	Stainless Steel Name Plate	1
7		
8		
9		
10		

INSTALLATION QUANTITY

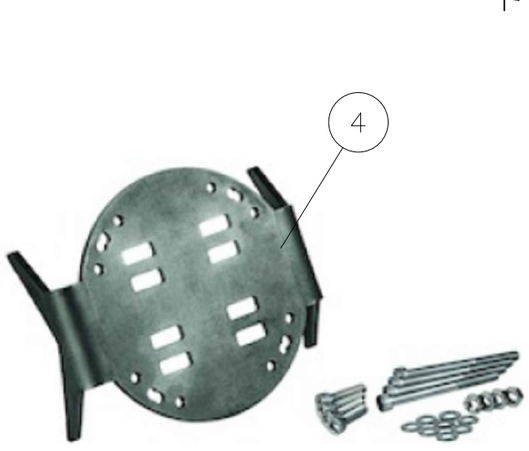
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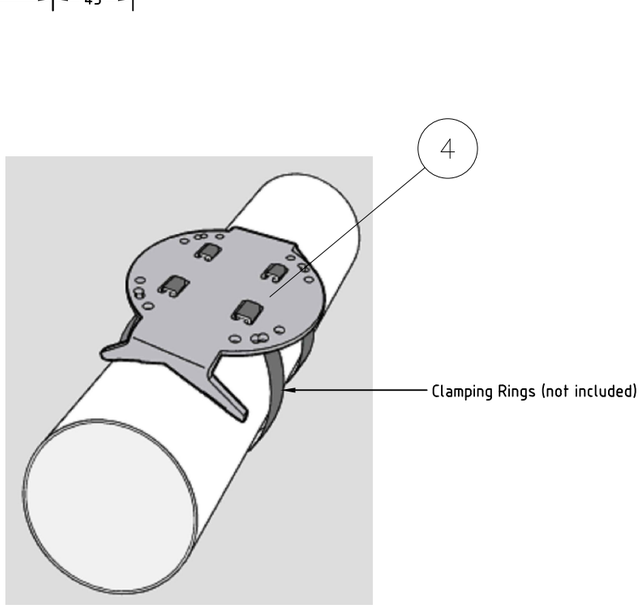


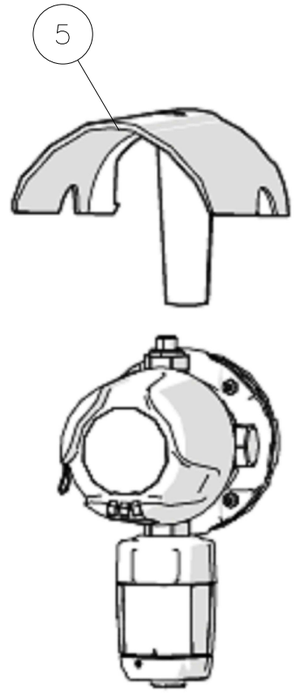
6 STAINLESS STEEL NAME PLATE DETAILS



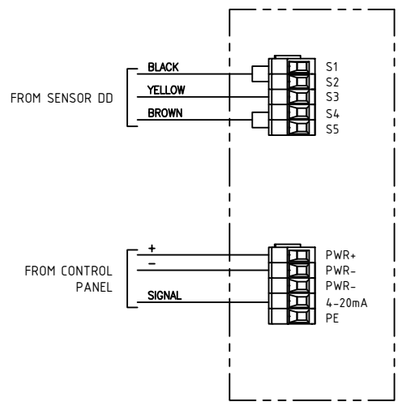
NOTE 5







WIRING



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HYDROGEN POINT DETECTOR / PIPE MOUNTING

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 005 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
20/659

File Name : 1724000821-IN-DA-00003 Rev. 03

HYDROGEN POINT DETECTOR / PIPE MOUNTING – TAG

POS.	TAG NUMBER
1	950-GDZ-02101
2	950-GDZ-02102
3	950-GDZ-02103
4	950-GDZ-02104
5	950-GDZ-02105
6	950-GDZ-02106
7	950-GDZ-02107
8	950-GDZ-02108
9	950-GDZ-02109
10	950-GDZ-02110
11	950-GDZ-02111
12	950-GDZ-02112
13	950-GDZ-02113
14	950-GDZ-02114
15	950-GDZ-02115
16	950-GDZ-02116
17	950-GDZ-05101
18	950-GDZ-05102
19	950-GDZ-05103
20	950-GDZ-05104
21	950-GDZ-05105
22	950-GDZ-05106
23	950-GDZ-03104
24	950-GDZ-03105
25	950-GDZ-01103

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HYDROGEN POINT DETECTOR / PIPE MOUNTING – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

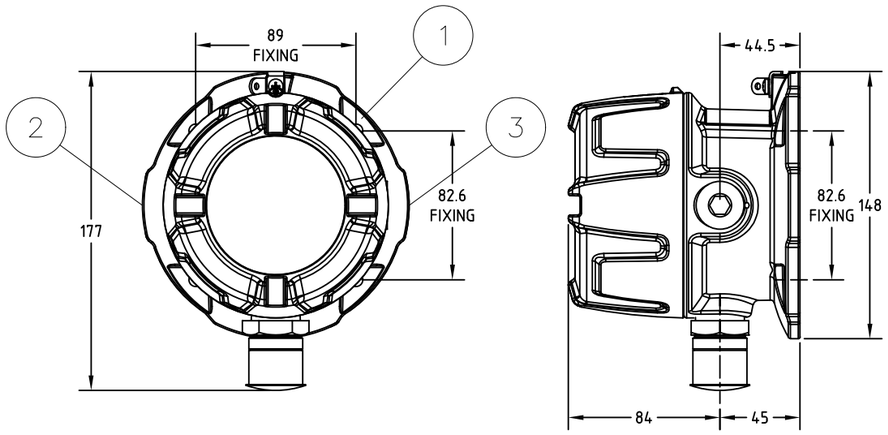
A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 006 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
21/659

File Name : 1724000821-IN-DA-00003 Rev. 03

HYDROGEN POINT DETECTOR / WALL MOUNTING



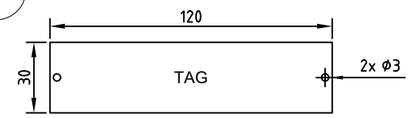
ITEM	DESCRIPTIONS	NR
1	Hydrogen point detector, DRÄGER Polytron 8200 CAT DQ d S 4-20/HART	1
2	Reducer 3/4" NPT - M20 Ex d AISI 316	2
3	3/4" plug Ex d AISI 316	1
4	Pipe mount bracket kit Polytron 5000/8000 series, DRÄGER	1
5	Sun and weather protection kit Polytron, DRÄGER	1
6	Stainless Steel Name Plate	1
7		
8		
9		
10		

INSTALLATION
QUANTITY

24

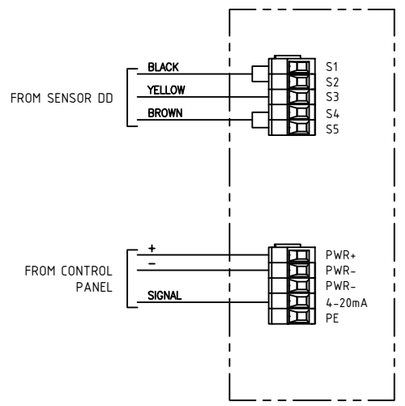
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STAINLESS STEEL
NAME PLATE DETAILS



NOTE 5

WIRING



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HYDROGEN POINT DETECTOR / WALL MOUNTING

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 007 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
22/659

File Name : 1724000821-IN-DA-00003 Rev. 03

HYDROGEN POINT DETECTOR / WALL MOUNTING – TAG

POS.	TAG NUMBER
1	950-GDZ-04201
2	950-GDZ-04202
3	950-GDZ-04203
4	950-GDZ-04204
5	950-GDZ-04205
6	950-GDZ-04206
7	950-GDZ-04207
8	950-GDZ-04208
9	950-GDZ-04209
10	950-GDZ-04210
11	950-GDZ-04211
12	950-GDZ-04212
13	950-GDZ-04213
14	950-GDZ-04214
15	950-GDZ-04215
16	950-GDZ-04216
17	950-GDZ-04217
18	950-GDZ-04218
19	950-GDZ-06201
20	950-GDZ-06202
21	950-GDZ-06203
22	950-GDZ-06204
23	950-GDZ-06205
24	950-GDZ-06206

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HYDROGEN POINT DETECTOR / WALL MOUNTING – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

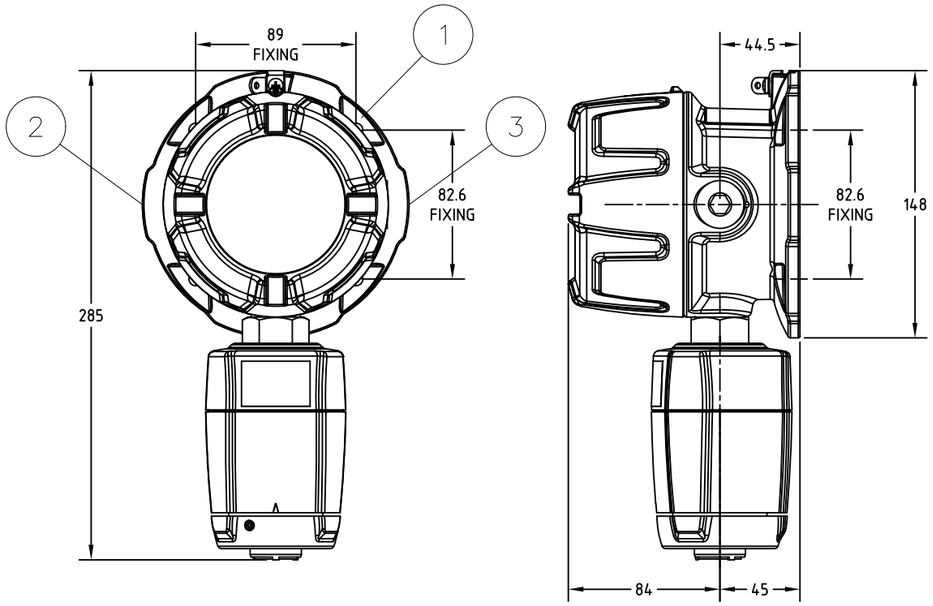
A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 008 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
23/659

File Name : 1724000821-IN-DA-00003 Rev. 03

HYDROGEN ULTRASONIC LEAK DETECTOR / PIPE MOUNTING



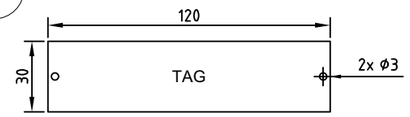
ITEM	DESCRIPTIONS	NR
1	Hydrogen Ultrasonic Leak Detector, DRÄGER Polytron 8900 UGLD d S 4-20/HART Relay	1
2	Reducer 3/4" NPT - M20 Ex d AISI 316	2
3	3/4" plug Ex d AISI 316	1
4	Pipe mount bracket kit Polytron 5000/8000 series, DRÄGER	1
5	Sun and weather protection kit Polytron, DRÄGER	1
6	Stainless Steel Name Plate	1
7		
8		
9		
10		

INSTALLATION
QUANTITY

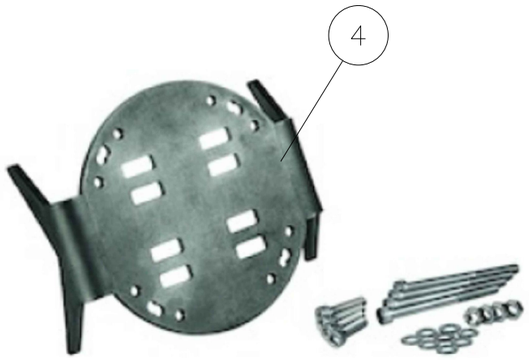
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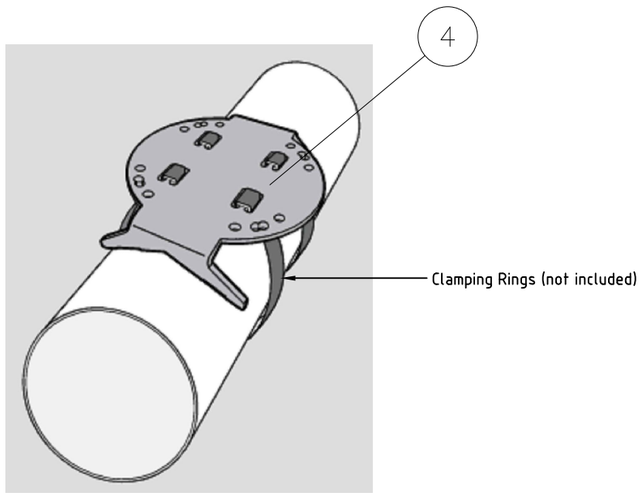
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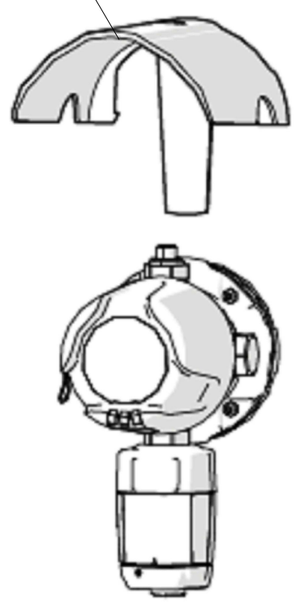
STAINLESS STEEL
NAME PLATE DETAILS



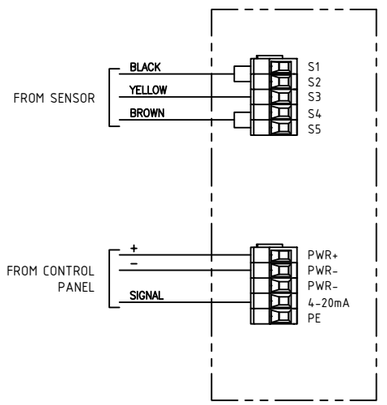
NOTE 5







WIRING



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HYDROGEN ULTRASONIC LEAK DETECTOR / PIPE MOUNTING

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 009 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
24/659

File Name : 1724000821-IN-DA-00003 Rev. 03

HYDROGEN ULTRASONIC LEAK DETECTOR / PIPE MOUNTING – TAG

POS.	TAG NUMBER
1	950-GDZ-01101
2	950-GDZ-01102
3	950-GDZ-02117
4	950-GDZ-02118
5	950-GKDZ-02119
6	950-GDZ-02120
7	950-GDZ-03101
8	950-GDZ-03102
9	950-GDZ-03103

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
HYDROGEN ULTRASONIC LEAK DETECTOR / PIPE MOUNTING – TAG

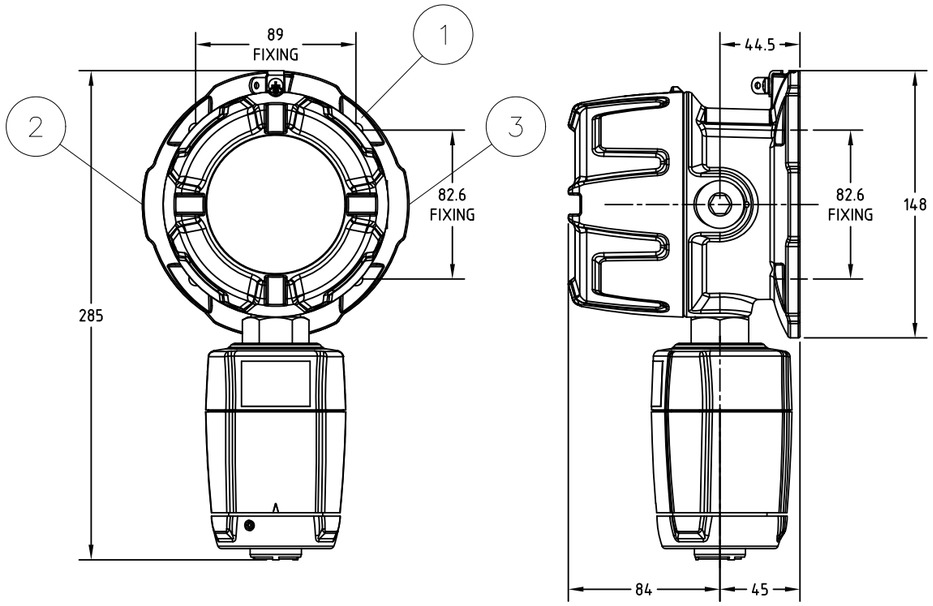
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 010 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000821-IN-DA-00003 Rev. 03

OXYGEN POINT DETECTOR / PIPE MOUNTING



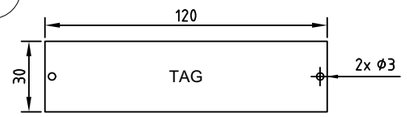
ITEM	DESCRIPTIONS	NR
1	Oxygen Point Detector, DRÄGER Polytron 8100 EC d S 4-20/HART	1
2	Reducer 3/4" NPT - M20 Ex d AISI 316	2
3	3/4" plug Ex d AISI 316	1
4	Pipe mount bracket kit Polytron 5000/8000 series, DRÄGER	1
5	Sun and weather protection kit Polytron, DRÄGER	1
6	Stainless Steel Name Plate	1
7		
8		
9		
10		

INSTALLATION
QUANTITY

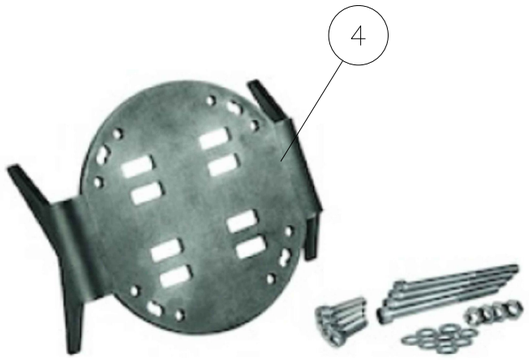
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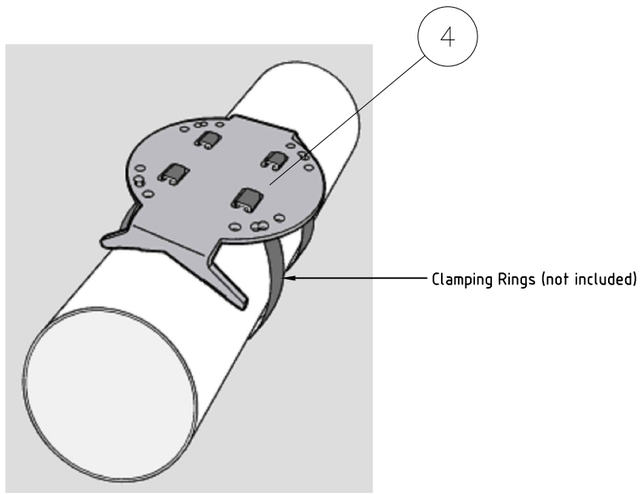
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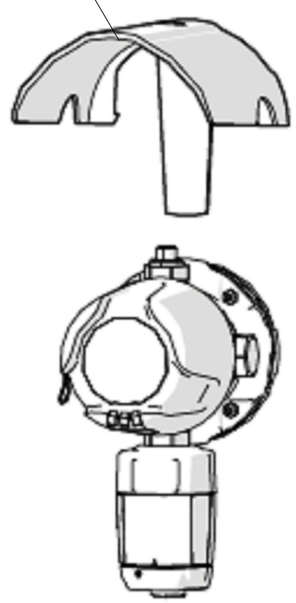
STAINLESS STEEL
NAME PLATE DETAILS



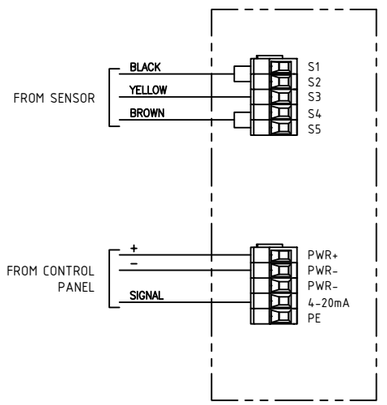
NOTE 5







WIRING



FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
OXYGEN POINT DETECTOR / PIPE MOUNTING

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 011 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000821-IN-DA-00003 Rev. 03

OXYGEN POINT DETECTOR / PIPE MOUNTING – TAG

POS.	TAG NUMBER
1	950-GDZ-03107
2	950-GDZ-03108
3	950-GDZ-03109

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
OXYGEN POINT DETECTOR / PIPE MOUNTING – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 012 | REV. 03

F.to UNI A3: 420mmx297mm

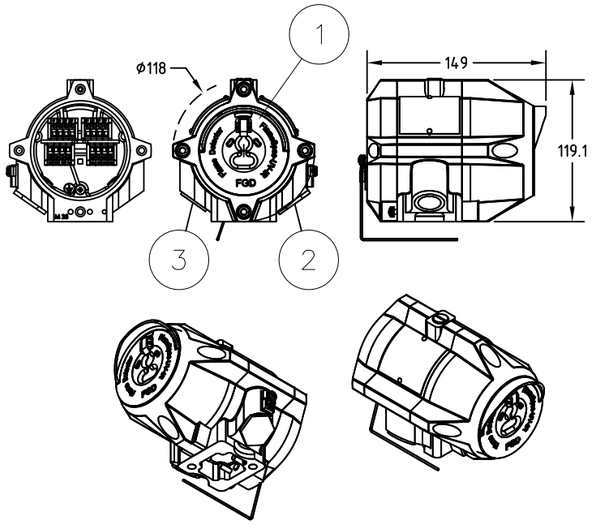
File Name : 1724000821-IN-DA-00003 Rev. 03

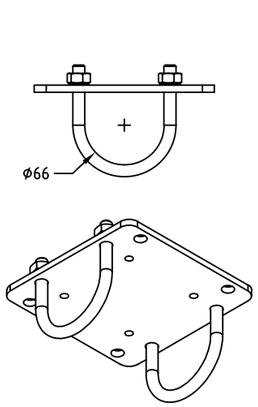
FLAME DETECTOR / 2" PIPE MOUNTING

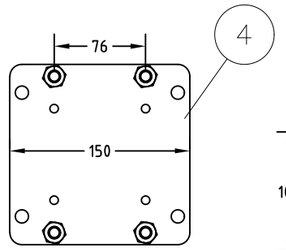
ITEM	DESCRIPTIONS	NR
1	Flame Detector, FGD FlameSpec FLS-UV-IR-AS11	1
2	Reducer M25 - M20 Ex d AISI 316	1
3	Stop Plug M25 Ex d AISI 316	1
4	2 inch Mounting Kit, FGD F107X0050.00	1
5	Tilt Assy, FGD F110X0090.00	1
6	Weather Shield, FGD F107X0240.00	1
7	Stainless Steel Name Plate	
8		
9		
10		

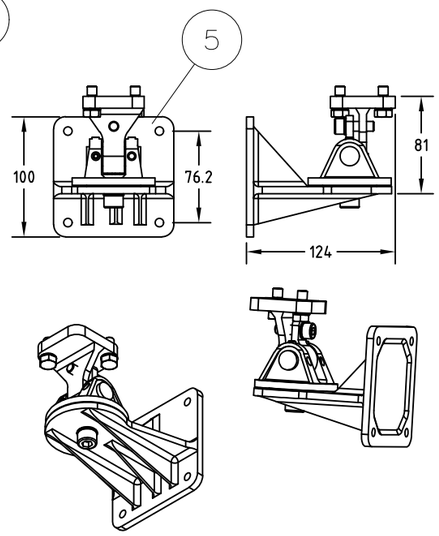
INSTALLATION QUANTITY

22

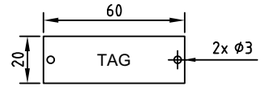






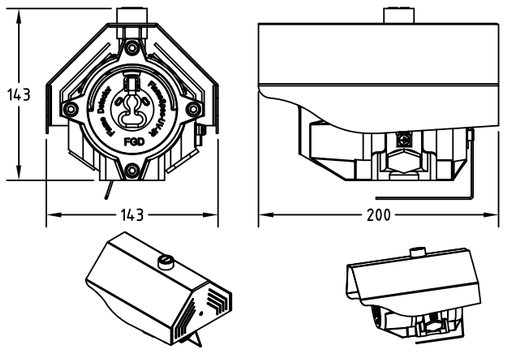


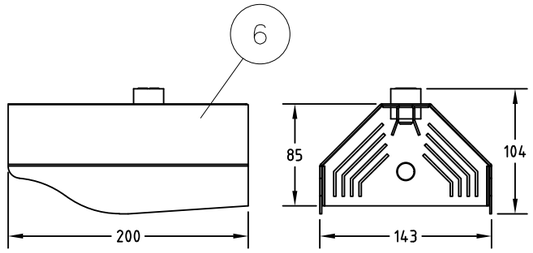
7 STAINLESS STEEL NAME PLATE DETAILS

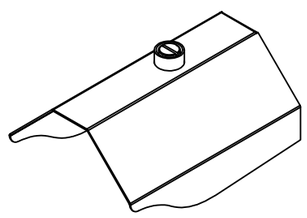


NOTE 5

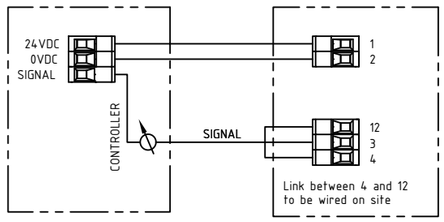
GA WEATHER SHIELD AND DETECTOR



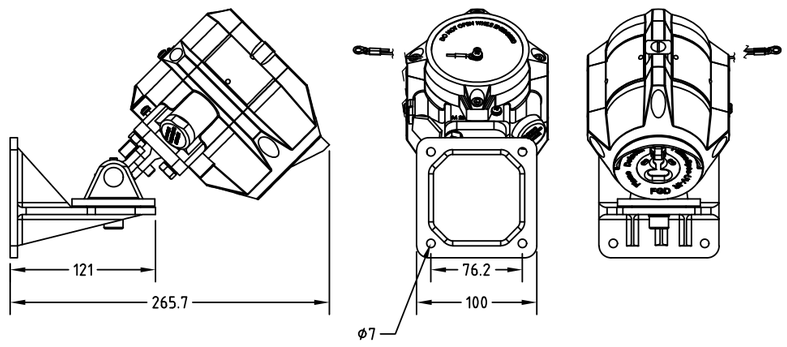




CONTROL CABINET — DETECTOR



INSTALLATION SCHEME



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
FLAME DETECTOR / 2" PIPE MOUNTING

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 013

REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
28/659

File Name : 1724000821-IN-DA-00003 Rev. 03

FLAME DETECTOR / 2" PIPE MOUNTING – TAG

POS.	TAG NUMBER
1	950-FDZ-01101
2	950-FDZ-01102
3	950-FDZ-01103
4	950-FDZ-01104
5	950-FDZ-02101
6	950-FDZ-02102
7	950-FDZ-02103
8	950-FDZ-02104
9	950-FDZ-03101
10	950-FDZ-03102
11	950-FDZ-03103
12	950-FDZ-03104
13	950-FDZ-04101
14	950-FDZ-04102
15	950-FDZ-04103
16	950-FDZ-04104
17	950-FDZ-05101
18	950-FDZ-05102
19	950-FDZ-05103
20	950-FDZ-05104
21	950-FDZ-06101
22	950-FDZ-06102

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
FLAME DETECTOR / 2" PIPE MOUNTING – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 014 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
29/659

File Name : 1724000821-IN-DA-00003 Rev. 03

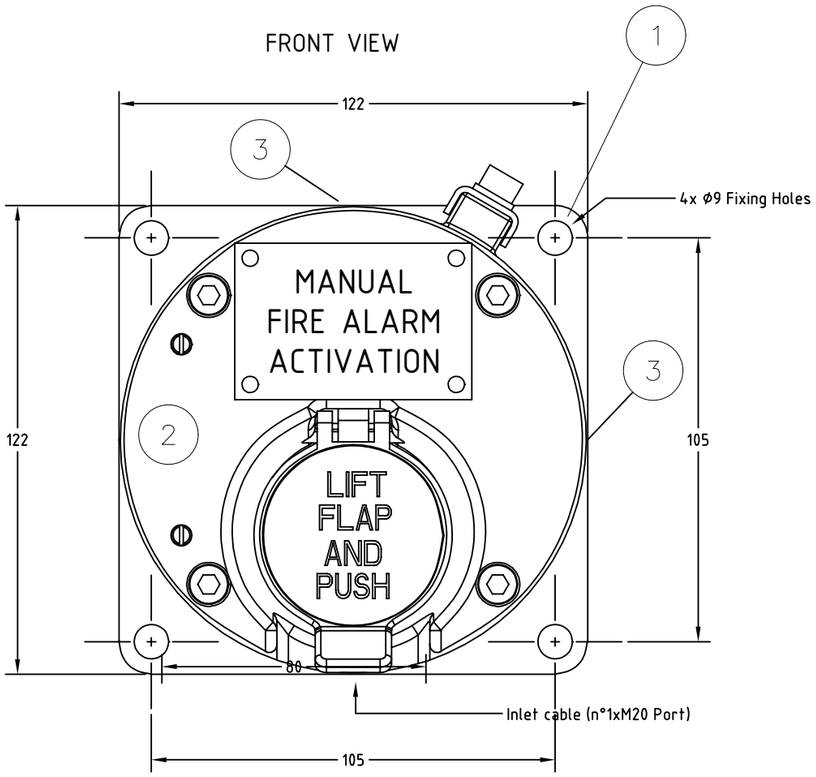
MANUAL CALL POINT (MANUAL FIRE ALARM) (RED)

ITEM	DESCRIPTIONS	NR
1	Manual Call Point (Manual Fire Alarm) (Red), MEDC SM87PBLSD1B1ROYHDRZ	1
2	Stainless Steel Name Plate	1
3	Stop Plug M20 Ex d AISI 316	2
4		
5		
6		
7		
8		
9		
10		

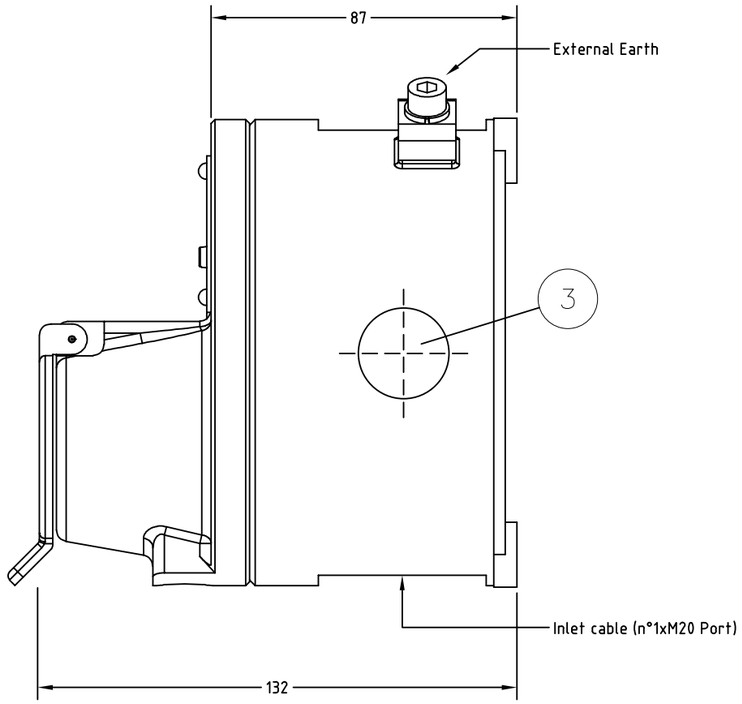
INSTALLATION QUANTITY

21

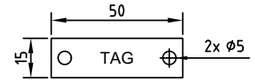
FRONT VIEW



SIDE VIEW



2 STAINLESS STEEL NAME PLATE DETAILS

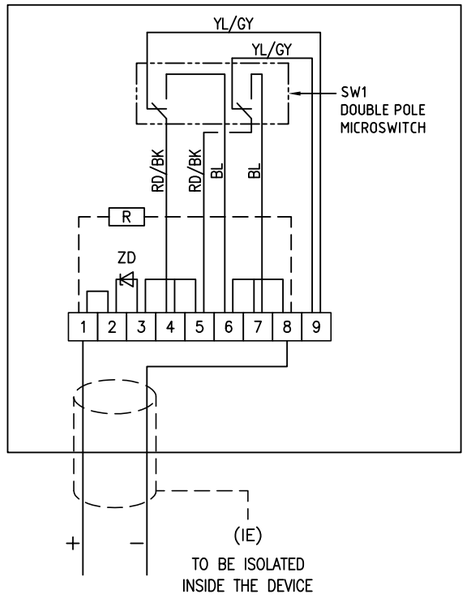


NOTE 5

WIRING

TERMINAL STRIP

ZD= ZENER 1N5339B 5.6V
R= 36 KOhm



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
MANUAL CALL POINT (MANUAL FIRE ALARM) (RED)

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 015 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
30/659

File Name : 1724000821-IN-DA-00003 Rev. 03

MANUAL CALL POINT (MANUAL FIRE ALARM) (RED) – TAG

POS.	TAG NUMBER
1	950-MFA-01101
2	950-MFA-01102
3	950-MFA-01103
4	950-MFA-02101
5	950-MFA-03101
6	950-MFA-03102
7	950-MFA-03103
8	950-MFA-03104
9	950-MFA-04101
10	950-MFA-04102
11	950-MFA-04201
12	950-MFA-04202
13	950-MFA-04203
14	950-MFA-05101
15	950-MFA-05102
16	950-MFA-05103
17	950-MFA-05104
18	950-MFA-06101
19	950-MFA-06102
20	950-MFA-06201
21	950-MFA-07101

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
MANUAL CALL POINT (MANUAL FIRE ALARM) (RED) – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 016 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
31/659

File Name : 1724000821-IN-DA-00003 Rev. 03

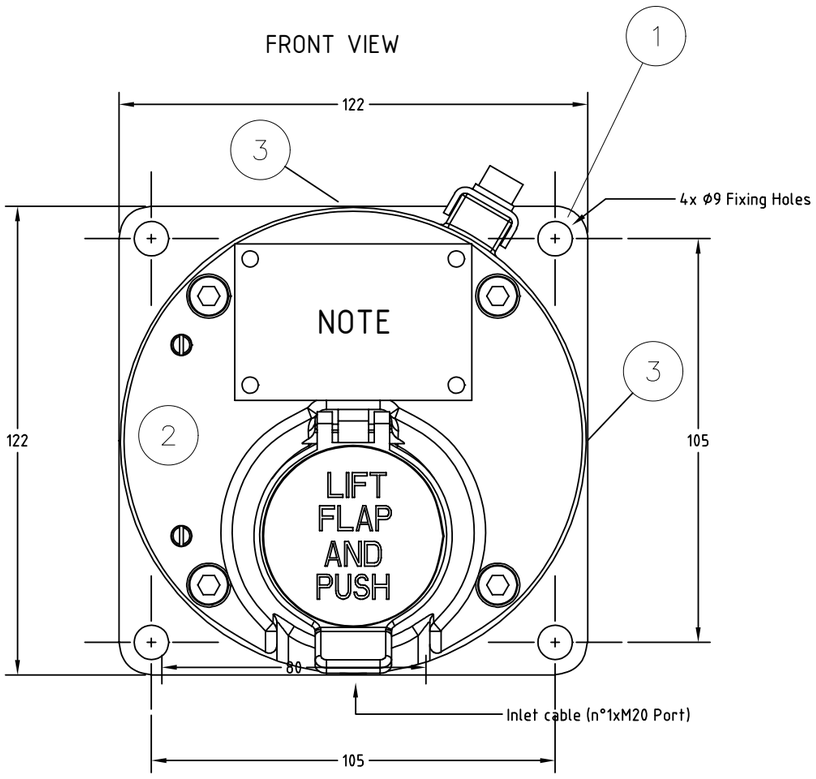
MANUAL CALL POINT (PUSH BUTTON TO SIS) (YELLOW)

ITEM	DESCRIPTIONS	NR
1	Manual Call Point (Push Button) (Yellow), MEDC SM87PBLSD1B1ROYHDYZ	1
2	Stainless Steel Name Plate	1
3	Stop Plug M20 Ex d AISI 316	2
4		
5		
6		
7		
8		
9		
10		

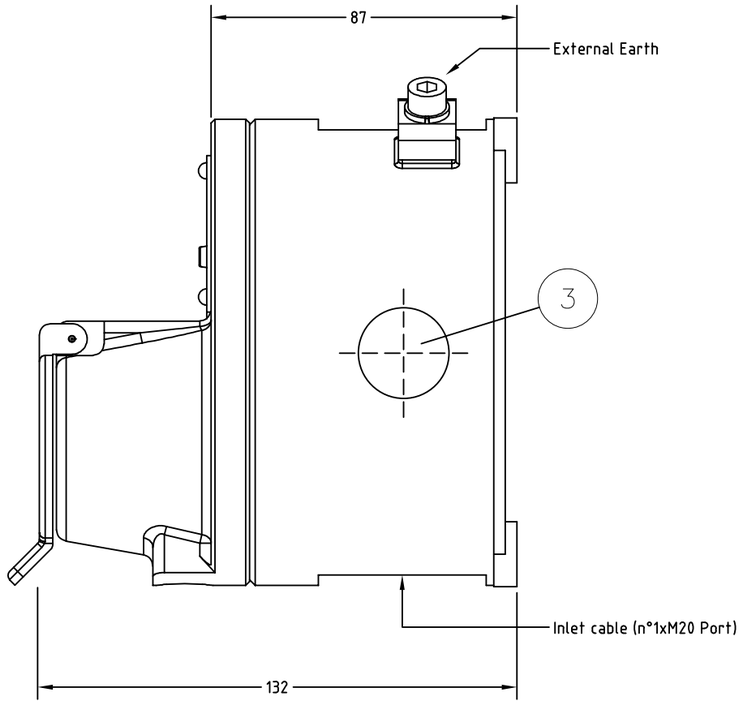
INSTALLATION QUANTITY

20

FRONT VIEW



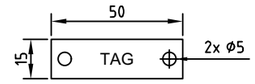
SIDE VIEW



NOTE

Q.TY	DUTY LABEL
5	ABANDON ACTIVATION
5	MAN OVER BOARD ACTIVATION
5	EMERGENCY SHUTDOWN ACTIVATION
5	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION

2 STAINLESS STEEL NAME PLATE DETAILS

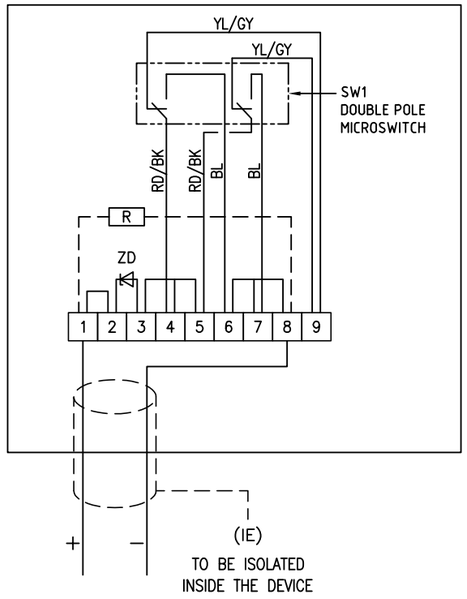


NOTE 5

WIRING

TERMINAL STRIP

ZD= ZENER 1N5339B 5.6V
R= 36 KOhm



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
MANUAL CALL POINT (PUSH BUTTON TO SIS) (YELLOW)

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 017 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
32/659

File Name : 1724000821-IN-DA-00003 Rev. 03

MANUAL CALL POINT (PUSH BUTTON TO SIS) (YELLOW) – TAG

POS.	TAG NUMBER
1	950-ASD-01101
2	950-ASD-03101
3	950-ASD-04101
4	950-ASD-06101
5	950-ASD-07101
6	950-MOB-01101
7	950-MOB-03101
8	950-MOB-04101
9	950-MOB-06101
10	950-MOB-07101
11	950-ESD-01101
12	950-ESD-03101
13	950-ESD-04101
14	950-ESD-06101
15	950-ESD-07101
16	950-ESDD-01101
17	950-ESDD-03101
18	950-ESDD-04101
19	950-ESDD-06101
20	950-ESDD-07101

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
MANUAL CALL POINT (PUSH BUTTON TO SIS) (YELLOW) – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724000821-IN-DA-00003 | SHEET 018 | REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
33/659

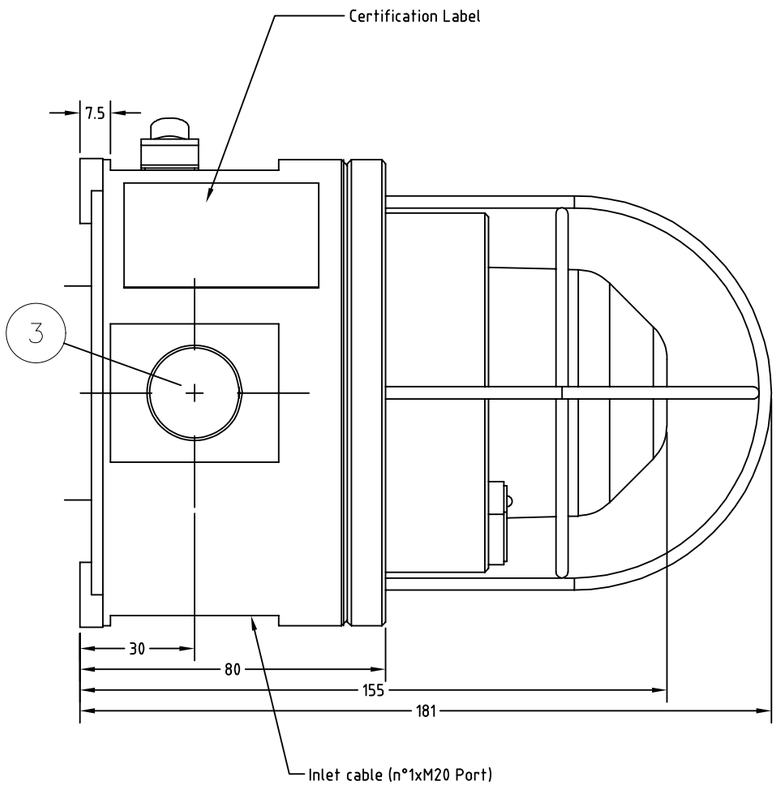
File Name : 1724000821-IN-DA-00003 Rev. 03

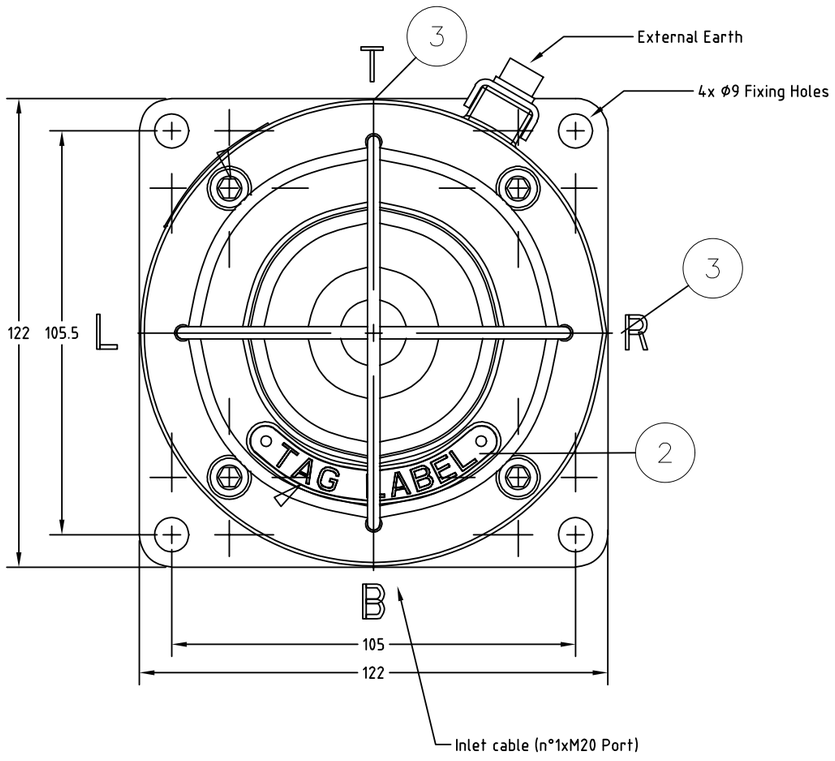
GAS FLASH BEACON (AMBER)

ITEM	DESCRIPTIONS	NR
1	Gas Flash Beacon (Amber), MEDC SM87LEDSB024AY1B1RYNRZZZ	1
2	Stainless Steel Name Plate	1
3	Stop Plug M20 Ex d AISI 316	2
4		
5		
6		
7		
8		
9		
10		

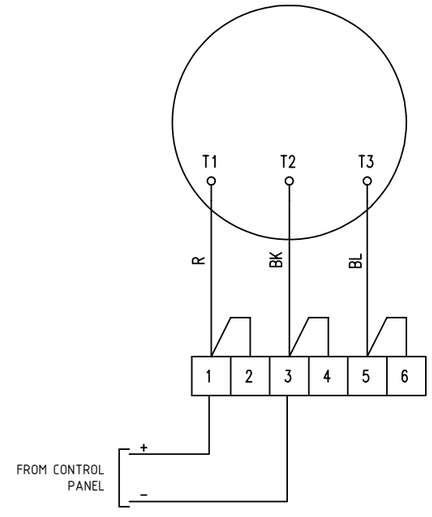
INSTALLATION QUANTITY

13





WIRING



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
GAS FLASH BEACON (AMBER)

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 019

REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02

File Name : 1724000821-IN-DA-00003 Rev. 03

GAS FLASH BEACON (AMBER) – TAG

POS.	TAG NUMBER
1	950-XL-01101
2	950-XL-02101
3	950-XL-03101
4	950-XL-03103
5	950-XL-04101
6	950-XL-04103
7	950-XL-04201
8	950-XL-04203
9	950-XL-04205
10	950-XL-06101
11	950-XL-06103
12	950-XL-06201
13	950-XL-07101

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
GAS FLASH BEACON (AMBER) – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 020

REV. 03

F.to UNI A3: 420mmx297mm

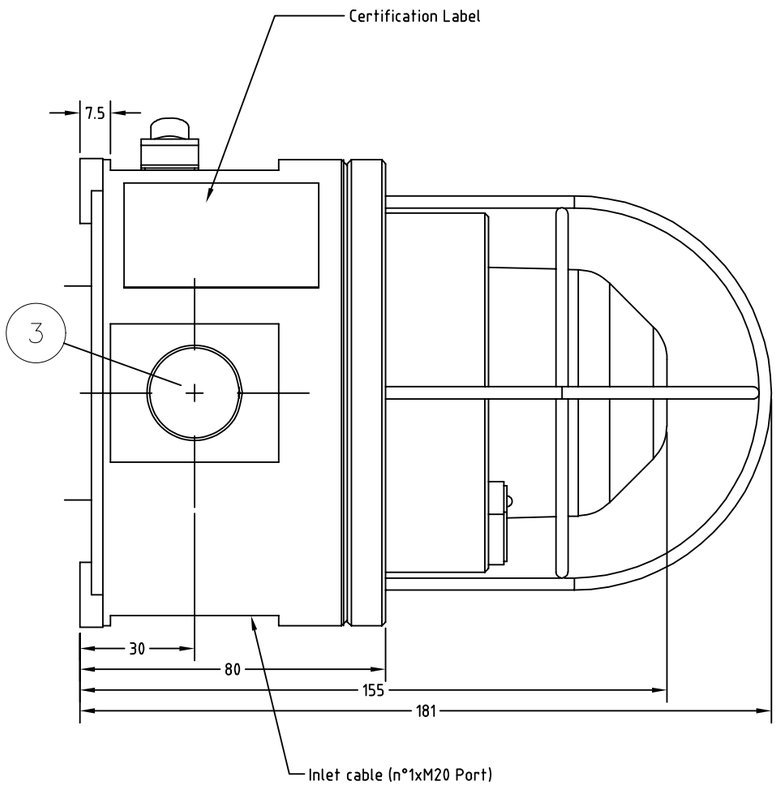
File Name : 1724000821-IN-DA-00003 Rev. 03

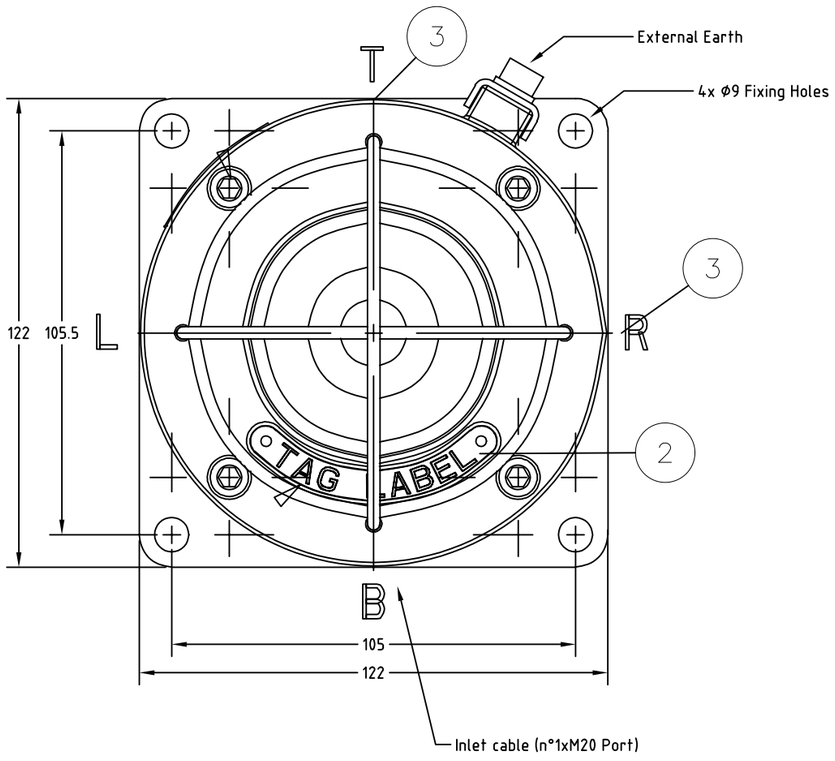
FIRE FLASH BEACON (RED)

ITEM	DESCRIPTIONS	NR
1	Fire Flash Beacon (Red), MEDC SM87LEDSB024RY1B1RYNRZZZ	1
2	Stainless Steel Name Plate	1
3	Stop Plug M20 Ex d AISI 316	2
4		
5		
6		
7		
8		
9		
10		

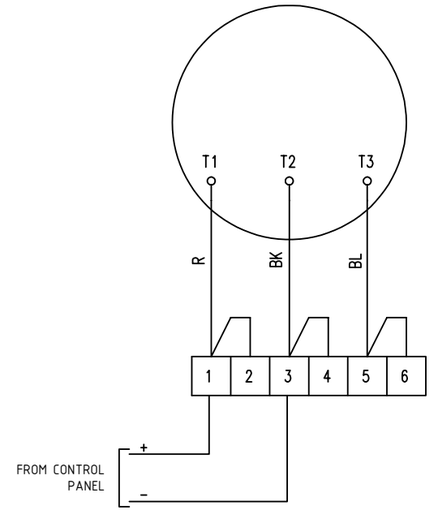
INSTALLATION QUANTITY

13





WIRING



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
FIRE FLASH BEACON (RED)

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 021

REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02

File Name : 1724000821-IN-DA-00003 Rev. 03

FIRE FLASH BEACON (RED) – TAG

POS.	TAG NUMBER
1	950-XL-01102
2	950-XL-02102
3	950-XL-03102
4	950-XL-03104
5	950-XL-04102
6	950-XL-04104
7	950-XL-04202
8	950-XL-04204
9	950-XL-04206
10	950-XL-06102
11	950-XL-06104
12	950-XL-06202
13	950-XL-07102

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
FIRE FLASH BEACON (RED) – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

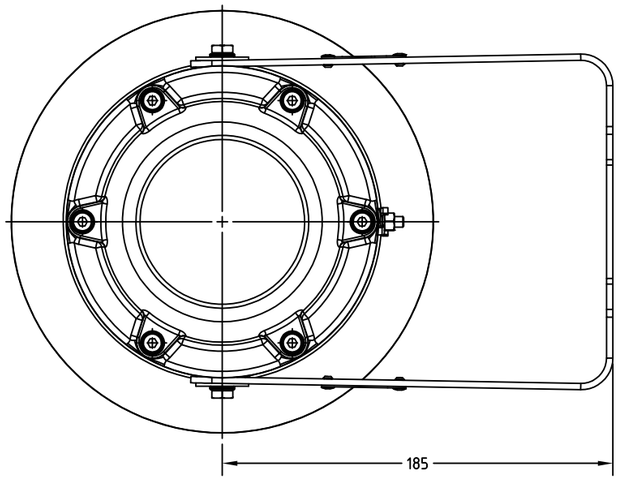
SHEET 022

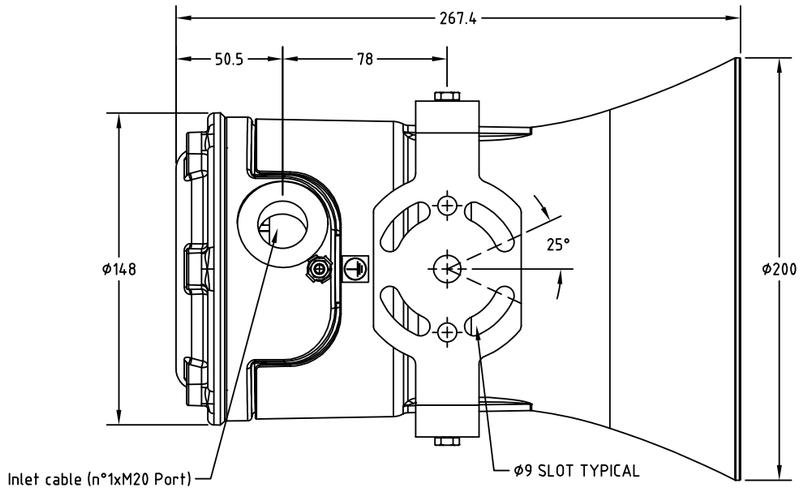
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000821-IN-DA-00003 Rev. 03

SOUNDER





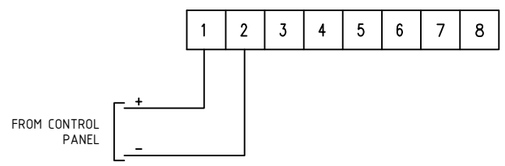
ITEM	DESCRIPTIONS	NR
1	Sounder, MEDC DM3BMSD048DT1BNR	1
2		
3		
4		
5		
6		
7		
8		
9		
10		

INSTALLATION QUANTITY

17

NOTE:
DUTY LABEL: EMERGENCY SHUTDOWN ALARM

WIRING



FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
02	10/10/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
SOUNDER

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 023

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000821-IN-DA-00003 Rev. 03

SOUNDER – TAG

POS.	TAG NUMBER
1	950-XZ-01101
2	950-XZ-01102
3	950-XZ-02101
4	950-XZ-03101
5	950-XZ-03102
6	950-XZ-04101
7	950-XZ-04102
8	950-XZ-04201
9	950-XZ-04202
10	950-XZ-04203
11	950-XZ-05101
12	950-XZ-05102
13	950-XZ-05103
14	950-XZ-05104
15	950-XZ-06101
16	950-XZ-06201
17	950-XZ-07101

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CROSSWIND

ROSETTI MARINO

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03	13/01/25	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
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00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
SOUNDER – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 024

REV. 03

F.to UNI A3: 420mmx297mm

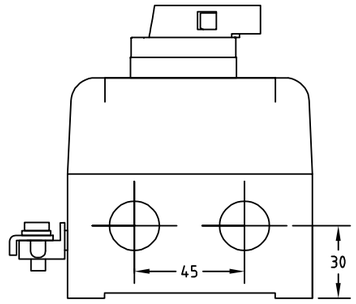
File Name : 1724000821-IN-DA-00003 Rev. 03

PUSH BUTTON DPDT CONTACT

ITEM	DESCRIPTIONS	NR
1	Control Station, CO.SI.ME GHG 432	1
2	Cable Gland M20 Ex-e (not included)	2
3		
4		
5		
6		
7		
8		
9		
10		

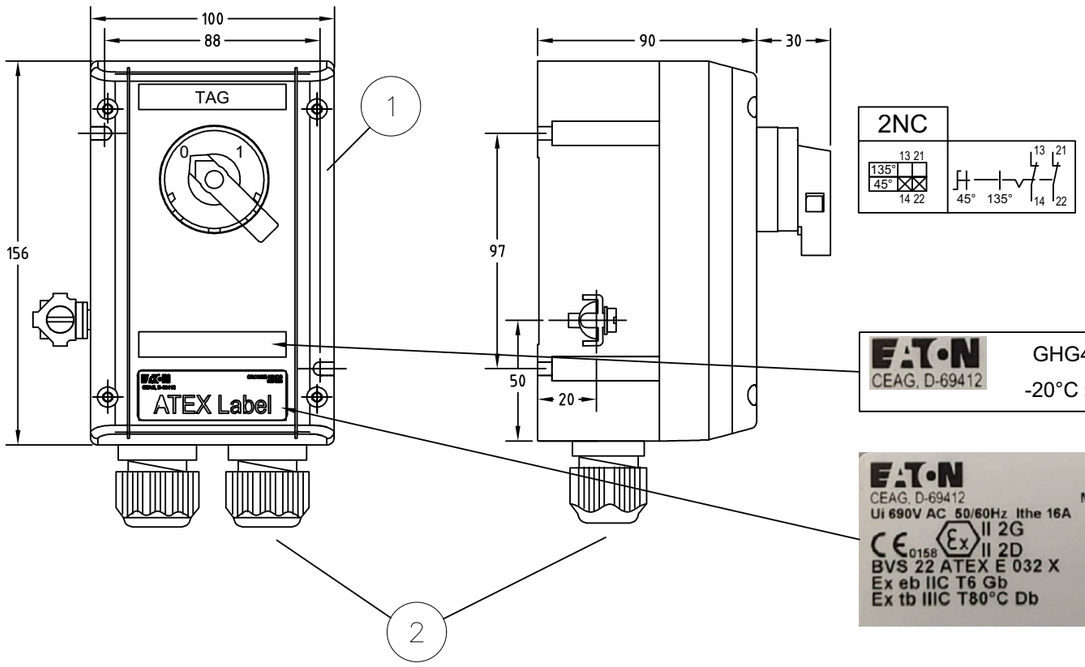
INSTALLATION QUANTITY

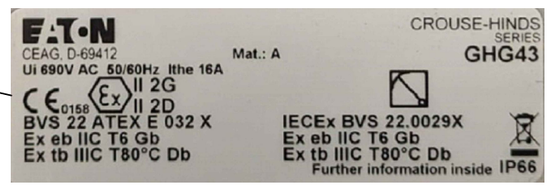
32



Traffolyte label red background - white letters (ARIAL font)
fixed by SS screws and insulated on the rear by PU resin







Technical data:
Manufactured by Eaton Crouse-Hinds Division
Model: GHG 432
Certificate No.
PTB 00 ATEX 3117
IECEx BKI 04.0003
Marking: ATEX and IECEx
II 2G Ex de IIC T6 Gb
II 2D Ex tb IIIC T80°C Db
-20°C ≤ tamb ≤ +55°C
Ui 690V
IP65

Specific characteristics:
- Polyamide (PA), black
- Closed with stainless steel screw
- M6 internal/external stainless steel earth stud

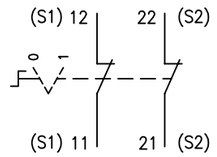
Components:
- No. 1 black selector switch with 2 position 2NC

Entries bottom side B:
- No. 2 M20 threaded holes

No. 1 1,6x60x10 mm white text on red background traffolyte tag fixed with stainless steel screws on the cover, sealed on the back with PU adhesive and engraved

Also a certification label fixed with back self adhesive on the cover

WIRING



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01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

FORES ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
PUSH BUTTON DPDT CONTACT

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 025

REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
40/659

File Name : 1724000821-IN-DA-00003 Rev. 03

PUSH BUTTON DPDT CONTACT – TAG

POS.	TAG NUMBER
1	77-HS-001A
2	77-HS-001B
3	77-HS-002A
4	77-HS-002B
5	77-HS-003A
6	77-HS-003B
7	77-HS-004A
8	77-HS-004B
9	77-HS-005A
10	77-HS-005B
11	77-HS-006A
12	77-HS-006B
13	77-HS-007A
14	77-HS-007B
15	77-HS-008A
16	77-HS-008B
17	77-HS-009A
18	77-HS-009B
19	77-HS-010A
20	77-HS-010B
21	77-HS-011A
22	77-HS-011B
23	77-HS-012A
24	77-HS-012B
25	77-HS-013A
26	77-HS-013B
27	77-HS-014A
28	77-HS-014B
29	77-HS-015A
30	77-HS-015B
31	77-HS-016A
32	77-HS-016B

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CROSSWIND

ROSETTI MARINO

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01	03/09/24	DB	MO	SM	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	DB	MO	SM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
GENERAL ARRANGEMENT
PUSH BUTTON DPDT CONTACT – TAG

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000821-IN-DA-00003

SHEET 026

REV. 03

F.to UNI A3: 420mmx297mm

1724000821-QC-DB-0006-02
41/659

File Name : 1724000821-IN-DA-00003 Rev. 03

Base Load Power Hub (BLPH)

FIRE AND GAS FIELD EQUIPMENT

INSPECTION AND TEST PLAN

Document Number: 1724000821-QC-ITP-00002

Document Class: 2

FORES ENGINEERING Srl
Luca Pizzigati
Project Quality Control Manager
☒ Witness ☐ Review
25/09/24

L. PIGNATELLI ON BEHALF OF CROSSWIND
☒ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS
DATE 25/9/2024

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.
25/09/24

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1	08/05/2024	Accepted for Construction (AFC)	L. Pizzigati	M. Ossani	S. Montanari
0	29/05/2024	Issue for Review (IFR)	L. Pizzigati	M. Ossani	S. Montanari

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2	Accepted for Construction (AFC)

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.



Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

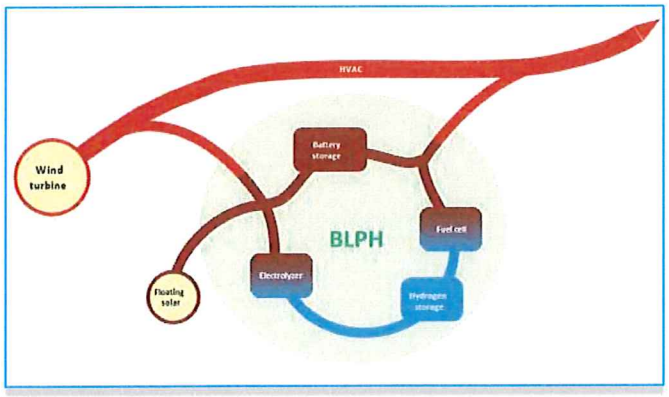


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT PURPOSE AND SCOPE

This plan defines inspections and tests to be carried out to verify quality requirements identified in all contractual documents: Drawings, Specification, Codes and Standards latest revisions.

This document shall be applied to structural fabrication and erection activities for Base Load Power Hub (BLPH), including sea fastening and grillage. Disciplines other than structural are covered by dedicated project ITPs.

2.1 REFERENCES

Doc. No.	Description

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project
CA	Certification Agency
SUB CONTRACTOR (SC)	FORES ENGINEERING S.r.l
LOG	Logistic Dept.
NDE	Non Destructive Examination
QC	Quality Control Dept.
QCI	Quality Control Inspector

Table 2 - Definitions and Abbreviations

3 RESPONSIBILITIES

3.1 PROJECT QUALITY MANAGER

The PQM shall assure that :

- the project quality requirements are implemented through all phase of the project;
- project works are properly controlled, inspected, tested and documented.
- The required documentation for certification purpose is submitted to CPY for review and signature on continuous basis;
- fabrication facilities are properly maintained and/or calibrated according to contractors and project quality standards ; all personnel holds required competence level and training in compliance with project specifications

3.2 QC INSPECTOR (QCI) / WELDING INSPECTOR (WI)

QCI / WI shall:

- perform the checks and tests as stated in responsibility column of this ITP;
- document the inspections issuing proper inspection reports;
- produce daily welding monitoring reports
- supervise and monitor the activities on site;
- interface with the CPY QA/QC site representative for the management of the inspection;
- notify the inspections to be attended to the CPY QA/QC site representative.
- coordinate all NDE activities;
- mark-up repairs area to be excavated in line with NDE report and control weld repairs (mark-up of areas to be repaired should be managed and independently performed by the NDE operator. Judgement of welds including characteristics of any repair shall be ensured the sole responsibility of the NDE operator).

3.3 NDE OPERATOR

The NDE operator shall :

- be suitably qualified (certified) in accordance with project requirements
- perform NDE according to the project requirements and applicable procedure, and ensure that NDE results shall be concluded subsequently after the inspection (at least daily), ensuring that inspection results are preserved and maintained
- prepare inspection reports within 48 hours from the inspection

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3.4 DIMENSIONAL CONTROL ENGINEER

The dimensional control engineer shall:

- carry out dimensional check
- issue dimensional reports, including relevant mark-up drawing
- Surveys will be carried out for the following items and steps :
  - Upper grillage subassemblies as-built
  - Upper grillage assembly, positioning and as-built
  - Topside structure subassemblies, as-built
  - Topside structure assemblies (by level), as built
  - Primary nodes at fit-up stage
  - Primary nodes as-built
  - Overall structure, including interfaces, as-built

3.5 SUB-CONTRACTOR

Subcontractor (1) shall:

- provide resources suitable for the required quality level, in terms of both personnel and equipment; RM has the right to reject or ask for replacement at any time in case of inadequate resources
- comply with instructions and coordination by RM construction supervisors
- execute the work in accordance with project requirements, by applying RM procedures and CPY specifications referenced in this document, supported by RM construction and inspection personnel

(1) for the purpose of this document "subcontractor" is intended as the organization providing resources and executing fabrication activities, with supervision by RM Construction Dept. and Quality Control by RM QC Dept. Such subcontractors may execute the work both within RM premises (yard, workshop) or in external workshops.

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4 NOTIFICATION FOR INSPECTION

CPY and CA site surveyor shall be notified for inspection attendance by means of "Notification for Inspection" form, containing all details on the inspection, sent by e-mail to the CPY QA/QC site representative and CA surveyor. The notification shall be issued to CPY and CA at least 24 hours in advance for site inspections and 48 hours in advance for local off-site inspections. In case of emergencies, such notification can be sent even with shorter notice, provided it has been previously agreed upon.

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5 INSPECTION RECORDS

Inspection records shall be made available for CPY and CA in due time after completion of activities. Original records shall be filed in the CTR QC dept. and made available for CPY and CA re-view at any time.

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6 INTERVENTION POINTS DESCRIPTION

Code	Description
M	Routine intervention (Monitoring). Activities concerned shall be continuously monitored. Monitoring activities are not formalised.
S	Percentage intervention (Spot). Activities shall be monitored in percentage. The intervention is formalised by issuing a document related to the specific activity (report, certificate or control report).
R	Documentation review (Review). Certificates, reports and documents issued for the specific activity foreseen by the Quality Control Plan shall be checked. Personnel in charge of controls shall formalise the review by signing relevant documents.
W	Witnessed intervention (Witness). CPY and\or CA shall be notified in written; should CPY and\or CA not be present at notified date and time, the activity may proceed.
H	Hold point (Hold). CPY and\or CA shall be notified in written; should CPY and\or CA decide not to witness the activity, the waiver shall be in written. In case the activity is not waived, it shall not proceed until CPY and\or CA are present.

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7 INSPECTION AND TEST

L. PIGNATELLI ON BEHALF OF CROSSWIND

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS
DATE 25/9/2024

Step	Step Description	Inspection/Test Requirement	Resp.	Reference Document	Acceptance Criteria	Ref. Record	Intervention Point			
							SC	CTR	CPY	CA
1.0	MATERIALS									
1.1	Check of incoming materials	Check of material damage and quantity. Material shall not be used until certificates check completion	LOG	1724000821-IN-DS-00004 INSTRUMENT DATA SHEETS - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	H	R	R	R
1.2.	Equipment identification check	Check of: Batch, Grade, Type, Thickness and Size, Color, Visual and Dimensional check	QCI	1724000821-IN-DS-00004 INSTRUMENT DATA SHEETS - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	H	W	W	R
1.3	Equipment certificates check	Check of: Batch, Grade, Type, Thickness, Size, certificate type, calibration certificate or sub supplier test certificate, Atex certificate, SIL certificate	QCI	1724000821-IN-DS-00004 INSTRUMENT DATA SHEETS - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	H	R	R	R
1.4	Flame & Gas detector power on (20%)	Flame & Gas detector power on (20%)	QCI	1724000821-IN-DS-00004 INSTRUMENT DATA SHEETS - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	H	W	W	R

25/09/24

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

Step	Step Description	Inspection/Test Requirement	Resp.	Reference Document	Acceptance Criteria	Ref. Record	Intervention Point			
							SC	CTR	CPY	CA
2.0	SPARE PARTS									
2.1	Spare Parts quantity check	Check of: Batch, Grade, Type, Thickness and Size, Color	QCI	1724000821-COM-LIS-00011 SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's) - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	H	R	R	R
2.2	Special tools quantity check	Check of: Batch, Grade, Type, Thickness and Size, Color	QCI	1724000821-COM-LIS-00011 SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's) - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	1724000821-QC-PRO-00005 FACTORY ACCEPTANCE TEST PROCEDURE - FIRE AND GAS FIELD EQUIPMENT	H	R	R	R
3.0	FINAL RECORDS									
3.1	Release note	-	QC	-	-	Release note	H	H	R	R

ROSETTI MARINO SpA
Stefano Linari 25/09/24
Quality Control Dept.

L. PIGNATELLI ON BEHALF OF
CROSS WIND

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Base Load Power Hub (BLPH)

F&G FIELD EQUIPMENT

FACTORY ACCEPTANCE TEST PROCEDURE

Document Number: 1724000821-QC-PRO-00005

L. PIGNATELLI ON BEHALF OF CROSSWIND

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS
DATE 25/9/2024

Document Class: 2

FORES ENGINEERING Srl
Luca Pizzigati
Project Quality Control Manager
☑ Witness ☐ Review
25/09/2024

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.
25/09/24

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Rev.	Date	Description	Prepared	Reviewed	Approved

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.



Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

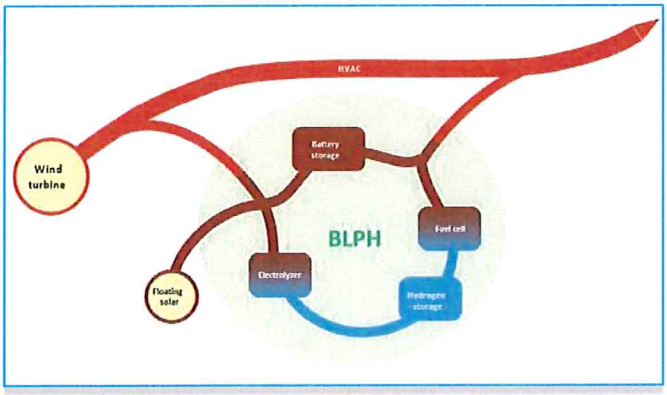


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

The purpose of this procedure is to define how the operating method, the checks and inspection for the Fire & Gas Equipment are carried out in accordance with its Inspection and Test Plan doc. 1724000821-QC-ITP-00002.

For each item in scope of the project will be used the relevant procedure and each activity must be signed in a report attached to this procedure.

Factory Acceptance Tests are carried out at the factory to make sure that all the requirements are met, which results in high quality products. The tests are normally executed in presence of the final customer.

2.1 REFERENCES

Doc. No.	Description
1724000821-IN-DS-00004	INSTRUMENT DATA SHEETS
1724000821-IN-DA-00003	GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM
1724000821-QC-ITP-00002	INSPECTION AND TEST PLAN

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
SYSTEM INTEGRATOR (SI):	FORES ENGINEERING S.r.l.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 2 - Definitions and Abbreviations

3 LIST OF TEST TOOLS USED DURING FAT

n.	Test tools	Test type
1	Measuring tape	Dimensional measures
2	RAL Series	Coating color evaluation
3	Multimeter	Electric parameters measures
4		

Note: All instrument calibration certificates will be provided during FAT and recorded on the FAT reports.

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4 ACTIVITIES AND EXECUTIVE MODALITIES

The scope of this document is to describe the requirements concerning Factory Acceptance Test (FAT), according to the ITP document and product's international standards. The FAT is a customized testing procedure for its system and the tests are executed before the final shipping at the plant.

The Inspection and tests shall be done considering the criteria mentioned on this procedure and all reference documents mentioned in section 5.

FAT report shall be completed with the name and signature of the person who carries out the check and/or test. All the results of each test shall be recorded in the test report.

4.1 ESTIMATE DURATION OF TEST

FAT test duration is estimated in 1 working day for loose materials.

5 FACTORY ACCEPTANCE TEST

5.1 LOOSE MATERIAL VISUAL AND DIMENSIONAL CHECK

5.1.1 Flame Detector Check

Test Name / Test N°	**FLAME DETECTOR CHECK**	
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type	
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	None	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
FGD FlameSpec FLS-UV-IR-AS11	X				25/09/2024

Remarks:

FORES ENGINEERING FORLI' - ITALY

Test Attendants		Name and Surname	Signature
	SI	LUCA PITTIGLIO	
	CTR	Stefano Linari	
	CPY	LUCA PIGNATELLI	

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.2 Flame Detector Check Power on

Test Name / Test N°	FLAME DETECTOR CHECK POWER ON	
Test Scope	The scope of this test to power on 20% devices	
ITP Reference	1724000821-QC-ITP-00002, section 1.4	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	24VDC	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Power on	Device LED on

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
FGD FlameSpec - S/N 606527	X				25/08/2024
FGD FlameSpec - S/N 606530	X				25/08/2024
FGD FlameSpec - S/N 606567	X				25/09/2024
FGD FlameSpec - S/N 606470	X				25/09/2024
FGD FlameSpec					

Remarks: * n. 1 Flame Detector is in Yoko Gawa for FAT ICSS. (S/N 606448)

Test Attendants		Name and Surname	Signature
	SI	LUCA PITIGLIANI	
	CTR	STEFANO LINARI	
	CPY	LUIGI PIGNATELLI	

FORES ENGINEERING FORLI' - ITALY

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.3 Smoke Detector Check

Test Name / Test N°	**SMOKE DETECTOR CHECK**
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM
Equipment Involved	Loose Material as listed in Data sheet
Requirements	None
Prerequisites	None
Notes	

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
ZETTLER MR601TEx	X				25/09/2024

Remarks: * N.1 SMOKE IS IN YOKOGAWA FOR FAT ICSS (SIN 4051763 - TAG: 850-SDE-04213)

Test Attendants		Name and Surname	Signature
	SI	LUCA PITTICATI	ROSETTI MARINO
	CTR	STEFANO LINARI	Stefano Linari
	CPY	LUIGI PIGNATELLI	Quality Control

FORES ENGINEERING FORLI - ITALY

5.1.4 Gas Detector Hydrogen Check

Test Name / Test N°	**GAS DETECTOR HYDROGEN CHECK**
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM
Equipment Involved	Loose Material as listed in Data sheet
Requirements	None
Prerequisites	None
Notes	

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
Dräger Polytron® 8200 CAT DQ d S 4-20/HART®	X				25/09/2024

Remarks:

* n. 1 HYDROGEN IS IN YOKOGAWA FOR FAT (CSS)
(SIN. ARSD - 0466)

Test Attendants		Name and Surname	Signature
	SI	LUCA PITACCATI	
	CTR	STEFANO UNARI	
	CPY	LUCA PIGNATELLI	

FORES ENGINEERING FORLI - ITALY

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.5 Gas Detector Hydrogen Power on

Test Name / Test N°	GAS DETECTOR HYDROGEN POWER ON	
Test Scope	The scope of this test to power on 20% devices	
ITP Reference	1724000821-QC-ITP-00002, section 1.4	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	24VDC	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Power on	Device display on

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
Dräger Polytron® 8200 CAT S/N ARTB 1644	X				21/10/2024
Dräger Polytron® 8200 CAT S/N ARTB 1637	X				
Dräger Polytron® 8200 CAT S/N ARTB 2004	X				
Dräger Polytron® 8200 CAT S/N ARTC 2203	X				
Dräger Polytron® 8200 CAT S/N ARTC 2196	X				
Dräger Polytron® 8200 CAT S/N ARTC 2198	X				
Dräger Polytron® 8200 CAT S/N ARTB 1639	X				
Dräger Polytron® 8200 CAT S/N ARTC 2191	X				
Dräger Polytron® 8200 CAT S/N ARTB 1629	X				
Dräger Polytron® 8200 CAT S/N					

Remarks:

Test Attendants		Name and Surname	Signature
	SI	LUCA PELLICIARI	
	CTR	STEFANO LINARI	
	CPY	LUCA PIGNATON	

FORES ENGINEERING FORLI' - ITALY

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.6 Gas Detector Ultrasonic Check and Power on

Test Name / Test N°	**GAS DETECTOR ULTRASONIC CHECK AND POWER ON**	
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type and to power on 20% devices	
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2, 1.3, 1.4	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	24VDC	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired
7	Power on	Device display on

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
Dräger Polytron® 8900 UGLD d S 4-20/HART® Relay	X				25 / 09 / 2024

Remarks: 1 ULTRASONIC IS IN YOKOGAWA FOR ICSS FAT (S/N ARTA-1681)
CHECKED IN FOLDER (POWER ON) - S/N ARTA-1687 ARTA-1688

Test Attendants		Name and Surname	Signature
	SI	LUCA PIZZATI	
	CTR	STEFANO LINARI	
	CPY	LUIGI PIGNATELLI	

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.7 Gas Detector Oxygen Check and Power on

Test Name / Test N°	GAS DETECTOR OXYGEN CHECK AND POWER ON	
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type and to power on 20% devices	
ITP Reference	1724000821-QC-ITP-00002, tion 1.1, 1.2, 1.3, 1.4	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	24VDC	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired
7	Power on	Device display on

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
Dräger Polytron 8100 EC d S 4-20/Hart	X				25/09/2024

Remarks: 1 DETECTOR OXYGEN IS IN YOKOGAWA FOR ICSS FAT (S/N ARTA 46-80)
IN ZONES CHECKED (POWER ON) S/N ARTA - 46-89

Test Attendants		Name and Surname	Signature
	SI	LUCA PITTATI	
	CTR	STEFANO LINARI	
	CPY	LUIGI PIGNATARO	

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ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.8 Push Button Manual Fire Alarm Check

Test Name / Test N°	**PUSH BUTTON MANUAL FIRE ALARM CHECK**
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM
Equipment Involved	Loose Material as listed in Data sheet
Requirements	None
Prerequisites	None
Notes	

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
MEDC SM87PBL MANUAL FIRE ALARM	✓				25/09/2024

Remarks: N.1 PUSH BUTTON IS YOKOGAWA ROZ ICSS FAT. 22546S / 20121

Test Attendants		Name and Surname	Signature
	SI	LUCA PITTIGLIATI	
	CTR	STEFANO LINARI	
	CPY	LUIGI SIGNORELLI	

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ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.9 Push Button To SIS Check

Test Name / Test N°	PUSH BUTTON TO SIS CHECK	
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type	
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	None	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
MEDC SM87PBL PUSH BUTTON TO SIS	X				25/09/2024

Remarks:

Test Attendants		Name and Surname	Signature
	SI	LUCA PITTIGATI	
	CTR	STEFANO LINARI	
	CPY	LUIGI PEGNALOSA	

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ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.10 Gas Flash Beacon (Amber) Check

Test Name / Test N°	**GAS FLASH BEACON (AMBER) CHECK**
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM
Equipment Involved	Loose Material as listed in Data sheet
Requirements	None
Prerequisites	None
Notes	

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
GAS FLASH BEACON (AMBER) MEDC SM87LEDS	X				25/09/2024

Remarks:

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Test Attendants		Name and Surname	Signature
	SI	LUCA PITTICATI	
	CTR	STEFANO LINARI	ROSETTI MARINO SpA Stefano Linari Quality Control Dept.
	CPY	LUIGI FIGNOLA	

5.1.11 Fire Flash Beacon (Red) Check

Test Name / Test N°	**FIRE FLASH BEACON (RED) CHECK**	
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type	
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	None	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
FIRE FLASH BEACON (RED) MEDC SM87LEDS	X				25/09/2024

Remarks:

Test Attendants		Name and Surname	Signature
	SI	LUCA PIZZICATI	
	CTR	Stefano Linari	
	CPY	LUIGI PIGNATELLI	

FORES ENGINEERING FORLI' - ITALY

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.12 Sounder Check

Test Name / Test N°	FIRE FLASH BEACON (RED) CHECK	
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type	
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	None	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
SOUNDER MEDC DB3B	X				25/09/2024

Remarks:

Test Attendants		Name and Surname	Signature
	SI	LUCA PIETRAGNOLI	
	CTR	Stefano Linari	
	CPY	LUCA PIETRAGNOLI	

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ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

5.1.13 Push Button DPDT Contact

Test Name / Test N°	**PUSH BUTTON DPDT CONTACT**	
Test Scope	The scope of this test to perform visual and mechanical check of 1 device for each device type	
ITP Reference	1724000821-QC-ITP-00002, section 1.1, 1.2 ,1.3	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS 1724000821-IN-DA-00003 - GENERAL ARRANGEMENTS including DETAIL DRAWINGS, NAME PLATE DRAWINGS, WIRING DIAGRAM	
Equipment Involved	Loose Material as listed in Data sheet	
Requirements	None	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The loose equipment is aligned with Datasheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Datasheets and complete with all accessories
5	Equipment tag labels check (where applicable)	Tag Label provided and compliant to Reference Documents (where applicable). Ex label installed and compliant to the Ex standard (where applicable)
6	Certification check	Atex, Sil, Calibration check (where applicable), Test certificate (where applicable) in compliance and unexpired

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
PUSH BUTTON DPDT CONTACT EATON GHG 432	X				25/09/2024

Remarks: n. 32 PUSH BUTTONS DPDT CONTACT (HS) are already at Rosetti yard as per request from RH team. RH confirmed to Received and checked.

Test Attendants		Name and Surname	Signature
	SI	LUCA PAPAGNI	
	CTR	STEFANO UNARI	
	CPY	LUIGI PIGNATELLI	

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Stefano Linari
Quality Control Dept

5.1.14 Commissioning Spare Parts Check

Test Name / Test N°	COMMISSIONING SPARE PARTS CHECK	
Test Scope	The scope of this test to perform visual and mechanical check of Commissioning Spare parts	
ITP Reference	1724000821-QC-ITP-00002, section 2.1	
Reference Documents	1724000821-COM-LIS-00011 - SPARE PART INDEX REGISTER 1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS	
Equipment Involved	Material as listed in the Commissioning Spare list	
Requirements	None	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The spare parts equipment are aligned with System Data sheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Commissioning Spare Parts list.

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
Ref. to Commissioning Spare Part List	X				25/09/2024

Remarks:

Test Attendants		Name and Surname	Signature
	SI	LUCA PITTALUGA	
	CTR	Stefano Linari	
	CPY	LUIGI PIGNATARO	

FORES ENGINEERING FORLI' - ITALY

ROSETTI MARINO S.p.A.
Stefano Linari
Quality Control Dept

5.1.15 Special Tools Check

Test Name / Test N°	SPECIAL TOOLS CHECK	
Test Scope	The scope of this test to perform visual and mechanical check of special tools	
ITP Reference	1724000821-QC-ITP-00002, section 2.2	
Reference Documents	1724000821-IN-DS-00004 - INSTRUMENT DATA SHEETS	
Equipment Involved	Material as listed in Data sheet	
Requirements	None	
Prerequisites	None	
Notes		

Procedure

Step	Description	Acceptance Criteria
1	Dimensional check	Visual inspection to verify compliance with reference Drawing
2	Mechanical damage check	No mechanical damage are presents
3	Equipment quality check	The spare parts equipment are aligned with System Data sheet
4	Equipment quantity check	The quantity of devices supplied are in compliance with Data sheet

Equipment involved	Pass	Fail	Not Applicable	Punch Code	Date
Ref. to Data sheets	X				25/09/2024

Remarks:

Test Attendants		Name and Surname	Signature
	SI	LUCA PIZZIGATI	
	CTR	Stefano Linari	
	CPY	LUIGI PIGNATELLI	

FORES ENGINEERING FORLI' - ITALY

ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

Base Load Power Hub (BLPH)

FIRE AND GAS FIELD EQUIPMENT

TECHNICAL OPERATING AND MAINTENANCE MANUAL

Document Number: 1724000821-IN-MAN-00010

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
V. Barratta	29-11-2024

Rev.	Date	Description	Prepared	Reviewed	Approved
01	06/11/2024	Accepted for Construction (IFC)	E. Balestri	M. Ossani	S. Montanari
00	02/10/2024	Issue for Review (IFR)	E. Balestri	M. Ossani	S. Montanari

FORES ENGINEERING

File: 1724000821-IN-MAN-00010-01.xlsx

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1	Cover	X	X						
2	Table of Contents	X	X						
3	Revision / Change Log	X	X						
4	SMOKE DETECTOR ZETTLER MR601TEx	X	X						
12	GAS DETECTOR HYDROGEN Dräger Polytron® 8200 CAT DQ d S 4-20/HART®	X	X						
62	GAS DETECTOR ULTRASONIC Dräger Polytron® 8900 UGLD d S 4-20/HART® Relay	X							
88	GAS DETECTOR OXYGEN Dräger Polytron 8100 EC d S 4-20/Hart	X							
138	FLAME DETECTOR FGD FlameSpec FLS-UV-IR-AS11	X	X						
188	FLAME DETECTOR FGD Test Lamp FLS-FSIM-UV-IR-KIT	X							
201	PUSH BUTTON MEDC SM87PBL	X							
208	GAS & FIRE FLASH BEACON MEDC SM87LEDS	X							
215	SOUNDER MEDC DB3BM	X							
230	PUSH BUTTON DPDT CONTACT EATON GHG 432	X							

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (IFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

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SMOKE DETECTOR

POS.	TAG NUMBER	SERVICE
1	950-SDZ-04201	FZ-04 B-400 HVAC AIR INTAKE
2	950-SDZ-04202	FZ-04 B-400 HVAC AIR INTAKE
3	950-SDZ-04203	FZ-04 B-400 HVAC AIR INTAKE
4	950-SDZ-04207	FZ-04 B-300 HVAC AIR INTAKE
5	950-SDZ-04208	FZ-04 B-300 HVAC AIR INTAKE
6	950-SDZ-04209	FZ-04 B-300 HVAC AIR INTAKE
7	950-SDZ-04213	FZ-04 B-200 HVAC AIR INTAKE
8	950-SDZ-04214	FZ-04 B-200 HVAC AIR INTAKE
9	950-SDZ-04215	FZ-04 B-200 HVAC AIR INTAKE
10	950-SDZ-06201	FZ-06 B-100 HVAC AIR INTAKE
11	950-SDZ-06202	FZ-06 B-100 HVAC AIR INTAKE
12	950-SDZ-06203	FZ-06 B-100 HVAC AIR INTAKE
13	950-SDZ-04204	FZ-04 B-400 AMBIENT
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15	950-SDZ-04206	FZ-04 B-400 AMBIENT
16	950-SDZ-04210	FZ-04 B-300 AMBIENT
17	950-SDZ-04211	FZ-04 B-300 AMBIENT
18	950-SDZ-04212	FZ-04 B-300 AMBIENT
19	950-SDZ-04216	FZ-04 B-200 AMBIENT
20	950-SDZ-04217	FZ-04 B-200 AMBIENT
21	950-SDZ-04218	FZ-04 B-200 AMBIENT
22	950-SDZ-06204	FZ-06 B-100 AMBIENT
23	950-SDZ-06205	FZ-06 B-100 AMBIENT
24	950-SDZ-06206	FZ-06 B-100 AMBIENT

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MR601TEx INTRINSICALLY SAFE ENHANCED OPTICAL SMOKE DETECTOR PRODUCT APPLICATION AND DESIGN INFORMATION

1. INTRODUCTION

The MR601TEx Intrinsically Safe High Performance Optical Smoke Detector forms part of the M600Ex series of plug in detectors for ceiling mounting. The detector plugs into the 5BEx 5" Universal IS Base and is intended for two-wire operation on the majority of the control equipment currently manufactured by the company. The Intrinsically Safe High Performance Optical detector is available in one sensitivity setting only.

2. INTRINSIC SAFETY

The detectors are for use in potentially explosive gas and dust atmospheres (zone 0 gas, zone 20 dust).

The detectors are designed to comply with EN/IEC 60079-0:2006, EN/IEC 60079-11:2007 and EN/IEC61241-11:2006 for Intrinsically Safe apparatus. They are certified:

ATEX code:	**II 1 GD** CE 1180
Certificate:	**BAS01ATEX1134X**
Gas/Dust code:	**Ex ia IIC T5** **Ex iaD 20 T100°C**
IECEx Certificate:	**IECEx BAS 07.0056X**

These detectors are designed and manufactured to protect against other hazards as defined in paragraph 1.2.7 of Annex II of the ATEX Directive 94/9/EC.

2.1 DETECTOR USE

It is recommended that the detector is used in conjunction with a suitable isolator or shunt diode safety barrier in a certified Intrinsically Safe system, ie, System 620.

2.2 SPECIAL CONDITIONS OF SAFE USE

The apparatus has a plastic enclosure which constitutes a potential electrostatic hazard. The enclosure must be cleaned only with a damp cloth.

3. OPERATING PRINCIPLE

The MR601TEx operates by sensing the optical scatter from smoke particles generated in a fire. While the optical scatter detector can give good detection performance for the majority of fires, some fast burning fires produce little visible smoke and some produce very black smoke, neither of which are easily detected by the optical scatter detector. (Such fires are represented in EN54-7 by Polyurethane and Heptane type fires respectively). These fires do, however, produce high heat outputs with an associated rise in air temperature.

The detector has been designed to offer improved detection of such fires, by detecting the rapid rate-of-rise of air temperature and under these conditions, increasing the smoke detection sensitivity. This gives an earlier detection of such fires and a broader detection capability than a standard detector.

The MR601TEx detector has two sensing systems as follows:

- An optical chamber with associated electronics to measure the presence of smoke by light scatter.
- A thermistor with its associated electronics to detect the presence of hot air draughts or high temperatures.

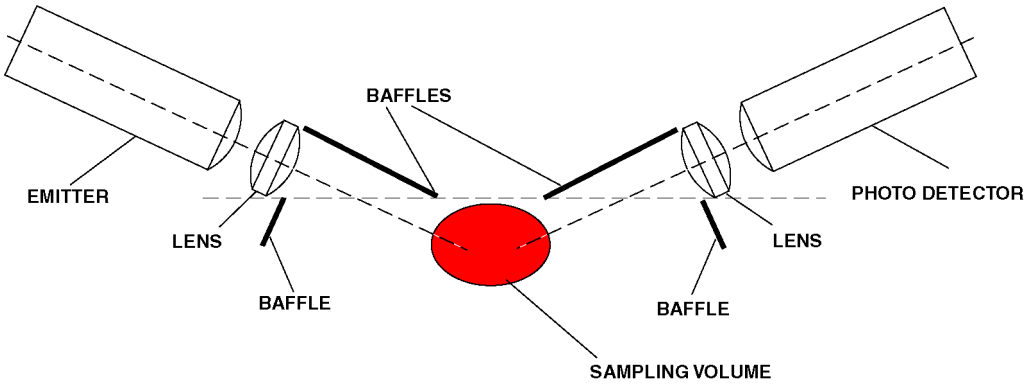


Fig. 1 Optical System Schematic

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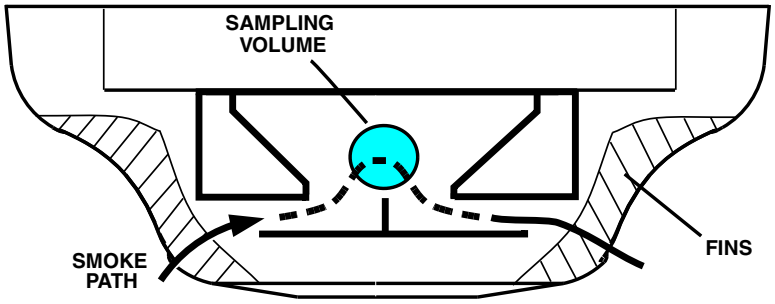


Fig. 2 Measuring Chamber Showing Smoke Flow Path

3.1 OPTICAL SYSTEM

The MR601TEx detects visible particles produced in fires by using the light scattering properties of the particles. The detector uses the optical arrangement shown diagrammatically in Fig. 1.

The optical system consists of an infra-red emitter and receiver, with a lens in front of each, so arranged that their optical axes cross in the sampling volume. The emitter, with its lens, produces a narrow beam of light which is prevented from reaching the receiver by the baffles. When smoke is present in the sampling volume a proportion of the light is scattered, some of which reaches the receiver. For a given type of smoke, the light reaching the photodetector is proportional to the smoke density. The amplified output from the sensor can be used to activate an alarm circuit at a predetermined threshold.

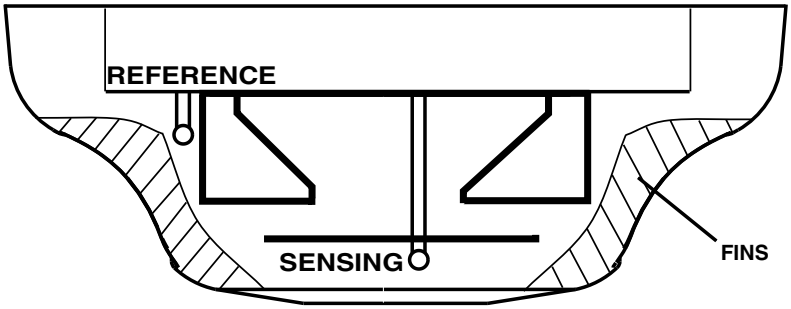


Fig. 3 Thermal Measuring System

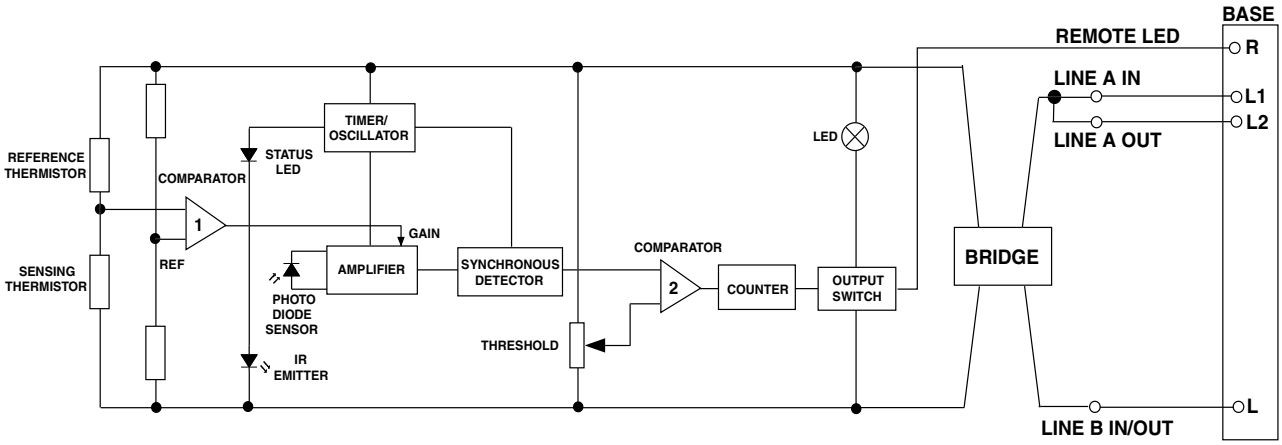


Fig. 4 Block Schematic of Detector

3.2 FEATURES OF MEASURING CHAMBER

The MR601TEx uses vertical chevrons to exclude ambient light.

Smoke incident on the detector is channelled into the detector by the outer cover fins (Fig. 2) and passes through the vertical chevrons. The smoke is deflected into the optical chamber and through the sampling volume before passing out the other side of the detector.

The emitter (Fig. 1) is a GaAlAs solid state type operating in the near infra-red (880nm peak), while the detector is a matched silicon photodiode. These devices, together with their associated lenses, are held in place by the chamber mouldings. The design of the optical system is such that the presence of small insects such as thrips, should not cause false alarms.

3.3 THERMAL MEASURING SYSTEM

Refer to Fig. 3.

This is designed to detect the presence of horizontally moving hot air draughts moving across the ceiling which occur in a fast burning fire.

The measuring system consists of two fast responding negative temperature thermistors. A sensing thermistor is located above the labyrinth under the cover in the airstream and will detect any sudden changes in the air temperature or draughts of hot air moving across the ceiling. The second thermistor is located out of the airflow within the smoke labyrinth and has a longer time constant and is used as a temperature reference to compare the sensing thermistor against. At a given temperature differential between the two thermistors, the comparator will switch and increase the gain of the amplifier, thereby increasing the sensitivity of the sensor. Fins located on the top of the labyrinth are designed to increase air turbulence and the efficiency of the sensing thermistor.

3.4 CIRCUIT OPERATIONS

A simplified block schematic of the detector is given in Fig. 4.

The emitter is subjected to a pulse stream only every 10s in order to reduce the quiescent current. The pulse signal received by the photodiode is fed to a high-gain amplifier. If smoke is present, the pulse signal received varies in proportion to the smoke density.

The amplifier output is fed via an integrator, the output of which is compared to a preset threshold level. Sophisticated synchronous detection techniques are used to reduce the effects of noise and spurious transients.

The gain of the front end amplifier is controlled by the thermistor bridge circuit. When the temperature differential between the two thermistors exceeds a certain value, the amplifier gain increases. Under these conditions the High Performance Optical detector is more sensitive to the presence of smoke and is said to be in ‘Enhanced Mode’.

When the detector is in the ‘Enhanced Mode’, the detector will only alarm if a smoke signal is present. The presence of rising temperature alone cannot cause an alarm.

If the signal amplitude exceeds a threshold level, then the emitter samples the smoke every two seconds. The sample period remains at two seconds if the signal is above the threshold. When the counter has counted three consecutive pulses above the threshold, the output stage is latched into the alarm condition. If however, the amplitude of the second or third pulse is below the threshold, then the pulse period reverts to 10 seconds and the counter resets. The switching of the output stage lights the alarm LED and provides drive for the remote LED indicator.

The critical front end of the circuit is run off a 12V regulator to make it independent of supply voltage.

The detector is polarity conscious.

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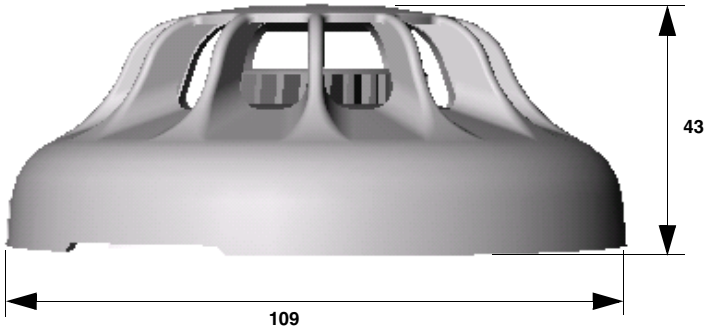


Fig. 5 Overall Dimensions of MR601TEx

3.5 WIRING

Loop cabling is connected to base terminals as follows:

L	-VE
L1	+VE IN
L2	+VE OUT
R	Remote LED Drive

4. MECHANICAL CONSTRUCTION

The major components of the detector are:

- Body Assembly
- Printed Circuit
- Optical Chamber
- Optical Chamber Cover
- Thermistor
- Light Pipe
- Outer Cover

4.1 ASSEMBLY

The body assembly consists of a plastic moulding which has four embedded detector contacts which align with contacts in the 5BEx base. The moulding incorporates securing features to retain the detector in the base.

The PCB is soldered to the body contacts. These contacts act as a mechanical fixture during assembly and provide electrical contact between the contacts and the PCB. The PCB is then potted.

The chamber cover is clipped to the body over the optical chamber ensuring the thermistor protrudes through the cover. The light pipe is slotted into the chamber cover. Finally, the outer cover is clipped to the body.



Fig. 6 MR601TEx Enhanced Optical Smoke Detector with 5BEx 5" Base

4.2 TEST AND FINAL ASSEMBLY

The detectors are fully functionally tested and their sensitivities set in a smoke tunnel to ensure correct calibration. The sealing ring and labels are then fitted to complete detector assembly.

5. TECHNICAL SPECIFICATION

5.1 MECHANICAL

Dimensions

The dimensions of the MR601TEx detector are shown in Fig. 5.

Materials

Body and cover:	FR110 'BAYBLEND' Fire Resistant

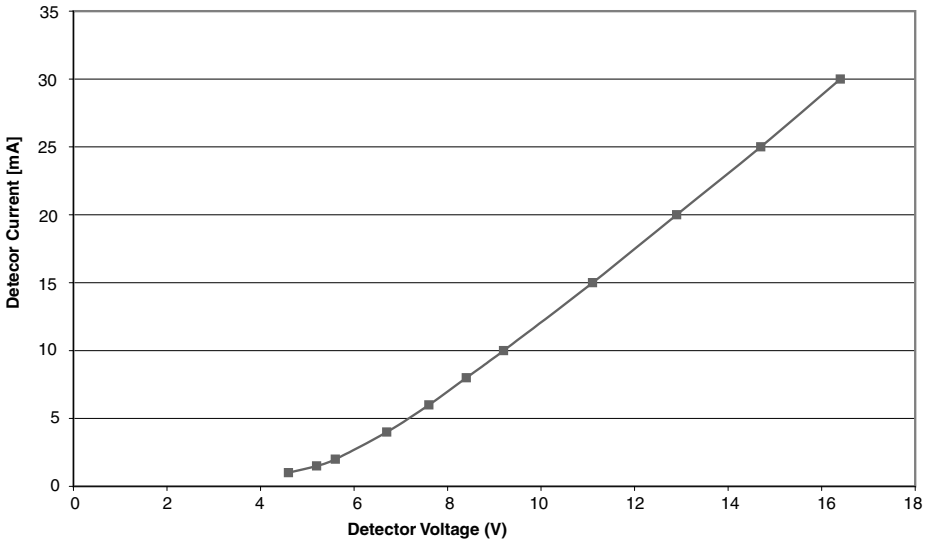


Fig. 7 Alarm Load Presented to the Controller

Weight

Detector:	0.128kg
Detector + base:	0.174kg

5.2 ENVIRONMENTAL

Operating Temperature:	-20°C to +70°C (please see note below).
Storage Temperature:	-25°C to +80°C

Note:

1) ***The operating temperatures quoted exceed the ATEX Certification limits.***
2) *Operation below 0°C is not recommended unless steps are taken to eliminate condensation and hence ice formation on the detector.*

Relative Humidity:	95% non-condensing
Shock:) Vibration:) Impact:) Corrosion:)	To EN54-7

5.3 ELECTROMAGNETIC COMPATIBILITY

The detector complies with the following:

Product family standard EN50130-4 in respect of Conducted Disturbances, Radiated Immunity, Electrostatic Discharge, Fast Transients and Slow High Energy

EN 61000-6-3 for Emissions

5.4 ELECTRICAL CHARACTERISTICS

The alarm load presented to the controller is shown in Fig. 7.

The following characteristics shown in Table 1 are taken at 25°C with a supply voltage of 20V unless otherwise specified.

Characteristics	Min.	Typ.	Max.	Unit
Operating Voltage (d.c.)	16	20	28	V
Average Quiescent Current	90		110	µA
Switch-on-Surge			130	µA
Stabilisation Time			60	sec
Alarm Current	See Fig. 6			mA
Holding Voltage			5	V
Holding Current			1	mA
Reset Time		2	5	sec
Remote LED Drive	Remote LED via 3.4k			

Table. 1 Electrical Characteristics

Intrinsic Safety Rating:

Maximum Voltage for safety (U_i):	28V
Maximum Current for Safety (I_i):	93mA
Maximum Power Input (P_i):	650mW
Equivalent Inductance (L_i):	0
Equivalent Capacitance (C_i):	0

5.5 PERFORMANCE CHARACTERISTICS

The fundamental parameter used to define the sensitivity of an optical smoke detector is the level of smoke which will just produce an alarm under 'ideal' conditions. This parameter, known as the response threshold value, is normally measured in a smoke tunnel and is defined in terms of the obscuration produced by the smoke over a one metre path. The response threshold value is normally given in dB/m, (or % per m).

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Interpretation of response threshold value is somewhat complicated by the fact that the measurement is given in terms of obscuration, whereas the detector works by scattering from the smoke particles. The response threshold (m) value will therefore, depend on the colour of the smoke. Black smokes give less scattering than light smokes for given values of obscuration as shown in Fig. 8.

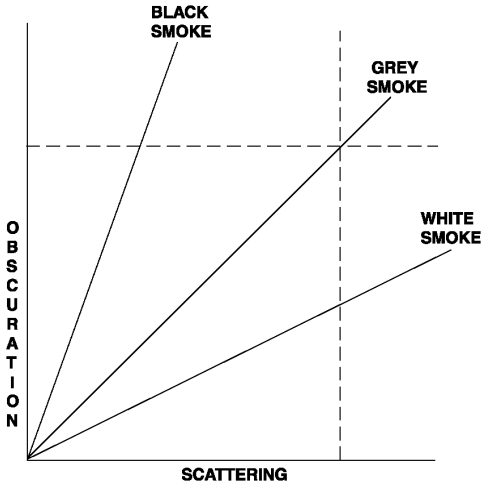


Fig. 8 Response Threshold vs Smoke Colour

Sensitivities are invariably specified for 'grey' smokes as produced by typical smouldering fires. Values for the MR601TEx are given below.

5.5.1 RESPONSE TO RATE OF CHANGE OF TEMPERATURE

The detector will not be enhanced by slow rates of change of temperature, or by cold air draughts moving across the ceiling creating negative rates of change of temperature. The detector is designed to detect sudden horizontal draughts of hot air produced by fast burning fires. The enhancement switching point has been set to allow the detection of TF1 type fires.

Normal response threshold = 0.19 dB/m, 2.7%/m typical.

Enhanced mode threshold = 0.08 dB/m, 1.1%/m typical.

5.6 RESPONSE TO FIRE TESTS

The response of an optical scatter detector to a fire will depend to a large extent on the colour of the smoke produced in the fire. However, other factors such as the detector smoke entry characteristics, the development of the fire and the thermal lift produced by the fire are important. In order to evaluate the response under realistic conditions, detectors are subjected to test fires which cover a range of fire types. These tests are defined in EN54 Pt 7. The MR601TEx passes the following Fire Tests:

TF1	open cellulosic (wood-flaming)
TF2	smouldering pyrolysis
TF3	glowing smouldering (cotton)
TF4	open plastics (polyurethane foam)
TF5	liquid (n-heptane)

Table 2: Response to Fire Tests

Note: TF2 to TF5 are mandatory test fires required to meet EN54 Pt 7.

The MR601TEx is designed to respond to the mandatory tests TF2 to TF5 as required by BS5445 Pt 7. The MR601TEx gives an earlier response to TF5 fires than the MR601 due to its thermal circuit detecting the heat generated by this test of fire and the MR601TEx being 'enhanced'. For the same reason the MR601TEx will detect test fire TF1 (open wood cellulosic flaming fire) which is not normally detected by optical smoke detectors - demonstrating the detectors broader detection capability.

The MR601TEx does not respond to TF6 liquid (methylated spirit) which although having a rapidly rising temperature, does not generate any optical scattering. This shows that the High Performance Optical detector will not respond to hot air draughts without the presence of smoke.

6. INSTALLATION RECOMMENDATIONS

It is not recommended that the MR601TEx be installed in areas where it is likely to be regularly enhanced, since in this condition the detector is extra sensitive and there is a possibility of unwanted alarms from low ambient smoke levels.

The MR601TEx is designed to become enhanced by detecting a rapid temperature rise (>10°C) in air moving horizontally across the ceiling. Siting sensors in positions where air is being blown through the detector should therefore, be particularly avoided, eg, close to ceiling ducts or ceiling mounted industrial heaters; or areas of forced ventilation, such as ducts and under floor voids of computer suites.

Also, not recommended are areas open to the outdoors, such as cargo handling bays, or areas where the detector may become contaminated.

The MR601TEx is not recommended for use in applications where a heater jacket is required.

The MR601TEx is primarily aimed at benign environments.

7. CPD INFORMATION

CE

0832

Tyco Safety Products
Dunhams Lane
Letchworth SG6 1BE
UK

06

0832-CPD-0248

EN 54-7: 2000 + A1: 2002

Conventional Intrinsically Safe high performance photoelectric smoke detector with heat enhancement for use in fire detection and alarm systems in buildings

MR601TEx

Application & Design	01B-04-D12
Installation Instructions	01B-04-I3
Service Instructions	01B-04-S2

8. DETECTOR IDENTIFICATION

The detector is identified by the logo label, as shown in Fig. 9.

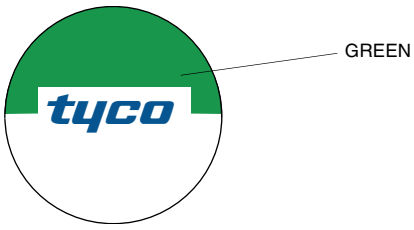


Fig. 9 Detector identification

9. ORDERING INFORMATION

MR601TEx Intrinsically Safe Enhanced Optical Smoke Detector:	516.054.011.Y
5BEx 5" Universal IS Base:	517.050.023

JM/jm

5th May 2010

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HYDROGEN POINT DETECTORS

POS.	TAG NUMBER	SERVICE
1	950-GDZ-02101	H2 GD FZ-02 H2 STORAGE VESSELS AREA
2	950-GDZ-02102	H2 GD FZ-02 H2 STORAGE VESSELS AREA
3	950-GDZ-02103	H2 GD FZ-02 H2 STORAGE VESSELS AREA
4	950-GDZ-02104	H2 GD FZ-02 H2 STORAGE VESSELS AREA
5	950-GDZ-02105	H2 GD FZ-02 H2 STORAGE VESSELS AREA
6	950-GDZ-02106	H2 GD FZ-02 H2 STORAGE VESSELS AREA
7	950-GDZ-02107	H2 GD FZ-02 H2 STORAGE VESSELS AREA
8	950-GDZ-02108	H2 GD FZ-02 H2 STORAGE VESSELS AREA
9	950-GDZ-02109	H2 GD FZ-02 H2 STORAGE VESSELS AREA
10	950-GDZ-02110	H2 GD FZ-02 H2 STORAGE VESSELS AREA
11	950-GDZ-02111	H2 GD FZ-02 H2 STORAGE VESSELS AREA
12	950-GDZ-02112	H2 GD FZ-02 H2 STORAGE VESSELS AREA
13	950-GDZ-02113	H2 GD FZ-02 H2 STORAGE VESSELS AREA
14	950-GDZ-02114	H2 GD FZ-02 H2 STORAGE VESSELS AREA
15	950-GDZ-02115	H2 GD FZ-02 H2 STORAGE VESSELS AREA
16	950-GDZ-02116	H2 GD FZ-02 H2 STORAGE VESSELS AREA
17	950-GDZ-04201	H2 GD FZ-04 B-400 HVAC AIR INTAKE
18	950-GDZ-04202	H2 GD FZ-04 B-400 HVAC AIR INTAKE
19	950-GDZ-04203	H2 GD FZ-04 B-400 HVAC AIR INTAKE
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34	950-GDZ-04218	H2 GD FZ-04 B-200 AMBIENT
35	950-GDZ-05101	H2 GD FZ-05 BESS AREA
36	950-GDZ-05102	H2 GD FZ-05 BESS AREA
37	950-GDZ-05103	H2 GD FZ-05 BESS AREA
38	950-GDZ-05104	H2 GD FZ-05 BESS AREA
39	950-GDZ-05105	H2 GD FZ-05 BESS AREA
40	950-GDZ-05106	H2 GD FZ-05 BESS AREA
41	950-GDZ-06201	H2 GD FZ-06 B-100 HVAC AIR INTAKE
42	950-GDZ-06202	H2 GD FZ-06 B-100 HVAC AIR INTAKE
43	950-GDZ-06203	H2 GD FZ-06 B-100 HVAC AIR INTAKE
44	950-GDZ-06204	H2 GD FZ-06 B-100 AMBIENT
45	950-GDZ-06205	H2 GD FZ-06 B-100 AMBIENT
46	950-GDZ-06206	H2 GD FZ-06 B-100 AMBIENT
47	950-GDZ-03104	H2 GD FZ-03 ELECTROLYZER PK AREA
48	950-GDZ-03105	H2 GD FZ-03 ELECTROLYZER PK AREA
49	950-GDZ-01103	H2 GD FZ-03 ELECTROLYZER PK AREA

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Instructions for use

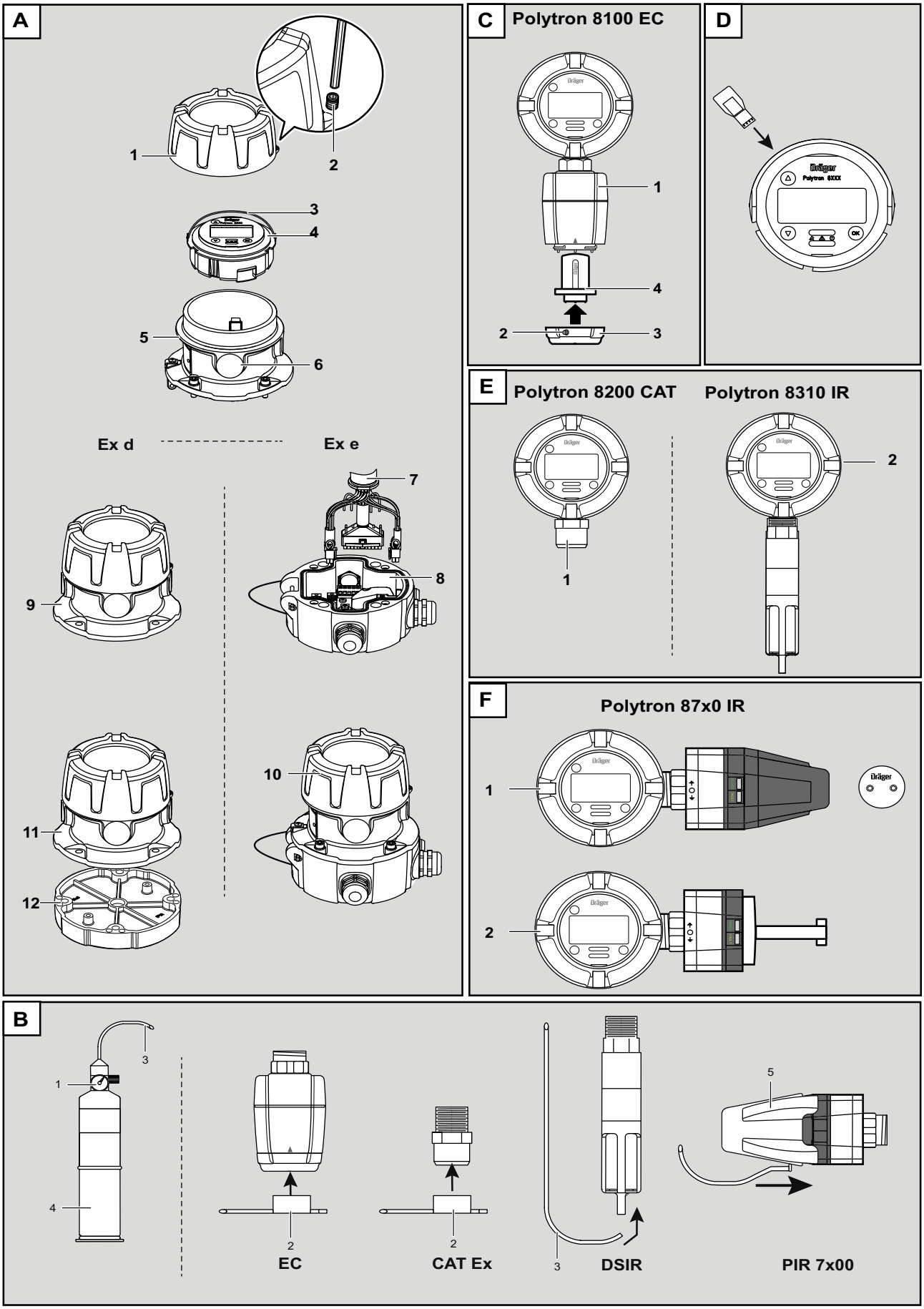
Dräger Polytron® 8000 Series

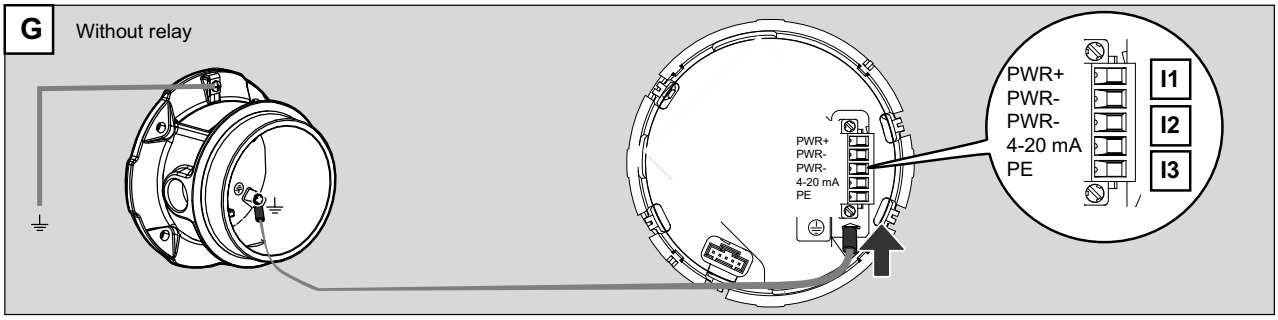


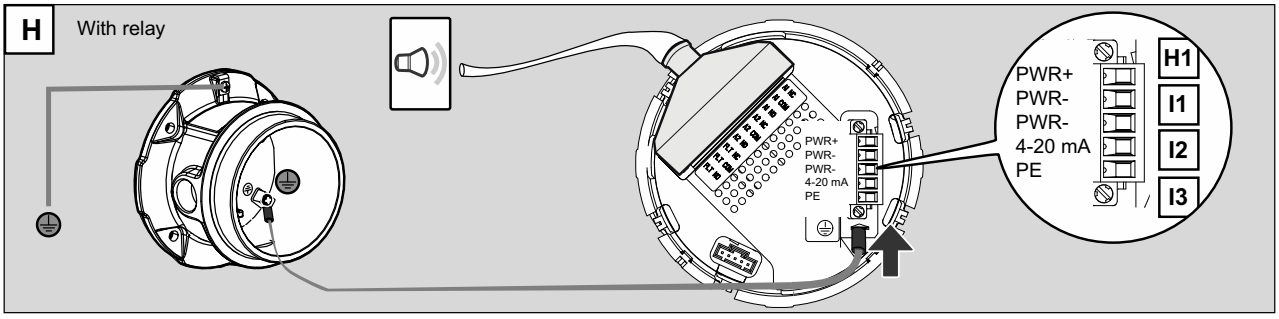
enUS, de, fr, es

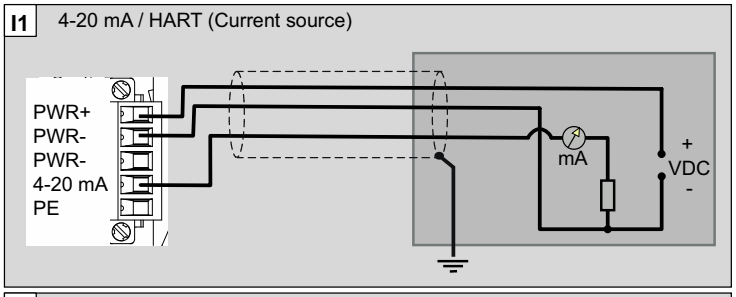
⚠ WARNING
To properly use this product, read and comply with these instructions for use.

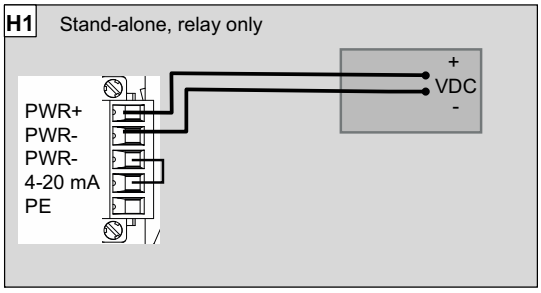
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de Gebrauchsanweisung 50
fr Notice d'utilisation 98
es Instrucciones de uso 145

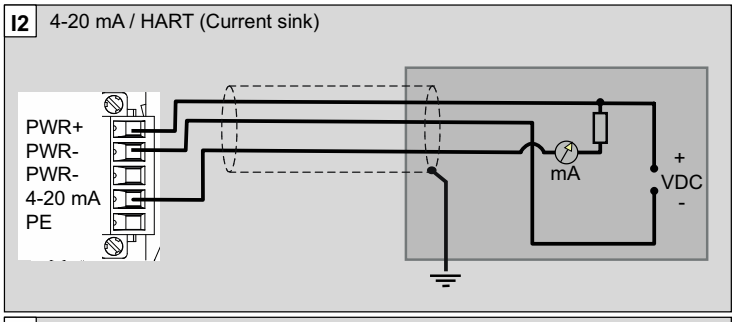

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Polytron 8200 CAT
Polytron 8310 IR
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Polytron 87x0 IR
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CAT Ex
DSIR
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PIR 7x00

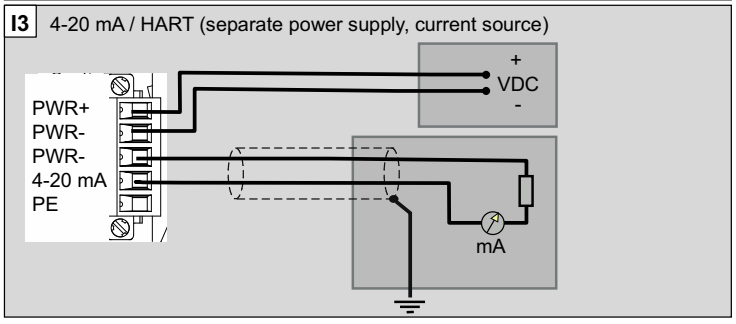






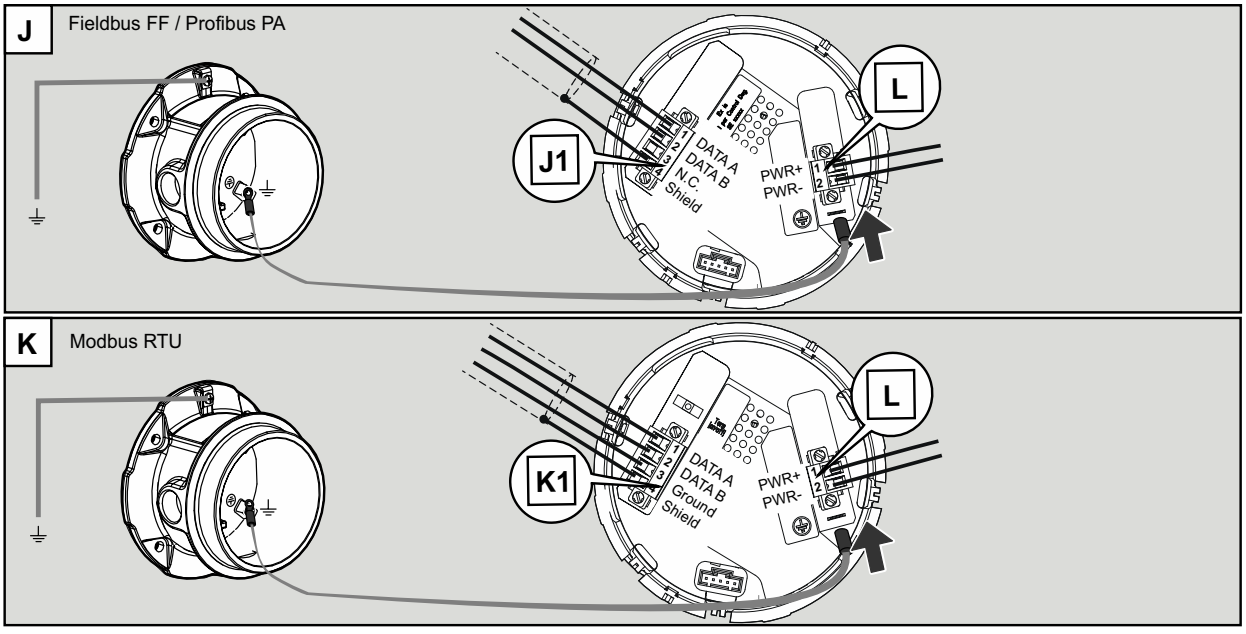


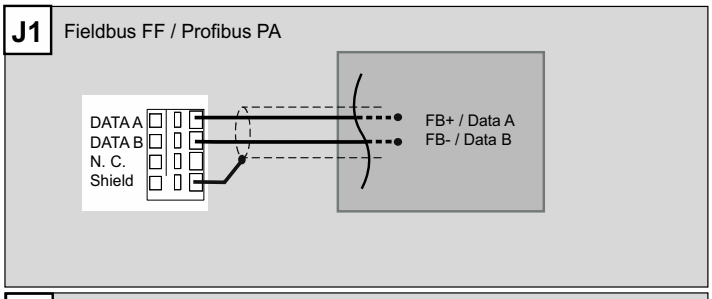


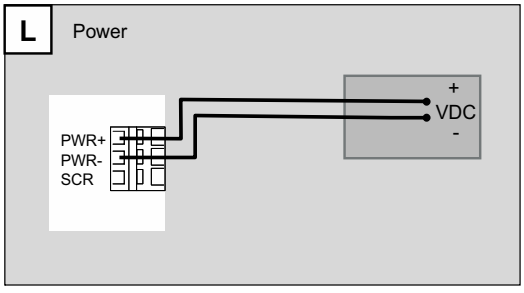


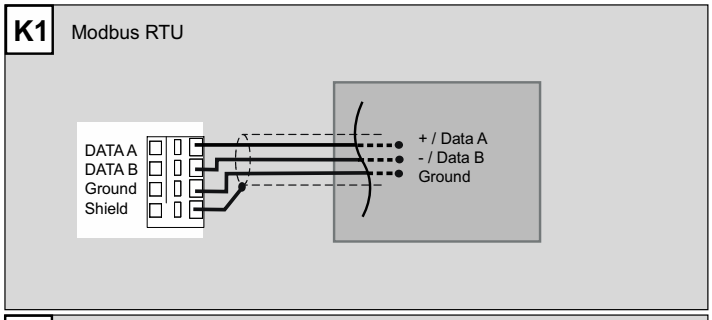
Cable specifications
Power supply and signals: 24 - 12 AWG / 0.2 - 2.5 mm²
Relays: 20 - 12 AWG / 0.5 - 2.5 mm²

35519

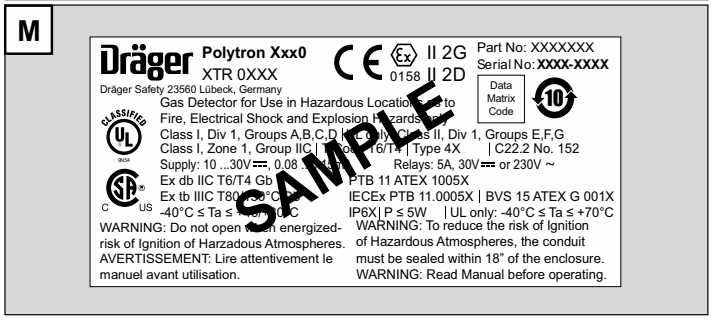








Cable specifications
Power supply and signals: 24 - 12 AWG / 0.2 - 2.5 mm²



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1 Safety-related information

Both the latest edition and other languages of these instructions for use can be downloaded in the Technical Documentation database (www.draeger.com/ifu). Due to product actualizations, Dräger recommends always using the latest edition of the instructions for use.

1.1 Safety instructions

- Before using this product, carefully read these Instructions for Use and those of the associated products.
- Strictly follow the instruction for use. The user must fully understand and strictly observe the instructions. Use the product only for the purposes and under the conditions specified in this document.
- Do not dispose of the Instructions for Use. Ensure that they are retained and appropriately used by the product user.
- Only trained and competent users are permitted to use this product.
- Notify Dräger in the event of any component fault or failure.
- Comply with all local and national laws, rules, and regulations associated with this product.
- Only trained and competent personnel are permitted to inspect, repair and service the product as detailed in these instructions for use. Further maintenance work that is not detailed in these instructions for use must only be carried out by Dräger or personnel qualified by Dräger.
- Dräger recommends a Dräger service contract for all maintenance activities and that all repairs are carried out by Dräger.
- Use only genuine Dräger spare parts and accessories. Otherwise the proper functioning of the product may be impaired.
- Maintenance must be performed as described, see 10 Maintenance.
- Only operate the product within the framework of a risk-based alarm signaling concept.
- Before connecting this instrument to electrical devices not mentioned in the IFU consult Dräger
- The instruments or components may not be modified in any manner.
- The use of faulty or incomplete parts is forbidden.
- The appropriate regulations must be observed at all times when carrying out repairs on these instruments or components.
- Do not open the instrument during operation.
- The corresponding regulations must be observed when carrying out repairs on these instruments or components.
- Follow the directions of EN 60079-29-2 for the measurement of flammable gases and oxygen.
- Follow the directions of EN 45544-4 for the measurement of toxic gases.

Polytron® 8100 EC-specific:

- **WARNING**: Risk of ignition of flammable or explosive atmospheres! Substitution of components may impair Intrinsic Safety.

1.2 Operating area and conditions

- For SIL applications, observe the Dräger Polytron® 8xx0 safety manual.
- Only applies for Polytron 8200 CAT:
  If the device is exposed to a targeted flow of air that is mixed with gas, the measured values may be elevated. For deviating values, see the instructions for use provided with the corresponding sensor.
- Observe the information and restrictions in the instructions for use for the sensors used.
- **CAUTION** Risk of ignition of flammable or explosive atmospheres! Not tested in oxygen enriched atmospheres (>21% O_2).
- **Using the product in areas subject to explosion hazards:** Instruments or components for use in explosion-hazard areas which have been tested and approved according to national, European or international Explosion Protection Regulations may only be used under the conditions specified in the approval and with consideration of the relevant legal regulations.

Hazardous areas classified by zones:

- The instrument is designed for use in Zone 1 or Zone 2 hazardous areas where gases of explosion groups IIA, IIB or IIC and temperature class T4 or T6 may be present. Temperature classes depend on the maximum ambient temperature. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.
- The instrument is designed for use in Zone 21 or Zone 22 hazardous areas where dusts of explosion groups IIIA, IIIB or IIIC and dust temperatures of T80 °C or T130 °C (T135 °C for the Polytron 5100 EC and Polytron 8100 EC) may be present. Dust temperatures depend on the maximum ambient temperature. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.

Hazardous areas classified by divisions:

- The instrument is designed for use in Class I, Div. 1 or Div. 2 hazardous areas where gases of groups A, B, C or D and temperature class T4 or T6 may be present. Temperature classes depend on the maximum ambient temperature. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.
- The instrument is designed for use in Class II, Div. 1 or Div. 2 hazardous areas where dusts of groups E, F or G may be present. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.

2 Conventions in this document

2.1 Meaning of the warnings

The following warnings are used in this document to alert the user to potential dangers. A definition of the meaning of each warning is as follows:

Alert icon	Signal word	Warning classification
⚠	WARNING	Indicates a potentially hazardous situation. If not avoided, it could result in death or serious injury.
⚠	CAUTION	Indicates a potentially hazardous situation. If not avoided, it could result in physical injury. It may also be used to alert against unsafe practices.
	NOTICE	Indicates a potentially hazardous situation. If not avoided, it could result in damage to the product or environment.

2.2 Trademarks

Trademark	Trademark owner
PROFIBUS®	PROFIBUS Nutzerorganisation e. V.
HART®	HART Communication Foundation
Polytron®	Dräger Safety AG & Co. KGaA
DrägerSensor®	Dräger Safety AG & Co. KGaA

The following webpage lists the countries in which Dräger's trademarks are registered: www.draeger.com/trademarks.

3 Description

3.1 Product overview

Refer to the figures on the fold-out page

A 1	Enclosure lid
A 2	Set screw (2 mm Allen screw)
A 3	Handle
A 4	PCB unit (and optional relay)
A 5	Enclosure bottom
A 6	Port for Sensor
A 7	Feed-through cable
A 8	Docking station
A 9	Explosion-proof instrument
A 10	Explosion-proof instrument with docking station for increased safety
A 11	Explosion-proof instrument with mounting spacer (only for Polytron 87x0 IR)
A 12	Mounting spacer (only for Polytron 87x0 IR)
B	Test setup for calibration
C	Polytron 8100 EC
D	Sensor dongle connection (only Polytron 8100 EC)
E 1	Polytron 8200 CAT
E 2	Polytron 8310 IR
F 1	Polytron 8710 IR with splash guard
F 2	Polytron 8710 IR without splash guard

3.2 Feature description

The Polytron 8000 family includes the following instrument versions:

– Polytron 8100 EC, operates with electrochemical sensors (EC sensors)
– Polytron 8200 CAT, operates with catalytic Ex sensors (CatEx sensors/catalytic, DQ or LC DrägerSensors)
– Polytron 8310 IR, operates with infrared Ex sensors (IREx sensors)
– Polytron 8700 IR, operates with infrared sensors (PIR 7000 sensors)
– Polytron 8720 IR, operates with infrared sensors (PIR 7200 sensors)

The following interfaces are possible:

– 4 to 20 mA analog (per NAMUR recommendation NE43)
– Relay board
– Digital HART output signal
– Foundation Fieldbus[1)]
– PROFIBUS PA[1)]
– Modbus RTU[1)]

If the 4 to 20 mA interface is used, the current must be monitored between 0 mA and 3.5 mA. Currents between 0 mA and 3.5 mA can indicate a special state (see "Special states", page 16).

If a relay board is used, local alarm devices can be activated. If no relay board is used and an alarm is pending, only the red LED on the instrument will flash.

Gas concentrations, status messages, and menu choices are displayed on a backlit graphic LC-display and 3 colored LEDs.

Navigation through the menu takes place by tapping the relevant key on the pane of the enclosure lid with a magnetic wand. The instrument can be configured, calibrated and maintained non-intrusively without declassifying the area.

The instruments are supplied with a data logger. The data logger can store up to 35,000 values. At a sampling interval of 1 measurement per minute, the data logger can store the measurement history of approximately 24 days. This time can be significantly increased if the trigger function is activated. The data logger can only be downloaded using the PolySoft

1) No relays are available when the fieldbus interface is used. The fieldbus interface does not conform to BVS 13 ATEX G 001 X. Dräger SensorAlive is not supported.

PC software. The download generates an .ofb file and a .txt file. The .txt file includes the data logger information in readable form.

The instruments can be connected to a Dräger controller or a programmable logic control (PLC) with a sealed conduit or approved cable gland.

The instruments can be operated as a current source or current sink if the power is supplied by the controller. If the instruments are connected to a separate power supply, they can only operate as a current source.

The enclosures of the instruments are made of sturdy stainless steel or aluminum, and are suitable for indoor and outdoor application.

The instruments are designed for stationary installation. They are available in the following designs:

– Explosion-proof instrument (Ex d)
  The flameproof, explosion-proof enclosure provides three ¾ " NPT connections which can be used for field wiring, direct connection of a sensor, or wiring of a remote sensor.
– Instrument for increased safety (Ex e)
  The instrument is supplemented by an increased safety terminal box (docking station) providing up to four 20 mm connections for field wiring or wiring of a remote sensor. If the cable gland from Dräger is used, the permissible cable diameter is 7 mm to 12 mm.

The following dongles are available for the Polytron 8100 EC:

Sensor-test dongle	Activates the sensor self-test (not for hydrazine sensor 6810180)
Diagnostic dongle	Activates the sensor self-test, the display of the sensor vitality and the sensor diagnostic functions (not for hydrazine sensor 6810180)

3.3 Intended use

The instruments in the Polytron 8000 family are intended for continuous monitoring of the ambient air.

With the optionally integrated relay module, the instrument can be operated without a central controller (with additional local alarm signaling).

The instrument can be connected to a Dräger controller or a programmable logic control (PLC) with a sealed conduit or approved cable gland.

If the 4-20 mA interface is used, the current between 0 mA and 3.5 mA must be monitored. Currents between 0 mA and 3.5 mA can indicate a special state.

The instruments are designed for permanent installation and are approved for use in hazardous areas.

– Polytron 8100 EC is a combined intrinsically safe/explosion proof instrument for continuous monitoring of toxic gases or oxygen in the ambient air.
– Polytron 8200 CAT with catalytic DrägerSensor DQ or LC is an explosion-proof instrument for continuous monitoring of combustible gases and vapors containing hydrocarbons and non-hydrocarbons (e.g., hydrogen or ammonia) in ambient air.
– Polytron 8310 IR with infrared DrägerSensor IR is an explosion-proof instrument for continuous monitoring of combustible gases and vapors containing hydrocarbons in ambient air.
– Polytron 8700 IR with PIR 7000 is an explosion proof instrument for the continuous monitoring of combustible gases and vapors containing hydrocarbons in an appropriate atmosphere.
– Polytron 8720 IR with PIR 7200 is an explosion proof instrument for the continuous monitoring of carbon dioxide in ambient air.

3.4 Approvals

3.4.1 ATEX, IECEx, UL, CSA

An example of a name plate is shown on the fold-out page. A print-out of the name plate can also be found on the instrument's shipping box.

3.4.2 Additional information

Declaration of conformity: see supplement 4544300 or www.draeger.com/product-certificates

For additional information on approvals, see supplement 4544300.

4 Transmitter installation

4.1 Explosion proof (Ex d) installation - without Docking Station

4.1.1 Mechanical installation

4.1.1.1 General information on mechanical installation

– Local, state, and national rules and regulations that govern the installation of gas monitoring equipment must be strictly observed.
– The physical properties of the gas or vapor to be detected and the details of the corresponding application (e.g., possible leaks, air movement/drafts, etc.) must be taken into account.
– The future use of accessories and maintenance equipment must be considered.
– The free gas or vapor flow to the sensor must not be obstructed.
– The instrument must not be exposed to radiant heat that will cause the temperature to rise beyond the indicated limit values (16.6 Environmental parameters). The use of a reflective shield is recommended.
– A dust cap may be attached to the cable entry of the instrument. This cap is neither explosion-proof nor watertight and must be removed before connecting the instrument to a sealed conduit or before installation of a flameproof cable gland.

– Unused openings must be closed with blind plugs. For the required tightening torques for cable bushings, cable glands, plugs and sensors, see 16.7 Tightening torques.
– For non-conduit installations, an approved cable gland must be used (e.g., Hawke A501/421/A/¾ " NPT or equivalent).
– **WARNING:** Only for conduit installations: To reduce the risk of ignition of hazardous atmospheres, the conduit must be sealed within 45 cm (18 ") of the enclosure.
– **CAUTION:** If the gas detector is connected to controllers, the total response time may be delayed. The entire measurement path must be taken into account (e.g., latency of the controller). Ensure that the required response time is kept.

Polytron® 8100 EC-specific:

– Recommended sensor orientation: Downwards (see Figure C on the fold-out page).

Polytron® 8200 CAT-specific:

– Preferred sensor orientation: Downwards (see Figure E on the fold-out page). If the sensor inlet is protected against mechanical damage and the ingress of dirt and water, any orientation is permitted.
– For CSA-conform operation only:
The use of the optional splash guard (6812510) is required for CSA approval.

Polytron® 8310 IR-specific:

– Recommended sensor orientation: Downwards (see Figure E on the fold-out page).

Polytron® 87x0 IR-specific:

– The preferred orientation of the Dräger PIR 7x00 sensor must be observed (see Figure F on the fold-out page). Larger deviations and the use of the preassembled splash guard will increase the response time (see PIR 7x00 instructions for use).
– Any other orientation is only permissible if the PIR 7x00 is used without a splash guard, e.g., for use in ducts. If the sensor is installed vertically, there is an increased risk of deposits forming on the optical surfaces.
– The use of the preassembled splash guard is recommended to protect the sensor from water and dust.
– If a splash guard (part number 6811911 or 6811912) is used, the status lights must be arranged in a vertical line and the Dräger logo on the splash guard must be horizontal. A maximum deviation of ±30 degrees from the horizontal position is permissible.
– Liquid and/or deposits on the optical surfaces of the PIR 7x00 may result in a warning or fault.
– For the explosion-proof version, using a spacer (part number 6812617) when the instrument is mounted on a wall or to a level surface is recommended.

Special conditions in accordance with EN/IEC 60079-1

– The threads for the flameproof / explosion-proof enclosure do not conform to the minimum/maximum values indicated in EN/IEC 60079-1. The threads must not be re-worked by the user.

4.1.1.2 Installation

The instrument can be mounted for measuring gases in ambient air or inside of a duct/pipe.

1. Use M6 (1/4’’) bolts with hex socket caps to mount the enclosure to one of the following options.

Option	Accessory
Mounting on a flat surface	Drilling template: 4544300 Additionally for Polytron 87x0 IR: Spacer 6812617
Mounting on a pole	Pole mount kit: 4544198
Mounting on a duct/pipe	Duct mount kit: 6812725 For Polytron® 87x0 IR:: 6812300

4.1.2 Electrical installation

4.1.2.1 General information on electrical installation

– For tightening torques, see 16.7, for permissible cable specifications, see 16.3.
– Strict compliance must be given to the electrical codes that govern the routing and connection of electrical power and signal cables to gas monitoring equipment.
– Ferrules must be used.
– The conductors for the power supply must have an adequately low resistance to ensure the correct supply voltage at the instrument.
– Wire insulation must be stripped by 5 to 7mm.
– The secondary circuit supplying power must be electrically isolated from the mains circuit (does not apply for the relay circuit).
– When installed at locations exceeding ambient temperatures of 55 °C, use only appropriate wiring, specified for at least 25 °C above the maximum ambient temperature.
– Only use cable glands that are approved in the country the system is installed in and suitable for the application.
– In accordance with EU Directive 2014/30/EU, this instrument may not be connected to a DC system. Providing the instrument with its own source of supply is recommended.

Analog interface

– To ensure proper operation of the instrument, the resistance of the 4 to 20 mA signal loop must not exceed 500 ohms.
When used in accordance with the metrological suitability test compliant with EN IEC 62990-1, EN IEC 60079-29-1 or EN 50104, the resistance must not exceed 300 ohms. With values above 300 ohms, supply voltage monitoring cannot be ensured.
Depending on the operating voltage and the application (e. g. HART® operation), a specified minimum resistance must be observed (see "Signal transmission to the controller", page 42).

Relay option

– At voltages >30 V AC or >42.4 V DC, the relay cables must be enclosed in protective tubing, or double-insulated cables must be used.
– The wiring for the optional relay module must be selected and fused according to the rated voltages, currents and environmental conditions.
– To ensure that a fault is recognized - without having to look at the instrument - an alarm device must be connected to the fault relay.
– Voltage differences can cause insulation faults. Do not mix electric loads with different voltage types (AC or DC). Using DC loads, ensure that relay contacts only control devices with the same DC voltage rating. Using AC loads, ensure that relay contacts are only connected to devices sharing a common phase.

Special conditions in accordance with IEC 60664-1

– The device variants incorporating a FISCO fieldbus interface as well as gas detection transmitter type ETR 02…5** must operate in circuits that are limited to overvoltage category I/II/III in accordance with IEC 60664-1.

4.1.2.2 Connection diagrams

The fold-out pages show the following connection diagrams:

Figure	Connection diagram for instruments
G	Without relay, enclosure grounding
H	With relay, enclosure grounding
I1	4-20 mA / HART (current source)
I2	4-20 mA / HART (current sink)
I3	4-20 mA / HART (separate power supply, current source)
H1	Standalone, relay only
J	Foundation Fieldbus / PROFIBUS PA, enclosure grounding
K	Modbus RTU, enclosure grounding
J1	Foundation Fieldbus / PROFIBUS PA, field wiring
K1	Modbus RTU, field wiring
L	Power supply digital interfaces

4.1.2.3 Wiring tables

4 to 20 mA/HART interface

Pin	Mark	Function
1	PWR+	V+
2	PWR-	V-
3	PWR-	V- Use if the instrument is connected to a separate power supply (operation as source).
4	4-20 mA	4 to 20 mA signal (Operation as source or sink)
5	PE	Protective earth Optional PE for relay connection. Connecting PE together with the 4-20mA analog output may cause ground loops.

Fieldbus interface

Pin	Mark	Function
1	Data-A	Signal Line A
2	Data-B	Signal Line B
3	GND	Ground
4	SHIELD	Cable Shield

Pin	Mark	Function
1	PWR+	V+
2	PWR-	V-

Relay connectors

All relays (A1, A2, FLT) of the device can be configured as "normally energized" (normally closed relay) or "energized on alarm" (normally open relay). The relays are configured at the factory as normally closed relays ("normally energized"). This ensures fail-safe operation.
Contrary to convention, the NO, COM, NC markings on the instrument are selected to correspond to the normally energized state. When the device is energized, the marking corresponds to the function of the pins.

Pin	Mark		Relay	
1	NO	FLT	Fault	Normally open
2	COM		Fault	Common connection
3	NC		Fault	Normally closed
4	NO	A2	A2	Normally open
5	COM		A2	Common connection
6	NC		A2	Normally closed
7	NO	A1	A1	Normally open
8	COM		A1	Common connection
9	NC		A1	Normally closed

4.1.2.4 Preparing the electrical installation

1. Loosen the set screw (2) and unscrew the enclosure lid from the lower part of the enclosure, see figure A on the fold-out page.
2. Pull out the PCB unit.
3. Proceed with the figure that contains your Polytron® model and signal output, see fold-out page.

4.1.2.5 Connecting the device with relays (stand-alone)

The wires for alarm devices must be connected to the 9-pin relay connector. A piece of wire insulation (heat-shrink tube) and a protective cover are included for extra protection of the relay wires.

1. Remove the 5-pin connector.
2. Connect the cable for the power supply to the corresponding connection terminals, see figure H1 on the fold-out page..
3. Bridge pins 3 and 4 of the 5-pin connector.
4. Remove the 9-pin connector.
5. Cut the heat-shrink tube as needed and slide it over the relay wires before insertion into the 9-pin connector.
6. Position the heat-shrink tube at the edge of the wire insulation and use a heat gun to shrink the tubing securely onto the wire insulation.
7. Slide the protective cover over the wires.
8. Connect the wires for alarm 1 (pre-alarm), alarm 2 (main alarm), and error alert to the relevant terminals as indicated in the following wiring table.
9. Plug the connector back into the socket and tighten the screws.
10. Close the device, see 4.1.2.9 Closing the gas detector.

The following tables display the status of a connected alarm indicator and whether it indicates faults (e.g., power failure for the gas detector).

The behavior of the relay depends on the alarm configuration and the relay contact the alarm indicator is connected to.

Relay configuration: Normally energized

Contact	Alarm indicator status and fault indication by the alarm indicator		
	Alarm triggered	Gas detector-specific fault	Field wiring fault
Normally closed	ON	displayed	not displayed
Normally open	OFF	displayed	displayed

Relay configuration: Energized on alarm

Contact	Alarm indicator status and fault indication by the alarm indicator		
	Alarm triggered	Gas detector-specific fault	Field wiring fault
Normally closed	OFF	not displayed	displayed
Normally open	ON	not displayed	not displayed

4.1.2.6 Connecting the 4-20mA/HART® interface

For connections to a control unit (PLC), refer to the documentation corresponding to the control unit.

1. Pull off the 5-pin connector.
2. Connect the three wires for power and signal to the appropriate terminal as indicated in the wiring table and figure.
3. Plug connector back into socket and tighten screws.
4. Close the instrument, see 4.1.2.9 Closing the gas detector.

4.1.2.7 Grounding

1. Ground the enclosure of the instrument locally at the grounding lug, see figures G and H on the fold-out page..
2. Connect the shield of the wires only to the instrument earth ground of the controller (e g. chassis, ground busbar, etc.).

ℹ Unless special measures are taken (e. g. capacitive earthing), the shield must only be connected at one end.

Information on grounding fieldbus and Modbus connections is provided in the following documents.

Interface	Document
Foundation Fieldbus FF	9033783
Modbus RTU	9033781

4.1.2.8 Connecting the fieldbus interface

1. Pull off the 2-pin and 4-pin connector.
2. Connect the two wires for power and the four wires for signal to the appropriate terminals as indicated in the wiring table and figure.
3. Plug connector back into socket and tighten screws.
4. Close the instrument, see 4.1.2.9 Closing the gas detector.

For further information regarding the fieldbus interface installation consult the corresponding Technical Handbook.

4.1.2.9 Closing the gas detector

1. Ensure that the following connections are correctly established:
   a. The screws for the wiring are tightened with the correct torque.
   b. All cable connections are secured with screws.
   c. The front port of the sensor is inserted.
   d. The grounding cable that leads from the enclosure is connected with the eye on the PCB unit, see figures G and H on the fold-out page.
2. Place the PCB unit in the lower part of the enclosure.
3. Screw the enclosure lid onto the lower part of the enclosure and tighten with the correct torque.
4. Tighten the set screw.

4.2 Increased safety (Ex e) installation - with Docking Station

The installation with enhanced safety (Ex e) is described in the assembly instructions for the docking station (part number 9033242).

5 Installation of sensors or sensing heads

5.1 Installing the EC sensor on the Polytron 8100 EC

See figure C on the fold-out page.

1. Unscrew the locking screw (2) (2 mm hexagon socket screw).
2. Unscrew and remove the bayonet ring (3) and remove the dummy disk.
3. Insert the sensor (4) in the opening and turn until it engages in the gas detector. This does not damage the sensor connector.
4. Secure the sensor with the corresponding bayonet ring (3).

   ℹ For Dräger SensorAlive, a different bayonet ring must be used than for other EC sensors.

5. Tighten the locking screw (2) so that the bayonet ring cannot come loose (required for installations in zone 22).

   ℹ If the Dräger SensorAlive is being installed in an existing system for the first time, the firmware must be updated to version 4.0.0 or higher. Contact Dräger for support.

5.2 Installing the sensing head

Depending on the type of explosion protection, there will be various sensing heads used. Information relating to the installation of the sensing heads can be found in the respective sensing head manual.

For remote applications, the cable shielding must be attached on both the sensor and transmitter side. The cable length should be ≤ 30 m.

Remote versions with "Explosion-proof (Ex d)" explosion protection

Transmitter	Sensing head IFU part numbers
Polytron 8100 EC	Remote EC sensing head (9033247)
Polytron 8200 CAT (for DQ sensors)	DQ NPT aluminum remote sensor, DQ NPT steel remote sensor (4544286)
Polytron 87x0 IR	Remote PIR 7000 (334) with stainless steel or aluminum sensor connection housing (4544286)
Polytron 8200 CAT (for LC sensors) Polytron 8310 IR Polytron 87x0 IR	Stainless steel or aluminum sensor connection housing (4544286)

Remote versions with "Increased safety (Ex e)" explosion protection

Transmitter	Sensing head IFU part numbers
Polytron 8100 EC	Remote EC sensing head (9033247)
Polytron 8200 CAT	Polytron SE Ex sensing heads (9033888)
Polytron 8310 IR	DrägerSensor IR (9023843)
Polytron 87x0 IR	PIR 7x00 (9023885)

6 Commissioning

6.1 General information

– Before connecting the instrument to the power supply, connect the wires for the relay and connect up the sensor.
– Before starting normal operation of the instrument, check whether the configuration and adjustment settings are correct.

In order to guarantee its safe operation according to BVS 13 ATEX G 001 X and PFG 14 G 001 X, the following standard alarm settings for the instrument must remain unchanged.

– The relays must be set to ***Normally energ.*** and the alarm A2 (main alarm) to ***Latching*** and ***Non-acknowledgeable*** or ***Pre-Acknowledgeable***.
– Alarm A1 (pre-alarm) may only be set to ***Acknowledgeable*** if used for activation of an acoustic alarm device.
– Latching in the event of over range (see "Setting the DQ sensor latching", page 37).

When operating in accordance with BVS 13 ATEX G 001 X and PFG 14 G 001 X, consideration must be given to the following special conditions:

– Polytron 8200 CAT:
  – When streaming the DQ or LC sensor with air containing measured gas, measured values may increase by up to 32 %.
    These values may increase by up to 70 % when operating with the DQ remote calibration adapter.
  – The transmitter with LC sensor must be operated in combination with a control unit that indicates over range with a latching signal. Internal transmitter alarm relays are not permitted.
  – The transmitter with LC sensor must be adjusted with its sensor in the standard operating position.
  – False alarms may be triggered during the warm up period of the LC sensor.
– Polytron 8100 EC:
  Minor changes to the concentration may see the setting time t20 of the transmitter with EC sensor exceed the EN 50104 threshold.

6.2 Commissioning the gas detector

1. To prevent false alarms, turn off the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).
2. Switch on the power supply.
   ⇒ The device performs a start-up sequence (LCD/LED test, software version, and initialization).
   ⇒ The display indicates that the sensor will be ready for measurement in hh:mm:ss (countdown). The device transmits the maintenance signal. The fault relay is activated.
   ⇒ The sensor warms up. The maintenance signal on the 4 to 20 mA interface remains until the sensor has warmed up. The length of the warm-up time depends on the type of sensor and the ambient conditions. Maximum warm-up time of a new sensor: See the instructions for use of the sensor.
3. Check the date and time. Settings can be changed during the sensor's warm-up time.
   ⇒ After the sensor's warm-up time, the device switches to normal operation. The display shows the current gas concentration, the unit of measurement, and the selected gas if applicable. The green LED is lit.

If the device is operated with a Dräger SensorAlive, Dräger recommends setting the correct date and time. The sensor's warm-up time is followed by the start-up period of the Dräger SensorAlive. The sensor is ready for measurement during this phase, but the self diagnostics do not yet take place.

4. Adjust the device as necessary.
5. Turn on the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).

7 Operation

7.1 Control panel

The control panel contains

– buttons for navigating in the menu
– a display
– LEDs and associated symbols

The buttons for navigation have different functions depending on the menu that is in use.

The instrument is operated with a magnetic wand. To do so, the enclosure lid must be in place on the instrument. If the enclosure lid is not in place, the magnetic wand may activate two or more buttons at once (cross-talk).

7.2 LEDs and symbols

The following symbols and LEDs can be found on the control panel:

Symbol	LED	Description
	Red	Alarm Triggered
	Yellow	Fault
	Green	Power on

LED status

– If alarm A1 (pre-alarm) has been triggered, the red LED will flash once .
– If alarm A2 (main alarm) has been triggered, the red LED will flash twice .
– If an alarm is acknowledged before the reason for the alarm has been rectified, the red LED will light continuously to indicate that there is a fault.

7.3 Readings on the display

7.3.1 All devices

Symbol	Explanation
	An error message is present. Additional information is available in the ***Information*** menu.
	A warning message is present. Additional information is available in the ***Information*** menu.
	Maintenance signal is transmitted.
	The set full scale deflection is exceeded at the 4-20 mA interface.
	The set threshold limit value is not met at the 4-20 mA interface.
	HART® operation is active. Analog interface is set to a fixed value and is not transmitting any measurement signal.
	Once the capacity of the data logger is reached, the old data are overwritten by new values ("roll" function).
	Once the capacity of the data logger is reached, no more data can be stored ("stack" function).
SIL	SIL operation mode is activated.

7.3.2 Polytron 8100 EC-specific symbols

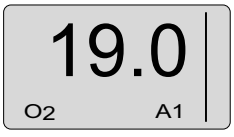
Symbol	Explanation
	The sensor is ready for operation.
	The sensor is ready for operation but is close to the end of its useful life.
	The sensor is still ready for operation but should be changed as soon as possible. The vitality is <25%.
LT	A LifeTest of the Dräger SensorAlive is carried out.

7.3.3 Measuring mode

The following display examples show the Polytron 8100 EC.

Gas names are not predefined for the Polytron 8200 CAT and Polytron 8310 IR. Gas names must be entered via the DrägerPolysoft PC software. After modifying parameters with the DrägerPolysoft PC software or another software, verify all parameters by downloading them from the Polytron® 8xx0 or by checking them directly on the instrument.

The following is displayed in measuring mode:

Display example	Description
	In normal operation, the display shows the measured gas concentration, the selected gas type, and the unit of measurement. **Analog interface:** Corresponding current value **Relays:** All relays are in the normal state
	Exceeding the alarm thresholds. Example shows pre-alarm A1. **Analog interface:** Corresponding current value **Relays:** Relay A1 is in alarm state.

7.3.4 Special states

If the instrument is in a special state, proper measurement or alarm activation can no longer be guaranteed.

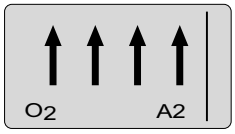
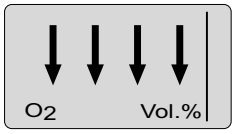
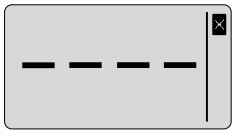
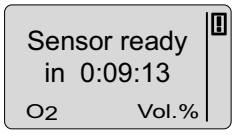
This is the case:

- When the gas concentration exceeds the measuring range.
- When a fault occurs.
- When alarms are deactivated.
- When calibrations are performed.
- When bump tests are performed.
- When a sensor is in the warm-up phase.
- When the system is in maintenance mode.
- When a Dräger SensorAlive is used and the system is configured such that the measured value is not indicated during a LifeTest.

For the current of the analog interface corresponding to the analog signal, see 16.2.

The signals of the digital interfaces are described in the following documents.

Interface	Document
PROFIBUS PA	9033782
Foundation Fieldbus FF	9033783
Modbus RTU	9033781

Display example	Description
	**Value above measuring range** The gas concentration is outside of the measuring range of the sensor[1)]. **Analog interface:** Over range **Relays:** A2 relay switch ***Note for the Polytron 8200 and Polytron 8310:*** The message that the measuring range has been exceeded can also be caused by a short circuit or an interruption in the line to a remote sensor.
	**Value below measuring range** The gas concentration is outside of the measuring range of the sensor. **Analog interface:** Drift below zero **Relays:** Fault relay switch
	**Fault display** The ⊠ symbol is displayed on the right side of the display. **Analog interface:** Fault current **Relays:** Fault relay switch
	**Maintenance display** The 🔧 symbol is displayed on the right side of the display. This is displayed when alarms are deactivated, and during adjustment, bump tests, and maintenance work. **Analog interface:** Maintenance current **Relays:** No change
	**Warning display** The ▯ symbol is displayed on the right side of the display. **Analog interface:** Warning current[2)] **Relays:** No change
	**Warm-up phase 1** The ▯ symbol is displayed on the right side of the display. The remaining time is displayed on the left side. **Analog interface:** Maintenance current **Relays:** Fault relay switch The fault relay behavior can be configured for warm-up phase 1 (see "Setting fault relay warm-up 1", page 30).

Display example	Description
	**Warm-up phase 2** The ! symbol is displayed on the right side of the display. The measured value is displayed on the left side. **Analog interface:** Measured value **Relays:** Behavior as in measuring mode (the fault relay does not indicate warm-up phase 2).

1) When the gas concentration exceeds the full scale deflection of the 4 to 20 mA interface, the display continues to display the measured value plus "Analog interface over range" .
2) Only when warning current is activated. Factory setting: Deactivated.

7.3.5 Ending special states

Error display / warning display

Error displays and warning displays are usually non-latching. As soon as the causes of the errors or warnings have been rectified, no more error or warning is displayed. Exceptions are "SensorAlive fault detection" and "SensorAlive clogging detection".

To eliminate the causes, display the error or warning (see "The Information menu", page 18) and start troubleshooting (see "Troubleshooting", page 25).

Value exceeds/falls below the measuring range

The display indicates that the gas concentration is beyond the measuring range of the sensor. The information on the display disappears as soon as the gas concentration is back within the measuring range. After an over range occurrence, the sensitivity and response time of the sensor may deteriorate.

NOTICE

Sensor malfunction

Gas concentrations outside the sensor's measuring range can cause the sensor to malfunction.

► Recalibrate the sensor if necessary.

Polytron® 8200 CAT with DQ sensor:

An over range has to be acknowledged with [OK] after verifying that the gas concentration is below 100 %LEL (e.g. using a portable instrument).

Latching alarms is the default setting of the instrument.

For instruments without relays, the over range can be set to non-latching. In this case, the over range indication disappears. The control unit must support this function! For further information see: "Setting the DQ sensor latching", page 37.

Polytron® 8200 CAT with LC sensor:

⚠ WARNING

Ambiguous readings for measured values that exceed the measuring range

Latching alarms for over range situations are not supported by LC sensors.

For safe operation in line with BVS 13 ATEX G 001 X, the gas detector must be operated with a controller that can display latching alarms. Do not use internal alarm relays of the gas detector.

► Make sure that over range latching is active at the controller.

After over range measuring values, verify that the gas concentration is below 100 %LEL (e.g. using a portable instrument).

7.4 Info mode and function keys

7.4.1 Opening Info mode

Info mode is used to show relevant device information. This does not interrupt the normal operation of the device.

- Tap and hold ▲ for 3 seconds in measuring mode.

7.4.2 Navigating in Info mode

Button	Function
▲	Switches to the next screen
▼M	Switches to the previous screen
OK	Ends info mode

If no key is tapped within 30 seconds, the instrument will automatically return to normal operation.

7.4.3 Using function key

Using the function key, a pre-set function can be executed. By default the faults are displayed.

- Tap and hold ▲ for 1 seconds in measuring mode.

To configure the function key, see 11.4 Configuring function key.

7.5 Menus

7.5.1 Navigating in a menu

Button	Function
▲	Scrolls upwards. Sets values.
▼M	Scrolls downwards. Sets values.
OK	Confirms entry. Selects menus and functions.

7.5.2 Opening menus

- To open the ***Information*** menu:
  a. Tap and hold ▼ for 1 second in measuring mode.
- To open the ***Calibration*** menu:
  a. Tap and hold ▼ for 3 seconds in measuring mode.
  b. Select ***Enter password***.
  c. Enter the corresponding password and confirm with [OK].
- To access all menus:
  a. Tap and hold ▼ for 3 seconds in measuring mode.
  b. Select ***Enter password***.
  c. Enter the corresponding password and confirm with [OK].

7.5.3 Passwords

Calibration PWD	Permits access to the ***Information*** menu and the ***Calibration*** menu (adjustment settings) Default value: **_ _ _ 1**
Settings PWD	Permits access to all configurations and menus Default value: **_ _ _ 2**

Information on changing the passwords can be found in 11.1.

7.5.4 The *Information* menu

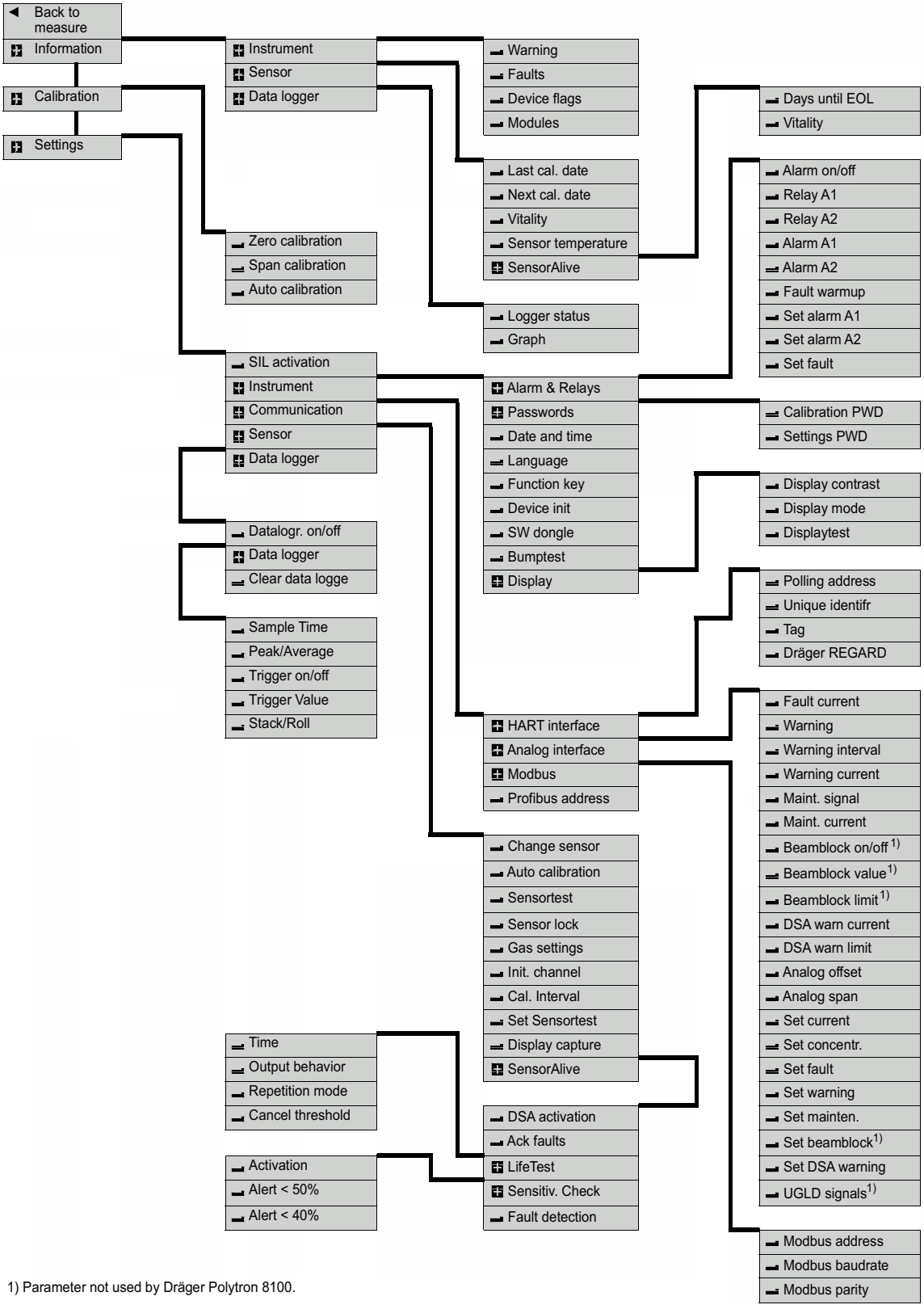
In the ***Information*** menu, the following information can be called up:

Instrument	
Warnings	Warning messages in plain text, including the corresponding number. If there are several warning messages, this will be shown accordingly (e.g. with 1/3 = screen 1 of 3).
Faults	Error messages in plain text, including the corresponding number. If there are several errors, this will be shown accordingly (e.g. with 1/3 = screen 1 of 3).
Device flag	With this function, the warning and error codes are shown in table format. If the value 00 is shown for all codes, then there are no warning or error messages present.
Modules	An overview of the installed hardware modules, as well as the software version of the SIOS-specified EC sensor interface, will be shown. For more detailed information, select the corresponding module. ■ = installed modules □ = modules not installed
Sensor	
Last cal. date	Adjustment date, unit, gas and concentration of the last adjustment are shown.
Next cal. date	Shows the date of the adjustment that is due next.
Vitality[1)]	The sensor vitality is shown in %. Dräger recommends replacing the sensor when vitality is < 25 %.
Sensor temperature[1)]	The current and highest sensor temperature will be shown.
SensorAlive	The sub-menu shows the number of days left for the expected service life and the vitality in %.
Data logger	
Logger status	Data logger status display (active or inactive)
Graph	Display of progress over last 15 minutes in a time/concentration graph.

1) The function is only available with the diagnostic dongle.

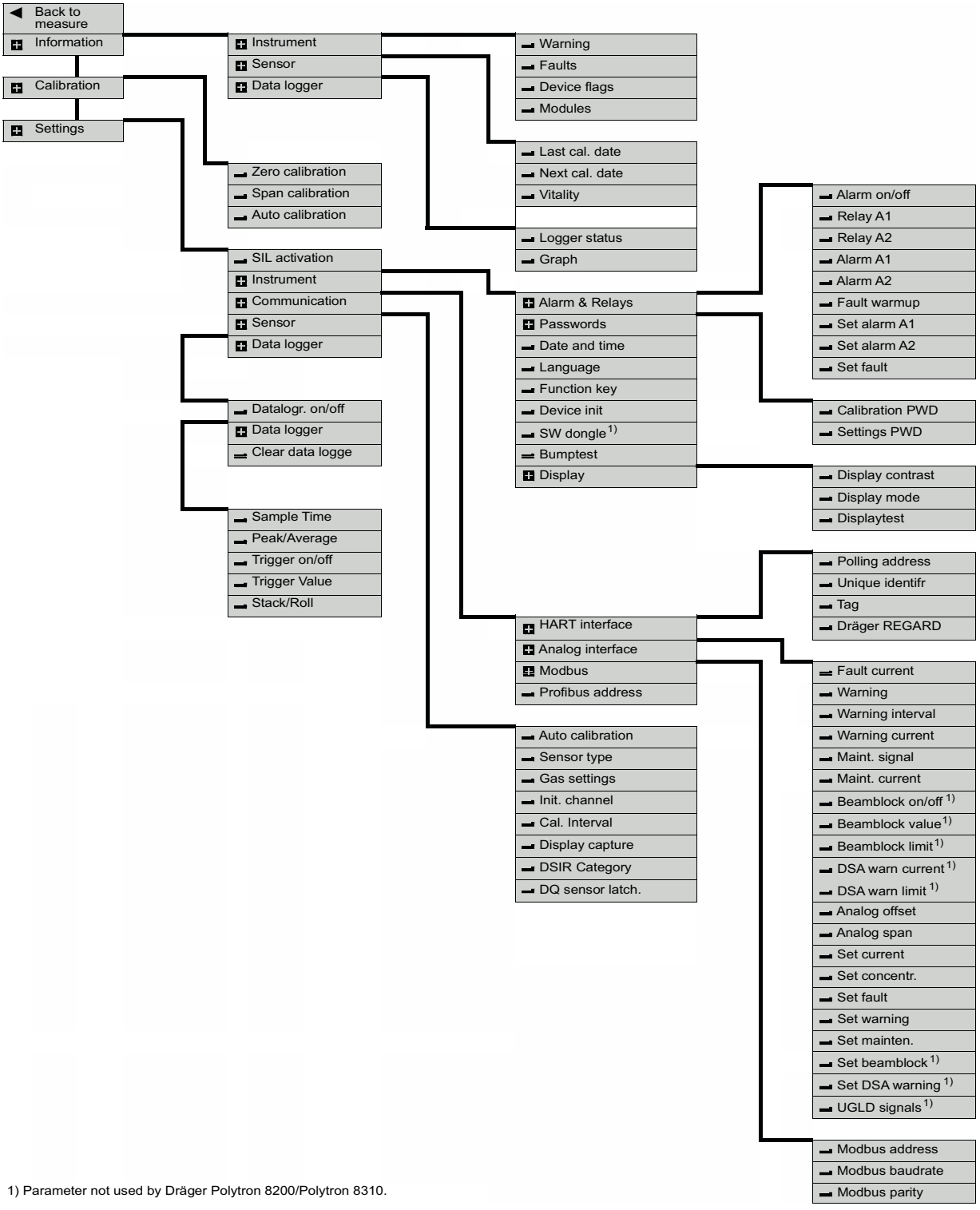
7.5.5 Menu overviews

Polytron 8100



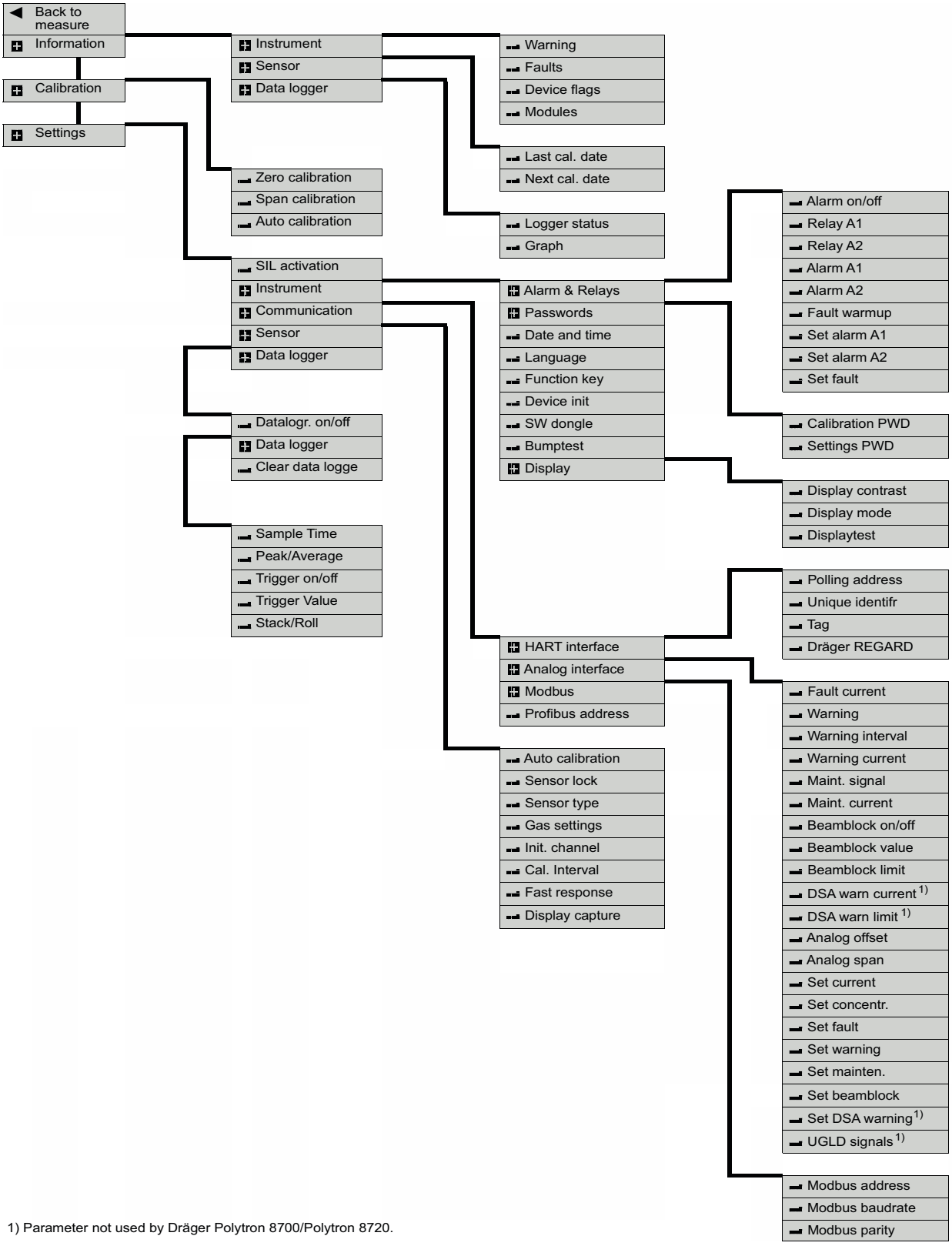
1) Parameter not used by Dräger Polytron 8100.

Polytron 8200, Polytron 8310



1) Parameter not used by Dräger Polytron 8200/Polytron 8310.

Polytron 8700, Polytron 8720



1) Parameter not used by Dräger Polytron 8700/Polytron 8720.

7.6 Information on operation with a Dräger SensorAlive

– If a menu is accessed on the transmitter or certain errors are set, the Dräger SensorAlive does not perform a LifeTest.
– The Dräger SensorAlive can suppress the instrument calibration for a certain period of time (H_2S sensor: 30 minutes).
– If a high level of accuracy is required for the duration of the LifeTests, the time on the transmitter should be regularly checked and adjusted as necessary.
– The menu entries for the Dräger SensorAlive are only displayed if a Dräger SensorAlive is connected. The dongle functions are also visible in this case, but are not active.

8 Calibration

8.1 General information

– To ensure proper operation, adjust the zero-point first and then the sensitivity. If these procedures are performed in the incorrect order, adjustment cannot be continued due to software settings.
– If the intended operation is at high altitudes, the display value will be lower than that at sea level (reduced partial pressure). New span adjustment is recommended if the altitude or the ambient pressure changes. The factory adjustment is set to sea level.
– Dräger recommends adjusting instruments with the gas to be detected. This method is more accurate than a surrogate gas adjustment. A surrogate gas adjustment may only be performed as an alternative if a measured gas adjustment is not possible.
– Sensors for methane and hydrogen should only be adjusted with measured gas and not with surrogate gas.
– For the Polytron 8310 IR: Also observe the information in the instructions for use for the DrägerSensor IR[1)].

During adjustment, the measurement accuracy of the sensor is checked and adjusted with a known test gas concentration. Adjustment must be performed on a regular basis. The length of the adjustment intervals depends on the ambient conditions in which the sensor is operated.

Ambient conditions and aging results in sensor drift. Sensor drift reduces the display accuracy of measured gases. Adjustment restores this display accuracy. Shorter adjustment intervals must be selected depending on the extent of the drift.

To gauge the ambient conditions for new installations, selecting short adjustment intervals and documenting the drift is recommended. The system operator should define the adjustment interval length with the aid of the collected data.

If a Dräger SensorAlive is used, the drift is compensated and can be read out.

Under normal conditions, Dräger recommends the following adjustment intervals[2)]:

– Electrochemical sensors (EC): 6–12 months[3)]
– Catalytic sensors (CAT): 4 months
– Infrared sensors (IR): 6–24 months[3)]

8.2 Test gases

Please refer to the instructions for use provided for the respective sensor for the test gas properties (e.g. relative humidity, concentration). If there is no information provided relating to relative humidity, dry test gas can be used for the adjustment. The humidity of the test gas is not relevant for O_2 sensors.

Depending on the type of adjustment, various types of test gas are used.

Zero gas

The zero gas is a test gas used for adjustment of the zero-point of a sensor. Nitrogen (N_2) is used for O_2 and CO_2 sensors. With other sensors, ambient air can be used once it is free from disruptive contamination and the measured gas.

Adjustment gas

The adjustment gas is a test gas used for adjustment of the sensitivity of a sensor. The adjustment gas is a known concentration of the measured gas, diluted with clean air and nitrogen. Adjustment gas is not required for O_2 sensors, as oxygen from the ambient air is used.

8.3 Gas flow for adjustments

The gas flow varies according to each sensor.

EC sensor, CAT sensor	0.5 L/min ± 10 %
All other sensors	0.5 L/min - 2 L/min

The gas flow should correspond with the ambient conditions during operation (e.g. duct measurement with flow higher than 2 L/min)

8.4 Preparing for adjustment

General information

⚠ WARNING
Health hazard due to test gas
Inhaling test gas may risk health or lead to death.
► Do not inhale test gas.
► Observe risks and security statements related to the test gas (Refer to data sheets and instructions figuring on calibration devices).

1) 9023981 (English), 9033555 (Bulgarian, Romanian), 9023984 (Spanish, Portuguese), 9023986 (Danish, Norwegian), 9033556 (Czech, Croatian), 9033809 (Chinese), 9023985 (Hungarian, Polish), 9023982 (French), 9033557 (Slovak, Slovenian), 9033558 (Greek, Turkish), 9023987 (Italian, Dutch), 9023983 (Finnish, Swedish), 9023843 (German)

2) Observe the instructions for use for the sensor.
3) For applications in accordance with EN 45544-1 and EN IEC 62990-1, the adjustment interval must not exceed 6 months.

⚠ CAUTION
Triggering alerts by test gas
Applied test gas may trigger alerts.
► Make sure that test gas is no longer applied after calibration.

Prerequisites
– The sensor warm-up phase has been completed (see "Commissioning the gas detector", page 15).
– The date and time have been set (see "Setting date and time", page 29).
– If a Dräger SensorAlive is used, the last LifeTest must be sufficiently long ago (see the instructions for use of the sensor).

Special feature of the Polytron 8310
Dräger recommends carrying out an automatic zero calibration on the sensor before adjustment of the zero-point. This resets the zero-point tracking of the DrägerSensor IR, and the full tracking range is available.
1. Turn off the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).
2. Use the calibration adapter to apply nitrogen, synthetic air, or clean air to the sensor and wait until a stable measured value is shown.
3. Set the magnetic wand on the area marked with the ⇩0 symbol (inside of the black border) on the surface of the sensor shell and hold it in place for at least 5 seconds. After 5 seconds, the sensor output signal switches to the display of the calibration signal (display change by approx. –10 %LEL) for as long as the magnetic wand is held in place. At the same time, a zero calibration of the optical measurement system is automatically performed.
4. Remove the magnetic wand. After 30 seconds, the instrument exits the automatic zero calibration routine. To confirm the automatic zero calibration, the output signal switches back to the calibration signal (display change to approx. –10 %LEL). This signal is also displayed for the same length of time as when starting the automatic zero calibration routine.
5. Turn on the alarm activation for the gas detector.

Polytron 8100, Polytron 8200, Polytron 8310
See figure B on the fold-out page.

Adjustment equipment:
– Dräger pressure regulator (1), use a stainless steel pressure regulator for reactive gases
– Dräger calibration adapter (2) (part number 6810536)
– Hose (3)
– Dräger test gas cylinder (4)

Preparing adjustment:
1. Connect the pressure regulator to the test gas cylinder.
2. Mount the calibration adapter on the sensor.
3. Connect the hose to the plug nipple connection.
4. Open the menu (see "Opening menus", page 18).

Polytron 87x0 IR
See figure B on the fold-out page.

Adjustment equipment:
– Dräger pressure regulator (1), use a stainless steel pressure regulator for reactive gases
– Dräger calibration adapter (5) (part number 6811610)
– Hose (3)
– Dräger test gas cylinder (4)

Preparing adjustment:
1. Connect the pressure regulator to the test gas cylinder.
2. Fit the calibration adapter to the splash guard so it snaps into place.
   This does not apply for mounting on ducts or if a process adapter or process cuvette is used (see installation instructions for the corresponding PIR 7x00 accessory).
3. Ensure that the sealing surfaces around the openings of the splash guard are clean. The insect guard does not have to be removed.
4. Connect the hose to the plug nipple connection.
5. Open the menu (see "Opening menus", page 18).

8.5 Zero calibration

8.5.1 General information

Ambient air can be used to calibrate the zero-point of the sensor instead of nitrogen or synthetic air only if the ambient air is known to be free of the target gas and any other gas to which the sensor may be cross-sensitive (as listed on the sensor data sheet). In this case, no cylinder or calibration adapter is needed for the zero calibration.

⚠ WARNING
Calibration fault at zero calibration
Insufficient ambient air flow may cause calibration errors.
► Make sure that the ambient air flow to the sensor is sufficient.

Polytron® 8100 EC-specific:

For Oxygen (O_2) sensors a zero calibration does not change any value in the firmware or sensor. Thus, the zero calibration function can be used to check the correct zero reading when Nitrogen is applied to the sensor. The Polytron 8100 EC will indicate a fault state if a zero check fails with a deviation of more than 0.6 Vol% O_2 from zero. In case of a fault, repeat the zero check or change the sensor if necessary. Use Nitrogen (N_2) for verification.

Polytron® 8200 CAT-specific:

Sensors must not be calibrated with pure nitrogen. Catalytic sensors need oxygen to work properly.

Polytron® 8720 IR-specific:

For Polytron 8720 IR (with PIR 7200 to detect carbon dioxide), only Nitrogen or Synthetic Air without any CO_2 content may be used for a zero calibration.

8.5.2 Performing a zero calibration

ℹ Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:
– Sensor has finished the warm-up phase
– Calibration is prepared.

Calibrate the zero-point as follows:
1. Select ***Calibration*** > ***Zero calibration*** and confirm.
   ⇒ The maintenance signal is transmitted via the analog interface. No alarms or fault relays are activated and the 🔧 symbol is displayed.
   ⇒ The message ***Apply zero gas*** is displayed.
2. Apply Synthetic Air or Nitrogen if ambient air cannot be used.
   a. Set the gas flow corresponding to the sensor used (see "Gas flow for adjustments", page 22)
3. Select ***Next*** and confirm.
   ⇒ The current value is displayed.

ℹ After 15 minutes without confirmation, the instrument reverts to the calibration menu without performing a calibration.

After the test gas has been applied to the sensor for 3 minutes and the displayed value is stable perform calibration.
4. Select ***calibrate*** and confirm.
   ⇒ The message ***please wait...*** is displayed.
   ⇒ The new current value is displayed.
5. Select ***Next*** and confirm.
6. Turn off the gas flow and remove the calibration adapter from the sensor or disconnect the hose.
   If the current value is not within the alarm range:
7. Select ***Next*** and confirm.
   ⇒ The instrument returns to the calibration menu.

8.6 Span calibration

8.6.1 General information

Polytron® 8310 IR-specific:

Due to the design of the DSIR gas sensor, the output signal of the gas sensor is limited to 45 %. . . 55 % of the internal supply voltage. If the gas concentrations increase further after the maximum sensor output signal has been reached, this does not lead to an increase of the values displayed on the instrument response transmitted to the central device. In case of substances with particularly low calibration factors and/or manual configuration of a high span calibration factor at the sensor, this may already happen at concentrations below 100 %LEL. For substitute gas calibrations, correct triggering of the alarm should therefore be checked with a test gas concentration corresponding to the alarm threshold. If necessary, the measuring range that can be displayed can be increased by reducing the sensor output signal as required with subsequent calibration on the instrument (see chapter "Manual span calibration of the output signal" in the instructions for use of the DSIR gas sensor).

8.6.2 Performing a span adjustment

ℹ Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:
– Adjustment is prepared.
– The zero-point has been adjusted.
– Specifically for all Polytron 8xx0 except the Polytron 8100 EC:
  The last valid zero adjustment was no longer than 24 hours ago.

Adjust the sensitivity as follows:
1. Select and confirm ***Calibration*** > ***Span calibration***.
   ⇒ The maintenance signal is transmitted via the analog interface. No alarms or fault relays are triggered and the 🔧 symbol is displayed.
   ⇒ The parameters for the adjustment gas are displayed, e.g.:[1)]
   Gas : H_2S
   Unit: ppm
   Concentr.: 25
2. If the displayed parameters do not match the target gas, adjust the parameters:
   a. Select and confirm ***Gas***.
   b. Select and confirm the adjustment gas from the list.
   c. Select and confirm ***Unit***.
   d. Select and confirm the unit of measurement from the list.
   e. Select and confirm ***Conc.***.
   f. Set the concentration of the adjustment gas.
3. If the settings are correct:
   a. Select and confirm ***Next***.
      ⇒ A message like ***Gas flow ON H_2S*** is displayed.
4. Apply adjustment gas.
   a. Set the gas flow corresponding to the sensor used (see "Gas flow for adjustments", page 22).
5. Select and confirm ***Next***.
   ⇒ The current value is displayed

ℹ After 15 minutes without confirmation, the instrument returns to the adjustment menu without performing an adjustment.

After the test gas has been applied to the sensor for 3 minutes and the displayed value is stable, perform adjustment.[2)]:
6. Select and confirm ***Next***.
   ⇒ The message ***please wait...*** is displayed.
   ⇒ The newly detected (current) value is displayed.

1) Not applicable for all sensors (see "Measuring mode", page 16).
2) For LC sensors, the test gas must be applied for at least 6 minutes.

7. Select and confirm ***Next***.
8. Turn off the gas flow and remove the calibration adapter from the sensor or disconnect the hose.

   If the current value is not within the alarm range:
9. Select and confirm ***Next***.
   ⇒ The instrument returns to the adjustment menu.

8.7 Automatic calibration

8.7.1 General information

Automatic calibration includes the zero calibration and a subsequent span calibration. It is an alternative to manually carrying out the zero and span calibration.

Not all sensors and gases support automatic calibration. If the function is not available, perform the calibration manually.

8.7.2 Perform automatic calibration

i After 24 hours, zero calibration is not up-to-date any more. Thus, automatic calibration cannot be performed unless zero calibration is performed again.

i Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:
– Automatic calibration is enabled.
– Sensor has finished the warm-up phase.
– Calibration is prepared.

Perform the automatic calibration as follows:
1. Apply Synthetic Air or Nitrogen if ambient air cannot be used.
2. Select ***Calibration*** > ***Auto calibration*** and confirm.
   ⇒ The message ***please wait...*** is displayed and the instrument automatically performs the zero calibration.
   ⇒ In the case of an O_2 sensor, ***Fresh air cal.*** is displayed.

   i The Maintenance signal is transmitted by the analog interface, no alarm or fault relays are switched and the symbol is displayed.
3. After a successful zero calibration, the span calibration is started.
   ⇒ The parameters for the gas are displayed, e. g.:[1)]
   Gas : H_2S
   Unit: ppm
   Concentr.:25
4. If the displayed parameters do not match the target gas, adjust the parameters:[2)]
   a. Select ***Gas*** and confirm.
   b. Select the calibration gas from the list and confirm.
   c. Select ***Unit*** and confirm.
   d. Select the unit of measurement from the list and confirm.
   e. Select ***Conc.*** and confirm.
   f. Set the concentration of the calibration gas.
5. If settings are correct:
   a. Select ***Next*** and confirm.
      ⇒ A message like ***Gas flow ON H_2S*** is displayed.
6. Apply calibration gas.
   a. Set the gas flow corresponding to the sensor used (see "Gas flow for adjustments", page 22)
7. Select ***Next*** and confirm.
   ⇒ The current value is displayed

   i After 15 minutes without confirmation, the instrument reverts to the calibration menu without performing a calibration.
8. Once the current value is stable, the instrument automatically performs the span calibration.
9. After a successful calibration, the new current value and the message ***Value OK?*** are displayed.
   - If not, select Redo and confirm to perform the calibration again.
   - If the value corresponds the target value, proceed.
10. Turn off the gas flow and remove the calibration adapter from the sensor or disconnect the hose.
11. Select ***Accept value*** and confirm to finish the calibration. The instrument returns to the calibration menu.

9 Troubleshooting

9.1 Faults

Number	Cause	Remedy
001, 003 - 004, 012 - 014, 020 - 024, 043, 060, 067	Serious instrument fault, various causes.	Have the instrument checked by DrägerService.
002, 025 - 027, 030 - 034, 041, 042, 044, 050, 052, 081, 085	Serious data error in the instrument, various causes.	Reset the instrument to factory settings. If the fault occurs again: Have the instrument checked by DrägerService.
005	Supply voltage is out of range.	Check the power supply.
010	4 to 20 mA interface cable not connected.	Check the 4 to 20 mA interface connection. If operated as a stand-alone instrument without a central controller, wire pin 3 to pin 4.

1) Not applicable for all sensors (see "Measuring mode", page 16).
2) Only possible for certain sensors.

Number	Cause	Remedy
011	Serious instrument fault, various causes.	Have the instrument checked by DrägerService. If the fault occurs again: Check the load or the cables.
045	Instrument does not detect any sensor.	Check the connections. If the fault occurs again: Have the instrument checked by DrägerService.
051, 054	Faulty zero adjustment.	Perform zero adjustment.
055	Faulty span adjustment.	Perform span adjustment.
076, 080 - 084	Instrument fault.	Check the electrical connections. If the fault occurs again: Have the instrument checked by DrägerService.
090	Sensor lock feature is activated. A sensor with a different part number has been connected.	Use a sensor with the same part number or deactivate the sensor lock feature.
105	Instrument fault.	Have the instrument checked by DrägerService.
137, 64, 91	Instrument fault.	Turn the instrument off and back on. If the fault occurs again: Have the instrument checked by DrägerService.

Only for Polytron 8100 EC with Dräger SensorAlive

Number	Cause	Remedy
220	Sensor opening is clogged.	Clean the sensor opening or replace the dust filter. Then confirm the clogged sensor in the menu (see "Dräger SensorAlive settings", page 36).
221	Sensor sensitivity is less than 40 % (calculated value).	Adjust or replace the sensor.
222	Gas value is too high after electrolysis due to a fault.	Replace the sensor or contact DrägerService.
223	Sensor sensitivity is too low.	Adjust or replace the sensor.
224	Conditioning current is not within the permissible range.	Replace the sensor or contact DrägerService.

Only for Polytron 87x0 IR

Number	Cause	Remedy
064, 071	Communication fault.	Check connection to PIR 7x00.
083	PIR 7x00 optics dirty.	Clean PIR 7x00 optics.
086	Supply voltage outside range	Check supply voltage.
087	4 to 20 mA fault at PIR 7x00 sensor.	Check 4 to 20 mA connection to PIR 7x00.
094, 095	Data error in the instrument.	Reset the sensor to factory default settings. If this error occurs again: Have the instrument checked by DrägerService.
096	SIL password does not match with PIR 7x00.	Enter password again.

9.2 Warnings

Number	Cause	Remedy
101	Data logger in Stack mode is 100 % full and is not logging any more data.	Have the instrument checked by DrägerService.
102	Data logger in Stack mode is 90 % full.	Download the data as soon as possible and clear the data logger.
103, 106	Data error in the instrument. Some dongle functions like the data logger, sensor test, etc. may no longer be available.	Reset the instrument to factory settings. If this error occurs again: Have the instrument checked by DrägerService.
104	Date or time setting not valid.	Set the date and time.
105	Instrument fault.	Have the instrument checked by DrägerService.
107	Battery for data memory empty.	Have the instrument checked by DrägerService.
110, 111, 112	The SW dongle has been removed without first being deactivated.	Deactivate the SW dongle.
113	Alarms inhibited.	Activate the alarms.
164, 165	Sensor warm-up phase not yet complete. Increased measurement errors must be expected.	Wait until the sensor warm-up phase has ended. Do not adjust the sensor before it is fully warmed-up.

Number	Cause	Remedy
167, 170	Adjustment interval expired.	Readjust the instrument.

Only for Polytron 8100 EC

Number	Cause	Remedy
163	Low EC sensor vitality	Replace sensor.
171	Negative reading. Value below range minimum.	Recalibrate zero point.

Only for Polytron 8100 EC with Dräger SensorAlive

Number	Cause	Remedy
320	Communication with the sensor failed. Diagnosis and gas generator no longer work.	Remove the sensor, do not use it for approx. 1 day and reinsert it. Check the firmware version and have it updated by DrägerService if necessary. Replace the sensor.
321	Evaluation of the sensor data failed. The sensor cannot perform or evaluate a LifeTest (preconditions are not met).	Change the time of the LifeTest or set the repeat profile to "Flexible" (see "Dräger SensorAlive settings", page 36). If the warning occurs again, contact DrägerService.
322	Sensor data set is faulty.	Replace the sensor.
323	Sensor data set is incompatible.	Contact DrägerService.
324	Sensor sensitivity is less than 50 % (calculated value).	Adjust the sensor and prepare for sensor replacement (e.g., order the spare part).
325	Sensor sensitivity is less than 40 % (calculated value).	Adjust or replace the sensor.
326	Sensor cannot be adjusted during a LifeTest and for a certain period afterwards.	To be able to perform a scheduled adjustment, the LifeTest can be temporarily inhibited in PolySoft via the Inhibit mode.
327, 330, 344, 347	Gas generator is not working.	Adjust or replace the sensor.
331	Gas generation failed.	Adjust the sensor.
332	Sensor is in the safe state. No LifeTests are performed (group warning).	Determine the cause and rectify it.
333	Real time clock of sensor is not working correctly.	Set the clock.
334	Sensor synchronization not complete.	Wait until synchronization is complete. Depending on the condition of the sensor, this state may last for several minutes. Have the firmware updated by DrägerService if necessary.
336	Internal sensor checks return faulty results.	Restart the system.
337	Transmitter firmware must be updated.	Contact DrägerService.
340	Sensor is synchronized after the system is restarted.	Wait until synchronization is complete.
342	Temperature difference between the two temperature measurement points is too great.	Wait and check if the LifeTest is evaluated, or replace the sensor.
347	Configuration failed due to an interruption in the communication between the transmitter and the sensor.	Reconfigure the sensor and check the configuration.
350	Gas generator is in the start-up phase.	Wait until the start-up phase has ended. During the start-up phase, the error detection and clogging detection functions are not active.
352	Sensor self-test failed.	Replace the sensor or contact DrägerService.
353	Sensor is temporarily in Inhibit mode. No LifeTests are performed during this time.	Inhibit mode can be exited manually via PolySoft or is exited automatically.
354	Error during system start.	Perform manual restart.
355	Sensor firmware is incompatible with the hardware.	Have the firmware updated by DrägerService.
356	Hardware data faulty.	Perform a restart or replace the sensor.
357	Sensor was set to the safe state manually, e.g., to perform a firmware update.	To exit the mode, restart the sensor.

Only for Polytron 87x0 IR:

Number	Cause	Remedy
163	Sensor temperature is very high.	
171	Zero drift too high.	Perform zero calibration.
172	PIR 7x00 optics dirty.	Clean PIR 7x00 optics.
173	Zero calibration expired for span calibration	Perform zero calibration.
182	Automatic calibration not possible with PIR 7200.	Perform new zero and span calibration

10 Maintenance

– The maintenance intervals must be established for each individual installation. Depending on safety considerations and application specific conditions the instrument is used in, these might need to be shortened.

Every 6 months:

– Inspection by trained service personnel.
– Check signal transmission to the controller (see "Testing the analog interface", page 33).
– Check LEDs as well as the triggering of the alarm device (see "Testing alarms/relays", page 31).

Regularly:

– Perform calibrations, see 8 Calibration

10.1 Performing a bump test and checking the response time (t90)

A bump test checks the response time without setting off an alarm.

1. Select and confirm ***Settings*** > ***Instrument*** > ***Bump test***.
   ⇒ The Maintenance symbol is displayed.
   ⇒ The analog output is set to the maintenance signal.
2. Apply a known gas concentration to the sensor.
3. Check the response time and compare it with the t90 value indicated in the corresponding sensor data sheet.
4. Press [OK] to return to measurement.

10.2 Sensor replacement

⚠ WARNING
Faulty Calibration
Faulty Calibration may cause inaccurate readings.
► If the sensor is replaced, all settings and parameters must be checked for correctness.
► Check calibration to verify proper operation.

10.2.1 Polytron® 8100 EC

A sensor can be replaced in the hazardous, classified area, without interrupting the power supply.

Sensor lock feature

If a sensor of the same type (same part number) was previously installed, the instrument-specific configuration is retained (gas type, measuring range, test gas, adjustment interval, etc.). Otherwise, the factory default settings of the new sensor are uploaded and will overwrite the instrument-specific configuration. This can be prevented if the sensor lock feature is activated (see "Setting sensor lock", page 35).

Sensor change function

The ***Change Sensor*** menu function lets you replace a sensor during operation without triggering a fault signal at the controller. It also ensures that all sensor data in the microprocessor can be saved in the sensor memory (EEPROM) before disconnecting the sensor.

Replacing a sensor

See figure C on the fold-out page.

A sensor can be replaced at any time.

1. Select ***Settings*** > ***Sensor*** > ***Change Sensor*** and confirm.
   ⇒ The maintenance signal is generated on the 4-20mA interface.
   ⇒ The display shows the following: ***Please remove the sensor***.
   ⇒ The Maintenance symbol is displayed.
2. Replace the old sensor with a new sensor:
   a. Loosen the locking screw (2) (2 mm Allen screw).
   b. Unscrew bayonet ring (3)
   c. Insert the sensor (4) into the opening and turn until it engages in the gas detector. This does not damage the sensor plug.
   d. Secure the sensor with the associated bayonet ring (3).

   ℹ For Dräger SensorAlive, a different bayonet ring needs to be used than for other EC sensors.

   e. Tighten the locking screw (2) so that the bayonet ring cannot come loose (required for installations in zone 22).
      ⇒ The display shows the following: ***Loading data, please wait***
3. If necessary, apply the label included with the sensor to the instrument. This identifies the gas type from a distance, even if the power has failed.
4. When the sensor data are loaded, the display shows: ***Data loaded***.
5. Select ***Back to menu*** and confirm.
   ⇒ The maintenance signal on the 4-20mA interface remains pending until the sensor is warmed-up.

   Maximum warm-up time of a new sensor: see the Instructions for Use for the sensor. For Oxygen: EN 50104 approvals.

6. Check calibration. If necessary, calibrate the instrument (see "Calibration", page 22).
7. Check the installation requirements and instrument for SIL status.
   See sections "Explosion proof (Ex d) installation - without Docking Station" to "Installation of sensors or sensing heads".

10.2.2 Polytron® 8200 CAT, 8310 IR, 87x0 IR

Replacing a sensor

1. If necessary, set the maintenance current for the analog interface.
2. Turn off power to the instrument or declassify the area according to local regulations.
3. Loosen set-screw and unscrew lid from instrument.
4. Pull out the PCB unit.
5. Turn PCB unit over and pull off the sensor connector.
6. Unscrew the sensor.
7. Insert the sensor wires through he threaded port of the enclosure.

⚠ WARNING
Explosion hazard!
The enclosure openings must be sealed to prevent ignition of hazardous atmospheres in case of an ignition inside the enclosure.

► Five threads must be engaged to ensure explosion proof status.

8. Screw in the sensor and tighten with the correct tightening torque (min. 266 in-lbs / min. 30 Nm)
9. Polytron® 8200 CAT-specific:
   Twist the sensor wires together. If necessary, fit a cable tie to keep the wires tight.
10. Plug the sensor connector back into socket.
11. Place PCB unit back into the enclosure.
12. Screw the cover on the instrument until it is correctly engaged (min. ≥44 in-lbs / min. ≥5 Nm) and tighten the locking screw.
13. Apply power to the instrument, if necessary.
    ⇒ The maintenance signal on the 4-20mA interface remains pending until the sensor is warmed-up.

    Maximum warm-up time of a new sensor: see the Instructions for Use for the sensor.
14. Check calibration. If necessary, calibrate the instrument (see "Calibration", page 22).
15. Check the installation requirements and instrument for SIL status.
    See sections "Explosion proof (Ex d) installation - without Docking Station" to "Installation of sensors or sensing heads".

10.3 Performing a display test

1. Select and confirm ***Settings*** > ***Instrument*** > ***Display*** > ***Displaytest***.
2. Select and confirm ***Enable***.
   ⇒ The information on the display is shown inverted. All LEDs are turned on.
   When the menu is exited, the inversion is ended.

11 Instrument settings

11.1 Setting passwords

1. Select ***Settings*** > ***Instrument*** > ***Passwords*** the desired password and confirm.

Calibration PWD	Access to zero and span calibration
Settings PWD	Access to all configuration parameters

2. Select the line for editing the password and confirm.
3. Set the password and confirm.
4. Select ***Confirm*** and confirm with [OK].

11.2 Setting date and time

1. Select ***Settings*** > ***Instrument*** > ***Date and time*** and confirm.
2. Select the line for editing the date or time and confirm.
3. Select ***Confirm*** and confirm with [OK].

11.3 Setting language

1. Select ***Settings*** > ***Instrument*** > ***Language*** and confirm.
2. Select a language from the list and confirm.

11.4 Configuring function key

1. Select ***Settings*** > ***Instrument*** > ***Function key*** and confirm.
2. Select a function and confirm.

Graph	The measurements of the past 15 minutes are displayed as a time/concentration graph.
Faults	Fault messages are displayed in plain text.
Warnings	Warning messages are displayed in plain text.
Bump test	The bump-test allows applying gas to the sensor without generating an alarm. The maintenance signal is transmitted. After 15 minutes or tapping [OK] again ends the bump test and the instrument returns to normal operation.
Sensor vitality[1)]	Shows the remaining sensor vitality.

1) Only with diagnostic dongle

11.5 Resetting to default settings

This function resets the instrument to factory default settings.

1. Select ***Settings*** > ***Instrument*** > ***Device init*** and confirm.
2. Select ***Confirm*** and confirm with [OK].

11.6 Changing the display contrast

1. Select ***Settings*** > ***Instrument*** > ***Display*** > ***Display contrast*** and confirm.
2. Change the contrast and confirm.

11.7 Changing the display mode

1. Select ***Settings*** > ***Instrument*** > ***Display*** > ***Display mode*** and confirm.
2. Select the desired mode and confirm.

Standard	Shows the standard display.
Non-display	Shows the start screen and the applicable symbols.

If an alarm is triggered, the display shows the current gas concentration and the red LED blinks regardless of the selected display mode.

11.8 Relays

11.8.1 Combinations of latching and alarm acknowledgment

The following examples give an overview of relay acknowledgment combinations.

	Latching (Manual relay reset)	**Non-Latching** (Automatic relay reset after alarm condition cleared)
Acknowledgeable	Relay reset possible at any time.	
Non-acknowledgeable	Relay reset not possible before alarm condition cleared.	
Pre-acknowledgeable	Alarm acknowledgment possible before the alarm condition cleared. The relay resets automatically after the alarm condition cleared.	

Latching and non-latching signals are not time-limited. Latching signals stay active until they are acknowledged. Non-latching signals stop as soon as the triggering condition clears.

11.8.2 Configuring relay A1 or A2

This function defines whether the alarm relay is energized during normal operation or energized at an alarm condition.

1. Select ***Settings*** > ***Instrument*** > ***Alarm***> ***Relay A1*** or ***Relay A2*** and confirm.
2. Select the desired option and confirm.

Normally energized	The relay contact is energized during normal operation and changes if an alarm is triggered. At a loss of power this triggers an alarm (fail-safe).
Energ. on alarm	If an alarm is triggered, the relay contact is energized.

11.8.3 Setting fault relay warm-up 1

This function is used to set operation of the fault relay during warm-up 1 to indicate the warm-up 1 state on the relay output.

1. Select ***Settings*** > ***Instrument*** > ***Alarm***> ***Fault warm up*** the desired option and confirm.

static	The fault relay triggers a connected alarm indicator permanently. The orange LED is lit continuously.
dynamic	The fault relay switches state for 9 seconds. *Example:* – A horn is connected to fault relay output Normally Open. – Relays are configured as normally energized. ⇒ The horn and the orange LED of the transmitter are 1 second active and 9 seconds in-active.

11.9 Alarm configuration

11.9.1 Turning the alarms on and off

1. Select ***Settings*** > ***Instrument*** > ***Alarm*** > ***Alarm on/off***.

Enable	Alarm activation is switched on.
Disable	Alarm activation is switched off. LEDs, relays and interfaces do not indicate an alarm condition. The 4-to-20 mA interface transmits the maintenance signal. The value determined and the ! symbol will be shown. The fault relay indicates an error.

2. Select and confirm ***Enable*** or ***Disable***.

11.9.2 Configuring alarms

1. Select and confirm ***Settings*** > ***Instrument*** > ***Alarm*** > ***Alarm A1*** or ***Alarm A2***.
   The current alarm threshold is displayed.
2. Accept the displayed suggestion or change the following settings (confirm the configuration steps one after the other with ***Next***):
   a. Set the value for the alarm threshold.

b. Set the alarm direction.

Rising	The alarm direction is called rising if the gas concentration has to exceed a certain value to activate an alarm.
Falling	The alarm direction is called falling if the gas concentration has to fall below a certain value to activate an alarm.

c. Set the latch mode.

Latching	Once the alarm threshold is reached, the instrument will trigger the alarm. It will remain in the alarm state even if the gas concentration no longer meets the alarm condition. To clear a latching alarm, it must be acknowledged.
Non-latching	The alarm state clears if the gas concentration no longer meets the alarm condition.

d. Set the acknowledgement mode.

Acknowledgeable	The alarm relay and the alarm LED can be reset before the alarm condition clears.
Non-acknowledgeable	The alarm relay and the alarm LED cannot be reset until the alarm condition clears.
Pre-Acknowledgeable	The alarm state can be acknowledged before the alarm condition clears. The alarm relay and the alarm LED stay active until the alarm condition clears, however.

e. Set the hysteresis value.
The hysteresis function defines a range in which a triggered relay will remain in its state until the gas concentration is outside the defined range again. Example: The alarm threshold is set to 40 ppm and hysteresis to 3 ppm. The alarm remains active until the value falls below 37 ppm. This prevents relays from closing and opening in rapid succession at an alarm threshold ("chattering").

ⓘ If the direction of an alarm is changed (from falling to rising or vice versa), the hysteresis value must be checked and corrected if necessary.

⇒ A confirmation screen shows all settings.

f. Select ***Confirm*** and confirm with OK.

✓ The new settings are saved.

11.9.3 Testing alarms/relays

These functions change the statuses of a relay and an LED for test purposes (e.g., to check the function of alarm devices connected to the relay). The ❗ symbol is displayed. After exiting this function, the statuses of the relay and the LED will automatically return to their previous statuses.

1. Select and confirm the desired alarm condition via ***Settings*** > ***Instrument*** > ***Alarm***.

Set Alarm A1	Simulates a pre-alarm
Set alarm A2	Simulates a main alarm
Set fault	Simulates a fault signal

2. Select and confirm ***Enable***.
⇒ The fault relay is de-energized and the 4 to 20 mA interface is set to fault current. The yellow LED is lit, the symbol for maintenance is shown.
When the menu is exited, the simulation is ended.

11.10 Data logger settings

11.10.1 Displaying graph

The last 15 minutes as a time/concentration graph can be viewed.

1. Select ***Information*** > ***Data logger*** > ***Graph***

11.10.2 Switching data logger on or off

1. Select ***Settings*** > ***Data logger*** > ***Datalogr. on/off*** and confirm.
2. Select ***Enable*** or ***Disable*** and confirm.

11.10.3 Setting the sampling time

This function defines how often a value is stored.

1. Select ***Settings*** > ***Data logger*** > ***Datalogr. on/off*** > ***Sample time*** and confirm.
2. Select the sample time and confirm.

11.10.4 Setting peak/average

This function determines which value is stored.

1. Select ***Settings*** > ***Data logger*** > ***Data logger*** > ***Peak/Average*** and confirm.
2. Select ***Peak*** or ***Average*** and confirm.

Peak	The maximum value (if monitoring falling concentrations, the minimum value) of the measured concentrations within the selected sampling time is stored.
Average	The average value of all the measured concentrations within the selected sampling time is stored

11.10.5 Switching triggering mode on or off

This function allows storing values from a certain value on.

1. Select ***Settings*** > ***Data logger*** > ***Data logger*** > ***Trigger on/off*** and confirm.
2. Select ***On*** or ***Off*** and confirm.

On	Measurements are stored if they exceed a threshold beyond the trigger value (relative to the last stored value).
Off	Measurements within the sampling time are stored.

11.10.6 Setting trigger value

This function defines the trigger threshold to store a value.The trigger value is defined as a percentage of the full scale deflection.

Example: A trigger value of 2 % at full scale deflection of 500 ppm will only store values if they deviate by 10 ppm (relative to the previously stored value).

1. Select ***Settings*** > ***Data logger*** > ***Datalogr. on/off Trigger value*** and confirm.
2. Set the trigger value and confirm.

11.10.7 Setting stack/roll function

1. Select ***Settings*** > ***Data logger*** > ***Data logger*** > ***Stack/Roll*** and confirm.
2. Select ***Stack*** or ***Roll*** and confirm.

Roll	Once the capacity of the data logger is reached, the old data are overwritten by new values.
Stack	Once the capacity of the data logger is reached, no more data can be stored. The instrument issues a warning.

11.10.8 Clearing data logger

This function deletes the stored data.

1. Select ***Settings*** > ***Data logger*** >***Clear data logger*** and confirm.
2. To clear the data-logger, select ***Confirm*** and confirm with [OK].

12 Interface settings

12.1 4-20mA interface

The current output of the instrument during normal operation is between 4 and 20 mA and is proportional to the detected gas concentration.

Polytron 8xx0 uses different current values to indicate various modes of operation. The factory default settings are user adjustable for application specific requirements. This follows the NAMUR recommendation NE43.

12.1.1 Full scale deflection

Polytron® 8100 EC, 87x0 IR and 8200 CAT LC only

Some sensors offer an adjustable full scale deflection to limit the measuring range for the 4-20 mA interface.

The full scale deflection (FSD) sets an endpoint within the measuring range of the sensor. If the gas concentration reaches this endpoint, the 4-20mA interface transmits 20mA.

Example: Required range 0 to 500 ppm CO (e.g. part number 6809605 default 300 ppm, range min/max = 50/1000 ppm).Select full scale deflection as 500 ppm. The analog output will be linear between 4 mA = 0 ppm and 20 mA = 500 ppm.

12.1.2 Setting fault current

This function defines the current for the fault signal.

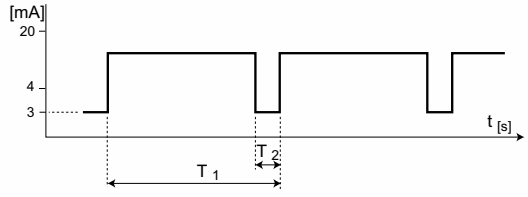
1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Fault current*** and confirm.
2. Select the line for editing the current and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Fault current*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

12.1.3 Information regarding the warning signal

To transmit a warning signal via the analog interface, it must be switched on.
The warning signal alternates between the warning current and the measurement current.

– Warning current (interval T2)
– Measurement current (interval T1-T2)

Time intervals and the warning current are configurable.



12.1.4 Switching the warning signal on or off

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning*** and confirm.
2. Select ***Enable*** or ***Disable*** and confirm.

12.1.5 Setting warning interval

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning interval*** and confirm.
2. Set times for warning intervals T1 and T2 and confirm.

12.1.6 Setting warning current

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning current*** and confirm.
2. Set the current and confirm with [OK].

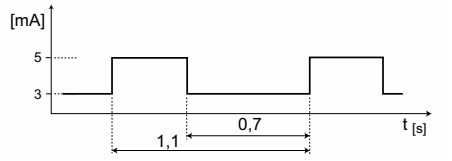
12.1.7 Setting the warnings of the Dräger SensorAlive

This menu can be used to set various parameters of the warning current:

- To set the warning current, select ***Settings*** > ***Communication*** > ***Analog interface*** > ***DSA warn current*** and enter the value.
- To set the threshold value for the warning, select ***Settings*** > ***Communication*** > ***Analog interface*** > ***DSA warn limit*** and enter the value.
- To enable or disable the warning, select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Set DSA warning*** and confirm.
  Select ***Enable*** or ***Disable*** and confirm.

12.1.8 Setting maintenance signal

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Maint. signal*** and confirm.
2. Set the signal type and confirm.

static	A constant current that can be configured.
dynamic	A square wave signal with the following characteristics: 

12.1.9 Setting the maintenance current

The maintenance current can only be set if the maintenance signal has been set to static.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Maint. current*** and confirm.
2. Set the current and confirm.

12.1.10 Setting analog offset

This function adds an offset to the analog output at 4 mA. The offset adjusts the current at 4 mA without affecting the 20 mA set point.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Analog offset*** and confirm.
2. Select the line for editing the offset (range: -0.5 to 0.5 mA, SIL: -0.1 to 0.1) and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Analog offset*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

12.1.11 Setting analog span

This function adjusts the analog output at 20 mA without affecting the 4 mA set point.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Analog span*** and confirm.
2. Select the line for editing the offset (range: -0.5 to 0.5 mA, SIL: -0.1 to 0.1) and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Analog span*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

12.1.12 Testing the analog interface

These functions change the current of the analog interface for test purposes (e.g., to check the programming of the controller). It may be necessary to temporarily inhibit the alarms at the controller to avoid false alarms. After exiting these functions, the currents automatically return to the maintenance signal. During the test, the maintenance symbol 🔧 is displayed.

- To set the current or concentration:

1. Select the desired option via ***Settings*** > ***Communication*** > ***Analog interface***.

Set Current	This function sets the current to any value between 0 and 22 mA. Offset current and analog span are not used in this function.
Set concentr.	This function sets the current to any measured value between 0 ppm and full scale deflection.

2. Once the alarms at the controller are inhibited, confirm the message ***Inhibit all alarms*** with ***Next***.
3. Select the line for editing and confirm with [OK].
4. Set the desired value.
5. Select and confirm ***Next***.
6. Select the desired option:

Set concentr. out / ***set current out***	This function simulates the preset measured value or test current value. During the test, the maintenance symbol 🔧 is displayed.
concentration off / ***current off***	This function aborts the transmission of the preset test value.

7. Select and confirm ***Next***.
   ⇒ The function is aborted.
8. Once the alarms at the controller are enabled again, confirm the following message: ***Enable all alarms***.

- To set the test signal:

1. Select the desired test via ***Settings*** > ***Communication*** > ***Analog interface***.

Set fault	This function sets the current to the fault current.
Set warning	This function sets the current to the warning current.
Set mainten.	This function sets the current to the maintenance current.

2. Once the alarms at the controller are inhibited, confirm the message ***Inhibit all alarms***.
3. Select and confirm ***Enable*** or ***Disable***.

12.1.13 Beam block

This function is only available for Polytron 87x0 IR (using the sensor PIR 7000/7200).

The factory default setting for the beam block function is off.

If turned On, the beam block signal will be transmitted on the analog interface if the optics of the PIR 7000/7200 sensor is “dirty”. The optics of the PIR 7000/7200 can become “dirty” if there is a build-up of deposits on the optical surfaces. However, if the gas concentration rises to a level above beam block limit, the instrument returns to normal operation.

If the build-up of deposits on the optical surfaces increases beyond the point where a measurement is possible, the instrument will go into fault.

- To set beam block signals on/off:

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** and the desired option.

Beamblock on/off	This function switches the beam block on or off
Set beamblock	This function sets the current to the beam block warning current

2. Select ***Enable*** or ***Disable*** and confirm.

- To set beam block signals:

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** and the desired option.

Beambl. current	This function defines the current for the beam block signal.
Beamblock limit.	This function defines the maximum limit if the beam block signal will be transmitted on the analog interface.

2. Select the current line for editing the current and confirm.
3. Set the current and confirm.
   ⇒ The setting for the beam block current is displayed.
4. Select ***Confirm*** and confirm with OK.

12.2 HART interface

12.2.1 Setting the polling address

The polling address (query address) configures the gas detector for analog operation or multidrop operation.

HART command: #6 (Write Polling Address)

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Polling address***.
2. Set the polling address and select ***Confirm***.

0	Activates analog operation.
1 to 15	Activates multidrop operation. The 4 to 20 mA interface is deactivated and set to a constant current of approx. 1 mA.

ℹ Configure all instruments on a line with different polling addresses. It is advised to choose a sequence starting with 1.

12.2.2 Displaying the Unique Identifier

The Unique Identifier (unique HART address) must be known for almost all HART addressing commands.

HART commands:

– #0 (Read Unique Identifier)
– #11 (Read Unique Identifier associated with Tag)

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Unique identifier***.
2. The Unique Identifier is displayed.

12.2.3 Setting the HART tag

The HART tag (measurement point identification) is used to mark a measurement point.

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Tag***.
2. Set the HART tag and select ***Confirm***. The HART tag can consist of up to 8 alphanumeric characters.

12.2.4 Setting the Dräger REGARD protocol

This function switches between different HART protocols.

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Dräger REGARD***.
2. Select the software version corresponding to the REGARD controller.

12.3 Digital interfaces

Information on configuring the other interfaces is provided in the following documents:

Interface	Document
PROFIBUS PA	9033782
Foundation Fieldbus FF	9033783
Modbus RTU	9033781

13 Sensor settings

13.1 Switching automatic calibration on or off

1. Select ***Settings*** > ***Sensor*** > ***Auto calibration*** and confirm.
2. Select ***Enable*** or ***Disable*** confirm with [OK].

13.2 Capture range

The capture range blanks out measurement fluctuations. Measurement fluctuations are minor variations in measured values (such as signal noise, variations in concentration). Those variations do not change the transmitted or displayed value. Measured values within this range will be displayed with the capture value. Measured values outside the capture range will be displayed with the actual measured value.

Capture value (offset)

The capture value is displayed continuously, as long as the measured value ranges between the upper and lower capture value limits.

Upper capture value limit

The upper capture value limit marks the upper limit of the range in which the capture value is displayed.

Lower capture value limit

The lower capture value limit marks the lower limit of the range in which the capture value is displayed.

13.2.1 Setting capture range

1. Select ***Settings*** > ***Sensor*** > ***Display Capture*** and confirm.
2. Set offset in the first window.
3. Set the lowest value of the capture range and confirm with ***Next***.
4. Set the highest value of the capture range and confirm with ***Next***.
5. Check all the values and confirm with ***Next***.

13.2.2 Switching capture range off

1. Select ***Settings*** > ***Sensor*** > ***Display Capture*** and confirm.
2. Set offset in the first window.
3. Set the lowest value of the capture range to 0 and confirm with ***Next***.
4. Set the highest value of the capture range to 0 and confirm with ***Next***.
5. Check all the values and confirm with ***Next***.

13.3 Resetting sensor

This function resets the sensor to factory default settings.

1. Select ***Settings*** > ***Sensor*** > ***Init. channel*** and confirm.
2. Select ***Confirm*** and confirm with [OK].

13.4 Setting calibration interval

After the calibration interval expires, the instrument will issue a warning that the calibration is past due.

1. Select ***Settings*** > ***Sensor*** > ***Cal. interval*** and confirm.
2. Set the calibration interval and confirm with [OK].

13.5 Setting sensor lock

This point is only valid for Polytron 8100 EC and Polytron 87x0 IR.

1. Select ***Settings*** >***Sensor*** > ***Sensor lock*** and confirm.
2. Select ***On*** or ***Off***.

On	The instrument rejects any sensor whose part number does not match the part number of the previously installed sensor.
Off	The instrument accepts any suitable sensor, uploading the default settings of this sensor. However, this overwrites any customized settings with the default settings of the new sensor.

13.6 Software dongles for EC sensors

13.6.1 Installing the dongle

1. Switch off power to the instrument or declassify the area according to the local regulations.
2. Loosen set-screw and unscrew lid from instrument.
3. Insert the dongle with the Dräger logo facing upwards in the slot of the PCB unit, See figure D on the fold-out page..
4. Position the PCB unit back cover and close the instrument (see "Closing the gas detector", page 13).

13.6.2 Deactivating dongles

This function deactivates a dongle to safely remove the dongle or if the dongle is faulty.

A dongle can only be reactivated by cycling the power to the instrument.

1. Select ***Settings*** > ***Instrument*** > ***SW dongle*** > and the dongle to be deactivated, and confirm.
2. Select ***Deactivation func.***. The selected dongle is deactivated.

13.7 Sensor settings Polytron® 8100 EC

13.7.1 Sensor self-test

This function is only active if the sensor-test dongle or diagnostic dongle is installed. If the sensor does not pass the self-test, a warning or error message is issued.

Setting regular sensor self-tests

This feature triggers the sensor self-test at regular intervals. The instrument then routinely checks that the sensor is functioning correctly.

1. Select and confirm ***Settings*** > ***Sensor*** > ***Set Sensortest***.
2. Select and confirm ***Enable*** or ***Disable***.

Starting sensor test manually

This function starts a single sensor self-test.

1. Select ***Settings*** > ***Sensor*** > ***Sensor test*** and confirm.
2. ***Start sensor test*** is displayed.
3. Select ***Confirm***.

✓ The test result is displayed.

13.7.2 Gas settings

This function sets the gas type, measuring range, and units of measurement. Different settings are possible depending on the installed sensor.

1. Select and confirm ***Settings*** > ***Sensor*** > ***Gas settings***.
   ⇒ The current measured gas is displayed.
2. Select and confirm the measured gas from the list.
   ⇒ The current unit of measurement is displayed.
3. Select and confirm the unit of measurement from the list.
   ⇒ The current full scale deflection is displayed.
4. For certain EC sensors only: Set and confirm the full scale deflection.
   ⇒ The new full scale deflection is displayed.
5. Select and confirm ***Next***.
   ⇒ An overview of the new gas settings is displayed.
6. After reviewing it, select ***Back to menu*** or ***Confirm***.

Back to menu	Select Back to menu to exit the function without changes and confirm with [OK].
Confirm	Select Confirm to accept the settings and confirm with [OK].

13.7.3 Dräger SensorAlive settings

This menu lets you select various parameters that define the behavior of the Dräger SensorAlive:

- To activate or deactivate the LifeTest functions of the sensor, select and confirm ***Settings*** > ***Sensor*** > ***SensorAlive*** > ***DSA activation***.
  Select and confirm ***Enable*** or ***Disable***.
- To acknowledge a clogged sensor, select ***Settings*** > ***Sensor*** > ***SensorAlive*** > ***Ack faults***.
- To enable or disable fault detection, select and confirm ***Settings*** > ***Sensor*** > ***SensorAlive*** > ***Fault detection***.
  Select and confirm ***Enable*** or ***Disable***.

The ***SensorAlive*** menu has the following sub-menus:

– LifeTest
– Sensitivity monitoring

The following parameters can be set in the LifeTest sub-menu:

- To define when to start a test run, select ***Time***.
  Enter a time and confirm. The test run is started when this time is reached on the transmitter.

  ℹ Transmitters do not support an automatic daylight savings changeover.

- To define the value to be output via the transmitter during the LifeTest, select ***Output behavior***.
  Select and confirm ***Fixed***, ***Maintenance*** or ***Measurement val.***.
- To define whether retests are to be carried out in a test run if a LifeTest has a negative test result, select ***Repetition mode***.
  Select and confirm ***Flexible***.
  If ***Static*** is selected, no retests are carried out and a new test run is carried out at the indicated time instead.
- To define when to abort a LifeTest, select ***Cancel threshold***.
  Enter a value and confirm.

  ℹ During a LifeTest, test gas is applied to the Dräger SensorAlive. This causes the measured value to rise. To prevent an alarm from being triggered, the measured value is not transmitted for a maximum of 15 minutes by default. The behavior during a LifeTest can be configured in the ***Output behavior*** menu, however. Independent of this, the sensor detects a gas leak if the measured gas concentration is greater than the gas concentration expected as a result of the LifeTest. The difference corresponds to the concentration of the gas leak and is compared with the value entered in ***Cancel threshold***. If this value is exceeded, the LifeTest is immediately aborted. The sensor switches back to measuring mode and the transmitter once again outputs a measured value. If relays are used, these are tripped on the transmitter and, where applicable, an alarm is triggered.

The following parameters can be set in the ***Sensitiv. check*** sub-menu:

- To define whether a warning needs to be issued, select and confirm ***Activation***.
- To define when a warning must be output, select and confirm ***Alert < 50%*** or ***Alert < 40%***.

13.8 Sensor settings Polytron® 8200 CAT / 8310 IR

13.8.1 Sensor type

This function defines the sensor type installed.

1. Select ***Settings*** > ***Sensor*** > ***Sensor type*** and confirm.
2. Select the sensor type and confirm.

13.8.2 Gas settings

This function sets the unit of measurement.

For LC sensors, this function also sets the full scale deflection.

1. Select ***Settings*** > ***Sensor*** > ***Gas settings*** and confirm.
2. Select the unit of measurement from the list and confirm.
   ⇒ For DQ sensors and DSIR:
   An overview of the new gas settings is displayed.
   Continue with step 4.
   ⇒ For LC sensors:
   The current full scale deflection is displayed. Continue with step 3.
3. Set the full scale deflection and confirm (only for LC sensors).
   ⇒ An overview of the new gas settings is displayed.
4. After review, select ***Back to menu*** or ***Confirm***.

Back to menu	Select Back to menu for leaving the function without changes and confirm with [OK].
Confirm	Select Confirm to accept the settings and confirm with [OK].

13.8.3 Setting the DQ sensor latching

This feature is only available if there are no relays installed.
This feature is used to determine whether the DQ sensor must be acknowledged after measuring a concentration higher than 100 %LEL.
This setting does not apply for LC sensors.

1. Select and confirm ***Settings*** > ***Sensor*** > ***DQ Sensor latch.***.
   ⇒ The current setting is displayed.
2. Select and confirm ***Enable*** or ***Disable***.

⚠ WARNING
Explosion Hazard
If sensor latching is disabled and an alarm indicating an explosion hazard is acknowledged, the instrument informs the end user of such hazard by having the red LED on the display being continuously lit.

► Before acknowledging an over range, ensure that the gas concentration has fallen under 100%LEL.

⚠ WARNING
Explosion Hazard possible
Operation is non-compliant with BVS type examination.
If DQ sensor latching is disabled, for safe operation in accordance with BVS 13 ATEX G 001 X, the central controller must support this function.

► Make sure that over range latching is active at the display unit.

13.9 Sensor settings Polytron 8310 IR

13.9.1 Changing the gas category

The DrägerSensor IR can measure gases and vapors that belong to the methane, propane, or ethene (ethylene) gas categories. A gas category must be set for the DrägerSensor IR depending on which target gas is to be measured. For the assignment of gases and vapors to the gas categories, see the DrägerSensor IR documentation.

13.9.2 Changing the gas category

Prerequisites

– The gas detector was turned on less than an hour ago.
– The automatic zero calibration on the sensor was performed less than an hour ago (see "Special feature of the Polytron 8310", page 23).
– The gas concentration measures by the gas detector is below 10 %LEL (apply zero gas to the sensor if necessary).

1. Turn off the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).
2. Select ***Settings*** > ***Sensor*** > ***DSIR Category*** and confirm.
   ⇒ The gas category is displayed on the instrument.

ℹ The next steps are carried out on the sensor.

3. To select the gas category on the sensor, tap the ⇧S or ⇩0 symbol with the magnetic wand.
   ⇒ START is displayed on the gas detector.
4. Remove the magnetic wand.
   ⇒ The sensor switches to an output signal that represents the gas category currently set:
   Output signal 20 %LEL: Methane gas category
   Output signal 40 %LEL: Propane gas category
   Output signal 60 %LEL: Ethene (ethylene) gas category
5. This output signal is maintained for 30 seconds. During this period, the next gas can be selected by placing the magnetic wand on the area marked with the ⇧S symbol.
   ⇒ The sensor's output signal then switches to the value that matches the newly selected gas category. If no further input with the magnetic wand takes place for more than 30 seconds, the setting is saved.
6. Check the span calibration on the gas detector (see "Span calibration", page 24)
7. Turn on the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).

ℹ The setting on the sensor can result in an incorrect gas category being displayed in the ***DSIR Category*** menu item or that a change in gas category is no longer visible.

13.10 Sensor settings Polytron® 87x0 IR

13.10.1 Gas settings

This function sets the gas type, measuring range and units of measurement. Only certain sensors support these settings.

1. Select ***Settings*** > ***Sensor*** > ***Gas settings*** and confirm.
   ⇒ The current measured gas is displayed.
2. Select a measured gas from the list and confirm.
   ⇒ The current unit of measurement is displayed.
3. Select the unit of measurement from the list and confirm.
   ⇒ If the unit of measurement is set to %LEL, %UEG, or %LIE, the category will be displayed. Continue with step 4.
   ⇒ Otherwise the current full scale deflection is displayed. Continue with step 6.
4. Select a category and confirm.
5. Set the LEL value and confirm.
6. Set the full scale deflection and confirm.
   ⇒ The new full scale deflection is displayed.
7. Select ***Next*** and confirm.
   ⇒ An overview of the new gas settings is displayed.
8. After review, select ***Back to menu*** or ***Confirm***.

Back to menu	Select Back to menu for leaving the function without changes and confirm with [OK].
Confirm	Select Confirm to accept the settings and confirm with [OK].

9. Check the alarm settings after changing the category or the LEL value.

14 Factory default settings

14.1 Unchangeable settings for relay, LED, and alarm

	Setting
Fault relay:	Energized / Normally Open
Yellow LED:	Lit if a fault message is available
Red LED:	Single flash if A1 alarm is present. Double flash if A2 alarm is present. If an alarm is configured as acknowledgeable and the alarm is acknowledged, single/double flash changes to continuously lit.
Alarm Hierarchy	A2 overrides A1 on the LED. However, the A1 and A2 relays operate independently. (Example: if A1 is acknowledgeable, A2 is not, and the gas concentration is such that it triggers A1 and A2: acknowledging the alarm will cause the A1 relay to release. But the red LED continues its double flash as long as the state that triggers the A2 alarm persists.

14.2 Settings which can be changed via the menu

Menu	Default setting	Range
Relay active on alarm / No alarm	Active on alarm	On/Off
A1 alarm: direction	Rising (falling for O_2 sensors)	Falling/Rising
A2 alarm: direction	Rising	
A1 latch mode	Non-latching	Latching/Non-latching
A2 latch mode	Latching	
A1 acknowledge mode	Acknowledgeable	Acknowledgeable/Non-acknowledgeable/Pre-acknowledgeable
A2 acknowledge mode	Not acknowledgeable	
Normal operation A1 relay	Energized	Energized/Not energized
Normal operation A2 relay		
Calibration password	_ _ _ 1	
Settings password	_ _ _ 2	
LCD setting	On	On/Off
SIL status	Off	On/Off
Language	EN	DE / EN / FR / ES / RU / ZH
Automatic calibration	Off	On/Off
Function key	Error	Graphic, fault, warning, vitality, bump test

Interface	Default setting	Range
Fault current	1.2 mA	0 to 3.5 mA
Warning	Off	On/Off
Warning current	3.0 mA	0 to 3.5 mA
Warning cycle interval T1	10 s	5 to 60 s

Interface	Default setting	Range
Warning cycle interval T2 (warning current)	1 s	1 to (T1-1) s
Maintenance signal	static	Static/dynamic
Maintenance current	3.4 mA	0 to 3.5 mA
Analog offset	0 mA	-0.5 to 0.5 mA
Sensitivity analog output	0 mA	-0.5 to 0.5 mA
HART® address	0	0 to 15
Modbus address[1)]	126	2-126
Modbus parity[1)]	even (default)	even, odd parity, no parity
Modbus baud rate[1)]	9600 bps	9600 or 19200 bps
PROFIBUS® address[1)]	126	2-126

1) Fieldbus interfaces are not in accordance with the BVS 13 ATEX G001 X. Using the fieldbus interface no relays are available.

14.3 Sensor-specific values

Further specifications are provided in the instructions for use for the relevant sensor.

14.3.1 Polytron 8100 EC

Menu	Default setting	Range
Alarm A1	Depending on sensor	
Alarm A2	Depending on sensor	
Hysteresis for A1 alarm in rising direction	0	0 to A1
Hysteresis for A2 alarm in rising direction	0	0 to A2
Hysteresis for A1 alarm in falling direction	0	0 to full scale deflection -A1
Hysteresis for A2 alarm in falling direction	0	0 to full scale deflection -A2
Calibration interval [days]	Depending on sensor	0 to 720

14.3.2 Polytron 8100 EC with O_2 sensors

Menu	Default setting	Range
Display capture range offset	20.9 Vol% (O_2)	0 to 25 Vol% (O_2 LS) 0 to 100 Vol% (O_2)
Display capture range low	-0.25 Vol% (O_2)	0 to -0.75 Vol%
Display capture range high	0.25 Vol% (O_2)	0 to 0.75 Vol%
Full scale value	25 Vol% (O_2, O_2 LS)	5 to 25 Vol% (O_2 LS) 5 to 100 Vol% (O_2)

14.3.3 Polytron 8100 EC with Dräger SensorAlive

Menu	Default setting	Range
DSA warn current	2.0 mA	0 mA to 3.5 mA
DSA warn limit	Depending on sensor	
DSA activation	On	On / Off
LifeTest		
Time	Depending on sensor	
Output behavior	Fixed	Fixed/maintenance/measured value
Repeat profile	Flexible	Flexible/static
Cancel threshold	Depending on sensor	
Senor monitoring		
Activation	Depending on sensor	
Alarm <50 %	Off	Off/warning
Alarm <40 %	DSA warning	Off/DSA warning/error
Fault detection	On	On / Off

14.3.4 Polytron 8200 CAT DrägerSensor® DQ

Menu	Default setting	Range
Alarm A1	20 %LEL	1 to 100 %LEL
Alarm A2	40 %LEL	
Hysteresis for alarm A1 with increasing direction	1 %LEL	0 to A1
Hysteresis for alarm A2 with increasing direction	1 %LEL	0 to A2
Adjustment interval [days]	180	0 to 360
Display capture range offset	0 %LEL	-5 to 4 %LEL
Display capture range low	-5 %LEL	-5 to 0 %LEL
Display capture range high	2 %LEL	0 to 4 %LEL
Full scale value	100 %LEL	Not possible to set range

14.3.5 Polytron 8200 CAT DrägerSensor® LC

Menu	Default setting	Range
Alarm A1	2.0 %LEL	0.1 to 10 %LEL
Alarm A2	4.0 %LEL	
Hysteresis for alarm A1 with increasing direction	0.1 %LEL	0 to A1
Hysteresis for alarm A2 with increasing direction	0.1 %LEL	0 to A2
Full scale value	10 %LEL	5 to 10[1] % LEL 1 to 10 %LEL
Adjustment interval [days]	180	0 to 360
Display capture range offset	0 %LEL	-0.5 to 0.4 %LEL
Display capture range low	-0.5 %LEL	-0.5 to 0 %LEL
Display capture range high	0.2 %LEL	0 to 0.4 %LEL

1) For firmware versions < 3.0.0

14.3.6 Polytron 8310 IR

Menu	Default setting	Range
Alarm A1	20 %LEL	1 to 100 %LEL
Alarm A2	40 %LEL	
Hysteresis for alarm A1 with increasing direction	1 %LEL	0 to A1
Hysteresis for alarm A2 with increasing direction	1 %LEL	0 to A2
Adjustment interval [days]	180	0 to 360
Display capture range offset	0 %LEL	-3 to 4 %LEL
Display capture range low	-3 %LEL	-3 to 0 %LEL
Display capture range high	2 %LEL	0 to 4 %LEL
Full scale value	100 %LEL	Not possible to set range

14.3.7 Polytron 8700 IR

Type 334

Menu	Default setting	Range
Test gas	Methane	
Test gas units	%LEL	
Test gas concentrations	50 %LEL	
Alarm A1	20 %LEL	0.01 to 100 Vol% with %LEL = 0.3 to 100 %LEL
Alarm A2	40 %LEL	
LEL type	NIOSH	IEC / PTB / NIOSH / configurable
Measured gas	Methane	
Units of measured gas	%LEL	Vol.% / PPM / %LEL / %LIE
Full scale value	100 %LEL	20 to 100 %LEL
Beam block	Off	On/Off
Beam block current	2 mA	0 to 3.5 mA
Beam block limit	7.5 %LEL	0 to max. 15 %LEL[1]
Adjustment interval [days]	360	0 to 720

Menu	Default setting	Range
Response behavior	normal	normal / fast
Display capture range offset	0	The absolute values of the display capture range must be within these limits: -1000 to 2200 ppm (Methane type 334) -850 to 850 ppm (Propane type 334) -1200 to 1150 ppm (Ethylene type 334)
Display capture range low	-750 ppm (Methane) -315 ppm (Propane) -405 ppm (Ethylene)	
Display capture range high	750 ppm (Methane) 315 ppm (Propane) 405 ppm (Ethylene)	

1) The maximum limit of the beam block depends on the type of gas detector and the measured gas selected.

Type 340

Menu	Default setting	Range
Test gas	Propane	
Test gas units	%LEL	
Test gas concentrations	50 %LEL	
Alarm A1	20 %LEL	0.01 to 100 Vol% with %LEL = 0.3 to 100 %LEL
Alarm A"	40 %LEL	
LEL type	NIOSH	IEC / PTB / NIOSH / configurable
Measured gas	Propane	
Units of measured gas	%LEL	Vol% / PPM / %LEL / %LIE
Full scale value	100 %LEL	20 to 100 %LEL
Beam block	Off	On/Off
Beam block current	2 mA	0 to 3.5 mA
Beam block limit	2.5 %LEL	0 to max. 15 %LEL[1)]
Adjustment interval [days]	360	0 to 720
Response behavior	normal	normal / fast
Display capture range offset	0	The absolute values of the display capture range must be within these limits: -850 to 425 ppm (Propane type 340) -1800 to 2200 ppm (Methane type 340)
Display capture range low	-750 ppm (Methane) -85 ppm (Propane)	
Display capture range high	750 ppm (Methane) 85 ppm (Propane)	

1) The maximum limit of the beam block depends on the type of gas detector and the measured gas selected.

14.3.8 Polytron 8720 IR

Menu	Default setting	Range
Test gas	CO_2	
Test gas units	Vol%	
Test gas concentrations	4.0 Vol%	0.2 to 100 Vol%
Alarm A1	1 Vol%	0.01 to 100 Vol%
Alarm A2	2 Vol%	
LEL type	-	
Measured gas	CO_2	
Units of measured gas	Vol%	Vol% / ppm
Full scale value	10 Vol%	0.2 to 100 Vol%
Beam block	Off	On/Off
Beam block current	2 mA	0 to 3.5 mA
Beam block limit	0.1 Vol%	0 to 0.1 Vol%
Adjustment interval [days]	360	0 to 720
Response behavior	normal	normal / fast
Display capture range offset	340 ppm	The absolute values of the display capture range must be within these limits: -1000 to 1000 ppm (carbon dioxide)
Display capture range low	-200 ppm	
Display capture range high	200 ppm	

15 Disposal

This product must not be disposed of as household waste. This is indicated by the adjacent icon.
You can return this product to Dräger free of charge. For information please contact the national marketing organisations and Dräger.

Disposal of electrochemical sensors

⚠ WARNING
Danger of explosions and risk of chemical burns!
Sensor fluids may leak out and can cause acid burns.
► Do not dispose sensors in fire.
► Do not open with force.

16 Technical data

16.1 Measuring ranges

Sensor	Measuring range
Polytron 8100 EC with DrägerSensor® EC	Depending on sensor
Polytron 8200 CAT with DrägerSensor® DQ	0 to 100 %LEL
Polytron 8200 CAT with DrägerSensor®LC	0 to 10 %LEL[1)]
Polytron 8310 IR with DrägerSensor® IR	0 to 100 %LEL
Polytron 8700 IR with PIR 7000 infrared gas sensor	
Type 334 (IDS 01x1)	0 to 10,000 ppm[1)] 0 to 100 %LEL,[1)] 0 to (1.25 x LEL_{max}) Vol%,[1)2)] For CH4 (methane) 0 to 100 Vol%[1)]
Type 340 (IDS 01x2)	0 to 10,000 ppm[1)] 0 to 100 %LEL[1)] 0 to 5 Vol%[1)]
Polytron 8720 IR with PIR 7200 infrared gas sensor (IDS 01x5)	0 to 100 Vol%[1)]

1) For adjustable full scale deflection, see 14.3.
2) Range changes depending on the substance to be measured

16.2 Signal transmission to the controller

The measuring range and performance characteristics depend on the installed sensor (see the instructions for use for the installed sensor).

Frequency of measurement calculation: 1 x per second (update of display, analog interface and relays).

Analog signal	
Normal operation	4 ... 20 mA
Drift below zero	3.8 ... 4 mA
Over range	20 ... 20.5 mA
Instrument fault	≤ 1.2 mA
Fault on analog interface	> 21 mA
Maintenance signal	3.4 mA steady signal or 1 Hz modulation between 3 and 5 mA (selectable)

Resistance of the signal loop

Operating mode	Resistance range of the signal loop	Power supply range
Operation without HART® communication	0 to 230 Ω	at 10 V DC
	Rising linearly with the supply voltage from: 0 to 230 Ω at 10 V to 0 to 500 Ω at 16 V	10 to 18 V DC
	0 to 500 Ω	18 to 30 V DC
Operation with HART® communication	230 to 270 Ω	at 13 V DC
	Rising linearly with the supply voltage from: 230 to 270 Ω at 11 V to 230 to 500 Ω at 16 V	11 to 16 V DC
	230 to 500 Ω	18 to 30 V DC
HART® multidrop operation	230 to 500 Ω	10 to 30 V DC

When used in accordance with the metrological suitability test compliant with EN IEC 62990-1, EN IEC 60079-29-1 or EN 50104, the resistance must not exceed 300 ohms. Further information on installing the fieldbus interface is provided in document 9033783.

16.3 Cable specifications

For non-conduit installations, use shielded cables.

Analog and HART® connection with controller and power supply	
Power supply and signals	3-core shielded cable 24 - 12 AWG / 0.2 - 2.5 mm²
Relays	20 - 12 AWG / 0.5 - 2.5 mm²

Digital connection with controller	
Instruments with fieldbus interfaces and remote sensors must be installed with shielded cables.	
Modbus RTU	2-core or 3-core[1], ≥ 26 AWG
PROFIBUS PA Foundation Fieldbus	2-core, cable type A Wave impedance R_W: 135 - 165 Ω Capacitance / unit length C‘: < 30 pF/m Loop resistance R‘: 110 Ω/km Core diameter d: 0.64 mm Core cross section q: > 0.34 mm² Shield coverage: ≥ 90 %
Power supply	2-core, 24 - 12 AWG / 0.2 - 2.5 mm²

1) If the distance between the controller and the transmitter is very long (>1 km) and the power supplies of the controller and the transmitter are separate, interference or differential differences can occur. In this case, 3-core cabling with ground must be selected. Ground is then connected to the transmitter and looped through to the ground of the controller.

16.4 Power supply and relays

Relay rating[1] SPDT[2]	
230 V ~	0.1 A - 5 A
30 V ⎓, resistive load	0.1 A (minimum) - 5 A

1) For safety-related applications (SIL 2), the maximum contact rating is reduced (see Polytron® 8xx0 Safety Manual).
2) Single pole, double throw, (changeover electrical contacts)

Power supply Polytron 8xx0	
Operating voltage	10[1] to 30 V⎓ at the instrument
Inrush current	2.3 A for 2 ms at 24 V⎓,10 Ω resistor

1) At supply voltages of < 7 V DC the instrument provides a fault signal. The warning signal "undervoltage" depends on the connected load at the 4-20 mA output and the cable resistance. In case of lower load (e.g. 230 Ω), the fault relay drops out and the current output is 0 mA. In case of higher load (e.g. 500 Ω), warning message 011 is indicated.

Operating current	
Polytron® 8100 EC	
without relay, non-remote sensor	80 mA
with relay, remote sensor	100 mA
Polytron® 8200 CAT	
without relay, non-remote sensor	105 mA (DrägerSensor DQ) 130 mA (DrägerSensor LC)
with relay, remote sensor	145 mA (DrägerSensor DQ) 165 mA (DrägerSensor LC)
Polytron® 8310 IR	
without relay, non-remote sensor	145 mA
with relay, remote sensor	185 mA
Polytron® 87x0 IR	
without relay, non-remote sensor	330 mA
with relay, remote sensor	350 mA

16.5 General specifications

Polytron 8xx0 enclosure	
Enclosure material	Copper-free aluminum
Enclosure guard	NEMA 4X[1] IP 65/66/67[2]
Display	Resolution 128 x 64 pixels, backlit[3]

1) Polytron 8100 EC NEMA 4X enclosure guard pending.
2) The IP degrees of protection do not cover the detection of a gas, during or after exposure of the equipment to these conditions. In the event of dust deposits and contact with water through immersion or a jet of water, check the adjustment and functional integrity of the instrument.
3) There is only a limited visibility of the display at high temperatures (>65 °C).

16.6 Environmental parameters

Further sensor specifications and influences can be found in the instructions for use provided for the respective sensor.

The values for accessories and spare parts may deviate from the values given here. The exact values can be found in the corresponding manual.

Polytron 8xx0	
Values in accordance with explosion protection testing	
During operation:	
Pressure	23.6 to 32.5 in. Hg (800 to 1100 hPa)
Humidity	0 to 100 % RH, non-condensing
Temperatures	
Polytron 8100 EC	-40 to +70 °C (-40 to +158 °F)
Polytron 8200 CAT	-40 to +80 °C (-40 to +176 °F)
Polytron 8310 IR	-40 to +65 °C (-40 to +149 °F)
Polytron 87x0 IR	-40 to +80 °C (-40 to +176 °F)
Values according to performance approval	
During operation:	
Pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)[1)]
Humidity	0 to 95 % RH, non-condensing
Temperatures	
Polytron 8100 EC[2)]	-40 to +65 °C (-40 to +149 °F)
Polytron 8200 CAT	-40 to +80 °C (-40 to +176 °F)
Polytron 8310 IR	-40 to +65 °C (-40 to +149 °F)
Polytron 87x0 IR	-40 to +77 °C (-40 to +170 °F)
During storage:	
Pressure	26.5 to 32.4 in. Hg (900 to 1100 hPa)
Humidity	0 to 100 % RH, non-condensing
Temperature	-20 to +65 °C (-4 to +149 °F)
Recommended storage period	5 years
Values for relay option and installations with UL approval	
During operation:	
Temperatures	
Polytron 8200 CAT	-40 to +70 °C (-40 to +158 °F)
Polytron 87x0 IR	-40 to +70 °C (-40 to +158 °F)

1) Polytron 8200 CAT: 23.6 to 35.44 in. Hg (800 to 1200 hPa)
2) See 18.3, 18.3.2 and the instructions for use provided for the EC sensor for the constraints of the maximum specification.

16.7 Tightening torques

Instrument threads	
Enclosure cover	≥44 in-lbs / ≥5 Nm
Sensor	min. 266 in-lbs / min. 30 Nm
Blind plugs	min. 266 in-lbs / min. 30 Nm
Ports (for conduits or cable glands)	min. 443 in-lbs / min. 50 Nm
Docking Station blind plugs	62 in-lbs / 7 Nm
Docking Station cable glands	70 in-lbs / 8 Nm
Remote EC sensing head	177 in-lbs ±9 in-lbs / 20 Nm ±1 Nm
Field wiring terminals	
Power supply, signals and relays	4.4 - 7.0 in-lbs / 0.5 - 0.8 Nm
Grounding screw	10.6 in-lbs / 1.2 Nm

17 Accessories and spare parts

This chapter provides an overview of the components that are covered by the BVS 13 ATEX G 001 X- and PFG 14 G 001 X-type examination. Further parts are listed in the spare parts list or can be requested from DrägerService.

17.1 Polytron® 8xx0

Description	Part number
IRDA to PC interface	4544197
Magnetic wand with key chain	4544101
Dräger PolySoft, configuration software	8328600 / 8328639
EXd blind plug, stainless steel, 2 pcs.	4544897
Exd blind plug, galvanic steel, 3 pcs.	8344041

17.1.1 Docking station

Description	Part number
Docking Station Power Only Version	8344027
Docking Station Power, Relay (includes 2 cable glands)	8344028
Docking Station Fieldbus	8344029
Cable Gland Docking Station	6812868
Blind plug Docking Station	8344042

17.2 Polytron® 8100 EC

Description	Part number
Polytron 8100 4-20/HART printed circuit board	4544781
Polytron 8100 4-20/HART printed circuit board, relay	4544782
Bayonet ring	4544366
Bayonet ring for Dräger SensorAlive	6800132
Duct adapter for remote EC sensing head[1)]	8317617
Rod attachment for remote EC sensing head	4544213
Sensor-test dongle	8317619
Diagnostic dongle	8317860
Calibration adapter	6810536

1) May influence the measurement, e.g. extend the response time. Not covered by BVS 13 ATEX G 001 X and PFG 14 G 001 X.

17.3 Polytron® 8200 CAT

Description	Part number
Polytron 8200 PCB unit 4-20/HART	4544788
Polytron 8200 PCB unit 4-20/HART relay	4544789
PE calibration adapter, Europe	6806978
DQ remote calibration adapter	6812480
LC remote calibration adapter[1)]	6812482
21.50X14.50 membranes spare part set, 2 pcs.	8326840
Dust filters for DrägerSensor DQ, 10 pcs.	6810537
DQ process adapter	6812470
LC process adapter[1)]	6812465
Splash guard	6812510

1) not covered by performance approval.

17.3.1 CAT sensors

Description	Part number
DrägerSensor DQ NPT	6814150
DrägerSensor DQ NPT S[1)]	3701800
DrägerSensor LC NPT	6810675
Sensing head, Polytron SE Ex PR M1 DQ	6812711
Sensing head, Polytron SE Ex PR M2 DQ	6812710
Sensing head, Polytron SE Ex HT M DQ	6812720
DQ NPT aluminum remote sensor	3706933
DQ NPT steel remote sensor	3706934

1) The DrägerSensor DQ NPT S can also be used instead of the DrägerSensor DQ NPT.

17.4 Polytron® 8310 IR

Description	Part Number
Splash Guard	6810796
Process Adapter	6811330
Protection Labyrinth	6811135
Calibration adapter	6810859
PCB unit Polytron 8310 4-20/HART	4544788
PCB unit Polytron 8310 4-20/HART Relay	4544789

17.4.1 DSIR sensors

Description	Part number
DrägerSensor IR NPT	6811901
Sensing head, DrägerSensor IR complete set e	6811165
Sensing head, DrägerSensor IR complete set e2	6811265

17.5 Polytron® 87x0 IR

Description	Part number
Polytron 87x0 PCB unit 4-20/HART[1)]	4544795
Polytron 87x0 PCB unit 4-20/HART relay[1)]	4544796
PIR 7000 attachment set	6811648
PIR 7000 process cuvette, stainless steel	6811415
PIR 7000 SGR process cuvette	6813219
PIR 7000 / 7200 status indicator	6811625 / 6811920
PIR 7000 / 7200 splash guard	6811911 / 6811912
PIR 7000 / 7200 flowcell	6811490 / 6811910

Description	Part number
PIR 7000 / 7200 remote test adapter	6811630 / 6811930
PIR 7000 insect protection	6811609
PIR 7000 hydrophobic filter	6811890
PIR 7000 calibration adapter	6811610
PIR 7000 / 7200 POM process adapter (polyoxymethylene)	6811915
PIR 7000 assembly set	6811648
Terminal box Ex e	6811989
Terminal box Ex d	4520561
Magnetic wand	4544101

1) Check firmware compatibility of sensor and gas detector. Changing the PCB unit may require a firmware update. Contact Dräger for support.

17.5.1 Sensors

Check firmware compatibility of sensor and gas detector. Changing the sensor may require a firmware update. Contact Dräger for support.

Description	Part number
Dräger PIR 7000 type 334 (NPT)	6811822
Dräger PIR 7000 type 340 (NPT)	6811832
Dräger PIR 7000 334 (M25) complete set	6811825
Dräger PIR 7000 340 (M25) complete set	6811819
Dräger PIR 7200 (NPT)	6811572
Dräger PIR 7200 (M25) HART complete set	6812290

18 Performance Approvals

In combination with certain sensors, Polytron 8xx0 is performance approved based on the following standards:

– EU and Type Examination Certificates in line with EN 60079-29-1, EN 50104, EN 45544 and DIN IEC 62990-1. Issued by DEKRA Testing and Certification GmbH, Handwerkstr. 15, D-70565 Stuttgart.
– FM performance approval in line with ANSI/ISA-92.00.01 FM6340

For further information on sensor specifications and restrictions (e.g., measuring principles, performance, cross-sensitivity), refer to the instructions for use for the relevant sensor.

18.1 EU-TYPE Examination Certificate, BVS 13 ATEX G 001 X

Measurement of flammable gases and vapors mixed with air.

– Polytron 8200 CAT with DrägerSensor DQ

  Special conditions:

  - When streaming with air containing measured gas, measured values may increase by up to 32 %.
  - When operating with the DQ remote calibration adapter, measured values may increase by up to 70 %.

– Polytron 8200 CAT with DrägerSensor LC
  Approved with 10 %LEL full scale deflection.
  A connection to a controller with approved measuring function (e.g., REGARD® 7000) is required. Latching alarms for over range measured values must be activated at the controller.
– Polytron 8310 IR with DrägerSensor IR
– Polytron 8700 IR with PIR 7000 type 334 and 340

Measurement of oxygen (inertization)

– Polytron 8100 EC with DrägerSensor O_2 (6809720) and DrägerSensor O_2 LS (6809630) within a measuring range of 0-5...25 Vol% O_2.

Approved are:

– 4 to 20 mA interface
– Relay module
– Remote sensor
– HART
– Factory default full scale deflections

Not approved are the fieldbus interface and the data logger.

18.2 Type Examination Certificate, PFG 14 G 001 X

Measurement of oxygen (deficiency and excess oxygen)

– Polytron 8100 EC with DrägerSensor O_2 (6809720) and DrägerSensor O_2 LS (6809630) within a measuring range of 0–25 Vol% O_2.

Measurement of hydrogen sulfide

– Polytron 8100 EC with Dräger SensorAlive (6809630) within the following measuring ranges:
  - 0.5 - 100 ppm (Type HM)
  - 0 - 100 ppm (Type SM)

Measurement of carbon dioxide

– Polytron 8720 IR with PIR 7200 within the following measuring ranges:
  - 1 Vol% and 10 Vol% – EN 45544-2
  - 2000 ppm, 1 Vol% and 10 Vol% – EN 45544-3

Approved are:

– 4 to 20 mA interface
– Relay module
– Remote sensor

Not approved are:
- Fieldbus interface
- Data logger
- Only Polytron 8100 EC with Dräger SensorAlive: Self-test functionality when using a gas generator

18.3 DrägerSensor O_2, O_2LS and Dräger SensorAlive certified operating conditions

Cross-sensitivities

There are no known cross-sensitivities against interfering gases with a concentration of up to 100 ppm. Further information can be requested from Dräger.

18.3.1 DrägerSensor O_2 (6809720)

The DrägerSensor O_2 (6809720) is an electrochemical two-electrode sensor for measuring oxygen (O_2) in ambient air.

Environmental parameters	
Pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)
Humidity	10 to 95 % RH, non-condensing
Temperature	Application of EN 50104 limits the temperature range to 0 °C to +55 °C.

Storage	
Pressure	no influence
Humidity	30 to 70 % RH, non-condensing (only relevant if sensor packaging is open)
Temperature	0 to +40 °C
Time	Storage of sensors is not intended. Sensors should be used immediately. Remaining life span = expected life span - storage time

Influence of environmental parameters		
	Zero-point	**Sensitivity[1)]**
Temperature[2)3)]		
0 to 55 °C	≤ 0.3 Vol% O_2	≤ 0.9 Vol% O_2
Pressure	< ± 0.2 Vol% O_2	Relative deviation from the reading at 1013 hPa: < 10 % of the measured value / 100 hPa
Humidity	No influence	Relative deviation from the reading at 50 % rel. humidity: < 1 % of the measured value

1) Relative deviation of the display reading is caused by atmospheric pressure fluctuations.
2) At temperatures below -5 °C, the measurement deviation is higher than specified in EN 50104.
3) For operating temperatures outside -5 °C to 40 °C, an adjustment at operating temperature must be performed.

Response time[1)]		
	$t_{0...20}$	$t_{0...90}$
0-5 Vol% O_2	≤ 15 seconds[2)]	≤ 33 seconds
0-25 Vol% O_2	≤ 10 seconds	≤ 26 seconds

1) At temperatures below -5 °C, the response time may increase.
2) Response time is higher than the permissible limit of EN 50104.

Stabilization time: 5 x $t_{0...90}$

Measuring range

0-5 Vol% O_2 to 0-100 Vol% O_2

Default value: 25 Vol% O_2 Minimum reading: -1.25 Vol% O_2

Sensor warm-up time

Operation: <20 minutes / Adjustment: ≤ 2 hours

18.3.2 DrägerSensor O_2LS (6809630)

The DrägerSensor O_2LS (6809630) is an electrochemical three-electrode sensor for measuring oxygen (O_2) in ambient air.

Environmental parameters	
Pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)
Humidity	5 to 95 % RH, non-condensing
Temperature	-40 to +60 °C short-term +65 °C

Storage	
Pressure	no influence
Humidity	30 to 70 % RH, non-condensing (only relevant if sensor packaging is open)
Temperature	0 to +40 °C
Time	Storage of sensors is not intended. Sensors should be used immediately. Remaining life span = expected life span - storage time

Influence of environmental parameters	Zero-point	Sensitivity
Temperature		
-20 to 40 °C	≤ 0.1 Vol% O_2	≤ 0.1 Vol% O_2
-40 to 65 °C	≤ 0.2 Vol% O_2	≤ 0.5 Vol% O_2
Pressure	< ± 0.1 Vol% O_2	≤ 0.8 Vol% O_2
Humidity	≤ 0.1 Vol% O_2	≤ 0.9 Vol% O_2

ℹ When measuring oxygen in the presence of helium, helium compensation can be used. The option of helium compensation is no certified measuring function according to EN 50104.

⚠ CAUTION

Sensor failure

The exposure of the sensor to higher concentrations of unsaturated hydrocarbons, alcohols, or hydrogen over an extended period of time (dose approx. 100,000 ppm x hours) can cause the instrument to fail.

► Ensure that the sensor is not exposed to such concentrations over an extended period of time.

Response time	$t_{0...20}$	$t_{0...90}$
0-5 Vol% O_2	≤ 14 seconds[1)]	≤ 45 seconds
0-25 Vol% O_2	≤ 10 seconds	≤ 27 seconds

1) Response time is higher than the permissible limit of EN 50104.

Stabilization time: 5 x $t_{0...90}$

Measuring range

0-5...25 Vol% O_2, 0-25 Vol% O_2

Default value: 25 Vol% O_2

Minimum reading: -1.25 Vol% O_2

Sensor warm-up time

Operation: ≤ 20 minutes / Adjustment: ≤ 6 hours

18.3.3 Dräger SensorAlive (6814014)

The Dräger SensorAlive (6814014) is an electrochemical diffusion sensor with an integrated gas generator for measuring hydrogen sulfide (H_2S) in ambient air.

Environmental parameters	
Pressure	20.7 to 35.5 in. Hg (700 to 1200 hPa)
Humidity	5 to 95 % RH, non-condensing
Temperature	-40 to +65 °C
Maximum flow speed of the ambient air	6 m/s

Storage	
Pressure	no influence
Humidity	30 to 70 % RH, non-condensing (only relevant if sensor packaging is open)
Temperature	0 to +40 °C
Time	Storage of sensors is not intended. Sensors should be used immediately. Remaining life span = expected life span - storage time

Influence of environmental parameters	Relative deviation from the reading
Pressure	At 1000 hPa: ≤ 0.15 ppm
Humidity (at +40 °C)	at 0 and 95 %RH: ≤ 0.29 ppm
Temperature	at 20 °C: ≤ 0.44 ppm

ℹ Interference gases (e.g., NH_3) can impair the function of the sensor.

Response times in diffusion operation	
t(50)	≤ 20 s
t(90)	≤ 55 s

Decay times in diffusion operation	
t(50)	≤ 20 s
t(10)	≤ 55 s

18.4 FM performance approval for DrägerSensor H_2S and H_2S LC

The DrägerSensor H_2S and H_2S LC are electrochemical diffusion sensors measuring hydrogen sulfide (H_2S) in ambient air.

DrägerSensor H_2S (6810435)	
Examination Type P8100	ETR 0400, 0401, 0500, 0501
Interface[1)]	4-20mA, relay
Environmental parameters	
Humidity	5 to 95%RH, non-condensing
Temperature	-40/+65 °C (-40/149 °F)
Storage temperature	0/+40°C (32/104°F)
Enclosure protection [2)]	IP 65/66/67
Range	0-100 ppm
Accuracy (whichever is greater)	measurement uncertainly (of meas. value) ≤ ±3 % or minimum ≤ ±0.5 ppm
Accessory	
Dust filter	6809595
Adapter kit	6810536
Standard	ANSI/ISA-92.00.01FM6340

1) HART communication must not be used for safety-relevant communication.
2) After submersion and jet water the sensor must be replaced.

DrägerSensor H_2S LC (6809610)	
Examination Type P8100	ETR 0400, 0401, 0500, 0501
Interface[1)]	4-20mA, relay
Environmental parameters	
Humidity	5 to 95%RH, non-condensing
Temperature	-20/+65 °C (-4/149 °F)
Storage temperature	0/+40°C (32/104°F)
Enclosure protection [2)]	IP 65/66/67
Range	0-100 ppm
Accuracy (whichever is greater)	measurement uncertainly (of meas.value) ≤ ±3 % or minimum ≤ ±0.5 ppm in the range >50 ppm, ±10 % or ±3 ppm
Accessory	
Dust filter	6809595
Adapter kit	6810536
Standard	ANSI/ISA-92.00.01FM6340

1) HART communication must not be used for safety-relevant communication.
2) After submersion and jet water the sensor must be replaced.

HYDROGEN ULTRASONIC LEAK DETECTORS

POS.	TAG NUMBER	SERVICE
1	950-GDZ-01101	H2 GD FZ-01 FUEL CELL PK AREA
2	950-GDZ-01102	H2 GD FZ-01 FUEL CELL PK AREA
3	950-GDZ-02117	H2 GD FZ-02 H2 STORAGE VESSELS AREA
4	950-GDZ-02118	H2 GD FZ-02 H2 STORAGE VESSELS AREA
5	950-GKDZ-02119	H2 GD FZ-02 H2 STORAGE VESSELS AREA
6	950-GDZ-02120	H2 GD FZ-02 H2 STORAGE VESSELS AREA
7	950-GDZ-03101	H2 GD FZ-03 ELECTROLYZER PK AREA
8	950-GDZ-03102	H2 GD FZ-03 ELECTROLYZER PK AREA
9	950-GDZ-03103	H2 GD FZ-03 ELECTROLYZER PK AREA

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Dräger Polytron® 8900 UGLD

Firmware version ≥ 4.0.x

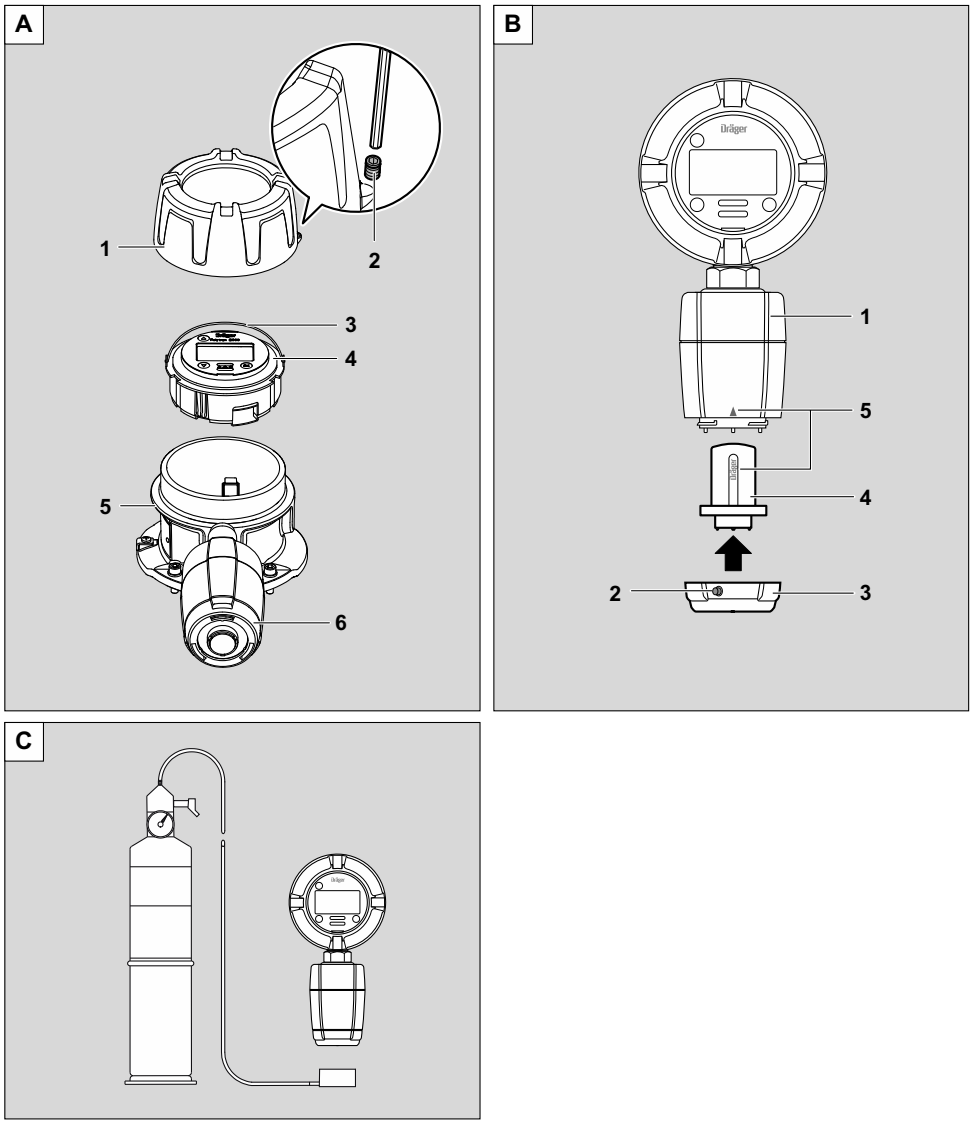


Instructions for use

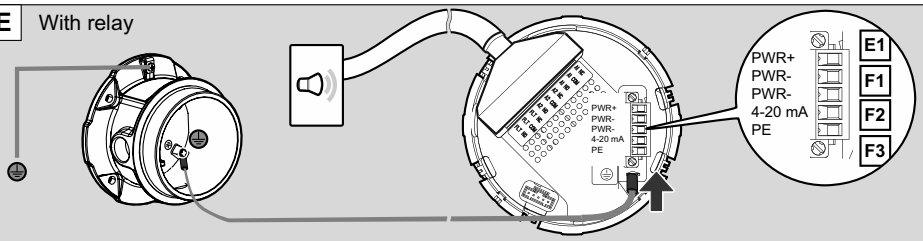
enUS · de · fr · es · ptBR

⚠ WARNING
To properly use this product, read and comply with these instructions for use.

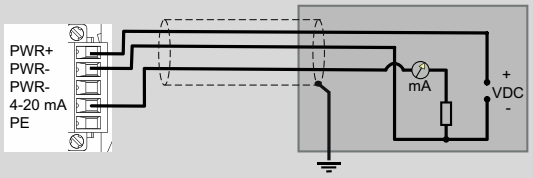
enUS Instructions for use 5
de Gebrauchsanweisung 26
fr Notice d'utilisation 49
es Instrucciones de uso 72
ptBR Instruções de uso 96


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Dräger
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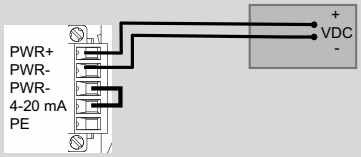
E With relay



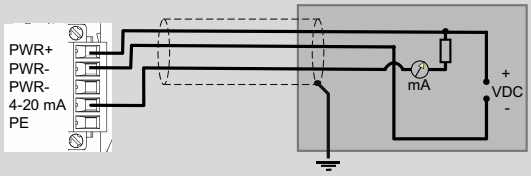
F1 4-20 mA / HART (Current source)



E1 Stand-alone, relay only



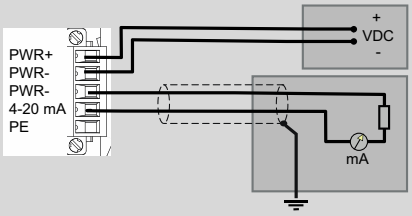
F2 4-20 mA / HART (Current sink)



Cable specifications

Power supply and signals: 24 - 12 AWG / 0.2 - 2.5 mm²
Relays: 20 - 12 AWG / 0.5 - 2.5 mm²

F3 4-20 mA / HART (separate power supply)



G

Dräger **Polytron Xxx0**
XTR 0XXX
Dräger Safety 23560 Lübeck, Germany
CE Ex 0158 II 2G II 2D
Part No: XXXXXXX
Serial No: **XXXX-XXXX**
Data Matrix Code

Gas Detector for Use in Hazardous Locations as to Fire, Electrical Shock and Explosion Hazards only
Class I, Div 1, Groups A,B,C,D | UL only: Class II, Div 1, Groups E,F,G
Class I, Zone 1, Group IIC | T-Code T6/T4 | Type 4X | C22.2 No. 152
Supply: 10 ...30V⎓, 0.08 ...0.15mA | Relays: 5A, 30V⎓ or 230V ~
Ex db IIC T6/T4 Gb
Ex tb IIIC T80/130°C Db
-40°C ≤ Ta ≤ +40/+80°C
PTB 11 ATEX 1005X
IECEx PTB 11.0005X | BVS 15 ATEX G 001X
IP6X| P ≤ 5W | UL only: -40°C ≤ Ta ≤ +70°C

WARNING: Do not open when energized-risk of Ignition of Harzadous Atmospheres.
AVERTISSEMENT: Lire attentivement le manuel avant utilisation.

WARNING: To reduce the risk of Ignition of Hazardous Atmospheres, the conduit must be sealed within 18" of the enclosure.
WARNING: Read Manual before operating.

NOTE

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1 Safety-related information

These instructions for use are available in further languages and can be downloaded in electronic form via the database for technical documentation (www.draeger.com/ifu) or a printed version can be ordered free of charge via Dräger.

1.1 Safety statements

- Before using this product, carefully read these Instructions for Use and those of the associated products.
- Strictly follow the instruction for use. The user must fully understand and strictly observe the instructions. Use the product only for the purposes and under the conditions specified in this document.
- Comply with all local and national laws, rules, and regulations associated with this product.
- Only trained and competent personnel are permitted to inspect, repair and service the product as detailed in these instructions for use. Further maintenance work that is not detailed in these instructions for use must only be carried out by Dräger or personnel qualified by Dräger.
- Dräger recommends a Dräger service contract for all maintenance activities and that all repairs are carried out by Dräger.
- Use only genuine Dräger spare parts and accessories. Otherwise the proper functioning of the product may be impaired.
- Do not dispose of the Instructions for Use. Ensure that they are retained and appropriately used by the product user.
- Only trained and competent users are permitted to use this product.
- Maintenance must be performed as described, see 9 Maintenance.
- Only operate the product within the framework of a risk-based alarm signaling concept.
- Before connecting this instrument to electrical devices not mentioned in the IFU consult Dräger
- Notify Dräger in the event of any component fault or failure.
- The instruments or components may not be modified in any manner.
- The use of faulty or incomplete parts is forbidden.
- The appropriate regulations must be observed at all times when carrying out repairs on these instruments or components.
- **WARNING**: Risk of ignition of flammable or explosive atmospheres! Substitution of components may impair Intrinsic Safety.
- The flameproof / explosion proof joints are not in accordance with the relevant minimum or maximum values of EN/IEC 60079-1. The joints are not intended to be re-worked by the user.

1.2 Operating area and conditions

- For SIL applications observe the Polytron® 8xx0 Safety Manual.
- Observe the specifications and restrictions in the Instructions for Use and/ or data sheets for the sensors.
- **CAUTION** Risk of ignition of flammable or explosive atmospheres! Not tested in oxygen enriched atmospheres (>21% O_2).
- **Using the product in areas subject to explosion hazards:** Instruments or components for use in explosion-hazard areas which have been tested and approved according to national, European or international Explosion Protection Regulations may only be used under the conditions specified in the approval and with consideration of the relevant legal regulations.
- **Hazardous areas classified by divisions:** The device is intended to be used in hazardous areas Class I, Div. 1 or Div. 2, where gases of groups A, B, C, D and temperature class T4 may be present. The device must not be operated within ambient temperatures outside the temperature range marked on the device.
- **Hazardous areas classified by zones:**
  The device is intended to be used in hazardous areas classified Zone 1 or Zone 2 where gases of explosion groups IIA, IIB or IIC and temperature class T4 may be present. The device must not be operated within ambient temperatures outside the temperature range marked on the device.

1.3 Mechanical installation

- Strict compliance must be given to the local, state, national codes and regulations that govern the installation of gas monitoring equipment.
- The future use of accessories and maintenance equipment must be kept in mind.
- The instrument must not be exposed to radiant heat that will cause the temperature to rise beyond the limits stated in 15.5 Environmental parameters. The use of a reflecting shield is recommended.
- The instrument may be equipped with a dust plug at the conduit entry. This plug is not explosion proof nor meant to be watertight, and must be removed before connecting the instrument to a sealed conduit or installation of a flameproof cable gland.
- Unused openings must be closed with a plug. For correct tightening torques of conduit hubs, cable glands, plugs and sensor see 15.6 Tightening torque.
- For non-conduit installations, an approved cable gland must be used (e.g. Hawke A501/421/A/¾” NPT or equivalent)
- **WARNING:** Only for conduit installations: To reduce the risk of Ignition of Hazardous Atmospheres, the conduit must be sealed within 45 cm (18") of the enclosure.

1.4 Electrical installation

- Strict compliance must be given to the electrical codes that govern the routing and connection of electrical power and signal cables to gas monitoring equipment.
- The instrument must have between 10 to 30 VDC at the instrument.
- Ferrules must be used.

– The conductors for the power supply must have an adequately low resistance to ensure the correct supply voltage at the instrument.
– Wire insulation must be stripped by 5 to 7mm.
– Secondary circuit intended to be supplied from an isolating source (N/A for relay circuits).
– When installed at locations exceeding ambient temperatures of 55 °C, use only appropriate wiring, specified for at least 25 °C above the maximum ambient temperature.

Analog interface

– To ensure proper operation of the instrument, the impedance of the 4 to 20 mA signal loop must not exceed 300 Ohms. With values above 300 Ohms, monitoring of the supply voltage cannot be guaranteed. Depending on the operating voltage and according to the application (e. g. HART® operation), certain minimum impedances must be observed (see "Signal transmission to control unit", page 24).

1.5 Commissioning

– Ensure wiring for relays and connections for sensor are made before applying power.
– Before leaving the instrument for normal operation, check the configuration and calibration for the proper settings.

1.6 During operation

– After modifying parameters with the PolySoft PC software or another software, verify all parameters by downloading from the instrument or by checking them on the Polytron 8xx0.
– IP ratings do not imply that the equipment detects leaks during and after exposure to those conditions. In case of dust deposits and submersion/jet water, check the calibration and the proper functioning of the device.

Risk of ignition of flammable or explosive atmospheres!

– **CAUTION:** High off scale readings may indicate an explosive concentration.
(Only for instruments measuring combustible atmospheres.)
– **WARNING:** Do not open when energized

1.6.1 Maintenance

– The maintenance intervals must be established for each individual installation. Depending on safety considerations and application specific conditions the instrument is used in, these might need to be shortened.
– Refer to the maintenance section in the transmitter instructions for use.

2 Conventions in this document

2.1 Meaning of the warnings

The following warnings are used in this document to alert the user to potential dangers. A definition of the meaning of each warning is as follows:

Alert icon	Signal word	Warning classification
⚠	WARNING	Indicates a potentially hazardous situation. If not avoided, it could result in death or serious injury.
⚠	CAUTION	Indicates a potentially hazardous situation. If not avoided, it could result in physical injury. It may also be used to alert against unsafe practices.
	NOTICE	Indicates a potentially hazardous situation. If not avoided, it could result in damage to the product or environment.

2.2 Typographical conventions

Text Texts in bold type identifies labels on the device and screen texts.

► This triangle indicates the possibilities for avoiding the hazard in warnings.

> The greater-than sign indicates a navigation path in a menu.

ℹ This symbol indicates information that facilitates the use of the product.

2.3 Trademarks

Trademark	Trademark owner
Polytron®	Dräger
DrägerSensor®	Dräger
HART®	HART Communication Foundation

The following webpage lists the countries in which Dräger's trademarks are registered: www.draeger.com/trademarks.

3 Description

3.1 Product overview

Refer to the figures on the fold-out page

A 1	Enclosure lid
A 2	Set screw (2 mm Allen screw)
A 3	Handle
A 4	PCB unit
A 5	Enclosure bottom
A 6	Port for sensor
B	Sensor replacement
C	Calibration set-up

3.2 Feature description

Polytron 8000 instruments are housed in a rugged stainless steel enclosure for indoor and outdoor applications.

The flameproof / explosion proof enclosure provides three ¾" NPT openings, which can be used for field wiring or direct attachment of a sensor.

Polytron 8900 UGLD consists of an ultrasonic sensor (remote or integrated) and the transmitter. The ultrasonic sensor detects the ultrasonic sound level of the surrounding areas. The detected ultrasound is then indicated as dB (re 20 µPa) or percentage of full scale measuring range on the display and the analog interface.

Level of ultrasound, status messages, and menu choices are displayed on a backlit graphic LC-display and 3 colored LEDs.

Navigation through the menu is done by taping a magnetic wand on the glass at the appropriate indicator. The instrument can be configured, calibrated and maintained non-intrusively without declassifying the area.

The instrument can be operated as current source or sink.

With the optional remote sensing head, the ultrasonic sensor can be mounted at a distance of up to 30 m from the transmitter.

3.3 Intended use

Polytron 8900 UGLD is an explosion proof instrument for continuous ultrasonic gas leak detection (Ultrasonic Gas Leak Detection = UGLD).

Dräger Polytron 8900 UGLD can be used to build large and complex monitoring systems if sufficient power supply and a sufficient number of HART/4-20 mA input channels are available in a suitable Programmable Logic Controller (PLC), e.g. Dräger REGARD 7000.

The instrument can be connected through a sealed conduit or approved cable gland to a Dräger monitoring system or a PLC.

The instrument is designed to be installed in permanent locations and is approved for use in hazardous, classified areas.

A mapping survey of the installation site should be conducted to determine environmental conditions. With the obtained data the instrument is commissioned.

3.4 Ultrasonic gas leak detection (UGLD)

Pressurized gas leaks (minimum pressure 2 bar / 29 psi) generate both acoustic and ultrasound. Airborne ultrasound has a frequency range of approx. 16 kHz to >100 kHz.

Dräger Polytron 8900 UGLD frequency range extends from 16 kHz to >80 kHz.

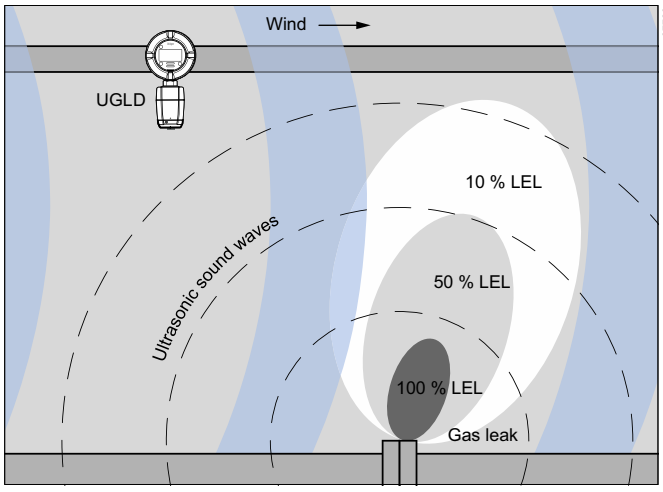
There are three primary factors that influence the intensity of the ultrasound signal:

– Physical size of the leak (mass flow)
– Pressure drop between the pressurized vessel or pipeline and the surrounding atmosphere.
– Properties of leaking gas

  Gases with lower molecular mass (or higher speed of sound) appear louder.

Ultrasound travels at the speed of sound and is only slightly influenced by wind or strong air currents. Thus, the instrument detects pressurized gas leaks that point detectors could miss due to environmental conditions. The position of the gas leak relative to the instrument does not significantly affect the ability of the system to detect leaks.

Size and ultrasound distribution of a leak



3.4.1 Gas leaks

Point detectors detect gas concentrations (e.g. ppm, %LEL). UGLD transmitters indicate a change of sound in a known environment. This is likely to be the onset of a hazard caused by a leak.

Ultrasound emitted by gas leaks is proportional to the leak rate. Leak rate is also called mass flow rate and describes the amount of gas released over time [kg/s].

3.4.2 Background noise

Background noise is recurrent noise from running machinery or other sound sources that emit ultrasound.

To increase the range, look for a location with as little background signal as possible (< 54 dB re 20 µPa).

3.4.3 Alarm settings

The instrument displays the ultrasonic sound level in dB.

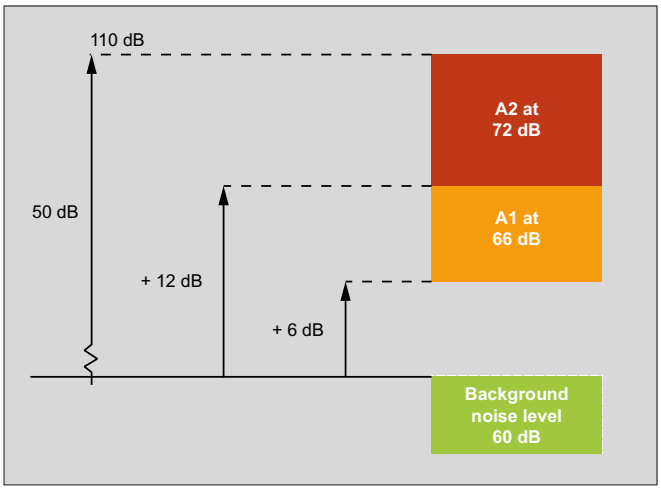
Alarm threshold

Alarm threshold should be based on the max. recurrent background noise level. Short lasting, background noise peaks may conflict with a lower required alarm threshold. For such cases, an alarm delay can be set.

Dräger recommends the following alarm thresholds.

– Alarm A1: 6 dB above max. recurrent background noise.
– Alarm A2 can be set as a second escalation stage.

In the example, A1 is triggered at 66 dB and A2 is triggered at 72 dB.



Alarm delay and analyzed time

If there is a possibility of short background noise peaks, it is reasonable to install an alarm delay. An alarm delay helps to avoid false alarms by ignoring spurious sound peaks not generated by a leak. Ultrasound peaks not created by a leak can arise e.g. by the fizz of detaching compressed air hoses, active pressure release valves, the jingling of tools falling to the ground or similar incidents. These sounds shall not trigger an alarm even if the detected sound levels breaches the alarm thresholds for a short time. Real leaks are characterized by generating a continuous signal. An alarm shall be triggered only if the signal is breaching the alarm threshold for a defined alarm delay time (***Delay***) within a time frame (***Analyzed time***) set to be analyzed.

Concept of the parameter '*Delay*' in the menu

All measurement data points (one per second) within 60 seconds are sorted by value. The parameter ***Delay*** (say e.g. 20 seconds) will provide the 20th largest value measured in this time frame. Here, it does not matter whether the larger data are received in one sequence or at different moments within the 60 seconds.

Concept of the parameter '*Analyzed time*' in the menu

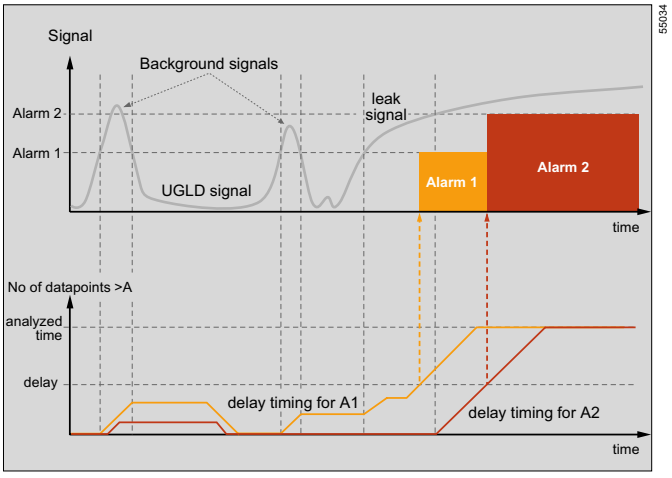
The parameter ***Analyzed time*** defines the number of measurement data points (length in seconds) that are used to determine the measurement value given by the parameter ***Delay***. The default value of the analyzed time is 60 seconds. This parameter can be changed by the DrägerService.

Examples

A If a normal delay is wanted, like: within the delay time the signal shall not drop below the alarm threshold and after the delay time the alarm shall be triggered. Here, the parameters ***Delay*** and ***Analyzed time*** shall be set to the same number.
Possible disadvantage: In usual industrial setups the ultrasonic signal by a leak can vary by e.g. shadowing effects (passing vehicles, changing environments, moving pressure vessels, etc.). Once the signal drops below the alarm threshold, the delay time starts over again. It is recommended to allow a few data points to drop below alarm level without losing too much time in detecting the leak. If a delay of 20 seconds within an analyzed time of 60 seconds is used, the alarm is triggered as soon as 20 measurement data points within 60 seconds are higher than the alarm threshold. If there is no repeated or persistent background signal to be expected, it reacts exactly like a normal delay. This may be a valid setup.

B If there is a recurring background signal (e.g. the UGLD is located near a large metal punch or release valve with regular gas deflation events) that extends repeatedly beyond the alarm level, the delay shall be set to a longer time, preventing to trigger an unwanted alarm by adding up background noise events.
Possible disadvantage: the delay may be too long for a quick detection of a leak and a safe reaction to it. In order to react to a leak quickly, the parameter ***Analyzed time*** shall not be chosen to be much larger than the delay. Thus, the alarm is triggered once the moments between the background signals that are usually below the alarm threshold are filled by the sound of the leak.

These examples show the concept of the parameters ***Delay*** and ***Analyzed time***. The alarm delay and analyzed time, which define the time where no alarm is triggered, should be optimized for each installation. Dräger recommends alarm delays of 10-30 seconds depending on the duration of spurious ultrasound events. Alarm delays of up to 60 seconds can be set by the customer. If longer delays are needed, the DrägerService can install delays of up to 240 seconds.



3.4.4 Placement / detection coverage

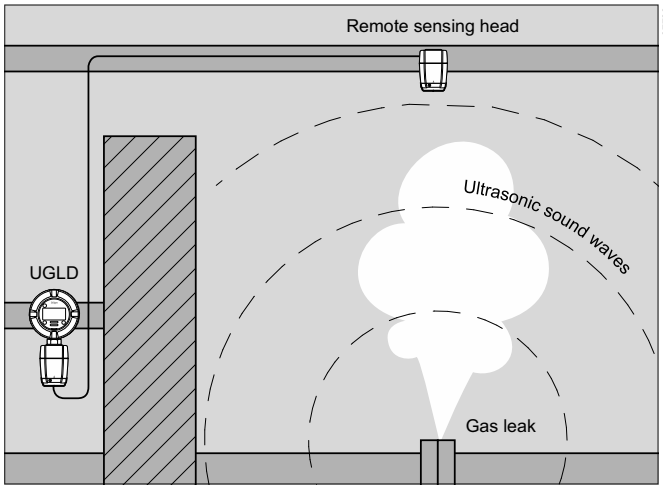
Instruments are normally installed at heights of 3-5 m (approx. 10- 16 ft.) above possible gas leak locations.

The recommendation that the instruments have to be installed above possible gas leaks may result in installations awkward to reach for maintenance and configuration.

The optional remote sensing head that can be installed remotely from the transmitter allows the display to be easily accessible for configuration. Remote sensor cables are available in lengths of 5 m, 15 m, and 30 m (approx. 15 ft., 50 ft. and 100 ft). The remote sensing head can also be used to avoid interferences such as vibrations or precipitation.

Placement of the ultrasonic sensor should not be obstructed by solid objects like walls or pipework. Such obstacles might deflect or absorb the ultrasound on its way to the instrument.

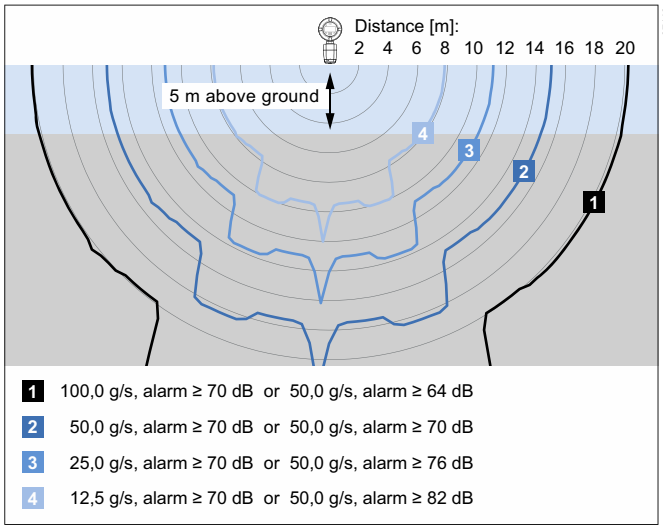
To optimize installation the sensor surface can be pointed at different directions.



Sensor orientation and coverage

The instrument detects ultrasound within a 360° coverage. However, coverage is not spherical since the sensor is more sensitive to the front than off to the side or back. Therefore, coverage range is affected by the sensor's orientation towards possible leaks.

Detection range for different leaks sizes of CH_4 at different alarm thresholds.



Limits to sensor orientation

The sensor surface should be facing potential gas leak sources. In most cases, the orientation of the sensor will be best facing downwards. In any case, objects (e.g. raindrops) falling onto the sensor surface generating a signal due to physical impact should be prevented.

3.4.5 Mapping survey

Mapping surveys should be conducted before an instrument is installed. A mapping survey is conducted by using a field survey device to record background ultrasound noise. Background noise readings serve as the basis for defining alarm set points. A background noise level must be determined for each installation location so that an appropriate alarm threshold can be defined for that location.

A mapping survey can be requested through the DrägerService organization.

The following environmental conditions need to be considered, because they can affect the measurement radius of the sensor.

– Typical temperature and humidity range
  UGLD range is higher with cold, dry air and lower with warm, humid air
– Typical and maximum background noise
  A field survey device may be used to log background noise and suggest suitable delay times.

There are two initial situations for a mapping survey.

– Green field
  The site to be mapped does not yet exist. During the planning stage, possible installation locations are determined based on estimated background levels.
– Brown field
  The site to be secured does already exist and is in operation. Measurements of typical and maximum background levels may be performed on site.

3.5 Interfaces

- 4 to 20 mA analog (per NAMUR recommendation NE43)
- Digital HART® output signal
- Relays with alarm delay functionality[1)]

3.6 Approvals

The approvals and the declaration of conformity can be found in the document "Notes on Approval" (order no. 4544300).

3.6.1 ATEX

See approval label. There is also a printout of the approval label inside the shipping box of the instrument.

3.6.2 Marking

The marking is reproduced on a separate piece of paper shipped with the instrument.

Serial Number key: The third letter of the serial number specifies the manufacturing year: M = 2019, N = 2020, P = 2021, R = 2022, S = 2023, T = 2024, U = 2025, W = 2026, X = 2027, Y = 2028, Z = 2029, etc. (Letters G, I, O, Q are omitted)

Example: Serial Number ARMB-0001: the third letter is M, which means that the unit was manufactured in 2019.

1) Alarm delay functionality will be available in a future firmware release.

4 Installation

Obey the safety statements mentioned in 1 Safety-related information!

4.1 Mechanical installation

The instrument can be mounted for measuring ultrasound in ambient air.

1. Use M6 (1/4") bolts with hex socket caps to mount the enclosure to one of the following options.

Option	
Mounting on a flat surface	Drilling template 4544299
Mounting on a pole	Pole mount kit (part number 4544198)

Mechanical installation impacts

Vibrations might have influence on the ultrasonic sensor measurements. Machinery and conduits might cause vibrations in the ultrasonic frequency range.
Conduits protect cable routing and are screwed into the enclosure. Conduits might transmit high-frequency vibrations into the transmitter enclosure.

To prevent vibrations, order and use the following spare parts.

- Flexible conduit cable glands
- Remote installation-kit

4.2 Electrical installation

For recommended tightening torques and admissible wire specifications see 15.2 Cable specifications.

4.2.1 Wiring tables

4-20mA / HART® interface

Pin	Mark	Function
1	PWR+	V+
2	PWR-	V-
3	PWR-	V- To be used when the instrument is not powered by the control unit (separate power supply), see figures F3 and E1 on the fold-out page.
4	4-20 mA	4 to 20 mA signal (Operation as source or sink)
5	PE	Protective earth Optional PE for relay connection. Connecting PE together with the 4-20 mA analog output may cause ground loops.

4.2.2 Figures on the fold-out page

Figure	Connecting diagram for instruments
E	With relay
F1	4-20 mA / HART (Current source)
F2	4-20 mA / HART (Current sink)
F3	4-20 mA / HART (separate power supply)

4.2.3 Preparing the electrical installation

1. Loosen set-screw (2) and unscrew lid from instrument (Figure A on the fold-out page).
2. Pull-out the PCB unit.
3. Proceed with the figure on the fold-out page corresponding to your Polytron model and signal output.

4.2.4 Connecting the 4-20mA/HART® interface

For connections to a control unit (PLC), refer to the documentation corresponding to the control unit.

1. Pull off the 5-pin connector.
2. Connect the three wires for power and signal to the appropriate terminal as indicated in the wiring table and figure.
3. Plug connector back into socket and tighten screws.
4. Close the instrument, see 4.2.6 Closing the instrument.

4.2.5 Grounding

1. Ground the enclosure of the instrument locally at the grounding lug.
2. Connect the shield of the wires only to the instrument earth ground of the controller (e g. chassis, ground busbar, etc.).

ℹ Unless special measures are taken (e. g. capacitive earthing), the shield must only be connected at one end.

4.2.6 Closing the instrument

1. Ensure the following connections are properly made:
   a. Wiring screws are tightened to the correct torque.
   b. All cable connectors are secured with screws.
   c. The sensor connector is plugged.
   d. The grounding cable coming from the enclosure is connected to the lug on the PCB unit (Figure E on the fold-out page)
2. Place PCB unit back into the enclosure.
3. Screw the lid back on, until it is seated with correct torque, and tighten set-screw.

5 Commissioning

5.1 Commissioning the instrument

1. Switch power supply on.
   ⇒ The fault relay is switched.
   ⇒ The instrument will go through a start-up sequence (LCD / LED test, software version, and initialization) and start the warm-up period.
   The maintenance signal on the 4-20 mA interface remains pending until the sensor is warmed-up.
   ⇒ The display shows that the sensor will be ready for measurement in hh:mm:ss (countdown) and the instrument transmits the maintenance signal.
   ⇒ After the countdown, the instrument goes into normal operation. The display shows the currently detected signal, UGLD (ultrasonic gas leak detection) and the units of measurement. The green LED is lit.
2. Check date and time.
3. Perform bump test.

5.2 Commissioning service

After the system is installed, it is recommended to schedule a system commissioning service through DrägerService.

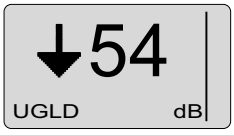
A commissioning service ensures that customer required leak rate at each potential leak location will be detected by the corresponding instrument. The instrument shall not be operated permanently with a background signal above 100 dB. However, permanent high signal above 100 dB does not harm the device.

A commissioning device simulates a real gas leak in a short burst and is proof for proper installation. A calibration of the instrument is not necessary.

6 Operation

6.1 Display

6.1.1 Measuring mode

Display example	Description
	In normal operation, the detected signal of the instrument is displayed[1].

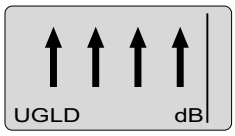
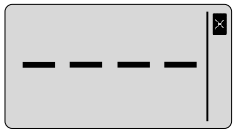
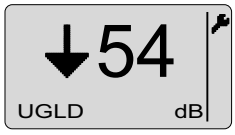
1) The value changes according to the background noise emitted by machinery or personnel. Thus a changing value does not immediately indicate a leak. To prevent misinterpretation from personnel, the display can be switched off.

6.1.2 Special states

If the instrument is in a special state, a proper measurement can no longer be guaranteed.

This is the case:

– When the ultrasonic signal exceeds the measuring range.
– When a fault occurs.
– During calibrations.
– During bump tests.
– During maintenance.

Display example	Description
	Exceeding measuring range
	Fault indication The current output of the analog interface is set to fault current and the fault relay is asserted (if relay option is installed).
	For calibration, bump test and maintenance the 🔧 symbol is displayed on the right side of the display. On the left side corresponding information is given.

6.1.3 Ending special states

Fault / warning indication

Faults and warnings are non-latching. If the fault or warning condition clears, the message disappears.

To solve warning and fault conditions, display the error code or warning message (see "Displaying Information", page 14) and begin troubleshooting (see "Troubleshooting", page 16).

6.2 LED and symbol indications

Symbol	LED	Description
	Red	Alarm Triggered
	Yellow	Fault
	Green	Power on

6.3 Definitions of indicators in the display

Symbol	Explanation
	Error message available.
	Warning message available.
	Maintenance signal is transmitted.
	Measuring range of analog interface exceeded.
	Measurement value less than range of analog interface.
	HART® operation is active. Analog interface is set to a fixed value and is not transmitting any measurement signal.

Symbol	Explanation
	The data logger is active in Roll mode.
	The data logger is active in stack mode.
SIL	SIL operation mode is activated.

6.4 User interface keys

The instrument is designed for the magnetic wand (part number 4544101: blue body, white logo) to be used with the enclosure lid in place. If the enclosure lid is not in place, the magnetic wand may activate two or more buttons at once (cross-talk).

Button	Function
▲	Upwards / Function key
▼	Downwards / Menu key
OK	Different functions depending on the type of menu

6.5 Info mode and function key

6.5.1 Activating info mode

The Info mode is used to show instrument relevant information. This does not interrupt the normal operation of the instrument.

- Tap and hold ▲ for 3 seconds in measuring mode.

6.5.2 Navigating in Info mode

Button	Function
▲	Switches to the next screen
▼M	Switches to the previous screen
OK	Ends info mode

If no key is tapped within 30 seconds, the instrument will automatically return to normal operation.

6.5.3 Using function key

Using the function key, a pre-set function can be executed. By default the faults are displayed.

- Tap and hold ▲ for 1 seconds in measuring mode.

To configure the function key, see 10.6 Configuring function key.

6.6 Menu

6.6.1 Menu navigation

Button	Function
▲	Scrolls upwards. Sets values.
▼	Scrolls downwards. Sets values.
OK	Confirms entry. Selects menus and functions.

6.6.2 Passwords

Calibration PWD	Access to information (Information menu) and calibration settings (Calibration menu) Default: _ _ _ **1**
Settings PWD	Access to all configurations and menus Default: _ _ _ **2**

To change passwords, see 10.3.

6.6.3 Entering the menu

- To directly enter the ***Information*** menu:
  a. Tap and hold ▼M for 1 second in the measuring mode.
- To enter the ***Calibration*** menu:
  a. Tap and hold ▼M for 3 seconds in measuring mode
  b. Select ***Enter password***
  c. Enter ***Calibration PWD***.
- To enter all menus:
  a. Tap and hold ▼M for 3 seconds in measuring mode
  b. Select ***Enter password***
  c. Enter ***Settings PWD***

6.6.4 Displaying Information

Select the appropriate menu item in the ***Information*** menu:

Instrument	
Warnings	Displays warning messages in plain text and the corresponding number. If there are several warning messages available, there is an indicator (e.g. 1/3 = Screen 1 of 3).
Faults	displays fault messages in plain text and the corresponding number If there are several faults, there is an indicator (e.g. 1/3 = Screen 1 of 3).
Device flag	This function displays warning and fault codes as a table. If all codes are 00 there are no warning or fault messages available.
Modules	Displays an overview of the installed hardware modules. To access detailed information select the appropriate module. ■ = installed modules □ = not installed modules
Sensor	
Last cal. date	The calibration date, unit, gas and concentration of the last calibration are displayed.
Next cal. date	Displays the next calibration due date.

Sensor temperature	The current and the highest sensor temperature is displayed.
Data logger	
Logger status	Display the data-logger status (active or non-active)
Graph	Displays the history of the past 15 minutes on a time/concentration graph.

7 Calibration

Obey the safety statements mentioned in 1 Safety-related information!

A bump test (calibration check) and adjustment of the measurement accuracy can be performed with the Dräger Polytron 8900 UGLD Calibration Kit. Only the sensor span should be calibrated if the bump test result is out of spec.

Severe ambient conditions or physical impacts to the sensor may cause sensor drifts. Sensor drifts have a negative impact on the measurement accuracy. Calibrations restore this accuracy.

Dräger ultrasonic sensors are life-time calibrated. Under normal conditions sensor drifts should not occur and a recalibration should not be necessary.

To verify the sensor is providing correct measurement data, the sensor should undergo a regular bump test utilizing the calibration kit.

ℹ In general calibration is not necessary. To check whether a calibration is necessary, first perform a bump test.

7.1 Test gas

The acoustic sound pressure emitted by a leak varies by the type of target gas, the leak size and the distance to the device.

Test gas for ultrasonic sensors is compressed air or nitrogen. The calibration adapter generates the ultrasonic sound pressure at defined flow rate.

Thus, the calibration adapter generates the needed ultrasonic signal to calibrate the system span.

7.2 Performing a bump test

Once installed, the instrument typically does not need regular calibrations. Nevertheless, the calibration can be checked and performed if a deviation outside the acceptable tolerance is detected.

A bump test checks alarm activation and sensor sensitivity without setting off the alarms.

Prerequisites:

– Background noise is < 80 dB.
– Environmental temperatures within 0 °C to 40 °C (+32 °F to +104 °F).

Calibration equipment:

– Dräger Polytron 8900 UGLD Calibration Kit (8328042)

To perform a bump test:

1. Place the calibration adapter onto the sensor up to the stop.
2. Enter the menu, see 6.6.3 Entering the menu.
3. Select ***Settings*** > ***Instrument*** > ***Bump test*** and confirm.
   ⇒ The maintenance symbol is displayed
   ⇒ The analog output is set to the maintenance signal.
4. Open calibration gas cylinder valve.
   ⇒ After a short period of stabilization time (~ 10 s), the displayed value should stabilize at the dB number (or percentage of measurement range) that is indicated on the calibration adapter.
   ⇒ If the value deviates by > 3 dB (or 6 %), perform a span calibration.
5. Press OK to return to measurement.

The calibration adapter must not be soiled. Store the calibration adapter in a clean environment. Dräger recommends storing the calibration adapter in the calibration kit case.

7.3 Preparing a calibration

A calibration needs to be performed in a controlled environment with the following prerequisites:

– Background noise is < 70 dB.
– Environmental temperatures within +15 °C to +35 °C (+59 °F to +95 °F).

Calibration equipment:

– Dräger Polytron 8900 UGLD Calibration Kit (83 28 042)

To prepare a calibration:

1. Remove the sensor from the instrument or the remote sensing head.
2. Take the sensor to a controlled environment.
3. In the controlled environment insert the sensor into a Polytron 8900 UGLD instrument.
4. Calibrate the sensor by using the calibration kit.
   - Performing a zero calibration, see 7.4 Performing a zero calibration.
   - Performing a span calibration, see 7.5 Performing a span calibration.
5. Re-insert the sensor in it‘s previous location.
6. Re-integrate the instrument into the alarming system.

7.4 Performing a zero calibration

NOTICE
Zero calibrations may cause malfunctions
Zero calibrations should not be necessary.
Zero calibrations set the zero point of the measurement range.
The zero point of the measurement is < 54 dB and should only be calibrated if background noise is < 54 dB.
► Do not calibrate the zero point at the installation site with background noise present.

If a zero calibration is still necessary, the ultrasonic sensor can be detached and calibrated with a separate Polytron 8900 UGLD instrument under workshop conditions.

Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:

– Calibration is prepared.

To perform a zero calibration:

1. Attach silencer cap to the sensor up to the stop.
2. Enter the menu, see 6.6.3 Entering the menu.
3. Select ***Calibration*** > ***Zero calibration*** and confirm.
   ⇒ The Maintenance signal is transmitted by the analog interface, no alarm or fault relays are switched and the symbol is displayed.
   ⇒ The message ***Apply zero gas*** is displayed.
4. Ignore the message ***Apply zero gas***, select ***Next*** and confirm.
   ⇒ The current value is displayed.
5. Once the displayed value is 54 dB, perform calibration.
   a. Select ***calibrate*** and confirm.
      ⇒ The message ***please wait...*** is displayed.
      ⇒ The new zero value is displayed.
   b. Select ***Next*** and confirm.
6. Select ***Next*** and confirm.
   ⇒ The instrument returns to the calibration menu.
7. Detach the silencer cap.

The silencer cap must not be soiled. Store the silencer cap in a clean environment. Dräger recommends storing the silencer cap in the calibration kit case.

7.5 Performing a span calibration

Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:

– Calibration is prepared.

Refer to figure C on the fold-out page.

To perform a span calibration:

1. Check the tubing for holes. The tubing must be leak-proof.
2. Attach the pressure regulator to the compressed air (or nitrogen) cylinder.
3. Fit calibration adapter to the sensor up to the stop and orientate the pipe parallel to the mark on the sensing head housing (figure B 5 on fold-out page).
4. Make sure the gas escapes the calibration adapter freely within 25 cm (10 inch) from the calibration adapter.
5. Connect the tubing to the barbed fitting.
6. Enter the menu, see 6.6.3 Entering the menu
7. Select ***Calibration*** > ***Span calibration*** and confirm.
   ⇒ The Maintenance signal is transmitted by the analog interface, no alarm or fault relays are switched and the symbol is displayed.
   ⇒ The parameters for calibration are displayed:
   Gas : UGLD
   Unit: dB (or %)
   Concentr.:50
8. Adjust the number at concentration to the number printed on the calibration adapter.
9. Select ***Next*** and confirm.
   ⇒ The message ***Gas flow ON*** is displayed.
10. Select ***Next*** and confirm.
    ⇒ The current value is displayed
11. Apply the gas flow.

    After the displayed value is stable by +/- 1 dB:
12. Select ***Next*** and confirm.
    ⇒ The message ***please wait...*** is displayed.
    ⇒ The new current value is displayed.
13. Select ***Next*** and confirm.
14. Turn off air flow and remove the calibration adapter from the sensor.

    If the current value is not within the alarm range:
15. Select ***Next*** and confirm.
    ⇒ The instrument returns to the calibration menu.

The calibration adapter must not be soiled. Store the calibration adapter in a clean environment. Dräger recommends storing the calibration adapter in the calibration kit case.

8 Troubleshooting

8.1 Faults

Fault number	Cause	Remedy
001, 003 004 012-014 020-024 043, 060 067	Serious instrument fault, various causes.	Have the instrument checked by DrägerService.
005	Supply voltage outside range.	Check power supply.
002 025-027 030-034 041, 042 044, 050 052, 081 085	Serious data error in the instrument, various causes.	Reset the instrument to factory default settings. If this fault occurs again: Have the instrument checked by DrägerService.

Fault number	Cause	Remedy
010	4 to 20 mA interface cable not connected.	Disconnect the power supply, connect the 4 to 20 mA interface and reconnect the power supply. If operated as a stand-alone instrument without a central controller, wire pin 3 to pin 4.
011	Serious instrument fault, various causes.	Have the instrument checked by DrägerService; in case of repeated occurrence, check the load or cable.
045	Instrument not detecting any sensor.	Check connections. If this fault occurs again: Have the instrument checked by DrägerService.
051, 054	Faulty zero calibration.	Perform zero calibration.
055	Faulty span calibration.	Perform span calibration
076 080-084	Instrument fault.	Check electrical connections. If this fault occurs again: Have the instrument checked by DrägerService.
081	Sensor fault (Self test failure) or Ultrasound noise level > 100 dB for more than 1 h detected.	Mute ultrasound noise or temporarily cover sensor with silencer cap. If error remains longer than 1 h, replace sensor.
090	Sensor lock function is activated. A sensor with a different part number has been connected.	Use a sensor with the same part number or disable the sensor lock function.
105	Instrument fault.	Have the instrument checked by DrägerService.
137	Instrument fault.	Cycle power.If this fault occurs again: Have the instrument checked by DrägerService.
064 071	Communication fault.	Check connection to Polytron 8900 UGLD.
086	Supply voltage outside range.	Check supply voltage.
087	4 to 20 mA fault at UGLD sensor.	Check 4 to 20 mA connection to Polytron 8900 UGLD.
094 095	Data error in the instrument.	Reset the sensor to factory default settings. If this fault occurs again: Have the instrument checked by DrägerService.
096	SIL password does not match.	Enter password again.

8.2 Warnings

Warning number	Cause	Remedy
101	Data-logger in Stack mode is 100 % full and is not logging any more data.	Have the instrument checked by DrägerService.
102	Data-logger in Stack mode is 90 % full.	Download the data as soon as possible and clear the data-logger.
103 106	Data error in the instrument. Some dongle functions like data-logger, sensor test, etc. may no longer be available.	Reset the instrument to factory default settings. If this error occurs again: Have the instrument checked by DrägerService.
104	Date or time setting not valid.	Set date and time
105	Instrument fault.	Have the instrument checked by DrägerService.
107	Battery for data memory empty.	Have the instrument checked by DrägerService.
110 111 112	SW dongle has been removed without being deactivated.	Deactivate SW dongle.
113	Alarms inhibited.	Enable alarms
164 165	Sensor warm-up phase has not ended. Increased measurement error must be expected.	Wait until the sensor has warmed up. Do not calibrate before sensor is fully warmed-up.
167 170	Calibration interval expired.	Recalibrate the instrument.
163	Sensor temperature is very high.	
171	Zero drift too high.	Perform zero calibration
182	Auto calibration not possible.	Perform new zero and span calibration

9 Maintenance

– The maintenance intervals must be established for each individual installation. Depending on safety considerations and application specific conditions the instrument is used in, these might need to be shortened.

Every 12 months

– Inspection by trained service personnel.
– Check signal transmission to the control unit, LEDs and triggering of alarm devices.
– Perform bump test

9.1 Sensor replacement

A sensor can be replaced in the hazardous, classified area, without interrupting the power supply.

Sensor change function

With the menu function ***Change Sensor***, a sensor can be changed during operation without triggering a fault signal at the control unit. It also ensures that all sensor data in the microprocessor can be saved in the sensor memory (EEPROM) before disconnecting the sensor.

Replacing the sensor

Refer to figure B on the fold-out page.

A sensor can be replaced at any time.

1. Select ***Settings*** > ***Sensor*** > ***Change Sensor*** and confirm.
   ⇒ The maintenance signal is generated on the 4-20mA interface. The display shows ***Please remove the sensor***.
   ⇒ The Maintenance symbol is displayed.
2. Replace the old sensor with a new sensor:
   a. Loosen set-screw (2)
   b. Unscrew bayonet ring (3)
   c. Remove old sensor.
   d. Insert sensor (4) into the opening. The Dräger logo on the sensor must point to the mark on the sensing head housing (5).
   e. Lock sensor with bayonet ring (3)
   f. Tighten set-screw (2).
   The display shows: ***Loading data, please wait***
3. When the sensor data are loaded, the display shows: ***Data loaded***.
4. Select ***Back to menu*** and confirm.
   ⇒ The maintenance signal on the 4-20mA interface remains pending until the sensor is warmed-up.
5. Perform bump test to check the instrument for proper operation.
6. Check the installation requirements and instrument for SIL status.

10 Instrument settings

10.1 Alarms and delay

ℹ To avoid false alarms triggered by short ultrasonic peaks, do not use alarm settings of the instrument without alarm delay.

10.1.1 Changing unit

The displayed unit can be changed to the relative unit % of the measuring range.

1. Select ***Settings*** > ***Sensor*** > ***Gas settings*** > ***UGLD*** > ***%*** and confirm with OK.
   ⇒ Range /% 100.00 is displayed.

   ℹ Do not change this range!

2. Select ***Next*** and confirm with ***Confirm***.

✓ The unit is changed.

10.1.2 Switching the alarms on or off

If the alarm is set to Off, an alarm condition will not be shown by the LEDs or asserted relays! Using relays the maintenance signal is transmitted via the 4-20 mA interface and the symbol is displayed.

1. Select ***Settings*** > ***Instrument*** > ***Alarm*** > ***Alarm on/off***.
2. Select ***Enable*** or ***Disable*** and confirm.

10.1.3 Configuring alarms

1. Select ***Settings*** > ***Instrument*** > ***Alarm*** > ***Alarm A1*** or ***Alarm A2*** and confirm.
   The current alarm threshold is displayed.
2. Apply settings and confirm the configuration steps successively with ***Next***.
   a. Set value for alarm threshold.
   b. Set alarm direction.

Rising	The alarm direction is called rising, if the gas concentration has to exceed a certain value to activate an alarm.
Falling	The alarm direction is called falling, if the gas concentration has to fall below a certain value to activate an alarm.

   c. Set latching mode.

Latching	Once the alarm threshold is reached, the instrument will trigger the alarm. It will remain in alarm status even if the gas concentration does not meet the alarm condition any more. To clear a latching alarm it has to be acknowledged.
Non-latching	The alarm status clears if the gas concentration does not meet the alarm condition anymore.

   d. Set acknowledgement mode.

Acknowledgeable	Alarm relay and LED can be reset before alarm condition clears.
Non-acknowledgeable	Alarm relay and LED can not be reset until the alarm condition clears.
Pre-Acknowledgeable	Alarm status is acknowledgeable before the alarm condition clears. However, the alarm relay and LED stay active until the alarm condition clears.

e. Set the hysteresis mode.
The hysteresis function defines an interval where a triggered relay maintains its status until the gas concentration is outside the defined interval. Example: Alarm threshold is set to 75 dB and hysteresis to 3 dB. The alarm stays active until the value falls below 72 dB. This prevents relays from chattering at an alarm threshold.

When the direction of an alarm was changed (from falling to rising or vice versa), the value of the hysteresis must be checked and corrected again if necessary.

⇒ A confirmation screen shows all settings.

f. Select ***Confirm*** and confirm with OK.

✓ The new settings are saved.

10.1.4 Adjusting alarm delay time and analyzed time

The alarm delay time is per default set to 30 seconds and can be adjusted between 1 second and the analyzed time.

The analyzed time is per default set to 60 seconds and can be adjusted by DrägerService only between 1 second and 240 seconds.

1. Select ***Settings*** > ***Sensor*** > ***UGLD delay*** > ***Delay*** and confirm.
2. Enter new alarm delay time in seconds and confirm with OK.
3. Select ***Confirm*** and confirm with OK.

✓ The new alarm delay time is saved.

10.1.5 Activating delay function

The delay function can be individually activated for the display, the alarm relays and the 4-20 mA output signal.

1. Select ***Settings*** > ***Sensor*** > ***UGLD delay*** and confirm.
2. Select desired output and confirm: ***Display***, ***Alarm Relays*** and ***4-20 mA***.
3. Select ***Enable*** or ***Disable*** for each output and confirm with ***Back to menu***.

✓ The delay function is activated for the selected output(s).

10.1.6 Setting analog output signal (4-20 mA) characteristic

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***UGLD signals*** and confirm.
2. Select analog output signal characteristic and confirm:

Alarm normal	The 4-20 mA reacts proportional to the detected ultrasonic signal.
Alarm enhanced	The 4-20 mA reacts proportional to the detected ultrasonic signal until an alarm is reached. The signal then jumps to 16 mA if A1 is triggered and to 20 mA if A2 is triggered.
Alarm only	The analog output signal stays at 4 mA until an alarm is reached. The signal then jumps to 16 mA if A1 is triggered and to 20 mA if A2 is triggered.

3. Select ***Back to menu*** and confirm.

✓ The new settings are saved.

10.2 Testing alarms/relays

These functions change the status of a relay and LED for test purposes (e.g. to check the function of alarm devices connected to the relay) and the symbol is displayed. After exiting this function, the status of the relay and LED will automatically return to their previous status.

1. Select ***Settings*** > ***Instrument*** > ***Alarm*** the desired alarm condition and confirm.

Set Alarm A1	Simulates pre-alarm
Set alarm A2	Simulates main alarm
Set fault	Simulates fault signal

2. Select ***Enable*** or ***Disable*** and confirm.

✓ If the function is activated, the fault relay is de-energized and the 4 to 20 mA interface is set to the fault current. The yellow LED is lit, the symbol for maintenance is shown.

10.3 Setting passwords

1. Select ***Settings*** > ***Instrument*** > ***Passwords*** the desired password and confirm.

Calibration PWD	Access to zero and span calibration
Settings PWD	Access to all configuration parameters

2. Select the line for editing the password and confirm.
3. Set the password and confirm.
4. Select ***Confirm*** and confirm with [OK].

10.4 Setting date and time

1. Select ***Settings*** > ***Instrument*** > ***Date and time*** and confirm.
2. Select the line for editing the date or time and confirm.
3. Select ***Confirm*** and confirm with [OK].

10.5 Setting language

1. Select ***Settings*** > ***Instrument*** > ***Language*** and confirm.
2. Select a language from the list and confirm

10.6 Configuring function key

1. Select ***Settings*** > ***Instrument*** > ***Function key*** and confirm.
2. Select a function and confirm.

Graph	The measurements of the past 15 minutes are displayed as a time/concentration graph.
Faults	Fault messages are displayed in plain text.
Warnings	Warning messages are displayed in plain text.
Bump test	The bump-test allows applying gas to the sensor without generating an alarm. The maintenance signal is transmitted. After 15 minutes or tapping [OK] again ends the bump test and the instrument returns to normal operation.

10.7 Resetting to default settings

This function resets the instrument to factory default settings.

1. Select ***Settings*** > ***Instrument*** > ***Device init*** and confirm.
2. Select ***Confirm*** and confirm with [OK].

10.8 Deactivating dongles

This function deactivates the sensor self-test dongle to safely remove the dongle or if the dongle is faulty. Dräger recommends not to deactivate the dongle.

A dongle can only be reactivated by cycling the power to the instrument.

1. Select ***Settings*** > ***Instrument*** > ***SW dongle*** and confirm.
2. Select ***Deactivation func.***
   ⇒ The selected dongle is deactivated.

11 Interface settings

HART interface and 4-20mA interface are available for Polytron 8900 UGLD.

11.1 HART interface

11.1.1 Polling address

The polling address configures the instrument for analog operation (4 to 20 mA) or multidrop operation. In multidrop operation the analog interface is deactivated and set to a constant current of approximately 1 mA. To allow the central controller to request the Unique Identifier (unique HART address) with HART command #0, all the devices on a line must be configured with different polling addresses. It is advised to choose a sequence starting with 1 and continuous increments. This function corresponds to HART command #6 (Write Polling Address).

1. Select ***Settings*** > ***Communication*** >***HART interface*** > ***Polling address*** and confirm.
2. Select the line for editing the address and confirm.
3. Set the polling address and confirm.

Address	Description
0	Setting the polling address to 0 activates analog operation (4 to 20 mA).
0 - 15	Setting the polling address to 0 activates analog operation (4 to 20 mA).

4. Select ***Confirm*** and confirm with [OK].

11.1.2 Unique Identifier

This function reads the Unique Identifier (unique HART address). It has to be known for almost all HART addressing commands. However, this information is only required for systems which are not able to read back the Unique Identifier using the HART command #0 in Short-Frame Format or HART command #11. The display corresponds to the address for HART command #0 (Read Unique Identifier) or #11 (Read Unique Identifier associated with Tag).

1. Select ***Settings*** > ***Communication*** > ***HART interface*** >***Unique Identifier*** and confirm.
   The Unique Identifier is displayed.

11.1.3 Tag

The tag can be used to identify an instrument. It can contain up to 8 alphanumeric characters. The tag can also be used as an address for reading the unique identifier using HART command #11 (Read Unique Identifier Associated with Tag), even if the polling address is unknown. This requires that a unique tag has been configured for each instrument.

1. Select ***Settings*** > ***Communication*** > ***HART interface*** > ***Tag*** and confirm.
2. Select the line for editing the tag and confirm.
3. Set the tag and confirm.
4. Select ***Confirm*** and confirm with [OK].

11.1.4 Dräger REGARD

This function switches between different HART protocols.

1. Select ***Settings*** > ***Communication*** > ***HART interface*** > **Dräger REGARD** and confirm.
2. Select the desired option and confirm.

REGARD SW 2.0	Default setting
REGARD SW 1.4	For REGARD controllers with SW 1.4

11.2 4-20mA interface

The current output of the instrument during normal operation is between 4 and 20 mA. Between 4.5 and 18 mA the current changes proportionally to the detected ultrasonic sound levels. Whereas 4 mA < 54 dB and 20 mA represents about 110 dB.

Alarms are not transmitted via the analog interface. Alarm thresholds must be set at the control unit.

The instrument uses different current values to indicate various modes of operation. The factory default settings are user adjustable for application specific requirements. This follows the NAMUR recommendation NE43.

11.2.1 Full scale deflection

The ultrasonic sensor full scale deflection represents about 110 dB.

⚠ WARNING
Sensor malfunction
The default full scale deflection must not be changed.
► Do not change the full scale deflection
► If the full scale deflection was changed by accident within the menu sensor settings, reset the instrument to default settings

11.2.2 Settings at the control unit

Alarm thresholds and alarm delays must be set in the control unit. For further information see: "Alarm threshold", page 9.

11.2.3 Setting fault current

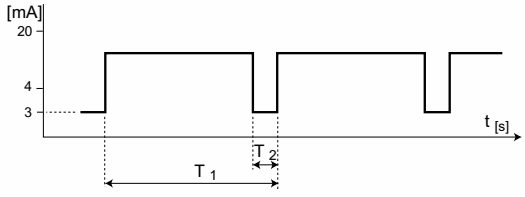
This function defines the current for the fault signal.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Fault current*** and confirm.
2. Select the line for editing the current and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Fault current*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

11.2.4 Information regarding the warning signal

To transmit a warning signal via the analog interface, the warning signal must be switched on.
The warning signal alternates between the warning current and the measurement current.
– Warning current (interval T2)
– Measurement current (interval T1-T2)

Time intervals and the warning current are configurable.



11.2.5 Switching the warning signal on or off

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning*** and confirm.
2. Select ***Enable*** or ***Disable*** and confirm.

11.2.6 Setting warning interval

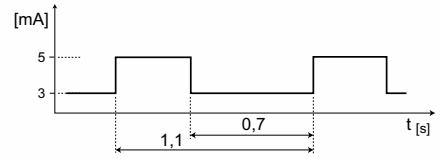
1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning interval*** and confirm.
2. Set times for warning intervals T1 and T2 and confirm.

11.2.7 Setting warning current

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning current*** and confirm.
2. Set the current and confirm with [OK].

11.2.8 Setting maintenance signal

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Maint. signal*** and confirm.
2. Set the signal type and confirm.

static	A constant current that can be configured.
dynamic	A square wave signal with the following characteristics: 

11.2.9 Setting static maintenance current

The maintenance current can only be set if the maintenance signal has been set to static.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Maint. current*** and confirm.
2. Set the current and confirm.

11.2.10 Setting analog offset

This function adds an offset to the analog output at 4 mA. The offset adjusts the current at 4 mA without affecting the 20 mA set point.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Analog offset*** and confirm.
2. Select the line for editing the offset (range: -0.5 to 0.5 mA, SIL: -0.1 to 0.1) and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Analog offset*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

11.2.11 Setting analog span

This function adjusts the analog output at 20 mA without affecting the 4 mA set point.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Analog span*** and confirm.
2. Select the line for editing the offset (range: -0.5 to 0.5 mA, SIL: -0.1 to 0.1) and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Analog span*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

11.2.12 Testing the analog interface

These functions change the current of the analog interface for test purposes (e.g. to check the programming of the control unit). It might be necessary to inhibit the alarms at the control

unit to avoid false alarms. After exiting these functions, the currents automatically return to the maintenance signal. During the test, the maintenance symbol is displayed.

- To set current or concentration:

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** and the desired option.

Set Current	This function sets the current to any value between 0 and 22 mA. Analog offset and analog span are not used for this function.
Set concentr.	This function sets the current corresponding to any measurement value between 54 dB and full scale deflection.

2. Once the alarms at the control unit are inhibited, confirm the message ***Inhibit all alarms*** with ***Next***.
3. Select the line for editing and confirm with [OK].
4. Set the desired value.
5. Select ***Next*** and confirm.
6. Select the desired option:

Set concentr. out / ***set current out***	This function sets the preset measurement value or current test value. During the test, the maintenance symbol is displayed.
concentration off / ***current off***	This function aborts the transmission of the preset test value.

7. Select ***Next*** and confirm.
   ⇒ The function is aborted.
8. Once the alarms at the control unit are enabled again, confirm the message ***Enable all alarms***.

- To set a test signal:

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** and the desired test.

Set fault	Sets the current to the fault current.
Set warning	Sets the current to the warning current.
Set mainten.	Sets the current to the maintenance current.

2. Once the alarms at the control unit are inhibited, confirm the message ***Inhibit all alarms***.
3. Select ***Enable*** or ***Disable*** and confirm.

12 Sensor settings

Ultrasonic sensors are not suited for auto calibration because the zero point of the sensor must only be calibrated under workshop conditions.

12.1 Setting capture range

1. Select ***Settings*** > ***Sensor*** > ***Display Capture*** and confirm.
2. Set offset in the first window.
3. Set the lowest value of the capture range and confirm with ***Next***.
4. Set the highest value of the capture range and confirm with ***Next***.
5. Check all the values and confirm with ***Next***.

12.2 Resetting sensor

This function resets the sensor to factory default settings.

1. Select ***Settings*** > ***Sensor*** > ***Init. channel*** and confirm.
2. Select ***Confirm*** and confirm with [OK].

12.3 Setting calibration interval

After the calibration interval expires, the instrument will issue a warning that the calibration is past due.

1. Select ***Settings*** > ***Sensor*** > ***Cal. interval*** and confirm.
2. Set the calibration interval and confirm with [OK].

12.4 Setting sensor lock

1. Select ***Settings*** >***Sensor*** > ***Sensor lock*** and confirm.
2. Select ***On*** or ***Off***.

On	The instrument rejects any sensor whose part number does not match the part number of the previously installed sensor.
Off	The instrument accepts any suitable sensor, uploading the default settings of this sensor. However, this overwrites any customized settings with the default settings of the new sensor.

12.5 Sensor test

This function is only active if the sensor test dongle is installed. If the sensor does not pass the self-test, a warning or fault message is created.

Setting periodic sensor test

This function periodically initiates the sensor self-test. The instrument routinely checks the sensor for proper function.

1. Select ***Settings*** > ***Sensor*** > ***Set sensor test*** and confirm.
2. Select ***Enable*** or ***Disable*** and confirm.

Starting sensor test manually

This function starts a singular sensor test.

1. Select ***Settings*** > ***Sensor*** > ***Sensor test*** and confirm.
2. Select ***Start sensor test*** and confirm.
3. Select ***Confirm***

✓ The test result is displayed.

12.6 Gas settings

Gas settings are not used in Polytron 8900 UGLD.

13 Factory default settings

13.1 Fixed settings for relays, LED and alarm

	Setting
Fault relay	Energized / Normally Open
Yellow Fault LED	Lit if a fault message is available
Red Alarm LED	Single blink if A1 condition is present. Double blink if A2 condition is present. If an alarm is configured as acknowledgeable and the alarm is acknowledged, single/double blink changes into continuously lit.
Alarm Hierarchy	A2 overrides A1 on the LED. However, the A1 and A2 relays operate independently. I.e. if A1 is acknowledgeable and A2 is not, and the gas concentration is such that it triggers A1 and A2: acknowledging will cause the A1 relay to release. However, the red LED will still double blink as long as the A2 condition continues to exist.

13.2 Settings which can be changed via the menu

Menu	Default setting	Range
Relay active on alarm / No alarm	Active on alarm	On / Off
A1 alarm: direction	Rising	Falling / Rising
A2 alarm: direction	Rising	
A1 latch mode	Non-latching	Latching / Non-latching
A2 latch mode	Latching	
A1 acknowledgment mode	Acknowledgeable	Acknowledgeable / Not acknowledgeable / Pre-acknowledgeable
A2 acknowledgment mode	Not acknowledgeable	
Normal operation A1 relay	Energized	Energized / Not energized
Normal operation A2 relay		
UGLD signals	Alarm normal	Alarm normal / Alarm enhanced / Alarm only
Calibration password	_ _ _ 1	
Settings password	_ _ _ 2	
LCD setting	On	On / Off
SIL status	Off	On / Off
Language	EN	DE / EN / FR / ES / RU / ZH
Function key	Faults	Graph, fault, warning, vitality, bump test

Interface	Default setting	Range
Fault current	1.2 mA	0 to 3.5 mA
Warning	Off	On / Off
Warning current	3.0 mA	0 to 3.5 mA
Warning cycle time T1 (measurement current)	9 s	5 to 60 s
Warning cycle time T2 (warning current)	1 s	1 to (T1-1) s
Maintenance signal	static	static / dynamic
Maintenance current	3.4 mA	0 to 3.5 mA
Analog offset	0 mA	-0.5 to 0.5 mA
Analog span	0 mA	-0.5 to 0.5 mA
HART address	0	0 to 15

13.3 Sensor specific values

Menu	Default setting	Range
A1 Alarm	108 dB	55 to 108 dB
A2 Alarm	108 dB	
Hysteresis for A1 alarm at direction rising	0	0 to A1
Hysteresis for A2 alarm at direction rising	0	0 to A2
Delay	30 s	1 to 60 (240) s
UGLD delay: Display	disabled	
UGLD delay: Alarm Relays	disabled	
UGLD delay: 4-20 mA	disabled	
Calibration interval [days]	3650	0 to 5475
Measuring range	< 54 dB to 108.6 dB	not adjustable

Menu	Default setting	Range
Display capture low	-1 dB	-3 to 0 dB
Display capture high	1 dB	0 to 3 dB

14 Disposal

This product must not be disposed of as household waste. This is indicated by the adjacent icon.
You can return this product to Dräger free of charge. For information please contact the national marketing organisations and Dräger.

15 Technical data

15.1 Signal transmission to control unit

Frequency of measurement calculation: 1 x per second (update of display, analog interface and relays).

Analog signal	
Normal operation	4 ... 20 mA
Drift below zero	3,8 ... 4 mA
Measuring range exceeded	20 ... 20,5 mA
Instrument fault	≤ 1.2 mA
Fault on analog interface	> 21 mA
Maintenance signal	3.4 mA steady signal or 1 Hz modulation between 3 and 5 mA (selectable)

Impedance of the signal loop

Operating mode	Impedance range of the signal loop	Supply voltage range
Operation without HART® communication	0 to 230 Ω	at 10 V DC
	Rising linearly with the supply voltage from: 0 to 230 Ω at 10 V to 0 to 500 Ω at 16 V	10 to 18 V DC
	0 to 500 Ω	18 to 30 V DC
Operation with HART® communication	230 to 270 Ω	at 13 V DC
	Rising linearly with the supply voltage from: 230 to 270 Ω at 11 V to 230 to 500 Ω at 16 V	11 to 16 V DC
	230 to 500 Ω	18 to 30 V DC
HART® Multidrop operation	230 to 500 Ω	10 to 30 V DC

15.2 Cable specifications

For non-conduit installations Dräger recommends using shielded cables.

Analog / HART connection with control unit and power supply	
Power supply and signals	3-core shielded cable 24 - 12 AWG / 0.2 - 2.5 mm²
Relays	20 -12 AWG / 0.5 - 2.5 mm²

15.3 Power supply

Power supply	
Maximum power consumption	3000 mW
Operating voltage	10 to 30 V⎓ at the instrument
Inrush current	2.3 A for 2 ms at 24 V⎓,10 Ω resistor
Minimum supply voltage	If the supply voltage is < 9.5 V DC, the instrument issues a fault signal.

Operating current (max.)[1]	
without relay, non-remote sensor	80 mA
with relay, remote sensor	100 mA

1) Values are valid at 24 V DC operating voltage.

15.4 General specifications

Enclosure	
Enclosure material	316L stainless steel
Enclosure protection	IP 66
Display	Resolution 128 x 64 pixel, back-lit

Size (LxWxD, approx.)	
Polytron 8900 UGLD	7.1” x 5.8” x 5.1” 180 x 150 x 130 mm

Weight stainless steel 316 enclosure (approx.)	
Polytron 8900 UGLD	8.8 lbs. 4.0 kg

Service life
10 years

Recommended period of storage
Maximum 5 years

15.5 Environmental parameters

See sensor data sheet for sensor specifications and influences.

Pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)
Humidity	0 to 100%RH, non-condensing
Storage temperature	-4 to +158 °F -20 to +70 °C
Storage pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)
Storage humidity	0 to 100%RH, non-condensing
Operating temperature	-40 to +149°F -40 to +65°C

15.6 Tightening torque

Instrument threads	
Enclosure lid	≥44 LB IN. / ≥5 Nm
Sensor	min. 266 LB IN. / min. 30 Nm
Blind plugs	min. 266 LB IN. / min. 30 Nm
Ports (for conduits or cable glands)	min. 443 LB IN. / min. 50 Nm

Field wiring terminals	
Power supply, signals and relays	4.4 - 7.0 LB IN. / 0.5 - 0.8 Nm
Grounding screws	10.6 LB IN. / 1.2 Nm

16 Accessories and spare parts

Description	Part Number
PCB unit Polytron 8900 UGLD 4-20/HART	8328015
Dräger Polytron 8900 UGLD d S 4-20/HART relay	8328030
Dräger PolySoft Configuration Software	8328600
IR Connection Kit (requires PolySoft)	4544197
UGLD Calibration and Bump Test Kit with Carrying Case (no bottle included).	8328042
UGLD Sensor SPPT (Dräger-Service Exclusive)	8328045
Zero Air Gas Cylinder 112L for Calibration and Bump Test Kit	6813239
Magnetic wand (blue body, white logo)	4544101
Hardware kit enclosure	4544167
EC Sensing Head Remote UGLD w/ wall mount kit (requires cable)	8328021
Remote Cable + Plug (5 m)	8323305
Remote Cable + Plug (15 m)	8323315
Remote Cable + Plug (30 m)	8323330
Blind Plug 316L St. Steel ¾” NPT for SS Housing (set of 2)	4544897
Bayonet ring	4544366
Pole mount kit for EC Sensing Head Remote	4544213
EX-D Cable Gland (CG ¾“ NPT BR 9.4 – 14 mm UAC)	AG00570

OXYGEN POINT DETECTORS

POS.	TAG NUMBER	SERVICE
1	950-GDZ-03107	O2 DET. FZ-03 ELECTROLYZER PK AREA
2	950-GDZ-03108	O2 DET. FZ-03 ELECTROLYZER PK AREA
3	950-GDZ-03109	O2 DET. FZ-03 ELECTROLYZER PK AREA

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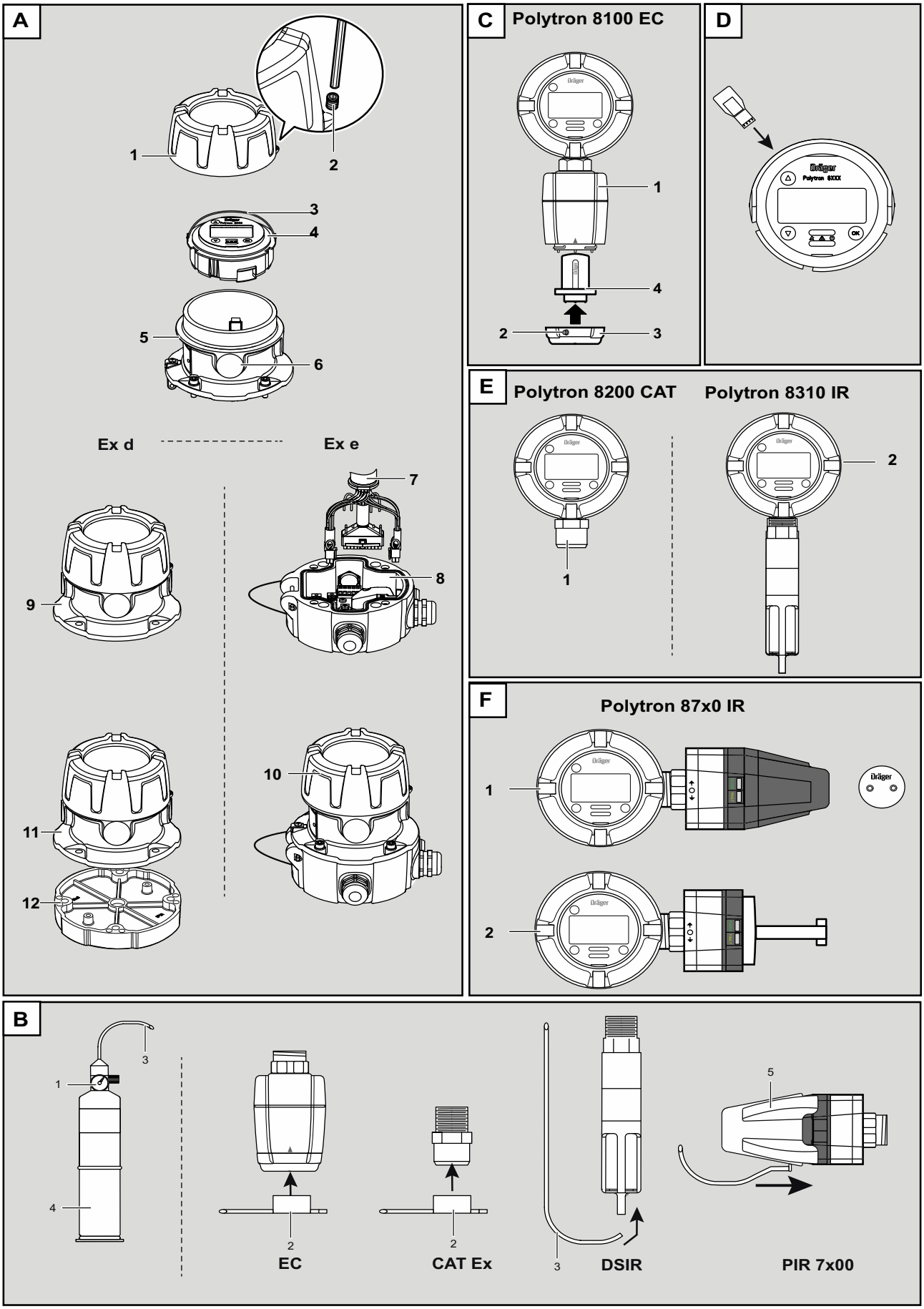
Dräger Polytron® 8000 Series

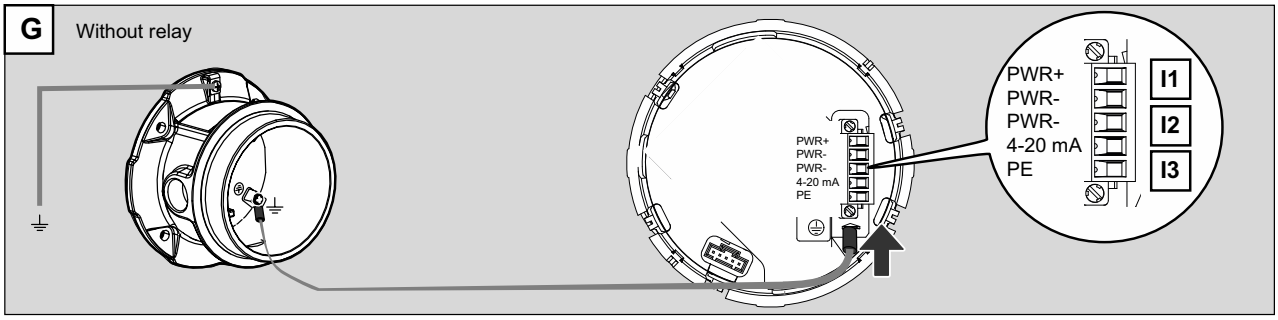


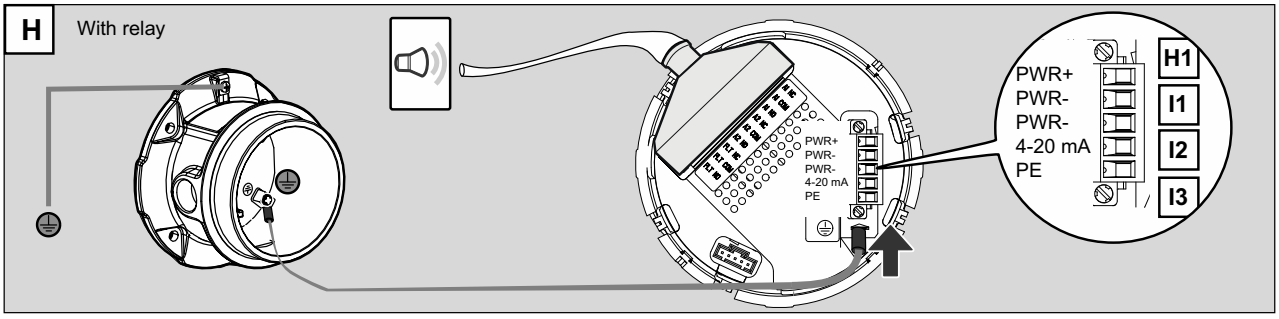
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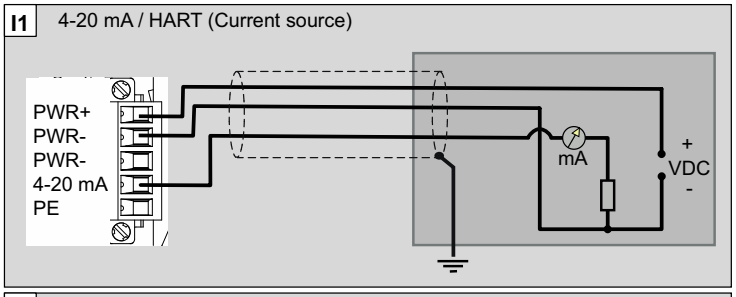
⚠ WARNING
To properly use this product, read and comply with these instructions for use.

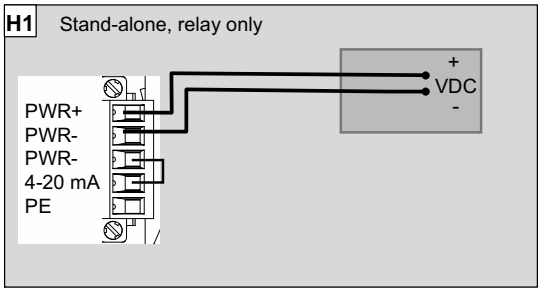
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de Gebrauchsanweisung 50
fr Notice d'utilisation 98
es Instrucciones de uso 145

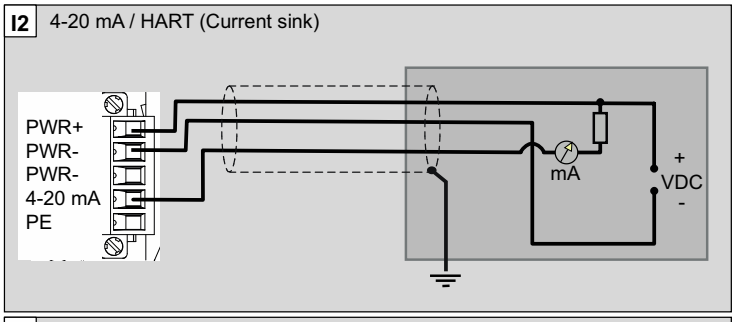

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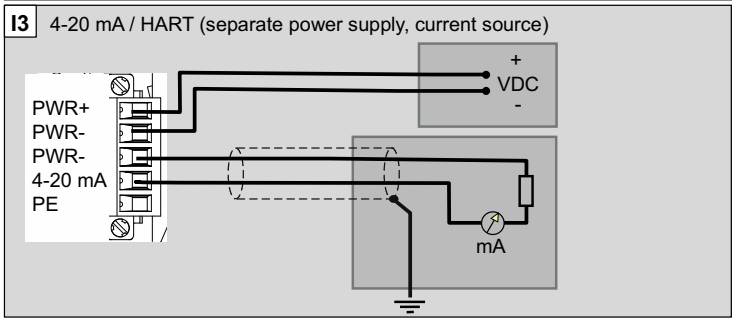






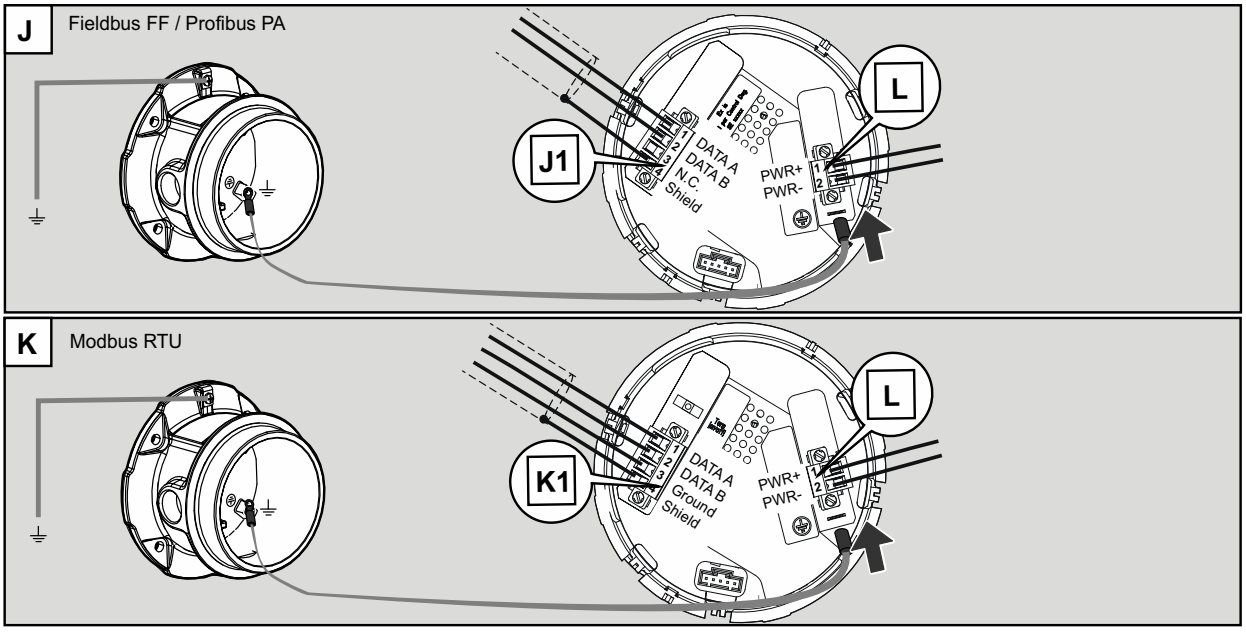


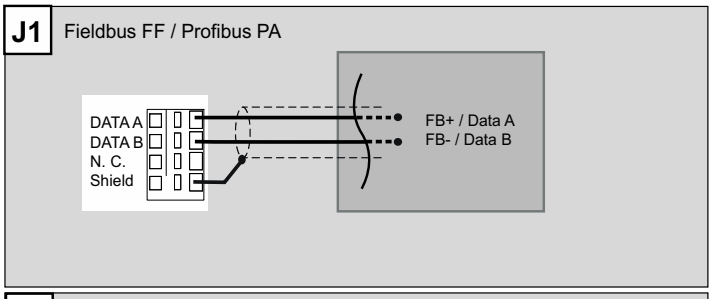


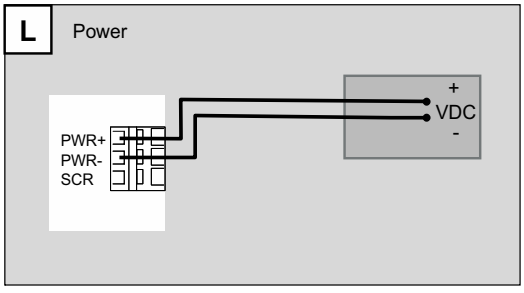


Cable specifications
Power supply and signals: 24 - 12 AWG / 0.2 - 2.5 mm²
Relays: 20 - 12 AWG / 0.5 - 2.5 mm²

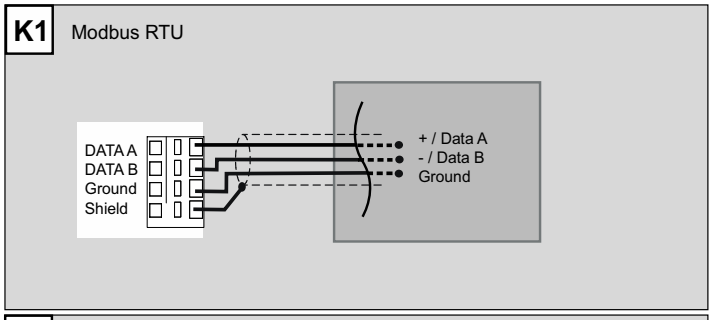
35519

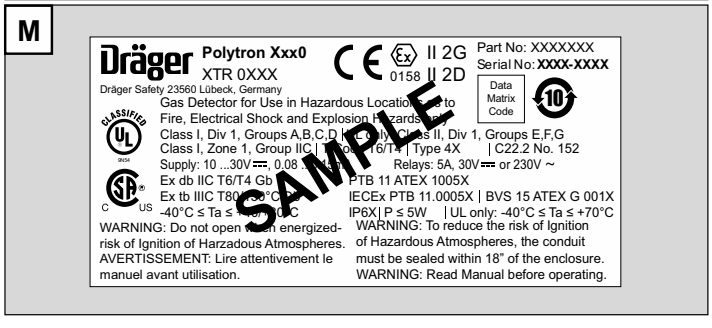






Cable specifications
Power supply and signals: 24 - 12 AWG / 0.2 - 2.5 mm²





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1 Safety-related information

Both the latest edition and other languages of these instructions for use can be downloaded in the Technical Documentation database (www.draeger.com/ifu). Due to product actualizations, Dräger recommends always using the latest edition of the instructions for use.

1.1 Safety instructions

- Before using this product, carefully read these Instructions for Use and those of the associated products.
- Strictly follow the instruction for use. The user must fully understand and strictly observe the instructions. Use the product only for the purposes and under the conditions specified in this document.
- Do not dispose of the Instructions for Use. Ensure that they are retained and appropriately used by the product user.
- Only trained and competent users are permitted to use this product.
- Notify Dräger in the event of any component fault or failure.
- Comply with all local and national laws, rules, and regulations associated with this product.
- Only trained and competent personnel are permitted to inspect, repair and service the product as detailed in these instructions for use. Further maintenance work that is not detailed in these instructions for use must only be carried out by Dräger or personnel qualified by Dräger.
- Dräger recommends a Dräger service contract for all maintenance activities and that all repairs are carried out by Dräger.
- Use only genuine Dräger spare parts and accessories. Otherwise the proper functioning of the product may be impaired.
- Maintenance must be performed as described, see 10 Maintenance.
- Only operate the product within the framework of a risk-based alarm signaling concept.
- Before connecting this instrument to electrical devices not mentioned in the IFU consult Dräger
- The instruments or components may not be modified in any manner.
- The use of faulty or incomplete parts is forbidden.
- The appropriate regulations must be observed at all times when carrying out repairs on these instruments or components.
- Do not open the instrument during operation.
- The corresponding regulations must be observed when carrying out repairs on these instruments or components.
- Follow the directions of EN 60079-29-2 for the measurement of flammable gases and oxygen.
- Follow the directions of EN 45544-4 for the measurement of toxic gases.

Polytron® 8100 EC-specific:

- **WARNING**: Risk of ignition of flammable or explosive atmospheres! Substitution of components may impair Intrinsic Safety.

1.2 Operating area and conditions

- For SIL applications, observe the Dräger Polytron® 8xx0 safety manual.
- Only applies for Polytron 8200 CAT:
  If the device is exposed to a targeted flow of air that is mixed with gas, the measured values may be elevated. For deviating values, see the instructions for use provided with the corresponding sensor.
- Observe the information and restrictions in the instructions for use for the sensors used.
- **CAUTION** Risk of ignition of flammable or explosive atmospheres! Not tested in oxygen enriched atmospheres (>21% O_2).
- **Using the product in areas subject to explosion hazards:** Instruments or components for use in explosion-hazard areas which have been tested and approved according to national, European or international Explosion Protection Regulations may only be used under the conditions specified in the approval and with consideration of the relevant legal regulations.

Hazardous areas classified by zones:

- The instrument is designed for use in Zone 1 or Zone 2 hazardous areas where gases of explosion groups IIA, IIB or IIC and temperature class T4 or T6 may be present. Temperature classes depend on the maximum ambient temperature. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.
- The instrument is designed for use in Zone 21 or Zone 22 hazardous areas where dusts of explosion groups IIIA, IIIB or IIIC and dust temperatures of T80 °C or T130 °C (T135 °C for the Polytron 5100 EC and Polytron 8100 EC) may be present. Dust temperatures depend on the maximum ambient temperature. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.

Hazardous areas classified by divisions:

- The instrument is designed for use in Class I, Div. 1 or Div. 2 hazardous areas where gases of groups A, B, C or D and temperature class T4 or T6 may be present. Temperature classes depend on the maximum ambient temperature. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.
- The instrument is designed for use in Class II, Div. 1 or Div. 2 hazardous areas where dusts of groups E, F or G may be present. The instrument must not be operated in ambient temperatures outside of the temperature range indicated on the instrument.

2 Conventions in this document

2.1 Meaning of the warnings

The following warnings are used in this document to alert the user to potential dangers. A definition of the meaning of each warning is as follows:

Alert icon	Signal word	Warning classification
⚠	WARNING	Indicates a potentially hazardous situation. If not avoided, it could result in death or serious injury.
⚠	CAUTION	Indicates a potentially hazardous situation. If not avoided, it could result in physical injury. It may also be used to alert against unsafe practices.
	NOTICE	Indicates a potentially hazardous situation. If not avoided, it could result in damage to the product or environment.

2.2 Trademarks

Trademark	Trademark owner
PROFIBUS®	PROFIBUS Nutzerorganisation e. V.
HART®	HART Communication Foundation
Polytron®	Dräger Safety AG & Co. KGaA
DrägerSensor®	Dräger Safety AG & Co. KGaA

The following webpage lists the countries in which Dräger's trademarks are registered: www.draeger.com/trademarks.

3 Description

3.1 Product overview

Refer to the figures on the fold-out page

A 1	Enclosure lid
A 2	Set screw (2 mm Allen screw)
A 3	Handle
A 4	PCB unit (and optional relay)
A 5	Enclosure bottom
A 6	Port for Sensor
A 7	Feed-through cable
A 8	Docking station
A 9	Explosion-proof instrument
A 10	Explosion-proof instrument with docking station for increased safety
A 11	Explosion-proof instrument with mounting spacer (only for Polytron 87x0 IR)
A 12	Mounting spacer (only for Polytron 87x0 IR)
B	Test setup for calibration
C	Polytron 8100 EC
D	Sensor dongle connection (only Polytron 8100 EC)
E 1	Polytron 8200 CAT
E 2	Polytron 8310 IR
F 1	Polytron 8710 IR with splash guard
F 2	Polytron 8710 IR without splash guard

3.2 Feature description

The Polytron 8000 family includes the following instrument versions:

– Polytron 8100 EC, operates with electrochemical sensors (EC sensors)
– Polytron 8200 CAT, operates with catalytic Ex sensors (CatEx sensors/catalytic, DQ or LC DrägerSensors)
– Polytron 8310 IR, operates with infrared Ex sensors (IREx sensors)
– Polytron 8700 IR, operates with infrared sensors (PIR 7000 sensors)
– Polytron 8720 IR, operates with infrared sensors (PIR 7200 sensors)

The following interfaces are possible:

– 4 to 20 mA analog (per NAMUR recommendation NE43)
– Relay board
– Digital HART output signal
– Foundation Fieldbus[1)]
– PROFIBUS PA[1)]
– Modbus RTU[1)]

If the 4 to 20 mA interface is used, the current must be monitored between 0 mA and 3.5 mA. Currents between 0 mA and 3.5 mA can indicate a special state (see "Special states", page 16).

If a relay board is used, local alarm devices can be activated. If no relay board is used and an alarm is pending, only the red LED on the instrument will flash.

Gas concentrations, status messages, and menu choices are displayed on a backlit graphic LC-display and 3 colored LEDs.

Navigation through the menu takes place by tapping the relevant key on the pane of the enclosure lid with a magnetic wand. The instrument can be configured, calibrated and maintained non-intrusively without declassifying the area.

The instruments are supplied with a data logger. The data logger can store up to 35,000 values. At a sampling interval of 1 measurement per minute, the data logger can store the measurement history of approximately 24 days. This time can be significantly increased if the trigger function is activated. The data logger can only be downloaded using the PolySoft

1) No relays are available when the fieldbus interface is used. The fieldbus interface does not conform to BVS 13 ATEX G 001 X. Dräger SensorAlive is not supported.

PC software. The download generates an .ofb file and a .txt file. The .txt file includes the data logger information in readable form.

The instruments can be connected to a Dräger controller or a programmable logic control (PLC) with a sealed conduit or approved cable gland.

The instruments can be operated as a current source or current sink if the power is supplied by the controller. If the instruments are connected to a separate power supply, they can only operate as a current source.

The enclosures of the instruments are made of sturdy stainless steel or aluminum, and are suitable for indoor and outdoor application.

The instruments are designed for stationary installation. They are available in the following designs:

– Explosion-proof instrument (Ex d)
  The flameproof, explosion-proof enclosure provides three ¾ " NPT connections which can be used for field wiring, direct connection of a sensor, or wiring of a remote sensor.
– Instrument for increased safety (Ex e)
  The instrument is supplemented by an increased safety terminal box (docking station) providing up to four 20 mm connections for field wiring or wiring of a remote sensor. If the cable gland from Dräger is used, the permissible cable diameter is 7 mm to 12 mm.

The following dongles are available for the Polytron 8100 EC:

Sensor-test dongle	Activates the sensor self-test (not for hydrazine sensor 6810180)
Diagnostic dongle	Activates the sensor self-test, the display of the sensor vitality and the sensor diagnostic functions (not for hydrazine sensor 6810180)

3.3 Intended use

The instruments in the Polytron 8000 family are intended for continuous monitoring of the ambient air.

With the optionally integrated relay module, the instrument can be operated without a central controller (with additional local alarm signaling).

The instrument can be connected to a Dräger controller or a programmable logic control (PLC) with a sealed conduit or approved cable gland.

If the 4-20 mA interface is used, the current between 0 mA and 3.5 mA must be monitored. Currents between 0 mA and 3.5 mA can indicate a special state.

The instruments are designed for permanent installation and are approved for use in hazardous areas.

– Polytron 8100 EC is a combined intrinsically safe/explosion proof instrument for continuous monitoring of toxic gases or oxygen in the ambient air.
– Polytron 8200 CAT with catalytic DrägerSensor DQ or LC is an explosion-proof instrument for continuous monitoring of combustible gases and vapors containing hydrocarbons and non-hydrocarbons (e.g., hydrogen or ammonia) in ambient air.
– Polytron 8310 IR with infrared DrägerSensor IR is an explosion-proof instrument for continuous monitoring of combustible gases and vapors containing hydrocarbons in ambient air.
– Polytron 8700 IR with PIR 7000 is an explosion proof instrument for the continuous monitoring of combustible gases and vapors containing hydrocarbons in an appropriate atmosphere.
– Polytron 8720 IR with PIR 7200 is an explosion proof instrument for the continuous monitoring of carbon dioxide in ambient air.

3.4 Approvals

3.4.1 ATEX, IECEx, UL, CSA

An example of a name plate is shown on the fold-out page. A print-out of the name plate can also be found on the instrument's shipping box.

3.4.2 Additional information

Declaration of conformity: see supplement 4544300 or www.draeger.com/product-certificates

For additional information on approvals, see supplement 4544300.

4 Transmitter installation

4.1 Explosion proof (Ex d) installation - without Docking Station

4.1.1 Mechanical installation

4.1.1.1 General information on mechanical installation

– Local, state, and national rules and regulations that govern the installation of gas monitoring equipment must be strictly observed.
– The physical properties of the gas or vapor to be detected and the details of the corresponding application (e.g., possible leaks, air movement/drafts, etc.) must be taken into account.
– The future use of accessories and maintenance equipment must be considered.
– The free gas or vapor flow to the sensor must not be obstructed.
– The instrument must not be exposed to radiant heat that will cause the temperature to rise beyond the indicated limit values (16.6 Environmental parameters). The use of a reflective shield is recommended.
– A dust cap may be attached to the cable entry of the instrument. This cap is neither explosion-proof nor watertight and must be removed before connecting the instrument to a sealed conduit or before installation of a flameproof cable gland.

– Unused openings must be closed with blind plugs. For the required tightening torques for cable bushings, cable glands, plugs and sensors, see 16.7 Tightening torques.
– For non-conduit installations, an approved cable gland must be used (e.g., Hawke A501/421/A/¾ " NPT or equivalent).
– **WARNING:** Only for conduit installations: To reduce the risk of ignition of hazardous atmospheres, the conduit must be sealed within 45 cm (18 ") of the enclosure.
– **CAUTION:** If the gas detector is connected to controllers, the total response time may be delayed. The entire measurement path must be taken into account (e.g., latency of the controller). Ensure that the required response time is kept.

Polytron® 8100 EC-specific:

– Recommended sensor orientation: Downwards (see Figure C on the fold-out page).

Polytron® 8200 CAT-specific:

– Preferred sensor orientation: Downwards (see Figure E on the fold-out page). If the sensor inlet is protected against mechanical damage and the ingress of dirt and water, any orientation is permitted.
– For CSA-conform operation only:
The use of the optional splash guard (6812510) is required for CSA approval.

Polytron® 8310 IR-specific:

– Recommended sensor orientation: Downwards (see Figure E on the fold-out page).

Polytron® 87x0 IR-specific:

– The preferred orientation of the Dräger PIR 7x00 sensor must be observed (see Figure F on the fold-out page). Larger deviations and the use of the preassembled splash guard will increase the response time (see PIR 7x00 instructions for use).
– Any other orientation is only permissible if the PIR 7x00 is used without a splash guard, e.g., for use in ducts. If the sensor is installed vertically, there is an increased risk of deposits forming on the optical surfaces.
– The use of the preassembled splash guard is recommended to protect the sensor from water and dust.
– If a splash guard (part number 6811911 or 6811912) is used, the status lights must be arranged in a vertical line and the Dräger logo on the splash guard must be horizontal. A maximum deviation of ±30 degrees from the horizontal position is permissible.
– Liquid and/or deposits on the optical surfaces of the PIR 7x00 may result in a warning or fault.
– For the explosion-proof version, using a spacer (part number 6812617) when the instrument is mounted on a wall or to a level surface is recommended.

Special conditions in accordance with EN/IEC 60079-1

– The threads for the flameproof / explosion-proof enclosure do not conform to the minimum/maximum values indicated in EN/IEC 60079-1. The threads must not be re-worked by the user.

4.1.1.2 Installation

The instrument can be mounted for measuring gases in ambient air or inside of a duct/pipe.

1. Use M6 (1/4’’) bolts with hex socket caps to mount the enclosure to one of the following options.

Option	Accessory
Mounting on a flat surface	Drilling template: 4544300 Additionally for Polytron 87x0 IR: Spacer 6812617
Mounting on a pole	Pole mount kit: 4544198
Mounting on a duct/pipe	Duct mount kit: 6812725 For Polytron® 87x0 IR:: 6812300

4.1.2 Electrical installation

4.1.2.1 General information on electrical installation

– For tightening torques, see 16.7, for permissible cable specifications, see 16.3.
– Strict compliance must be given to the electrical codes that govern the routing and connection of electrical power and signal cables to gas monitoring equipment.
– Ferrules must be used.
– The conductors for the power supply must have an adequately low resistance to ensure the correct supply voltage at the instrument.
– Wire insulation must be stripped by 5 to 7mm.
– The secondary circuit supplying power must be electrically isolated from the mains circuit (does not apply for the relay circuit).
– When installed at locations exceeding ambient temperatures of 55 °C, use only appropriate wiring, specified for at least 25 °C above the maximum ambient temperature.
– Only use cable glands that are approved in the country the system is installed in and suitable for the application.
– In accordance with EU Directive 2014/30/EU, this instrument may not be connected to a DC system. Providing the instrument with its own source of supply is recommended.

Analog interface

– To ensure proper operation of the instrument, the resistance of the 4 to 20 mA signal loop must not exceed 500 ohms.
When used in accordance with the metrological suitability test compliant with EN IEC 62990-1, EN IEC 60079-29-1 or EN 50104, the resistance must not exceed 300 ohms. With values above 300 ohms, supply voltage monitoring cannot be ensured.
Depending on the operating voltage and the application (e. g. HART® operation), a specified minimum resistance must be observed (see "Signal transmission to the controller", page 42).

Relay option

– At voltages >30 V AC or >42.4 V DC, the relay cables must be enclosed in protective tubing, or double-insulated cables must be used.
– The wiring for the optional relay module must be selected and fused according to the rated voltages, currents and environmental conditions.
– To ensure that a fault is recognized - without having to look at the instrument - an alarm device must be connected to the fault relay.
– Voltage differences can cause insulation faults. Do not mix electric loads with different voltage types (AC or DC). Using DC loads, ensure that relay contacts only control devices with the same DC voltage rating. Using AC loads, ensure that relay contacts are only connected to devices sharing a common phase.

Special conditions in accordance with IEC 60664-1

– The device variants incorporating a FISCO fieldbus interface as well as gas detection transmitter type ETR 02…5** must operate in circuits that are limited to overvoltage category I/II/III in accordance with IEC 60664-1.

4.1.2.2 Connection diagrams

The fold-out pages show the following connection diagrams:

Figure	Connection diagram for instruments
G	Without relay, enclosure grounding
H	With relay, enclosure grounding
I1	4-20 mA / HART (current source)
I2	4-20 mA / HART (current sink)
I3	4-20 mA / HART (separate power supply, current source)
H1	Standalone, relay only
J	Foundation Fieldbus / PROFIBUS PA, enclosure grounding
K	Modbus RTU, enclosure grounding
J1	Foundation Fieldbus / PROFIBUS PA, field wiring
K1	Modbus RTU, field wiring
L	Power supply digital interfaces

4.1.2.3 Wiring tables

4 to 20 mA/HART interface

Pin	Mark	Function
1	PWR+	V+
2	PWR-	V-
3	PWR-	V- Use if the instrument is connected to a separate power supply (operation as source).
4	4-20 mA	4 to 20 mA signal (Operation as source or sink)
5	PE	Protective earth Optional PE for relay connection. Connecting PE together with the 4-20mA analog output may cause ground loops.

Fieldbus interface

Pin	Mark	Function
1	Data-A	Signal Line A
2	Data-B	Signal Line B
3	GND	Ground
4	SHIELD	Cable Shield

Pin	Mark	Function
1	PWR+	V+
2	PWR-	V-

Relay connectors

ℹ All relays (A1, A2, FLT) of the device can be configured as "normally energized" (normally closed relay) or "energized on alarm" (normally open relay). The relays are configured at the factory as normally closed relays ("normally energized"). This ensures fail-safe operation.
Contrary to convention, the NO, COM, NC markings on the instrument are selected to correspond to the normally energized state. When the device is energized, the marking corresponds to the function of the pins.

Pin	Mark		Relay	
1	NO	FLT	Fault	Normally open
2	COM		Fault	Common connection
3	NC		Fault	Normally closed
4	NO	A2	A2	Normally open
5	COM		A2	Common connection
6	NC		A2	Normally closed
7	NO	A1	A1	Normally open
8	COM		A1	Common connection
9	NC		A1	Normally closed

4.1.2.4 Preparing the electrical installation

1. Loosen the set screw (2) and unscrew the enclosure lid from the lower part of the enclosure, see figure A on the fold-out page.
2. Pull out the PCB unit.
3. Proceed with the figure that contains your Polytron® model and signal output, see fold-out page.

4.1.2.5 Connecting the device with relays (stand-alone)

The wires for alarm devices must be connected to the 9-pin relay connector. A piece of wire insulation (heat-shrink tube) and a protective cover are included for extra protection of the relay wires.

1. Remove the 5-pin connector.
2. Connect the cable for the power supply to the corresponding connection terminals, see figure H1 on the fold-out page..
3. Bridge pins 3 and 4 of the 5-pin connector.
4. Remove the 9-pin connector.
5. Cut the heat-shrink tube as needed and slide it over the relay wires before insertion into the 9-pin connector.
6. Position the heat-shrink tube at the edge of the wire insulation and use a heat gun to shrink the tubing securely onto the wire insulation.
7. Slide the protective cover over the wires.
8. Connect the wires for alarm 1 (pre-alarm), alarm 2 (main alarm), and error alert to the relevant terminals as indicated in the following wiring table.
9. Plug the connector back into the socket and tighten the screws.
10. Close the device, see 4.1.2.9 Closing the gas detector.

The following tables display the status of a connected alarm indicator and whether it indicates faults (e.g., power failure for the gas detector).

The behavior of the relay depends on the alarm configuration and the relay contact the alarm indicator is connected to.

Relay configuration: Normally energized

Contact	Alarm indicator status and fault indication by the alarm indicator		
	Alarm triggered	Gas detector-specific fault	Field wiring fault
Normally closed	ON	displayed	not displayed
Normally open	OFF	displayed	displayed

Relay configuration: Energized on alarm

Contact	Alarm indicator status and fault indication by the alarm indicator		
	Alarm triggered	Gas detector-specific fault	Field wiring fault
Normally closed	OFF	not displayed	displayed
Normally open	ON	not displayed	not displayed

4.1.2.6 Connecting the 4-20mA/HART® interface

For connections to a control unit (PLC), refer to the documentation corresponding to the control unit.

1. Pull off the 5-pin connector.
2. Connect the three wires for power and signal to the appropriate terminal as indicated in the wiring table and figure.
3. Plug connector back into socket and tighten screws.
4. Close the instrument, see 4.1.2.9 Closing the gas detector.

4.1.2.7 Grounding

1. Ground the enclosure of the instrument locally at the grounding lug, see figures G and H on the fold-out page..
2. Connect the shield of the wires only to the instrument earth ground of the controller (e g. chassis, ground busbar, etc.).

ℹ Unless special measures are taken (e. g. capacitive earthing), the shield must only be connected at one end.

Information on grounding fieldbus and Modbus connections is provided in the following documents.

Interface	Document
Foundation Fieldbus FF	9033783
Modbus RTU	9033781

4.1.2.8 Connecting the fieldbus interface

1. Pull off the 2-pin and 4-pin connector.
2. Connect the two wires for power and the four wires for signal to the appropriate terminals as indicated in the wiring table and figure.
3. Plug connector back into socket and tighten screws.
4. Close the instrument, see 4.1.2.9 Closing the gas detector.

For further information regarding the fieldbus interface installation consult the corresponding Technical Handbook.

4.1.2.9 Closing the gas detector

1. Ensure that the following connections are correctly established:
   a. The screws for the wiring are tightened with the correct torque.
   b. All cable connections are secured with screws.
   c. The front port of the sensor is inserted.
   d. The grounding cable that leads from the enclosure is connected with the eye on the PCB unit, see figures G and H on the fold-out page.
2. Place the PCB unit in the lower part of the enclosure.
3. Screw the enclosure lid onto the lower part of the enclosure and tighten with the correct torque.
4. Tighten the set screw.

4.2 Increased safety (Ex e) installation - with Docking Station

The installation with enhanced safety (Ex e) is described in the assembly instructions for the docking station (part number 9033242).

5 Installation of sensors or sensing heads

5.1 Installing the EC sensor on the Polytron 8100 EC

See figure C on the fold-out page.

1. Unscrew the locking screw (2) (2 mm hexagon socket screw).
2. Unscrew and remove the bayonet ring (3) and remove the dummy disk.
3. Insert the sensor (4) in the opening and turn until it engages in the gas detector. This does not damage the sensor connector.
4. Secure the sensor with the corresponding bayonet ring (3).

   ℹ For Dräger SensorAlive, a different bayonet ring must be used than for other EC sensors.

5. Tighten the locking screw (2) so that the bayonet ring cannot come loose (required for installations in zone 22).

   ℹ If the Dräger SensorAlive is being installed in an existing system for the first time, the firmware must be updated to version 4.0.0 or higher. Contact Dräger for support.

5.2 Installing the sensing head

Depending on the type of explosion protection, there will be various sensing heads used. Information relating to the installation of the sensing heads can be found in the respective sensing head manual.

For remote applications, the cable shielding must be attached on both the sensor and transmitter side. The cable length should be ≤ 30 m.

Remote versions with "Explosion-proof (Ex d)" explosion protection

Transmitter	Sensing head IFU part numbers
Polytron 8100 EC	Remote EC sensing head (9033247)
Polytron 8200 CAT (for DQ sensors)	DQ NPT aluminum remote sensor, DQ NPT steel remote sensor (4544286)
Polytron 87x0 IR	Remote PIR 7000 (334) with stainless steel or aluminum sensor connection housing (4544286)
Polytron 8200 CAT (for LC sensors) Polytron 8310 IR Polytron 87x0 IR	Stainless steel or aluminum sensor connection housing (4544286)

Remote versions with "Increased safety (Ex e)" explosion protection

Transmitter	Sensing head IFU part numbers
Polytron 8100 EC	Remote EC sensing head (9033247)
Polytron 8200 CAT	Polytron SE Ex sensing heads (9033888)
Polytron 8310 IR	DrägerSensor IR (9023843)
Polytron 87x0 IR	PIR 7x00 (9023885)

6 Commissioning

6.1 General information

– Before connecting the instrument to the power supply, connect the wires for the relay and connect up the sensor.
– Before starting normal operation of the instrument, check whether the configuration and adjustment settings are correct.

In order to guarantee its safe operation according to BVS 13 ATEX G 001 X and PFG 14 G 001 X, the following standard alarm settings for the instrument must remain unchanged.

– The relays must be set to ***Normally energ.*** and the alarm A2 (main alarm) to ***Latching*** and ***Non-acknowledgeable*** or ***Pre-Acknowledgeable***.
– Alarm A1 (pre-alarm) may only be set to ***Acknowledgeable*** if used for activation of an acoustic alarm device.
– Latching in the event of over range (see "Setting the DQ sensor latching", page 37).

When operating in accordance with BVS 13 ATEX G 001 X and PFG 14 G 001 X, consideration must be given to the following special conditions:

– Polytron 8200 CAT:
  – When streaming the DQ or LC sensor with air containing measured gas, measured values may increase by up to 32 %.
    These values may increase by up to 70 % when operating with the DQ remote calibration adapter.
  – The transmitter with LC sensor must be operated in combination with a control unit that indicates over range with a latching signal. Internal transmitter alarm relays are not permitted.
  – The transmitter with LC sensor must be adjusted with its sensor in the standard operating position.
  – False alarms may be triggered during the warm up period of the LC sensor.
– Polytron 8100 EC:
  Minor changes to the concentration may see the setting time t20 of the transmitter with EC sensor exceed the EN 50104 threshold.

6.2 Commissioning the gas detector

1. To prevent false alarms, turn off the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).
2. Switch on the power supply.
   ⇒ The device performs a start-up sequence (LCD/LED test, software version, and initialization).
   ⇒ The display indicates that the sensor will be ready for measurement in hh:mm:ss (countdown). The device transmits the maintenance signal. The fault relay is activated.
   ⇒ The sensor warms up. The maintenance signal on the 4 to 20 mA interface remains until the sensor has warmed up. The length of the warm-up time depends on the type of sensor and the ambient conditions. Maximum warm-up time of a new sensor: See the instructions for use of the sensor.
3. Check the date and time. Settings can be changed during the sensor's warm-up time.
   ⇒ After the sensor's warm-up time, the device switches to normal operation. The display shows the current gas concentration, the unit of measurement, and the selected gas if applicable. The green LED is lit.

If the device is operated with a Dräger SensorAlive, Dräger recommends setting the correct date and time. The sensor's warm-up time is followed by the start-up period of the Dräger SensorAlive. The sensor is ready for measurement during this phase, but the self diagnostics do not yet take place.

4. Adjust the device as necessary.
5. Turn on the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).

7 Operation

7.1 Control panel

The control panel contains

– buttons for navigating in the menu
– a display
– LEDs and associated symbols

The buttons for navigation have different functions depending on the menu that is in use.

The instrument is operated with a magnetic wand. To do so, the enclosure lid must be in place on the instrument. If the enclosure lid is not in place, the magnetic wand may activate two or more buttons at once (cross-talk).

7.2 LEDs and symbols

The following symbols and LEDs can be found on the control panel:

Symbol	LED	Description
	Red	Alarm Triggered
	Yellow	Fault
	Green	Power on

LED status

– If alarm A1 (pre-alarm) has been triggered, the red LED will flash once .
– If alarm A2 (main alarm) has been triggered, the red LED will flash twice  .
– If an alarm is acknowledged before the reason for the alarm has been rectified, the red LED will light continuously to indicate that there is a fault.

7.3 Readings on the display

7.3.1 All devices

Symbol	Explanation
	An error message is present. Additional information is available in the ***Information*** menu.
	A warning message is present. Additional information is available in the ***Information*** menu.
	Maintenance signal is transmitted.
	The set full scale deflection is exceeded at the 4-20 mA interface.
	The set threshold limit value is not met at the 4-20 mA interface.
	HART® operation is active. Analog interface is set to a fixed value and is not transmitting any measurement signal.
	Once the capacity of the data logger is reached, the old data are overwritten by new values ("roll" function).
	Once the capacity of the data logger is reached, no more data can be stored ("stack" function).
SIL	SIL operation mode is activated.

7.3.2 Polytron 8100 EC-specific symbols

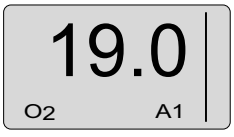
Symbol	Explanation
	The sensor is ready for operation.
	The sensor is ready for operation but is close to the end of its useful life.
	The sensor is still ready for operation but should be changed as soon as possible. The vitality is <25%.
LT	A LifeTest of the Dräger SensorAlive is carried out.

7.3.3 Measuring mode

The following display examples show the Polytron 8100 EC.

Gas names are not predefined for the Polytron 8200 CAT and Polytron 8310 IR. Gas names must be entered via the DrägerPolysoft PC software. After modifying parameters with the DrägerPolysoft PC software or another software, verify all parameters by downloading them from the Polytron® 8xx0 or by checking them directly on the instrument.

The following is displayed in measuring mode:

Display example	Description
	In normal operation, the display shows the measured gas concentration, the selected gas type, and the unit of measurement. **Analog interface:** Corresponding current value **Relays:** All relays are in the normal state
	Exceeding the alarm thresholds. Example shows pre-alarm A1. **Analog interface:** Corresponding current value **Relays:** Relay A1 is in alarm state.

7.3.4 Special states

If the instrument is in a special state, proper measurement or alarm activation can no longer be guaranteed.

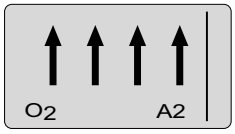
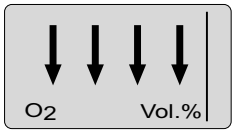
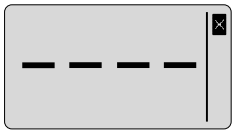
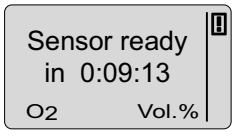
This is the case:

- When the gas concentration exceeds the measuring range.
- When a fault occurs.
- When alarms are deactivated.
- When calibrations are performed.
- When bump tests are performed.
- When a sensor is in the warm-up phase.
- When the system is in maintenance mode.
- When a Dräger SensorAlive is used and the system is configured such that the measured value is not indicated during a LifeTest.

For the current of the analog interface corresponding to the analog signal, see 16.2.

The signals of the digital interfaces are described in the following documents.

Interface	Document
PROFIBUS PA	9033782
Foundation Fieldbus FF	9033783
Modbus RTU	9033781

Display example	Description
	**Value above measuring range** The gas concentration is outside of the measuring range of the sensor[1]. **Analog interface:** Over range **Relays:** A2 relay switch ***Note for the Polytron 8200 and Polytron 8310:*** The message that the measuring range has been exceeded can also be caused by a short circuit or an interruption in the line to a remote sensor.
	**Value below measuring range** The gas concentration is outside of the measuring range of the sensor. **Analog interface:** Drift below zero **Relays:** Fault relay switch
	**Fault display** The ⊠ symbol is displayed on the right side of the display. **Analog interface:** Fault current **Relays:** Fault relay switch
	**Maintenance display** The 🔧 symbol is displayed on the right side of the display. This is displayed when alarms are deactivated, and during adjustment, bump tests, and maintenance work. **Analog interface:** Maintenance current **Relays:** No change
	**Warning display** The ▯ symbol is displayed on the right side of the display. **Analog interface:** Warning current[2] **Relays:** No change
	**Warm-up phase 1** The ▯ symbol is displayed on the right side of the display. The remaining time is displayed on the left side. **Analog interface:** Maintenance current **Relays:** Fault relay switch The fault relay behavior can be configured for warm-up phase 1 (see "Setting fault relay warm-up 1", page 30).

Display example	Description
	**Warm-up phase 2** The ! symbol is displayed on the right side of the display. The measured value is displayed on the left side. **Analog interface:** Measured value **Relays:** Behavior as in measuring mode (the fault relay does not indicate warm-up phase 2).

1) When the gas concentration exceeds the full scale deflection of the 4 to 20 mA interface, the display continues to display the measured value plus "Analog interface over range" .
2) Only when warning current is activated. Factory setting: Deactivated.

7.3.5 Ending special states

Error display / warning display

Error displays and warning displays are usually non-latching. As soon as the causes of the errors or warnings have been rectified, no more error or warning is displayed. Exceptions are "SensorAlive fault detection" and "SensorAlive clogging detection".

To eliminate the causes, display the error or warning (see "The Information menu", page 18) and start troubleshooting (see "Troubleshooting", page 25).

Value exceeds/falls below the measuring range

The display indicates that the gas concentration is beyond the measuring range of the sensor. The information on the display disappears as soon as the gas concentration is back within the measuring range. After an over range occurrence, the sensitivity and response time of the sensor may deteriorate.

NOTICE
Sensor malfunction
Gas concentrations outside the sensor's measuring range can cause the sensor to malfunction.
► Recalibrate the sensor if necessary.

Polytron® 8200 CAT with DQ sensor:

An over range has to be acknowledged with [OK] after verifying that the gas concentration is below 100 %LEL (e.g. using a portable instrument).

Latching alarms is the default setting of the instrument.

For instruments without relays, the over range can be set to non-latching. In this case, the over range indication disappears. The control unit must support this function! For further information see: "Setting the DQ sensor latching", page 37.

Polytron® 8200 CAT with LC sensor:

⚠ WARNING
Ambiguous readings for measured values that exceed the measuring range
Latching alarms for over range situations are not supported by LC sensors.
For safe operation in line with BVS 13 ATEX G 001 X, the gas detector must be operated with a controller that can display latching alarms. Do not use internal alarm relays of the gas detector.
► Make sure that over range latching is active at the controller.

After over range measuring values, verify that the gas concentration is below 100 %LEL (e.g. using a portable instrument).

7.4 Info mode and function keys

7.4.1 Opening Info mode

Info mode is used to show relevant device information. This does not interrupt the normal operation of the device.

- Tap and hold ▲ for 3 seconds in measuring mode.

7.4.2 Navigating in Info mode

Button	Function
▲	Switches to the next screen
▼M	Switches to the previous screen
OK	Ends info mode

If no key is tapped within 30 seconds, the instrument will automatically return to normal operation.

7.4.3 Using function key

Using the function key, a pre-set function can be executed. By default the faults are displayed.

- Tap and hold ▲ for 1 seconds in measuring mode.

To configure the function key, see 11.4 Configuring function key.

7.5 Menus

7.5.1 Navigating in a menu

Button	Function
▲	Scrolls upwards. Sets values.
▼M	Scrolls downwards. Sets values.
OK	Confirms entry. Selects menus and functions.

7.5.2 Opening menus

- To open the ***Information*** menu:
  a. Tap and hold ▼ for 1 second in measuring mode.
- To open the ***Calibration*** menu:
  a. Tap and hold ▼ for 3 seconds in measuring mode.
  b. Select ***Enter password***.
  c. Enter the corresponding password and confirm with [OK].
- To access all menus:
  a. Tap and hold ▼ for 3 seconds in measuring mode.
  b. Select ***Enter password***.
  c. Enter the corresponding password and confirm with [OK].

7.5.3 Passwords

Calibration PWD	Permits access to the ***Information*** menu and the ***Calibration*** menu (adjustment settings) Default value: **_ _ _ 1**
Settings PWD	Permits access to all configurations and menus Default value: **_ _ _ 2**

Information on changing the passwords can be found in 11.1.

7.5.4 The *Information* menu

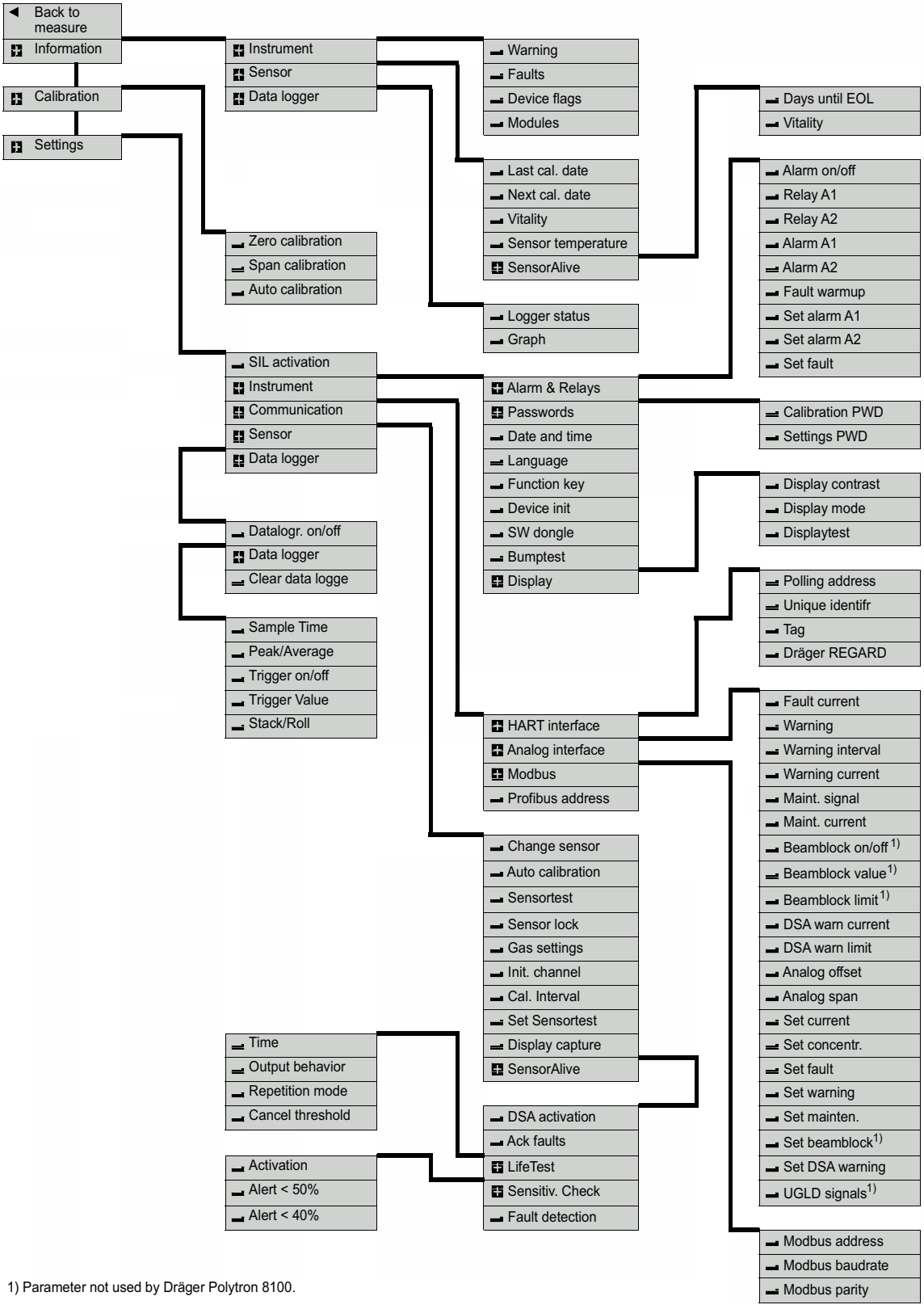
In the ***Information*** menu, the following information can be called up:

Instrument	
Warnings	Warning messages in plain text, including the corresponding number. If there are several warning messages, this will be shown accordingly (e.g. with 1/3 = screen 1 of 3).
Faults	Error messages in plain text, including the corresponding number. If there are several errors, this will be shown accordingly (e.g. with 1/3 = screen 1 of 3).
Device flag	With this function, the warning and error codes are shown in table format. If the value 00 is shown for all codes, then there are no warning or error messages present.
Modules	An overview of the installed hardware modules, as well as the software version of the SIOS-specified EC sensor interface, will be shown. For more detailed information, select the corresponding module. ■ = installed modules □ = modules not installed
Sensor	
Last cal. date	Adjustment date, unit, gas and concentration of the last adjustment are shown.
Next cal. date	Shows the date of the adjustment that is due next.
Vitality[1)]	The sensor vitality is shown in %. Dräger recommends replacing the sensor when vitality is < 25 %.
Sensor temperature[1)]	The current and highest sensor temperature will be shown.
SensorAlive	The sub-menu shows the number of days left for the expected service life and the vitality in %.
Data logger	
Logger status	Data logger status display (active or inactive)
Graph	Display of progress over last 15 minutes in a time/concentration graph.

1) The function is only available with the diagnostic dongle.

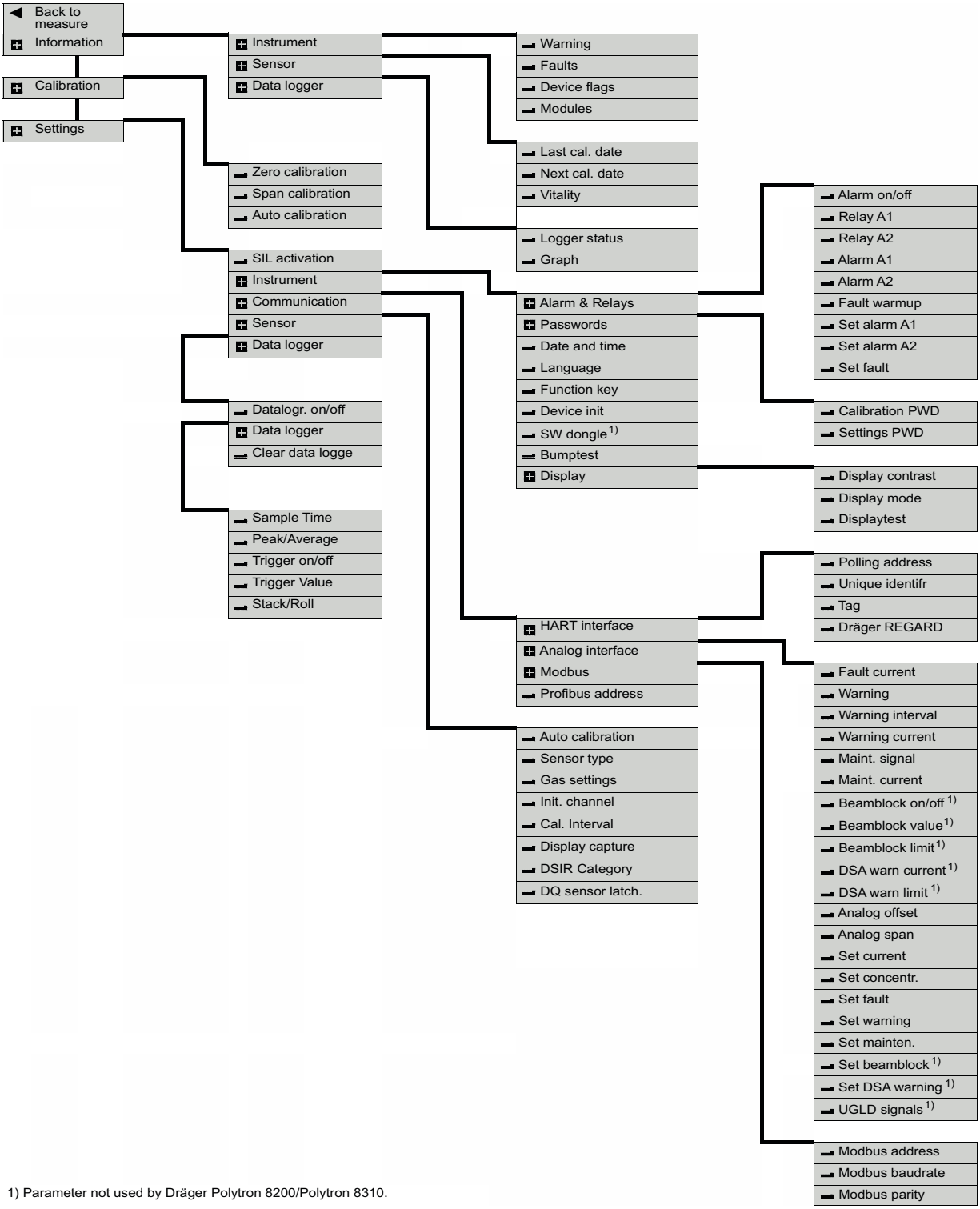
7.5.5 Menu overviews

Polytron 8100



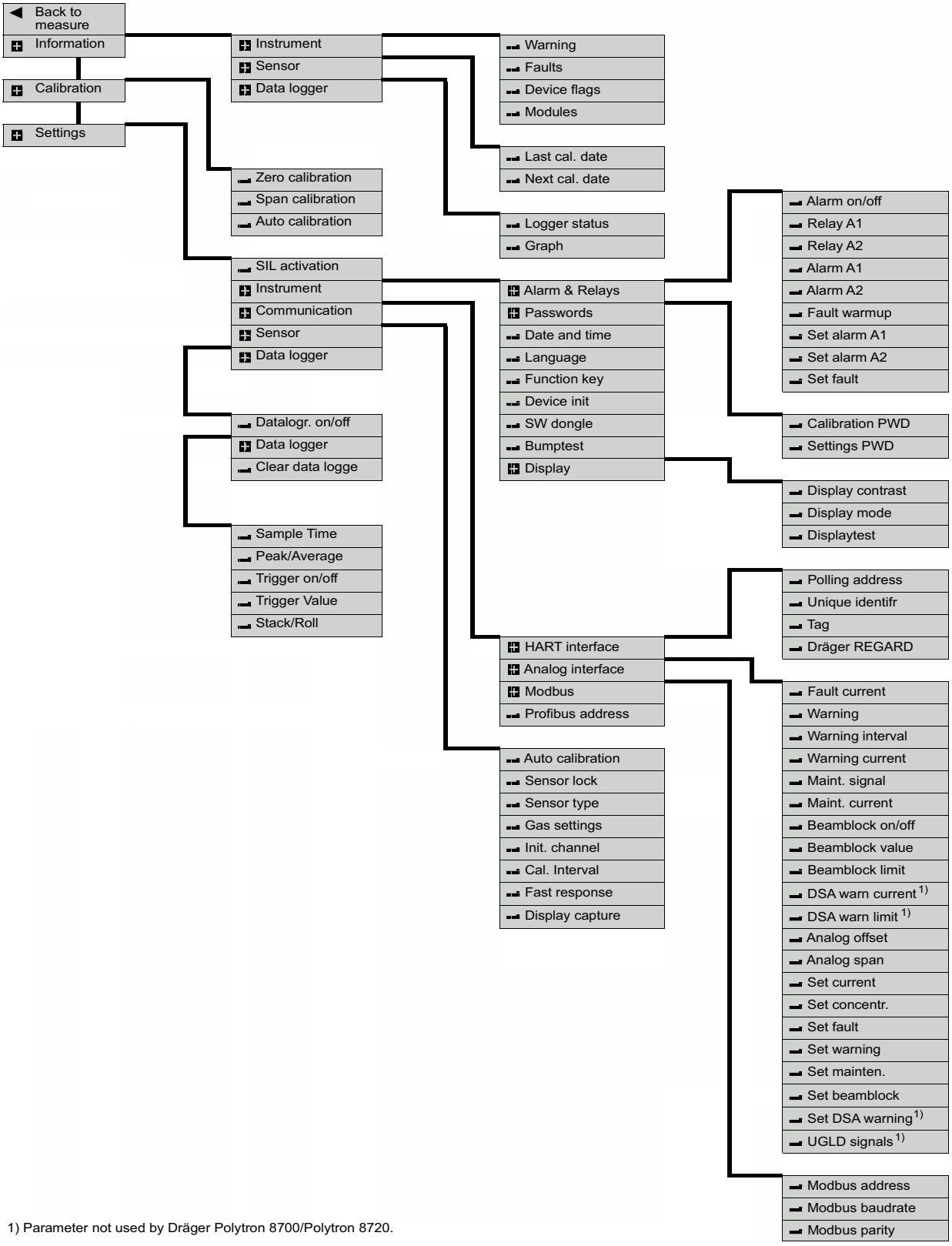
1) Parameter not used by Dräger Polytron 8100.

Polytron 8200, Polytron 8310



1) Parameter not used by Dräger Polytron 8200/Polytron 8310.

Polytron 8700, Polytron 8720



1) Parameter not used by Dräger Polytron 8700/Polytron 8720.

7.6 Information on operation with a Dräger SensorAlive

– If a menu is accessed on the transmitter or certain errors are set, the Dräger SensorAlive does not perform a LifeTest.
– The Dräger SensorAlive can suppress the instrument calibration for a certain period of time (H_2S sensor: 30 minutes).
– If a high level of accuracy is required for the duration of the LifeTests, the time on the transmitter should be regularly checked and adjusted as necessary.
– The menu entries for the Dräger SensorAlive are only displayed if a Dräger SensorAlive is connected. The dongle functions are also visible in this case, but are not active.

8 Calibration

8.1 General information

– To ensure proper operation, adjust the zero-point first and then the sensitivity. If these procedures are performed in the incorrect order, adjustment cannot be continued due to software settings.
– If the intended operation is at high altitudes, the display value will be lower than that at sea level (reduced partial pressure). New span adjustment is recommended if the altitude or the ambient pressure changes. The factory adjustment is set to sea level.
– Dräger recommends adjusting instruments with the gas to be detected. This method is more accurate than a surrogate gas adjustment. A surrogate gas adjustment may only be performed as an alternative if a measured gas adjustment is not possible.
– Sensors for methane and hydrogen should only be adjusted with measured gas and not with surrogate gas.
– For the Polytron 8310 IR: Also observe the information in the instructions for use for the DrägerSensor IR[1)].

During adjustment, the measurement accuracy of the sensor is checked and adjusted with a known test gas concentration. Adjustment must be performed on a regular basis. The length of the adjustment intervals depends on the ambient conditions in which the sensor is operated.

Ambient conditions and aging results in sensor drift. Sensor drift reduces the display accuracy of measured gases. Adjustment restores this display accuracy. Shorter adjustment intervals must be selected depending on the extent of the drift.

To gauge the ambient conditions for new installations, selecting short adjustment intervals and documenting the drift is recommended. The system operator should define the adjustment interval length with the aid of the collected data.

If a Dräger SensorAlive is used, the drift is compensated and can be read out.

Under normal conditions, Dräger recommends the following adjustment intervals[2)]:

– Electrochemical sensors (EC): 6–12 months[3)]
– Catalytic sensors (CAT): 4 months
– Infrared sensors (IR): 6–24 months[3)]

8.2 Test gases

Please refer to the instructions for use provided for the respective sensor for the test gas properties (e.g. relative humidity, concentration). If there is no information provided relating to relative humidity, dry test gas can be used for the adjustment. The humidity of the test gas is not relevant for O_2 sensors.

Depending on the type of adjustment, various types of test gas are used.

Zero gas

The zero gas is a test gas used for adjustment of the zero-point of a sensor. Nitrogen (N_2) is used for O_2 and CO_2 sensors. With other sensors, ambient air can be used once it is free from disruptive contamination and the measured gas.

Adjustment gas

The adjustment gas is a test gas used for adjustment of the sensitivity of a sensor. The adjustment gas is a known concentration of the measured gas, diluted with clean air and nitrogen. Adjustment gas is not required for O_2 sensors, as oxygen from the ambient air is used.

8.3 Gas flow for adjustments

The gas flow varies according to each sensor.

EC sensor, CAT sensor	0.5 L/min ± 10 %
All other sensors	0.5 L/min - 2 L/min

The gas flow should correspond with the ambient conditions during operation (e.g. duct measurement with flow higher than 2 L/min)

8.4 Preparing for adjustment

General information

⚠ WARNING
Health hazard due to test gas
Inhaling test gas may risk health or lead to death.
► Do not inhale test gas.
► Observe risks and security statements related to the test gas (Refer to data sheets and instructions figuring on calibration devices).

1) 9023981 (English), 9033555 (Bulgarian, Romanian), 9023984 (Spanish, Portuguese), 9023986 (Danish, Norwegian), 9033556 (Czech, Croatian), 9033809 (Chinese), 9023985 (Hungarian, Polish), 9023982 (French), 9033557 (Slovak, Slovenian), 9033558 (Greek, Turkish), 9023987 (Italian, Dutch), 9023983 (Finnish, Swedish), 9023843 (German)

2) Observe the instructions for use for the sensor.
3) For applications in accordance with EN 45544-1 and EN IEC 62990-1, the adjustment interval must not exceed 6 months.

⚠ CAUTION
Triggering alerts by test gas
Applied test gas may trigger alerts.
► Make sure that test gas is no longer applied after calibration.

Prerequisites
– The sensor warm-up phase has been completed (see "Commissioning the gas detector", page 15).
– The date and time have been set (see "Setting date and time", page 29).
– If a Dräger SensorAlive is used, the last LifeTest must be sufficiently long ago (see the instructions for use of the sensor).

Special feature of the Polytron 8310
Dräger recommends carrying out an automatic zero calibration on the sensor before adjustment of the zero-point. This resets the zero-point tracking of the DrägerSensor IR, and the full tracking range is available.
1. Turn off the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).
2. Use the calibration adapter to apply nitrogen, synthetic air, or clean air to the sensor and wait until a stable measured value is shown.
3. Set the magnetic wand on the area marked with the ⇩0 symbol (inside of the black border) on the surface of the sensor shell and hold it in place for at least 5 seconds. After 5 seconds, the sensor output signal switches to the display of the calibration signal (display change by approx. –10 %LEL) for as long as the magnetic wand is held in place. At the same time, a zero calibration of the optical measurement system is automatically performed.
4. Remove the magnetic wand. After 30 seconds, the instrument exits the automatic zero calibration routine. To confirm the automatic zero calibration, the output signal switches back to the calibration signal (display change to approx. –10 %LEL). This signal is also displayed for the same length of time as when starting the automatic zero calibration routine.
5. Turn on the alarm activation for the gas detector.

Polytron 8100, Polytron 8200, Polytron 8310
See figure B on the fold-out page.

Adjustment equipment:
– Dräger pressure regulator (1), use a stainless steel pressure regulator for reactive gases
– Dräger calibration adapter (2) (part number 6810536)
– Hose (3)
– Dräger test gas cylinder (4)

Preparing adjustment:
1. Connect the pressure regulator to the test gas cylinder.
2. Mount the calibration adapter on the sensor.
3. Connect the hose to the plug nipple connection.
4. Open the menu (see "Opening menus", page 18).

Polytron 87x0 IR
See figure B on the fold-out page.

Adjustment equipment:
– Dräger pressure regulator (1), use a stainless steel pressure regulator for reactive gases
– Dräger calibration adapter (5) (part number 6811610)
– Hose (3)
– Dräger test gas cylinder (4)

Preparing adjustment:
1. Connect the pressure regulator to the test gas cylinder.
2. Fit the calibration adapter to the splash guard so it snaps into place.
   This does not apply for mounting on ducts or if a process adapter or process cuvette is used (see installation instructions for the corresponding PIR 7x00 accessory).
3. Ensure that the sealing surfaces around the openings of the splash guard are clean. The insect guard does not have to be removed.
4. Connect the hose to the plug nipple connection.
5. Open the menu (see "Opening menus", page 18).

8.5 Zero calibration

8.5.1 General information

Ambient air can be used to calibrate the zero-point of the sensor instead of nitrogen or synthetic air only if the ambient air is known to be free of the target gas and any other gas to which the sensor may be cross-sensitive (as listed on the sensor data sheet). In this case, no cylinder or calibration adapter is needed for the zero calibration.

⚠ WARNING
Calibration fault at zero calibration
Insufficient ambient air flow may cause calibration errors.
► Make sure that the ambient air flow to the sensor is sufficient.

Polytron® 8100 EC-specific:

For Oxygen (O_2) sensors a zero calibration does not change any value in the firmware or sensor. Thus, the zero calibration function can be used to check the correct zero reading when Nitrogen is applied to the sensor. The Polytron 8100 EC will indicate a fault state if a zero check fails with a deviation of more than 0.6 Vol% O_2 from zero. In case of a fault, repeat the zero check or change the sensor if necessary. Use Nitrogen (N_2) for verification.

Polytron® 8200 CAT-specific:

Sensors must not be calibrated with pure nitrogen. Catalytic sensors need oxygen to work properly.

Polytron® 8720 IR-specific:

For Polytron 8720 IR (with PIR 7200 to detect carbon dioxide), only Nitrogen or Synthetic Air without any CO_2 content may be used for a zero calibration.

8.5.2 Performing a zero calibration

ℹ Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:
– Sensor has finished the warm-up phase
– Calibration is prepared.

Calibrate the zero-point as follows:
1. Select ***Calibration*** > ***Zero calibration*** and confirm.
   ⇒ The maintenance signal is transmitted via the analog interface. No alarms or fault relays are activated and the 🔧 symbol is displayed.
   ⇒ The message ***Apply zero gas*** is displayed.
2. Apply Synthetic Air or Nitrogen if ambient air cannot be used.
   a. Set the gas flow corresponding to the sensor used (see "Gas flow for adjustments", page 22)
3. Select ***Next*** and confirm.
   ⇒ The current value is displayed.

ℹ After 15 minutes without confirmation, the instrument reverts to the calibration menu without performing a calibration.

After the test gas has been applied to the sensor for 3 minutes and the displayed value is stable perform calibration.
4. Select ***calibrate*** and confirm.
   ⇒ The message ***please wait...*** is displayed.
   ⇒ The new current value is displayed.
5. Select ***Next*** and confirm.
6. Turn off the gas flow and remove the calibration adapter from the sensor or disconnect the hose.
   If the current value is not within the alarm range:
7. Select ***Next*** and confirm.
   ⇒ The instrument returns to the calibration menu.

8.6 Span calibration

8.6.1 General information

Polytron® 8310 IR-specific:

Due to the design of the DSIR gas sensor, the output signal of the gas sensor is limited to 45 %. . . 55 % of the internal supply voltage. If the gas concentrations increase further after the maximum sensor output signal has been reached, this does not lead to an increase of the values displayed on the instrument response transmitted to the central device. In case of substances with particularly low calibration factors and/or manual configuration of a high span calibration factor at the sensor, this may already happen at concentrations below 100 %LEL. For substitute gas calibrations, correct triggering of the alarm should therefore be checked with a test gas concentration corresponding to the alarm threshold. If necessary, the measuring range that can be displayed can be increased by reducing the sensor output signal as required with subsequent calibration on the instrument (see chapter "Manual span calibration of the output signal" in the instructions for use of the DSIR gas sensor).

8.6.2 Performing a span adjustment

ℹ Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:
– Adjustment is prepared.
– The zero-point has been adjusted.
– Specifically for all Polytron 8xx0 except the Polytron 8100 EC:
  The last valid zero adjustment was no longer than 24 hours ago.

Adjust the sensitivity as follows:
1. Select and confirm ***Calibration*** > ***Span calibration***.
   ⇒ The maintenance signal is transmitted via the analog interface. No alarms or fault relays are triggered and the 🔧 symbol is displayed.
   ⇒ The parameters for the adjustment gas are displayed, e.g.:[1)]
   Gas : H_2S
   Unit: ppm
   Concentr.: 25
2. If the displayed parameters do not match the target gas, adjust the parameters:
   a. Select and confirm ***Gas***.
   b. Select and confirm the adjustment gas from the list.
   c. Select and confirm ***Unit***.
   d. Select and confirm the unit of measurement from the list.
   e. Select and confirm ***Conc.***.
   f. Set the concentration of the adjustment gas.
3. If the settings are correct:
   a. Select and confirm ***Next***.
      ⇒ A message like ***Gas flow ON H_2S*** is displayed.
4. Apply adjustment gas.
   a. Set the gas flow corresponding to the sensor used (see "Gas flow for adjustments", page 22).
5. Select and confirm ***Next***.
   ⇒ The current value is displayed

ℹ After 15 minutes without confirmation, the instrument returns to the adjustment menu without performing an adjustment.

After the test gas has been applied to the sensor for 3 minutes and the displayed value is stable, perform adjustment.[2)]:
6. Select and confirm ***Next***.
   ⇒ The message ***please wait...*** is displayed.
   ⇒ The newly detected (current) value is displayed.

1) Not applicable for all sensors (see "Measuring mode", page 16).
2) For LC sensors, the test gas must be applied for at least 6 minutes.

7. Select and confirm ***Next***.
8. Turn off the gas flow and remove the calibration adapter from the sensor or disconnect the hose.

   If the current value is not within the alarm range:
9. Select and confirm ***Next***.
   ⇒ The instrument returns to the adjustment menu.

8.7 Automatic calibration

8.7.1 General information

Automatic calibration includes the zero calibration and a subsequent span calibration. It is an alternative to manually carrying out the zero and span calibration.

Not all sensors and gases support automatic calibration. If the function is not available, perform the calibration manually.

8.7.2 Perform automatic calibration

i After 24 hours, zero calibration is not up-to-date any more. Thus, automatic calibration cannot be performed unless zero calibration is performed again.

i Calibration can be aborted at any time. To abort calibration select ***back***.

Prerequisites:
– Automatic calibration is enabled.
– Sensor has finished the warm-up phase.
– Calibration is prepared.

Perform the automatic calibration as follows:
1. Apply Synthetic Air or Nitrogen if ambient air cannot be used.
2. Select ***Calibration*** > ***Auto calibration*** and confirm.
   ⇒ The message ***please wait...*** is displayed and the instrument automatically performs the zero calibration.
   ⇒ In the case of an O_2 sensor, ***Fresh air cal.*** is displayed.

   i The Maintenance signal is transmitted by the analog interface, no alarm or fault relays are switched and the symbol is displayed.
3. After a successful zero calibration, the span calibration is started.
   ⇒ The parameters for the gas are displayed, e. g.:[1)]
   Gas : H_2S
   Unit: ppm
   Concentr.:25
4. If the displayed parameters do not match the target gas, adjust the parameters:[2)]
   a. Select ***Gas*** and confirm.
   b. Select the calibration gas from the list and confirm.
   c. Select ***Unit*** and confirm.
   d. Select the unit of measurement from the list and confirm.
   e. Select ***Conc.*** and confirm.
   f. Set the concentration of the calibration gas.
5. If settings are correct:
   a. Select ***Next*** and confirm.
      ⇒ A message like ***Gas flow ON H_2S*** is displayed.
6. Apply calibration gas.
   a. Set the gas flow corresponding to the sensor used (see "Gas flow for adjustments", page 22)
7. Select ***Next*** and confirm.
   ⇒ The current value is displayed

   i After 15 minutes without confirmation, the instrument reverts to the calibration menu without performing a calibration.
8. Once the current value is stable, the instrument automatically performs the span calibration.
9. After a successful calibration, the new current value and the message ***Value OK?*** are displayed.
   - If not, select Redo and confirm to perform the calibration again.
   - If the value corresponds the target value, proceed.
10. Turn off the gas flow and remove the calibration adapter from the sensor or disconnect the hose.
11. Select ***Accept value*** and confirm to finish the calibration. The instrument returns to the calibration menu.

9 Troubleshooting

9.1 Faults

Number	Cause	Remedy
001, 003 - 004, 012 - 014, 020 - 024, 043, 060, 067	Serious instrument fault, various causes.	Have the instrument checked by DrägerService.
002, 025 - 027, 030 - 034, 041, 042, 044, 050, 052, 081, 085	Serious data error in the instrument, various causes.	Reset the instrument to factory settings. If the fault occurs again: Have the instrument checked by DrägerService.
005	Supply voltage is out of range.	Check the power supply.
010	4 to 20 mA interface cable not connected.	Check the 4 to 20 mA interface connection. If operated as a stand-alone instrument without a central controller, wire pin 3 to pin 4.

1) Not applicable for all sensors (see "Measuring mode", page 16).
2) Only possible for certain sensors.

Number	Cause	Remedy
011	Serious instrument fault, various causes.	Have the instrument checked by DrägerService. If the fault occurs again: Check the load or the cables.
045	Instrument does not detect any sensor.	Check the connections. If the fault occurs again: Have the instrument checked by DrägerService.
051, 054	Faulty zero adjustment.	Perform zero adjustment.
055	Faulty span adjustment.	Perform span adjustment.
076, 080 - 084	Instrument fault.	Check the electrical connections. If the fault occurs again: Have the instrument checked by DrägerService.
090	Sensor lock feature is activated. A sensor with a different part number has been connected.	Use a sensor with the same part number or deactivate the sensor lock feature.
105	Instrument fault.	Have the instrument checked by DrägerService.
137, 64, 91	Instrument fault.	Turn the instrument off and back on. If the fault occurs again: Have the instrument checked by DrägerService.

Only for Polytron 8100 EC with Dräger SensorAlive

Number	Cause	Remedy
220	Sensor opening is clogged.	Clean the sensor opening or replace the dust filter. Then confirm the clogged sensor in the menu (see "Dräger SensorAlive settings", page 36).
221	Sensor sensitivity is less than 40 % (calculated value).	Adjust or replace the sensor.
222	Gas value is too high after electrolysis due to a fault.	Replace the sensor or contact DrägerService.
223	Sensor sensitivity is too low.	Adjust or replace the sensor.
224	Conditioning current is not within the permissible range.	Replace the sensor or contact DrägerService.

Only for Polytron 87x0 IR

Number	Cause	Remedy
064, 071	Communication fault.	Check connection to PIR 7x00.
083	PIR 7x00 optics dirty.	Clean PIR 7x00 optics.
086	Supply voltage outside range	Check supply voltage.
087	4 to 20 mA fault at PIR 7x00 sensor.	Check 4 to 20 mA connection to PIR 7x00.
094, 095	Data error in the instrument.	Reset the sensor to factory default settings. If this error occurs again: Have the instrument checked by DrägerService.
096	SIL password does not match with PIR 7x00.	Enter password again.

9.2 Warnings

Number	Cause	Remedy
101	Data logger in Stack mode is 100 % full and is not logging any more data.	Have the instrument checked by DrägerService.
102	Data logger in Stack mode is 90 % full.	Download the data as soon as possible and clear the data logger.
103, 106	Data error in the instrument. Some dongle functions like the data logger, sensor test, etc. may no longer be available.	Reset the instrument to factory settings. If this error occurs again: Have the instrument checked by DrägerService.
104	Date or time setting not valid.	Set the date and time.
105	Instrument fault.	Have the instrument checked by DrägerService.
107	Battery for data memory empty.	Have the instrument checked by DrägerService.
110, 111, 112	The SW dongle has been removed without first being deactivated.	Deactivate the SW dongle.
113	Alarms inhibited.	Activate the alarms.
164, 165	Sensor warm-up phase not yet complete. Increased measurement errors must be expected.	Wait until the sensor warm-up phase has ended. Do not adjust the sensor before it is fully warmed-up.

Number	Cause	Remedy
167, 170	Adjustment interval expired.	Readjust the instrument.

Only for Polytron 8100 EC

Number	Cause	Remedy
163	Low EC sensor vitality	Replace sensor.
171	Negative reading. Value below range minimum.	Recalibrate zero point.

Only for Polytron 8100 EC with Dräger SensorAlive

Number	Cause	Remedy
320	Communication with the sensor failed. Diagnosis and gas generator no longer work.	Remove the sensor, do not use it for approx. 1 day and reinsert it. Check the firmware version and have it updated by DrägerService if necessary. Replace the sensor.
321	Evaluation of the sensor data failed. The sensor cannot perform or evaluate a LifeTest (preconditions are not met).	Change the time of the LifeTest or set the repeat profile to "Flexible" (see "Dräger SensorAlive settings", page 36). If the warning occurs again, contact DrägerService.
322	Sensor data set is faulty.	Replace the sensor.
323	Sensor data set is incompatible.	Contact DrägerService.
324	Sensor sensitivity is less than 50 % (calculated value).	Adjust the sensor and prepare for sensor replacement (e.g., order the spare part).
325	Sensor sensitivity is less than 40 % (calculated value).	Adjust or replace the sensor.
326	Sensor cannot be adjusted during a LifeTest and for a certain period afterwards.	To be able to perform a scheduled adjustment, the LifeTest can be temporarily inhibited in PolySoft via the Inhibit mode.
327, 330, 344, 347	Gas generator is not working.	Adjust or replace the sensor.
331	Gas generation failed.	Adjust the sensor.
332	Sensor is in the safe state. No LifeTests are performed (group warning).	Determine the cause and rectify it.
333	Real time clock of sensor is not working correctly.	Set the clock.
334	Sensor synchronization not complete.	Wait until synchronization is complete. Depending on the condition of the sensor, this state may last for several minutes. Have the firmware updated by DrägerService if necessary.
336	Internal sensor checks return faulty results.	Restart the system.
337	Transmitter firmware must be updated.	Contact DrägerService.
340	Sensor is synchronized after the system is restarted.	Wait until synchronization is complete.
342	Temperature difference between the two temperature measurement points is too great.	Wait and check if the LifeTest is evaluated, or replace the sensor.
347	Configuration failed due to an interruption in the communication between the transmitter and the sensor.	Reconfigure the sensor and check the configuration.
350	Gas generator is in the start-up phase.	Wait until the start-up phase has ended. During the start-up phase, the error detection and clogging detection functions are not active.
352	Sensor self-test failed.	Replace the sensor or contact DrägerService.
353	Sensor is temporarily in Inhibit mode. No LifeTests are performed during this time.	Inhibit mode can be exited manually via PolySoft or is exited automatically.
354	Error during system start.	Perform manual restart.
355	Sensor firmware is incompatible with the hardware.	Have the firmware updated by DrägerService.
356	Hardware data faulty.	Perform a restart or replace the sensor.
357	Sensor was set to the safe state manually, e.g., to perform a firmware update.	To exit the mode, restart the sensor.

Only for Polytron 87x0 IR:

Number	Cause	Remedy
163	Sensor temperature is very high.	
171	Zero drift too high.	Perform zero calibration.
172	PIR 7x00 optics dirty.	Clean PIR 7x00 optics.
173	Zero calibration expired for span calibration	Perform zero calibration.
182	Automatic calibration not possible with PIR 7200.	Perform new zero and span calibration

10 Maintenance

– The maintenance intervals must be established for each individual installation. Depending on safety considerations and application specific conditions the instrument is used in, these might need to be shortened.

Every 6 months:

– Inspection by trained service personnel.
– Check signal transmission to the controller (see "Testing the analog interface", page 33).
– Check LEDs as well as the triggering of the alarm device (see "Testing alarms/relays", page 31).

Regularly:

– Perform calibrations, see 8 Calibration

10.1 Performing a bump test and checking the response time (t90)

A bump test checks the response time without setting off an alarm.

1. Select and confirm ***Settings*** > ***Instrument*** > ***Bump test***.
   ⇒ The Maintenance symbol is displayed.
   ⇒ The analog output is set to the maintenance signal.
2. Apply a known gas concentration to the sensor.
3. Check the response time and compare it with the t90 value indicated in the corresponding sensor data sheet.
4. Press [OK] to return to measurement.

10.2 Sensor replacement

⚠ WARNING
Faulty Calibration
Faulty Calibration may cause inaccurate readings.
► If the sensor is replaced, all settings and parameters must be checked for correctness.
► Check calibration to verify proper operation.

10.2.1 Polytron® 8100 EC

A sensor can be replaced in the hazardous, classified area, without interrupting the power supply.

Sensor lock feature

If a sensor of the same type (same part number) was previously installed, the instrument-specific configuration is retained (gas type, measuring range, test gas, adjustment interval, etc.). Otherwise, the factory default settings of the new sensor are uploaded and will overwrite the instrument-specific configuration. This can be prevented if the sensor lock feature is activated (see "Setting sensor lock", page 35).

Sensor change function

The ***Change Sensor*** menu function lets you replace a sensor during operation without triggering a fault signal at the controller. It also ensures that all sensor data in the microprocessor can be saved in the sensor memory (EEPROM) before disconnecting the sensor.

Replacing a sensor

See figure C on the fold-out page.

A sensor can be replaced at any time.

1. Select ***Settings*** > ***Sensor*** > ***Change Sensor*** and confirm.
   ⇒ The maintenance signal is generated on the 4-20mA interface.
   ⇒ The display shows the following: ***Please remove the sensor***.
   ⇒ The Maintenance symbol is displayed.
2. Replace the old sensor with a new sensor:
   a. Loosen the locking screw (2) (2 mm Allen screw).
   b. Unscrew bayonet ring (3)
   c. Insert the sensor (4) into the opening and turn until it engages in the gas detector. This does not damage the sensor plug.
   d. Secure the sensor with the associated bayonet ring (3).

   ℹ For Dräger SensorAlive, a different bayonet ring needs to be used than for other EC sensors.

   e. Tighten the locking screw (2) so that the bayonet ring cannot come loose (required for installations in zone 22).
      ⇒ The display shows the following: ***Loading data, please wait***
3. If necessary, apply the label included with the sensor to the instrument. This identifies the gas type from a distance, even if the power has failed.
4. When the sensor data are loaded, the display shows: ***Data loaded***.
5. Select ***Back to menu*** and confirm.
   ⇒ The maintenance signal on the 4-20mA interface remains pending until the sensor is warmed-up.

   Maximum warm-up time of a new sensor: see the Instructions for Use for the sensor. For Oxygen: EN 50104 approvals.

6. Check calibration. If necessary, calibrate the instrument (see "Calibration", page 22).
7. Check the installation requirements and instrument for SIL status.
   See sections "Explosion proof (Ex d) installation - without Docking Station" to "Installation of sensors or sensing heads".

10.2.2 Polytron® 8200 CAT, 8310 IR, 87x0 IR

Replacing a sensor

1. If necessary, set the maintenance current for the analog interface.
2. Turn off power to the instrument or declassify the area according to local regulations.
3. Loosen set-screw and unscrew lid from instrument.
4. Pull out the PCB unit.
5. Turn PCB unit over and pull off the sensor connector.
6. Unscrew the sensor.
7. Insert the sensor wires through he threaded port of the enclosure.

⚠ WARNING
Explosion hazard!
The enclosure openings must be sealed to prevent ignition of hazardous atmospheres in case of an ignition inside the enclosure.

► Five threads must be engaged to ensure explosion proof status.

8. Screw in the sensor and tighten with the correct tightening torque (min. 266 in-lbs / min. 30 Nm)
9. Polytron® 8200 CAT-specific:
   Twist the sensor wires together. If necessary, fit a cable tie to keep the wires tight.
10. Plug the sensor connector back into socket.
11. Place PCB unit back into the enclosure.
12. Screw the cover on the instrument until it is correctly engaged (min. ≥44 in-lbs / min. ≥5 Nm) and tighten the locking screw.
13. Apply power to the instrument, if necessary.
    ⇒ The maintenance signal on the 4-20mA interface remains pending until the sensor is warmed-up.

    Maximum warm-up time of a new sensor: see the Instructions for Use for the sensor.
14. Check calibration. If necessary, calibrate the instrument (see "Calibration", page 22).
15. Check the installation requirements and instrument for SIL status.
    See sections "Explosion proof (Ex d) installation - without Docking Station" to "Installation of sensors or sensing heads".

10.3 Performing a display test

1. Select and confirm ***Settings*** > ***Instrument*** > ***Display*** > ***Displaytest***.
2. Select and confirm ***Enable***.
   ⇒ The information on the display is shown inverted. All LEDs are turned on.
   When the menu is exited, the inversion is ended.

11 Instrument settings

11.1 Setting passwords

1. Select ***Settings*** > ***Instrument*** > ***Passwords*** the desired password and confirm.

Calibration PWD	Access to zero and span calibration
Settings PWD	Access to all configuration parameters

2. Select the line for editing the password and confirm.
3. Set the password and confirm.
4. Select ***Confirm*** and confirm with [OK].

11.2 Setting date and time

1. Select ***Settings*** > ***Instrument*** > ***Date and time*** and confirm.
2. Select the line for editing the date or time and confirm.
3. Select ***Confirm*** and confirm with [OK].

11.3 Setting language

1. Select ***Settings*** > ***Instrument*** > ***Language*** and confirm.
2. Select a language from the list and confirm.

11.4 Configuring function key

1. Select ***Settings*** > ***Instrument*** > ***Function key*** and confirm.
2. Select a function and confirm.

Graph	The measurements of the past 15 minutes are displayed as a time/concentration graph.
Faults	Fault messages are displayed in plain text.
Warnings	Warning messages are displayed in plain text.
Bump test	The bump-test allows applying gas to the sensor without generating an alarm. The maintenance signal is transmitted. After 15 minutes or tapping [OK] again ends the bump test and the instrument returns to normal operation.
Sensor vitality[1)]	Shows the remaining sensor vitality.

1) Only with diagnostic dongle

11.5 Resetting to default settings

This function resets the instrument to factory default settings.

1. Select ***Settings*** > ***Instrument*** > ***Device init*** and confirm.
2. Select ***Confirm*** and confirm with [OK].

11.6 Changing the display contrast

1. Select ***Settings*** > ***Instrument*** > ***Display*** > ***Display contrast*** and confirm.
2. Change the contrast and confirm.

11.7 Changing the display mode

1. Select ***Settings*** > ***Instrument*** > ***Display*** > ***Display mode*** and confirm.
2. Select the desired mode and confirm.

Standard	Shows the standard display.
Non-display	Shows the start screen and the applicable symbols.

If an alarm is triggered, the display shows the current gas concentration and the red LED blinks regardless of the selected display mode.

11.8 Relays

11.8.1 Combinations of latching and alarm acknowledgment

The following examples give an overview of relay acknowledgment combinations.

	Latching (Manual relay reset)	**Non-Latching** (Automatic relay reset after alarm condition cleared)
Acknowledgeable	Relay reset possible at any time.	
Non-acknowledgeable	Relay reset not possible before alarm condition cleared.	
Pre-acknowledgeable	Alarm acknowledgment possible before the alarm condition cleared. The relay resets automatically after the alarm condition cleared.	

Latching and non-latching signals are not time-limited. Latching signals stay active until they are acknowledged. Non-latching signals stop as soon as the triggering condition clears.

11.8.2 Configuring relay A1 or A2

This function defines whether the alarm relay is energized during normal operation or energized at an alarm condition.

1. Select ***Settings*** > ***Instrument*** > ***Alarm***> ***Relay A1*** or ***Relay A2*** and confirm.
2. Select the desired option and confirm.

Normally energized	The relay contact is energized during normal operation and changes if an alarm is triggered. At a loss of power this triggers an alarm (fail-safe).
Energ. on alarm	If an alarm is triggered, the relay contact is energized.

11.8.3 Setting fault relay warm-up 1

This function is used to set operation of the fault relay during warm-up 1 to indicate the warm-up 1 state on the relay output.

1. Select ***Settings*** > ***Instrument*** > ***Alarm***> ***Fault warm up*** the desired option and confirm.

static	The fault relay triggers a connected alarm indicator permanently. The orange LED is lit continuously.
dynamic	The fault relay switches state for 9 seconds. *Example:* – A horn is connected to fault relay output Normally Open. – Relays are configured as normally energized. ⇒ The horn and the orange LED of the transmitter are 1 second active and 9 seconds in-active.

11.9 Alarm configuration

11.9.1 Turning the alarms on and off

1. Select ***Settings*** > ***Instrument*** > ***Alarm*** > ***Alarm on/off***.

Enable	Alarm activation is switched on.
Disable	Alarm activation is switched off. LEDs, relays and interfaces do not indicate an alarm condition. The 4-to-20 mA interface transmits the maintenance signal. The value determined and the ! symbol will be shown. The fault relay indicates an error.

2. Select and confirm ***Enable*** or ***Disable***.

11.9.2 Configuring alarms

1. Select and confirm ***Settings*** > ***Instrument*** > ***Alarm*** > ***Alarm A1*** or ***Alarm A2***.
   The current alarm threshold is displayed.
2. Accept the displayed suggestion or change the following settings (confirm the configuration steps one after the other with ***Next***):
   a. Set the value for the alarm threshold.

b. Set the alarm direction.

Rising	The alarm direction is called rising if the gas concentration has to exceed a certain value to activate an alarm.
Falling	The alarm direction is called falling if the gas concentration has to fall below a certain value to activate an alarm.

c. Set the latch mode.

Latching	Once the alarm threshold is reached, the instrument will trigger the alarm. It will remain in the alarm state even if the gas concentration no longer meets the alarm condition. To clear a latching alarm, it must be acknowledged.
Non-latching	The alarm state clears if the gas concentration no longer meets the alarm condition.

d. Set the acknowledgement mode.

Acknowledgeable	The alarm relay and the alarm LED can be reset before the alarm condition clears.
Non-acknowledgeable	The alarm relay and the alarm LED cannot be reset until the alarm condition clears.
Pre-Acknowledgeable	The alarm state can be acknowledged before the alarm condition clears. The alarm relay and the alarm LED stay active until the alarm condition clears, however.

e. Set the hysteresis value.
The hysteresis function defines a range in which a triggered relay will remain in its state until the gas concentration is outside the defined range again. Example: The alarm threshold is set to 40 ppm and hysteresis to 3 ppm. The alarm remains active until the value falls below 37 ppm. This prevents relays from closing and opening in rapid succession at an alarm threshold ("chattering").

ⓘ If the direction of an alarm is changed (from falling to rising or vice versa), the hysteresis value must be checked and corrected if necessary.

⇒ A confirmation screen shows all settings.

f. Select ***Confirm*** and confirm with OK.

✓ The new settings are saved.

11.9.3 Testing alarms/relays

These functions change the statuses of a relay and an LED for test purposes (e.g., to check the function of alarm devices connected to the relay). The ❗ symbol is displayed. After exiting this function, the statuses of the relay and the LED will automatically return to their previous statuses.

1. Select and confirm the desired alarm condition via ***Settings*** > ***Instrument*** > ***Alarm***.

Set Alarm A1	Simulates a pre-alarm
Set alarm A2	Simulates a main alarm
Set fault	Simulates a fault signal

2. Select and confirm ***Enable***.
⇒ The fault relay is de-energized and the 4 to 20 mA interface is set to fault current. The yellow LED is lit, the symbol for maintenance is shown.
When the menu is exited, the simulation is ended.

11.10 Data logger settings

11.10.1 Displaying graph

The last 15 minutes as a time/concentration graph can be viewed.

1. Select ***Information*** > ***Data logger*** > ***Graph***

11.10.2 Switching data logger on or off

1. Select ***Settings*** > ***Data logger*** > ***Datalogr. on/off*** and confirm.
2. Select ***Enable*** or ***Disable*** and confirm.

11.10.3 Setting the sampling time

This function defines how often a value is stored.

1. Select ***Settings*** > ***Data logger*** > ***Datalogr. on/off*** > ***Sample time*** and confirm.
2. Select the sample time and confirm.

11.10.4 Setting peak/average

This function determines which value is stored.

1. Select ***Settings*** > ***Data logger*** > ***Data logger*** > ***Peak/Average*** and confirm.
2. Select ***Peak*** or ***Average*** and confirm.

Peak	The maximum value (if monitoring falling concentrations, the minimum value) of the measured concentrations within the selected sampling time is stored.
Average	The average value of all the measured concentrations within the selected sampling time is stored

11.10.5 Switching triggering mode on or off

This function allows storing values from a certain value on.

1. Select ***Settings*** > ***Data logger*** > ***Data logger*** > ***Trigger on/off*** and confirm.
2. Select ***On*** or ***Off*** and confirm.

On	Measurements are stored if they exceed a threshold beyond the trigger value (relative to the last stored value).
Off	Measurements within the sampling time are stored.

11.10.6 Setting trigger value

This function defines the trigger threshold to store a value.The trigger value is defined as a percentage of the full scale deflection.

Example: A trigger value of 2 % at full scale deflection of 500 ppm will only store values if they deviate by 10 ppm (relative to the previously stored value).

1. Select ***Settings*** > ***Data logger*** > ***Datalogr. on/off Trigger value*** and confirm.
2. Set the trigger value and confirm.

11.10.7 Setting stack/roll function

1. Select ***Settings*** > ***Data logger*** > ***Data logger*** > ***Stack/Roll*** and confirm.
2. Select ***Stack*** or ***Roll*** and confirm.

Roll	Once the capacity of the data logger is reached, the old data are overwritten by new values.
Stack	Once the capacity of the data logger is reached, no more data can be stored. The instrument issues a warning.

11.10.8 Clearing data logger

This function deletes the stored data.

1. Select ***Settings*** > ***Data logger*** >***Clear data logger*** and confirm.
2. To clear the data-logger, select ***Confirm*** and confirm with [OK].

12 Interface settings

12.1 4-20mA interface

The current output of the instrument during normal operation is between 4 and 20 mA and is proportional to the detected gas concentration.

Polytron 8xx0 uses different current values to indicate various modes of operation. The factory default settings are user adjustable for application specific requirements. This follows the NAMUR recommendation NE43.

12.1.1 Full scale deflection

Polytron® 8100 EC, 87x0 IR and 8200 CAT LC only

Some sensors offer an adjustable full scale deflection to limit the measuring range for the 4-20 mA interface.

The full scale deflection (FSD) sets an endpoint within the measuring range of the sensor. If the gas concentration reaches this endpoint, the 4-20mA interface transmits 20mA.

Example: Required range 0 to 500 ppm CO (e.g. part number 6809605 default 300 ppm, range min/max = 50/1000 ppm).Select full scale deflection as 500 ppm. The analog output will be linear between 4 mA = 0 ppm and 20 mA = 500 ppm.

12.1.2 Setting fault current

This function defines the current for the fault signal.

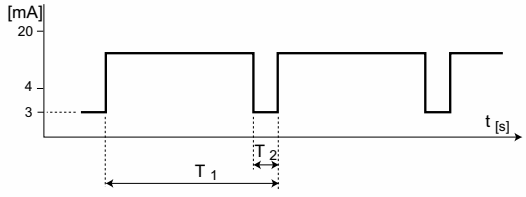
1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Fault current*** and confirm.
2. Select the line for editing the current and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Fault current*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

12.1.3 Information regarding the warning signal

To transmit a warning signal via the analog interface, it must be switched on.
The warning signal alternates between the warning current and the measurement current.

– Warning current (interval T2)
– Measurement current (interval T1-T2)

Time intervals and the warning current are configurable.



12.1.4 Switching the warning signal on or off

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning*** and confirm.
2. Select ***Enable*** or ***Disable*** and confirm.

12.1.5 Setting warning interval

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning interval*** and confirm.
2. Set times for warning intervals T1 and T2 and confirm.

12.1.6 Setting warning current

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Warning current*** and confirm.
2. Set the current and confirm with [OK].

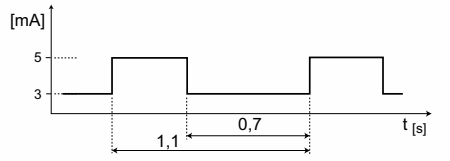
12.1.7 Setting the warnings of the Dräger SensorAlive

This menu can be used to set various parameters of the warning current:

- To set the warning current, select ***Settings*** > ***Communication*** > ***Analog interface*** > ***DSA warn current*** and enter the value.
- To set the threshold value for the warning, select ***Settings*** > ***Communication*** > ***Analog interface*** > ***DSA warn limit*** and enter the value.
- To enable or disable the warning, select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Set DSA warning*** and confirm.
  Select ***Enable*** or ***Disable*** and confirm.

12.1.8 Setting maintenance signal

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Maint. signal*** and confirm.
2. Set the signal type and confirm.

static	A constant current that can be configured.
dynamic	A square wave signal with the following characteristics: 

12.1.9 Setting the maintenance current

The maintenance current can only be set if the maintenance signal has been set to static.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Maint. current*** and confirm.
2. Set the current and confirm.

12.1.10 Setting analog offset

This function adds an offset to the analog output at 4 mA. The offset adjusts the current at 4 mA without affecting the 20 mA set point.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** >***Analog offset*** and confirm.
2. Select the line for editing the offset (range: -0.5 to 0.5 mA, SIL: -0.1 to 0.1) and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Analog offset*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

12.1.11 Setting analog span

This function adjusts the analog output at 20 mA without affecting the 4 mA set point.

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** > ***Analog span*** and confirm.
2. Select the line for editing the offset (range: -0.5 to 0.5 mA, SIL: -0.1 to 0.1) and confirm.
3. Set the current and confirm.
   ⇒ The setting for the ***Analog span*** is displayed.
4. Select ***Confirm*** and confirm with [OK].

12.1.12 Testing the analog interface

These functions change the current of the analog interface for test purposes (e.g., to check the programming of the controller). It may be necessary to temporarily inhibit the alarms at the controller to avoid false alarms. After exiting these functions, the currents automatically return to the maintenance signal. During the test, the maintenance symbol 🔧 is displayed.

- To set the current or concentration:

1. Select the desired option via ***Settings*** > ***Communication*** > ***Analog interface***.

Set Current	This function sets the current to any value between 0 and 22 mA. Offset current and analog span are not used in this function.
Set concentr.	This function sets the current to any measured value between 0 ppm and full scale deflection.

2. Once the alarms at the controller are inhibited, confirm the message ***Inhibit all alarms*** with ***Next***.
3. Select the line for editing and confirm with [OK].
4. Set the desired value.
5. Select and confirm ***Next***.
6. Select the desired option:

Set concentr. out / ***set current out***	This function simulates the preset measured value or test current value. During the test, the maintenance symbol 🔧 is displayed.
concentration off / ***current off***	This function aborts the transmission of the preset test value.

7. Select and confirm ***Next***.
   ⇒ The function is aborted.
8. Once the alarms at the controller are enabled again, confirm the following message: ***Enable all alarms***.

- To set the test signal:

1. Select the desired test via ***Settings*** > ***Communication*** > ***Analog interface***.

Set fault	This function sets the current to the fault current.
Set warning	This function sets the current to the warning current.
Set mainten.	This function sets the current to the maintenance current.

2. Once the alarms at the controller are inhibited, confirm the message ***Inhibit all alarms***.
3. Select and confirm ***Enable*** or ***Disable***.

12.1.13 Beam block

This function is only available for Polytron 87x0 IR (using the sensor PIR 7000/7200).

The factory default setting for the beam block function is off.

If turned On, the beam block signal will be transmitted on the analog interface if the optics of the PIR 7000/7200 sensor is “dirty”. The optics of the PIR 7000/7200 can become “dirty” if there is a build-up of deposits on the optical surfaces. However, if the gas concentration rises to a level above beam block limit, the instrument returns to normal operation.

If the build-up of deposits on the optical surfaces increases beyond the point where a measurement is possible, the instrument will go into fault.

- To set beam block signals on/off:

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** and the desired option.

Beamblock on/off	This function switches the beam block on or off
Set beamblock	This function sets the current to the beam block warning current

2. Select ***Enable*** or ***Disable*** and confirm.

- To set beam block signals:

1. Select ***Settings*** > ***Communication*** > ***Analog interface*** and the desired option.

Beambl. current	This function defines the current for the beam block signal.
Beamblock limit.	This function defines the maximum limit if the beam block signal will be transmitted on the analog interface.

2. Select the current line for editing the current and confirm.
3. Set the current and confirm.
   ⇒ The setting for the beam block current is displayed.
4. Select ***Confirm*** and confirm with OK.

12.2 HART interface

12.2.1 Setting the polling address

The polling address (query address) configures the gas detector for analog operation or multidrop operation.

HART command: #6 (Write Polling Address)

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Polling address***.
2. Set the polling address and select ***Confirm***.

0	Activates analog operation.
1 to 15	Activates multidrop operation. The 4 to 20 mA interface is deactivated and set to a constant current of approx. 1 mA.

ℹ Configure all instruments on a line with different polling addresses. It is advised to choose a sequence starting with 1.

12.2.2 Displaying the Unique Identifier

The Unique Identifier (unique HART address) must be known for almost all HART addressing commands.

HART commands:

– #0 (Read Unique Identifier)
– #11 (Read Unique Identifier associated with Tag)

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Unique identifier***.
2. The Unique Identifier is displayed.

12.2.3 Setting the HART tag

The HART tag (measurement point identification) is used to mark a measurement point.

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Tag***.
2. Set the HART tag and select ***Confirm***. The HART tag can consist of up to 8 alphanumeric characters.

12.2.4 Setting the Dräger REGARD protocol

This function switches between different HART protocols.

1. Select ***Settings*** > ***Communication*** > ***Hart interface*** > ***Dräger REGARD***.
2. Select the software version corresponding to the REGARD controller.

12.3 Digital interfaces

Information on configuring the other interfaces is provided in the following documents:

Interface	Document
PROFIBUS PA	9033782
Foundation Fieldbus FF	9033783
Modbus RTU	9033781

13 Sensor settings

13.1 Switching automatic calibration on or off

1. Select ***Settings*** > ***Sensor*** > ***Auto calibration*** and confirm.
2. Select ***Enable*** or ***Disable*** confirm with [OK].

13.2 Capture range

The capture range blanks out measurement fluctuations. Measurement fluctuations are minor variations in measured values (such as signal noise, variations in concentration). Those variations do not change the transmitted or displayed value. Measured values within this range will be displayed with the capture value. Measured values outside the capture range will be displayed with the actual measured value.

Capture value (offset)

The capture value is displayed continuously, as long as the measured value ranges between the upper and lower capture value limits.

Upper capture value limit

The upper capture value limit marks the upper limit of the range in which the capture value is displayed.

Lower capture value limit

The lower capture value limit marks the lower limit of the range in which the capture value is displayed.

13.2.1 Setting capture range

1. Select ***Settings*** > ***Sensor*** > ***Display Capture*** and confirm.
2. Set offset in the first window.
3. Set the lowest value of the capture range and confirm with ***Next***.
4. Set the highest value of the capture range and confirm with ***Next***.
5. Check all the values and confirm with ***Next***.

13.2.2 Switching capture range off

1. Select ***Settings*** > ***Sensor*** > ***Display Capture*** and confirm.
2. Set offset in the first window.
3. Set the lowest value of the capture range to 0 and confirm with ***Next***.
4. Set the highest value of the capture range to 0 and confirm with ***Next***.
5. Check all the values and confirm with ***Next***.

13.3 Resetting sensor

This function resets the sensor to factory default settings.

1. Select ***Settings*** > ***Sensor*** > ***Init. channel*** and confirm.
2. Select ***Confirm*** and confirm with [OK].

13.4 Setting calibration interval

After the calibration interval expires, the instrument will issue a warning that the calibration is past due.

1. Select ***Settings*** > ***Sensor*** > ***Cal. interval*** and confirm.
2. Set the calibration interval and confirm with [OK].

13.5 Setting sensor lock

This point is only valid for Polytron 8100 EC and Polytron 87x0 IR.

1. Select ***Settings*** >***Sensor*** > ***Sensor lock*** and confirm.
2. Select ***On*** or ***Off***.

On	The instrument rejects any sensor whose part number does not match the part number of the previously installed sensor.
Off	The instrument accepts any suitable sensor, uploading the default settings of this sensor. However, this overwrites any customized settings with the default settings of the new sensor.

13.6 Software dongles for EC sensors

13.6.1 Installing the dongle

1. Switch off power to the instrument or declassify the area according to the local regulations.
2. Loosen set-screw and unscrew lid from instrument.
3. Insert the dongle with the Dräger logo facing upwards in the slot of the PCB unit, See figure D on the fold-out page..
4. Position the PCB unit back cover and close the instrument (see "Closing the gas detector", page 13).

13.6.2 Deactivating dongles

This function deactivates a dongle to safely remove the dongle or if the dongle is faulty.

A dongle can only be reactivated by cycling the power to the instrument.

1. Select ***Settings*** > ***Instrument*** > ***SW dongle*** > and the dongle to be deactivated, and confirm.
2. Select ***Deactivation func.***. The selected dongle is deactivated.

13.7 Sensor settings Polytron® 8100 EC

13.7.1 Sensor self-test

This function is only active if the sensor-test dongle or diagnostic dongle is installed. If the sensor does not pass the self-test, a warning or error message is issued.

Setting regular sensor self-tests

This feature triggers the sensor self-test at regular intervals. The instrument then routinely checks that the sensor is functioning correctly.

1. Select and confirm ***Settings*** > ***Sensor*** > ***Set Sensortest***.
2. Select and confirm ***Enable*** or ***Disable***.

Starting sensor test manually

This function starts a single sensor self-test.

1. Select ***Settings*** > ***Sensor*** > ***Sensor test*** and confirm.
2. ***Start sensor test*** is displayed.
3. Select ***Confirm***.

✓ The test result is displayed.

13.7.2 Gas settings

This function sets the gas type, measuring range, and units of measurement. Different settings are possible depending on the installed sensor.

1. Select and confirm ***Settings*** > ***Sensor*** > ***Gas settings***.
   ⇒ The current measured gas is displayed.
2. Select and confirm the measured gas from the list.
   ⇒ The current unit of measurement is displayed.
3. Select and confirm the unit of measurement from the list.
   ⇒ The current full scale deflection is displayed.
4. For certain EC sensors only: Set and confirm the full scale deflection.
   ⇒ The new full scale deflection is displayed.
5. Select and confirm ***Next***.
   ⇒ An overview of the new gas settings is displayed.
6. After reviewing it, select ***Back to menu*** or ***Confirm***.

Back to menu	Select Back to menu to exit the function without changes and confirm with [OK].
Confirm	Select Confirm to accept the settings and confirm with [OK].

13.7.3 Dräger SensorAlive settings

This menu lets you select various parameters that define the behavior of the Dräger SensorAlive:

- To activate or deactivate the LifeTest functions of the sensor, select and confirm ***Settings*** > ***Sensor*** > ***SensorAlive*** > ***DSA activation***.
  Select and confirm ***Enable*** or ***Disable***.
- To acknowledge a clogged sensor, select ***Settings*** > ***Sensor*** > ***SensorAlive*** > ***Ack faults***.
- To enable or disable fault detection, select and confirm ***Settings*** > ***Sensor*** > ***SensorAlive*** > ***Fault detection***.
  Select and confirm ***Enable*** or ***Disable***.

The ***SensorAlive*** menu has the following sub-menus:

– LifeTest
– Sensitivity monitoring

The following parameters can be set in the LifeTest sub-menu:

- To define when to start a test run, select ***Time***.
  Enter a time and confirm. The test run is started when this time is reached on the transmitter.

  ℹ Transmitters do not support an automatic daylight savings changeover.

- To define the value to be output via the transmitter during the LifeTest, select ***Output behavior***.
  Select and confirm ***Fixed***, ***Maintenance*** or ***Measurement val.***.
- To define whether retests are to be carried out in a test run if a LifeTest has a negative test result, select ***Repetition mode***.
  Select and confirm ***Flexible***.
  If ***Static*** is selected, no retests are carried out and a new test run is carried out at the indicated time instead.
- To define when to abort a LifeTest, select ***Cancel threshold***.
  Enter a value and confirm.

  ℹ During a LifeTest, test gas is applied to the Dräger SensorAlive. This causes the measured value to rise. To prevent an alarm from being triggered, the measured value is not transmitted for a maximum of 15 minutes by default. The behavior during a LifeTest can be configured in the ***Output behavior*** menu, however. Independent of this, the sensor detects a gas leak if the measured gas concentration is greater than the gas concentration expected as a result of the LifeTest. The difference corresponds to the concentration of the gas leak and is compared with the value entered in ***Cancel threshold***. If this value is exceeded, the LifeTest is immediately aborted. The sensor switches back to measuring mode and the transmitter once again outputs a measured value. If relays are used, these are tripped on the transmitter and, where applicable, an alarm is triggered.

The following parameters can be set in the ***Sensitiv. check*** sub-menu:

- To define whether a warning needs to be issued, select and confirm ***Activation***.
- To define when a warning must be output, select and confirm ***Alert < 50%*** or ***Alert < 40%***.

13.8 Sensor settings Polytron® 8200 CAT / 8310 IR

13.8.1 Sensor type

This function defines the sensor type installed.

1. Select ***Settings*** > ***Sensor*** > ***Sensor type*** and confirm.
2. Select the sensor type and confirm.

13.8.2 Gas settings

This function sets the unit of measurement.

For LC sensors, this function also sets the full scale deflection.

1. Select ***Settings*** > ***Sensor*** > ***Gas settings*** and confirm.
2. Select the unit of measurement from the list and confirm.
   ⇒ For DQ sensors and DSIR:
   An overview of the new gas settings is displayed.
   Continue with step 4.
   ⇒ For LC sensors:
   The current full scale deflection is displayed. Continue with step 3.
3. Set the full scale deflection and confirm (only for LC sensors).
   ⇒ An overview of the new gas settings is displayed.
4. After review, select ***Back to menu*** or ***Confirm***.

Back to menu	Select Back to menu for leaving the function without changes and confirm with [OK].
Confirm	Select Confirm to accept the settings and confirm with [OK].

13.8.3 Setting the DQ sensor latching

This feature is only available if there are no relays installed.
This feature is used to determine whether the DQ sensor must be acknowledged after measuring a concentration higher than 100 %LEL.
This setting does not apply for LC sensors.

1. Select and confirm ***Settings*** > ***Sensor*** > ***DQ Sensor latch.***.
   ⇒ The current setting is displayed.
2. Select and confirm ***Enable*** or ***Disable***.

⚠ WARNING
Explosion Hazard
If sensor latching is disabled and an alarm indicating an explosion hazard is acknowledged, the instrument informs the end user of such hazard by having the red LED on the display being continuously lit.

► Before acknowledging an over range, ensure that the gas concentration has fallen under 100%LEL.

⚠ WARNING
Explosion Hazard possible
Operation is non-compliant with BVS type examination.
If DQ sensor latching is disabled, for safe operation in accordance with BVS 13 ATEX G 001 X, the central controller must support this function.

► Make sure that over range latching is active at the display unit.

13.9 Sensor settings Polytron 8310 IR

13.9.1 Changing the gas category

The DrägerSensor IR can measure gases and vapors that belong to the methane, propane, or ethene (ethylene) gas categories. A gas category must be set for the DrägerSensor IR depending on which target gas is to be measured. For the assignment of gases and vapors to the gas categories, see the DrägerSensor IR documentation.

13.9.2 Changing the gas category

Prerequisites

– The gas detector was turned on less than an hour ago.
– The automatic zero calibration on the sensor was performed less than an hour ago (see "Special feature of the Polytron 8310", page 23).
– The gas concentration measures by the gas detector is below 10 %LEL (apply zero gas to the sensor if necessary).

1. Turn off the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).
2. Select ***Settings*** > ***Sensor*** > ***DSIR Category*** and confirm.
   ⇒ The gas category is displayed on the instrument.

ℹ The next steps are carried out on the sensor.

3. To select the gas category on the sensor, tap the ⇧S or ⇩0 symbol with the magnetic wand.
   ⇒ START is displayed on the gas detector.
4. Remove the magnetic wand.
   ⇒ The sensor switches to an output signal that represents the gas category currently set:
   Output signal 20 %LEL: Methane gas category
   Output signal 40 %LEL: Propane gas category
   Output signal 60 %LEL: Ethene (ethylene) gas category
5. This output signal is maintained for 30 seconds. During this period, the next gas can be selected by placing the magnetic wand on the area marked with the ⇧S symbol.
   ⇒ The sensor's output signal then switches to the value that matches the newly selected gas category. If no further input with the magnetic wand takes place for more than 30 seconds, the setting is saved.
6. Check the span calibration on the gas detector (see "Span calibration", page 24)
7. Turn on the alarm activation for the gas detector (see "Turning the alarms on and off", page 30).

ℹ The setting on the sensor can result in an incorrect gas category being displayed in the ***DSIR Category*** menu item or that a change in gas category is no longer visible.

13.10 Sensor settings Polytron® 87x0 IR

13.10.1 Gas settings

This function sets the gas type, measuring range and units of measurement. Only certain sensors support these settings.

1. Select ***Settings*** > ***Sensor*** > ***Gas settings*** and confirm.
   ⇒ The current measured gas is displayed.
2. Select a measured gas from the list and confirm.
   ⇒ The current unit of measurement is displayed.
3. Select the unit of measurement from the list and confirm.
   ⇒ If the unit of measurement is set to %LEL, %UEG, or %LIE, the category will be displayed. Continue with step 4.
   ⇒ Otherwise the current full scale deflection is displayed. Continue with step 6.
4. Select a category and confirm.
5. Set the LEL value and confirm.
6. Set the full scale deflection and confirm.
   ⇒ The new full scale deflection is displayed.
7. Select ***Next*** and confirm.
   ⇒ An overview of the new gas settings is displayed.
8. After review, select ***Back to menu*** or ***Confirm***.

Back to menu	Select Back to menu for leaving the function without changes and confirm with [OK].
Confirm	Select Confirm to accept the settings and confirm with [OK].

9. Check the alarm settings after changing the category or the LEL value.

14 Factory default settings

14.1 Unchangeable settings for relay, LED, and alarm

	Setting
Fault relay:	Energized / Normally Open
Yellow LED:	Lit if a fault message is available
Red LED:	Single flash if A1 alarm is present. Double flash if A2 alarm is present. If an alarm is configured as acknowledgeable and the alarm is acknowledged, single/double flash changes to continuously lit.
Alarm Hierarchy	A2 overrides A1 on the LED. However, the A1 and A2 relays operate independently. (Example: if A1 is acknowledgeable, A2 is not, and the gas concentration is such that it triggers A1 and A2: acknowledging the alarm will cause the A1 relay to release. But the red LED continues its double flash as long as the state that triggers the A2 alarm persists.

14.2 Settings which can be changed via the menu

Menu	Default setting	Range
Relay active on alarm / No alarm	Active on alarm	On/Off
A1 alarm: direction	Rising (falling for O_2 sensors)	Falling/Rising
A2 alarm: direction	Rising	
A1 latch mode	Non-latching	Latching/Non-latching
A2 latch mode	Latching	
A1 acknowledge mode	Acknowledgeable	Acknowledgeable/Non-acknowledgeable/Pre-acknowledgeable
A2 acknowledge mode	Not acknowledgeable	
Normal operation A1 relay	Energized	Energized/Not energized
Normal operation A2 relay		
Calibration password	_ _ _ 1	
Settings password	_ _ _ 2	
LCD setting	On	On/Off
SIL status	Off	On/Off
Language	EN	DE / EN / FR / ES / RU / ZH
Automatic calibration	Off	On/Off
Function key	Error	Graphic, fault, warning, vitality, bump test

Interface	Default setting	Range
Fault current	1.2 mA	0 to 3.5 mA
Warning	Off	On/Off
Warning current	3.0 mA	0 to 3.5 mA
Warning cycle interval T1	10 s	5 to 60 s

Interface	Default setting	Range
Warning cycle interval T2 (warning current)	1 s	1 to (T1-1) s
Maintenance signal	static	Static/dynamic
Maintenance current	3.4 mA	0 to 3.5 mA
Analog offset	0 mA	-0.5 to 0.5 mA
Sensitivity analog output	0 mA	-0.5 to 0.5 mA
HART® address	0	0 to 15
Modbus address[1)]	126	2-126
Modbus parity[1)]	even (default)	even, odd parity, no parity
Modbus baud rate[1)]	9600 bps	9600 or 19200 bps
PROFIBUS® address[1)]	126	2-126

1) Fieldbus interfaces are not in accordance with the BVS 13 ATEX G001 X. Using the fieldbus interface no relays are available.

14.3 Sensor-specific values

Further specifications are provided in the instructions for use for the relevant sensor.

14.3.1 Polytron 8100 EC

Menu	Default setting	Range
Alarm A1	Depending on sensor	
Alarm A2	Depending on sensor	
Hysteresis for A1 alarm in rising direction	0	0 to A1
Hysteresis for A2 alarm in rising direction	0	0 to A2
Hysteresis for A1 alarm in falling direction	0	0 to full scale deflection -A1
Hysteresis for A2 alarm in falling direction	0	0 to full scale deflection -A2
Calibration interval [days]	Depending on sensor	0 to 720

14.3.2 Polytron 8100 EC with O_2 sensors

Menu	Default setting	Range
Display capture range offset	20.9 Vol% (O_2)	0 to 25 Vol% (O_2 LS) 0 to 100 Vol% (O_2)
Display capture range low	-0.25 Vol% (O_2)	0 to -0.75 Vol%
Display capture range high	0.25 Vol% (O_2)	0 to 0.75 Vol%
Full scale value	25 Vol% (O_2, O_2 LS)	5 to 25 Vol% (O_2 LS) 5 to 100 Vol% (O_2)

14.3.3 Polytron 8100 EC with Dräger SensorAlive

Menu	Default setting	Range
DSA warn current	2.0 mA	0 mA to 3.5 mA
DSA warn limit	Depending on sensor	
DSA activation	On	On / Off
LifeTest		
Time	Depending on sensor	
Output behavior	Fixed	Fixed/maintenance/measured value
Repeat profile	Flexible	Flexible/static
Cancel threshold	Depending on sensor	
Senor monitoring		
Activation	Depending on sensor	
Alarm <50 %	Off	Off/warning
Alarm <40 %	DSA warning	Off/DSA warning/error
Fault detection	On	On / Off

14.3.4 Polytron 8200 CAT DrägerSensor® DQ

Menu	Default setting	Range
Alarm A1	20 %LEL	1 to 100 %LEL
Alarm A2	40 %LEL	
Hysteresis for alarm A1 with increasing direction	1 %LEL	0 to A1
Hysteresis for alarm A2 with increasing direction	1 %LEL	0 to A2
Adjustment interval [days]	180	0 to 360
Display capture range offset	0 %LEL	-5 to 4 %LEL
Display capture range low	-5 %LEL	-5 to 0 %LEL
Display capture range high	2 %LEL	0 to 4 %LEL
Full scale value	100 %LEL	Not possible to set range

14.3.5 Polytron 8200 CAT DrägerSensor® LC

Menu	Default setting	Range
Alarm A1	2.0 %LEL	0.1 to 10 %LEL
Alarm A2	4.0 %LEL	
Hysteresis for alarm A1 with increasing direction	0.1 %LEL	0 to A1
Hysteresis for alarm A2 with increasing direction	0.1 %LEL	0 to A2
Full scale value	10 %LEL	5 to 10[1] % LEL 1 to 10 %LEL
Adjustment interval [days]	180	0 to 360
Display capture range offset	0 %LEL	-0.5 to 0.4 %LEL
Display capture range low	-0.5 %LEL	-0.5 to 0 %LEL
Display capture range high	0.2 %LEL	0 to 0.4 %LEL

1) For firmware versions < 3.0.0

14.3.6 Polytron 8310 IR

Menu	Default setting	Range
Alarm A1	20 %LEL	1 to 100 %LEL
Alarm A2	40 %LEL	
Hysteresis for alarm A1 with increasing direction	1 %LEL	0 to A1
Hysteresis for alarm A2 with increasing direction	1 %LEL	0 to A2
Adjustment interval [days]	180	0 to 360
Display capture range offset	0 %LEL	-3 to 4 %LEL
Display capture range low	-3 %LEL	-3 to 0 %LEL
Display capture range high	2 %LEL	0 to 4 %LEL
Full scale value	100 %LEL	Not possible to set range

14.3.7 Polytron 8700 IR

Type 334

Menu	Default setting	Range
Test gas	Methane	
Test gas units	%LEL	
Test gas concentrations	50 %LEL	
Alarm A1	20 %LEL	0.01 to 100 Vol% with %LEL = 0.3 to 100 %LEL
Alarm A2	40 %LEL	
LEL type	NIOSH	IEC / PTB / NIOSH / configurable
Measured gas	Methane	
Units of measured gas	%LEL	Vol.% / PPM / %LEL / %LIE
Full scale value	100 %LEL	20 to 100 %LEL
Beam block	Off	On/Off
Beam block current	2 mA	0 to 3.5 mA
Beam block limit	7.5 %LEL	0 to max. 15 %LEL[1]
Adjustment interval [days]	360	0 to 720

Menu	Default setting	Range
Response behavior	normal	normal / fast
Display capture range offset	0	The absolute values of the display capture range must be within these limits: -1000 to 2200 ppm (Methane type 334) -850 to 850 ppm (Propane type 334) -1200 to 1150 ppm (Ethylene type 334)
Display capture range low	-750 ppm (Methane) -315 ppm (Propane) -405 ppm (Ethylene)	
Display capture range high	750 ppm (Methane) 315 ppm (Propane) 405 ppm (Ethylene)	

1) The maximum limit of the beam block depends on the type of gas detector and the measured gas selected.

Type 340

Menu	Default setting	Range
Test gas	Propane	
Test gas units	%LEL	
Test gas concentrations	50 %LEL	
Alarm A1	20 %LEL	0.01 to 100 Vol% with %LEL = 0.3 to 100 %LEL
Alarm A"	40 %LEL	
LEL type	NIOSH	IEC / PTB / NIOSH / configurable
Measured gas	Propane	
Units of measured gas	%LEL	Vol% / PPM / %LEL / %LIE
Full scale value	100 %LEL	20 to 100 %LEL
Beam block	Off	On/Off
Beam block current	2 mA	0 to 3.5 mA
Beam block limit	2.5 %LEL	0 to max. 15 %LEL[1)]
Adjustment interval [days]	360	0 to 720
Response behavior	normal	normal / fast
Display capture range offset	0	The absolute values of the display capture range must be within these limits: -850 to 425 ppm (Propane type 340) -1800 to 2200 ppm (Methane type 340)
Display capture range low	-750 ppm (Methane) -85 ppm (Propane)	
Display capture range high	750 ppm (Methane) 85 ppm (Propane)	

1) The maximum limit of the beam block depends on the type of gas detector and the measured gas selected.

14.3.8 Polytron 8720 IR

Menu	Default setting	Range
Test gas	CO_2	
Test gas units	Vol%	
Test gas concentrations	4.0 Vol%	0.2 to 100 Vol%
Alarm A1	1 Vol%	0.01 to 100 Vol%
Alarm A2	2 Vol%	
LEL type	-	
Measured gas	CO_2	
Units of measured gas	Vol%	Vol% / ppm
Full scale value	10 Vol%	0.2 to 100 Vol%
Beam block	Off	On/Off
Beam block current	2 mA	0 to 3.5 mA
Beam block limit	0.1 Vol%	0 to 0.1 Vol%
Adjustment interval [days]	360	0 to 720
Response behavior	normal	normal / fast
Display capture range offset	340 ppm	The absolute values of the display capture range must be within these limits: -1000 to 1000 ppm (carbon dioxide)
Display capture range low	-200 ppm	
Display capture range high	200 ppm	

15 Disposal

This product must not be disposed of as household waste. This is indicated by the adjacent icon.
You can return this product to Dräger free of charge. For information please contact the national marketing organisations and Dräger.

Disposal of electrochemical sensors

⚠ WARNING
Danger of explosions and risk of chemical burns!
Sensor fluids may leak out and can cause acid burns.
► Do not dispose sensors in fire.
► Do not open with force.

16 Technical data

16.1 Measuring ranges

Sensor	Measuring range
Polytron 8100 EC with DrägerSensor® EC	Depending on sensor
Polytron 8200 CAT with DrägerSensor® DQ	0 to 100 %LEL
Polytron 8200 CAT with DrägerSensor®LC	0 to 10 %LEL[1)]
Polytron 8310 IR with DrägerSensor® IR	0 to 100 %LEL
Polytron 8700 IR with PIR 7000 infrared gas sensor	
Type 334 (IDS 01x1)	0 to 10,000 ppm[1)] 0 to 100 %LEL,[1)] 0 to (1.25 x LEL_{max}) Vol%,[1)2)] For CH4 (methane) 0 to 100 Vol%[1)]
Type 340 (IDS 01x2)	0 to 10,000 ppm[1)] 0 to 100 %LEL[1)] 0 to 5 Vol%[1)]
Polytron 8720 IR with PIR 7200 infrared gas sensor (IDS 01x5)	0 to 100 Vol%[1)]

1) For adjustable full scale deflection, see 14.3.
2) Range changes depending on the substance to be measured

16.2 Signal transmission to the controller

The measuring range and performance characteristics depend on the installed sensor (see the instructions for use for the installed sensor).

Frequency of measurement calculation: 1 x per second (update of display, analog interface and relays).

Analog signal	
Normal operation	4 ... 20 mA
Drift below zero	3.8 ... 4 mA
Over range	20 ... 20.5 mA
Instrument fault	≤ 1.2 mA
Fault on analog interface	> 21 mA
Maintenance signal	3.4 mA steady signal or 1 Hz modulation between 3 and 5 mA (selectable)

Resistance of the signal loop

Operating mode	Resistance range of the signal loop	Power supply range
Operation without HART® communication	0 to 230 Ω	at 10 V DC
	Rising linearly with the supply voltage from: 0 to 230 Ω at 10 V to 0 to 500 Ω at 16 V	10 to 18 V DC
	0 to 500 Ω	18 to 30 V DC
Operation with HART® communication	230 to 270 Ω	at 13 V DC
	Rising linearly with the supply voltage from: 230 to 270 Ω at 11 V to 230 to 500 Ω at 16 V	11 to 16 V DC
	230 to 500 Ω	18 to 30 V DC
HART® multidrop operation	230 to 500 Ω	10 to 30 V DC

When used in accordance with the metrological suitability test compliant with EN IEC 62990-1, EN IEC 60079-29-1 or EN 50104, the resistance must not exceed 300 ohms. Further information on installing the fieldbus interface is provided in document 9033783.

16.3 Cable specifications

For non-conduit installations, use shielded cables.

Analog and HART® connection with controller and power supply	
Power supply and signals	3-core shielded cable 24 - 12 AWG / 0.2 - 2.5 mm²
Relays	20 - 12 AWG / 0.5 - 2.5 mm²

Digital connection with controller	
Instruments with fieldbus interfaces and remote sensors must be installed with shielded cables.	
Modbus RTU	2-core or 3-core[1], ≥ 26 AWG
PROFIBUS PA Foundation Fieldbus	2-core, cable type A Wave impedance R_W: 135 - 165 Ω Capacitance / unit length C‘: < 30 pF/m Loop resistance R‘: 110 Ω/km Core diameter d: 0.64 mm Core cross section q: > 0.34 mm² Shield coverage: ≥ 90 %
Power supply	2-core, 24 - 12 AWG / 0.2 - 2.5 mm²

1) If the distance between the controller and the transmitter is very long (>1 km) and the power supplies of the controller and the transmitter are separate, interference or differential differences can occur. In this case, 3-core cabling with ground must be selected. Ground is then connected to the transmitter and looped through to the ground of the controller.

16.4 Power supply and relays

Relay rating[1] SPDT[2]	
230 V ~	0.1 A - 5 A
30 V ⎓, resistive load	0.1 A (minimum) - 5 A

1) For safety-related applications (SIL 2), the maximum contact rating is reduced (see Polytron® 8xx0 Safety Manual).
2) Single pole, double throw, (changeover electrical contacts)

Power supply Polytron 8xx0	
Operating voltage	10[1] to 30 V⎓ at the instrument
Inrush current	2.3 A for 2 ms at 24 V⎓,10 Ω resistor

1) At supply voltages of < 7 V DC the instrument provides a fault signal. The warning signal "undervoltage" depends on the connected load at the 4-20 mA output and the cable resistance. In case of lower load (e.g. 230 Ω), the fault relay drops out and the current output is 0 mA. In case of higher load (e.g. 500 Ω), warning message 011 is indicated.

Operating current	
Polytron® 8100 EC	
without relay, non-remote sensor	80 mA
with relay, remote sensor	100 mA
Polytron® 8200 CAT	
without relay, non-remote sensor	105 mA (DrägerSensor DQ) 130 mA (DrägerSensor LC)
with relay, remote sensor	145 mA (DrägerSensor DQ) 165 mA (DrägerSensor LC)
Polytron® 8310 IR	
without relay, non-remote sensor	145 mA
with relay, remote sensor	185 mA
Polytron® 87x0 IR	
without relay, non-remote sensor	330 mA
with relay, remote sensor	350 mA

16.5 General specifications

Polytron 8xx0 enclosure	
Enclosure material	Copper-free aluminum
Enclosure guard	NEMA 4X[1] IP 65/66/67[2]
Display	Resolution 128 x 64 pixels, backlit[3]

1) Polytron 8100 EC NEMA 4X enclosure guard pending.
2) The IP degrees of protection do not cover the detection of a gas, during or after exposure of the equipment to these conditions. In the event of dust deposits and contact with water through immersion or a jet of water, check the adjustment and functional integrity of the instrument.
3) There is only a limited visibility of the display at high temperatures (>65 °C).

16.6 Environmental parameters

Further sensor specifications and influences can be found in the instructions for use provided for the respective sensor.

The values for accessories and spare parts may deviate from the values given here. The exact values can be found in the corresponding manual.

Polytron 8xx0	
Values in accordance with explosion protection testing	
During operation:	
Pressure	23.6 to 32.5 in. Hg (800 to 1100 hPa)
Humidity	0 to 100 % RH, non-condensing
Temperatures	
Polytron 8100 EC	-40 to +70 °C (-40 to +158 °F)
Polytron 8200 CAT	-40 to +80 °C (-40 to +176 °F)
Polytron 8310 IR	-40 to +65 °C (-40 to +149 °F)
Polytron 87x0 IR	-40 to +80 °C (-40 to +176 °F)
Values according to performance approval	
During operation:	
Pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)[1)]
Humidity	0 to 95 % RH, non-condensing
Temperatures	
Polytron 8100 EC[2)]	-40 to +65 °C (-40 to +149 °F)
Polytron 8200 CAT	-40 to +80 °C (-40 to +176 °F)
Polytron 8310 IR	-40 to +65 °C (-40 to +149 °F)
Polytron 87x0 IR	-40 to +77 °C (-40 to +170 °F)
During storage:	
Pressure	26.5 to 32.4 in. Hg (900 to 1100 hPa)
Humidity	0 to 100 % RH, non-condensing
Temperature	-20 to +65 °C (-4 to +149 °F)
Recommended storage period	5 years
Values for relay option and installations with UL approval	
During operation:	
Temperatures	
Polytron 8200 CAT	-40 to +70 °C (-40 to +158 °F)
Polytron 87x0 IR	-40 to +70 °C (-40 to +158 °F)

1) Polytron 8200 CAT: 23.6 to 35.44 in. Hg (800 to 1200 hPa)
2) See 18.3, 18.3.2 and the instructions for use provided for the EC sensor for the constraints of the maximum specification.

16.7 Tightening torques

Instrument threads	
Enclosure cover	≥44 in-lbs / ≥5 Nm
Sensor	min. 266 in-lbs / min. 30 Nm
Blind plugs	min. 266 in-lbs / min. 30 Nm
Ports (for conduits or cable glands)	min. 443 in-lbs / min. 50 Nm
Docking Station blind plugs	62 in-lbs / 7 Nm
Docking Station cable glands	70 in-lbs / 8 Nm
Remote EC sensing head	177 in-lbs ±9 in-lbs / 20 Nm ±1 Nm
Field wiring terminals	
Power supply, signals and relays	4.4 - 7.0 in-lbs / 0.5 - 0.8 Nm
Grounding screw	10.6 in-lbs / 1.2 Nm

17 Accessories and spare parts

This chapter provides an overview of the components that are covered by the BVS 13 ATEX G 001 X- and PFG 14 G 001 X-type examination. Further parts are listed in the spare parts list or can be requested from DrägerService.

17.1 Polytron® 8xx0

Description	Part number
IRDA to PC interface	4544197
Magnetic wand with key chain	4544101
Dräger PolySoft, configuration software	8328600 / 8328639
EXd blind plug, stainless steel, 2 pcs.	4544897
Exd blind plug, galvanic steel, 3 pcs.	8344041

17.1.1 Docking station

Description	Part number
Docking Station Power Only Version	8344027
Docking Station Power, Relay (includes 2 cable glands)	8344028
Docking Station Fieldbus	8344029
Cable Gland Docking Station	6812868
Blind plug Docking Station	8344042

17.2 Polytron® 8100 EC

Description	Part number
Polytron 8100 4-20/HART printed circuit board	4544781
Polytron 8100 4-20/HART printed circuit board, relay	4544782
Bayonet ring	4544366
Bayonet ring for Dräger SensorAlive	6800132
Duct adapter for remote EC sensing head[1)]	8317617
Rod attachment for remote EC sensing head	4544213
Sensor-test dongle	8317619
Diagnostic dongle	8317860
Calibration adapter	6810536

1) May influence the measurement, e.g. extend the response time. Not covered by BVS 13 ATEX G 001 X and PFG 14 G 001 X.

17.3 Polytron® 8200 CAT

Description	Part number
Polytron 8200 PCB unit 4-20/HART	4544788
Polytron 8200 PCB unit 4-20/HART relay	4544789
PE calibration adapter, Europe	6806978
DQ remote calibration adapter	6812480
LC remote calibration adapter[1)]	6812482
21.50X14.50 membranes spare part set, 2 pcs.	8326840
Dust filters for DrägerSensor DQ, 10 pcs.	6810537
DQ process adapter	6812470
LC process adapter[1)]	6812465
Splash guard	6812510

1) not covered by performance approval.

17.3.1 CAT sensors

Description	Part number
DrägerSensor DQ NPT	6814150
DrägerSensor DQ NPT S[1)]	3701800
DrägerSensor LC NPT	6810675
Sensing head, Polytron SE Ex PR M1 DQ	6812711
Sensing head, Polytron SE Ex PR M2 DQ	6812710
Sensing head, Polytron SE Ex HT M DQ	6812720
DQ NPT aluminum remote sensor	3706933
DQ NPT steel remote sensor	3706934

1) The DrägerSensor DQ NPT S can also be used instead of the DrägerSensor DQ NPT.

17.4 Polytron® 8310 IR

Description	Part Number
Splash Guard	6810796
Process Adapter	6811330
Protection Labyrinth	6811135
Calibration adapter	6810859
PCB unit Polytron 8310 4-20/HART	4544788
PCB unit Polytron 8310 4-20/HART Relay	4544789

17.4.1 DSIR sensors

Description	Part number
DrägerSensor IR NPT	6811901
Sensing head, DrägerSensor IR complete set e	6811165
Sensing head, DrägerSensor IR complete set e2	6811265

17.5 Polytron® 87x0 IR

Description	Part number
Polytron 87x0 PCB unit 4-20/HART[1)]	4544795
Polytron 87x0 PCB unit 4-20/HART relay[1)]	4544796
PIR 7000 attachment set	6811648
PIR 7000 process cuvette, stainless steel	6811415
PIR 7000 SGR process cuvette	6813219
PIR 7000 / 7200 status indicator	6811625 / 6811920
PIR 7000 / 7200 splash guard	6811911 / 6811912
PIR 7000 / 7200 flowcell	6811490 / 6811910

Description	Part number
PIR 7000 / 7200 remote test adapter	6811630 / 6811930
PIR 7000 insect protection	6811609
PIR 7000 hydrophobic filter	6811890
PIR 7000 calibration adapter	6811610
PIR 7000 / 7200 POM process adapter (polyoxymethylene)	6811915
PIR 7000 assembly set	6811648
Terminal box Ex e	6811989
Terminal box Ex d	4520561
Magnetic wand	4544101

1) Check firmware compatibility of sensor and gas detector. Changing the PCB unit may require a firmware update. Contact Dräger for support.

17.5.1 Sensors

Check firmware compatibility of sensor and gas detector. Changing the sensor may require a firmware update. Contact Dräger for support.

Description	Part number
Dräger PIR 7000 type 334 (NPT)	6811822
Dräger PIR 7000 type 340 (NPT)	6811832
Dräger PIR 7000 334 (M25) complete set	6811825
Dräger PIR 7000 340 (M25) complete set	6811819
Dräger PIR 7200 (NPT)	6811572
Dräger PIR 7200 (M25) HART complete set	6812290

18 Performance Approvals

In combination with certain sensors, Polytron 8xx0 is performance approved based on the following standards:

– EU and Type Examination Certificates in line with EN 60079-29-1, EN 50104, EN 45544 and DIN IEC 62990-1. Issued by DEKRA Testing and Certification GmbH, Handwerkstr. 15, D-70565 Stuttgart.
– FM performance approval in line with ANSI/ISA-92.00.01 FM6340

For further information on sensor specifications and restrictions (e.g., measuring principles, performance, cross-sensitivity), refer to the instructions for use for the relevant sensor.

18.1 EU-TYPE Examination Certificate, BVS 13 ATEX G 001 X

Measurement of flammable gases and vapors mixed with air.

– Polytron 8200 CAT with DrägerSensor DQ

  Special conditions:

  - When streaming with air containing measured gas, measured values may increase by up to 32 %.
  - When operating with the DQ remote calibration adapter, measured values may increase by up to 70 %.

– Polytron 8200 CAT with DrägerSensor LC
  Approved with 10 %LEL full scale deflection.
  A connection to a controller with approved measuring function (e.g., REGARD® 7000) is required. Latching alarms for over range measured values must be activated at the controller.
– Polytron 8310 IR with DrägerSensor IR
– Polytron 8700 IR with PIR 7000 type 334 and 340

Measurement of oxygen (inertization)

– Polytron 8100 EC with DrägerSensor O_2 (6809720) and DrägerSensor O_2 LS (6809630) within a measuring range of 0-5...25 Vol% O_2.

Approved are:

– 4 to 20 mA interface
– Relay module
– Remote sensor
– HART
– Factory default full scale deflections

Not approved are the fieldbus interface and the data logger.

18.2 Type Examination Certificate, PFG 14 G 001 X

Measurement of oxygen (deficiency and excess oxygen)

– Polytron 8100 EC with DrägerSensor O_2 (6809720) and DrägerSensor O_2 LS (6809630) within a measuring range of 0–25 Vol% O_2.

Measurement of hydrogen sulfide

– Polytron 8100 EC with Dräger SensorAlive (6809630) within the following measuring ranges:
  - 0.5 - 100 ppm (Type HM)
  - 0 - 100 ppm (Type SM)

Measurement of carbon dioxide

– Polytron 8720 IR with PIR 7200 within the following measuring ranges:
  - 1 Vol% and 10 Vol% – EN 45544-2
  - 2000 ppm, 1 Vol% and 10 Vol% – EN 45544-3

Approved are:

– 4 to 20 mA interface
– Relay module
– Remote sensor

Not approved are:
- Fieldbus interface
- Data logger
- Only Polytron 8100 EC with Dräger SensorAlive: Self-test functionality when using a gas generator

18.3 DrägerSensor O_2, O_2LS and Dräger SensorAlive certified operating conditions

Cross-sensitivities

There are no known cross-sensitivities against interfering gases with a concentration of up to 100 ppm. Further information can be requested from Dräger.

18.3.1 DrägerSensor O_2 (6809720)

The DrägerSensor O_2 (6809720) is an electrochemical two-electrode sensor for measuring oxygen (O_2) in ambient air.

Environmental parameters	
Pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)
Humidity	10 to 95 % RH, non-condensing
Temperature	Application of EN 50104 limits the temperature range to 0 °C to +55 °C.

Storage	
Pressure	no influence
Humidity	30 to 70 % RH, non-condensing (only relevant if sensor packaging is open)
Temperature	0 to +40 °C
Time	Storage of sensors is not intended. Sensors should be used immediately. Remaining life span = expected life span - storage time

Influence of environmental parameters		
	Zero-point	**Sensitivity[1)]**
Temperature[2)3)]		
0 to 55 °C	≤ 0.3 Vol% O_2	≤ 0.9 Vol% O_2
Pressure	< ± 0.2 Vol% O_2	Relative deviation from the reading at 1013 hPa: < 10 % of the measured value / 100 hPa
Humidity	No influence	Relative deviation from the reading at 50 % rel. humidity: < 1 % of the measured value

1) Relative deviation of the display reading is caused by atmospheric pressure fluctuations.
2) At temperatures below -5 °C, the measurement deviation is higher than specified in EN 50104.
3) For operating temperatures outside -5 °C to 40 °C, an adjustment at operating temperature must be performed.

Response time[1)]		
	$t_{0...20}$	$t_{0...90}$
0-5 Vol% O_2	≤ 15 seconds[2)]	≤ 33 seconds
0-25 Vol% O_2	≤ 10 seconds	≤ 26 seconds

1) At temperatures below -5 °C, the response time may increase.
2) Response time is higher than the permissible limit of EN 50104.

Stabilization time: 5 x $t_{0...90}$

Measuring range

0-5 Vol% O_2 to 0-100 Vol% O_2

Default value: 25 Vol% O_2 Minimum reading: -1.25 Vol% O_2

Sensor warm-up time

Operation: <20 minutes / Adjustment: ≤ 2 hours

18.3.2 DrägerSensor O_2LS (6809630)

The DrägerSensor O_2LS (6809630) is an electrochemical three-electrode sensor for measuring oxygen (O_2) in ambient air.

Environmental parameters	
Pressure	20.7 to 38.4 in. Hg (700 to 1300 hPa)
Humidity	5 to 95 % RH, non-condensing
Temperature	-40 to +60 °C short-term +65 °C

Storage	
Pressure	no influence
Humidity	30 to 70 % RH, non-condensing (only relevant if sensor packaging is open)
Temperature	0 to +40 °C
Time	Storage of sensors is not intended. Sensors should be used immediately. Remaining life span = expected life span - storage time

Influence of environmental parameters	Zero-point	Sensitivity
Temperature		
-20 to 40 °C	≤ 0.1 Vol% O_2	≤ 0.1 Vol% O_2
-40 to 65 °C	≤ 0.2 Vol% O_2	≤ 0.5 Vol% O_2
Pressure	< ± 0.1 Vol% O_2	≤ 0.8 Vol% O_2
Humidity	≤ 0.1 Vol% O_2	≤ 0.9 Vol% O_2

ℹ When measuring oxygen in the presence of helium, helium compensation can be used. The option of helium compensation is no certified measuring function according to EN 50104.

⚠ CAUTION

Sensor failure

The exposure of the sensor to higher concentrations of unsaturated hydrocarbons, alcohols, or hydrogen over an extended period of time (dose approx. 100,000 ppm x hours) can cause the instrument to fail.

► Ensure that the sensor is not exposed to such concentrations over an extended period of time.

Response time	$t_{0...20}$	$t_{0...90}$
0-5 Vol% O_2	≤ 14 seconds[1)]	≤ 45 seconds
0-25 Vol% O_2	≤ 10 seconds	≤ 27 seconds

1) Response time is higher than the permissible limit of EN 50104.

Stabilization time: 5 x $t_{0...90}$

Measuring range

0-5...25 Vol% O_2, 0-25 Vol% O_2

Default value: 25 Vol% O_2

Minimum reading: -1.25 Vol% O_2

Sensor warm-up time

Operation: ≤ 20 minutes / Adjustment: ≤ 6 hours

18.3.3 Dräger SensorAlive (6814014)

The Dräger SensorAlive (6814014) is an electrochemical diffusion sensor with an integrated gas generator for measuring hydrogen sulfide (H_2S) in ambient air.

Environmental parameters	
Pressure	20.7 to 35.5 in. Hg (700 to 1200 hPa)
Humidity	5 to 95 % RH, non-condensing
Temperature	-40 to +65 °C
Maximum flow speed of the ambient air	6 m/s

Storage	
Pressure	no influence
Humidity	30 to 70 % RH, non-condensing (only relevant if sensor packaging is open)
Temperature	0 to +40 °C
Time	Storage of sensors is not intended. Sensors should be used immediately. Remaining life span = expected life span - storage time

Influence of environmental parameters	Relative deviation from the reading
Pressure	At 1000 hPa: ≤ 0.15 ppm
Humidity (at +40 °C)	at 0 and 95 %RH: ≤ 0.29 ppm
Temperature	at 20 °C: ≤ 0.44 ppm

ℹ Interference gases (e.g., NH_3) can impair the function of the sensor.

Response times in diffusion operation	
t(50)	≤ 20 s
t(90)	≤ 55 s

Decay times in diffusion operation	
t(50)	≤ 20 s
t(10)	≤ 55 s

18.4 FM performance approval for DrägerSensor H2S and H2S LC

The DrägerSensor H2S and H2S LC are electrochemical diffusion sensors measuring hydrogen sulfide (H2S) in ambient air.

DrägerSensor H2S (6810435)	
Examination Type P8100	ETR 0400, 0401, 0500, 0501
Interface[1)]	4-20mA, relay
Environmental parameters	
Humidity	5 to 95%RH, non-condensing
Temperature	-40/+65 °C (-40/149 °F)
Storage temperature	0/+40°C (32/104°F)
Enclosure protection [2)]	IP 65/66/67
Range	0-100 ppm
Accuracy (whichever is greater)	measurement uncertainly (of meas. value) ≤ ±3 % or minimum ≤ ±0.5 ppm
Accessory	
Dust filter	6809595
Adapter kit	6810536
Standard	ANSI/ISA-92.00.01FM6340

1) HART communication must not be used for safety-relevant communication.
2) After submersion and jet water the sensor must be replaced.

DrägerSensor H2S LC (6809610)	
Examination Type P8100	ETR 0400, 0401, 0500, 0501
Interface[1)]	4-20mA, relay
Environmental parameters	
Humidity	5 to 95%RH, non-condensing
Temperature	-20/+65 °C (-4/149 °F)
Storage temperature	0/+40°C (32/104°F)
Enclosure protection [2)]	IP 65/66/67
Range	0-100 ppm
Accuracy (whichever is greater)	measurement uncertainly (of meas.value) ≤ ±3 % or minimum ≤ ±0.5 ppm in the range >50 ppm, ±10 % or ±3 ppm
Accessory	
Dust filter	6809595
Adapter kit	6810536
Standard	ANSI/ISA-92.00.01FM6340

1) HART communication must not be used for safety-relevant communication.
2) After submersion and jet water the sensor must be replaced.

FLAME DETECTOR

POS.	TAG NUMBER	SERVICE
1	950-FDZ-01101	FZ-01 FUEL CELL PK AREA
2	950-FDZ-01102	FZ-01 FUEL CELL PK AREA
3	950-FDZ-01103	FZ-01 FUEL CELL PK AREA
4	950-FDZ-01104	FZ-01 FUEL CELL PK AREA
5	950-FDZ-02101	FZ-02 H2 STORAGE VESSELS AREA
6	950-FDZ-02102	FZ-02 H2 STORAGE VESSELS AREA
7	950-FDZ-02103	FZ-02 H2 STORAGE VESSELS AREA
8	950-FDZ-02104	FZ-02 H2 STORAGE VESSELS AREA
9	950-FDZ-03101	FZ-03 ELECTROLYZER PK AREA
10	950-FDZ-03102	FZ-03 ELECTROLYZER PK AREA
11	950-FDZ-03103	FZ-03 ELECTROLYZER PK AREA
12	950-FDZ-03104	FZ-03 ELECTROLYZER PK AREA
13	950-FDZ-04101	FZ-04 B-400/B-300/B-200 AREA
14	950-FDZ-04102	FZ-04 B-400/B-300/B-200 AREA
15	950-FDZ-04103	FZ-04 B-400/B-300/B-200 AREA
16	950-FDZ-04104	FZ-04 B-400/B-300/B-200 AREA
17	950-FDZ-05101	FZ-05 BESS AREA
18	950-FDZ-05102	FZ-05 BESS AREA
19	950-FDZ-05103	FZ-05 BESS AREA
20	950-FDZ-05104	FZ-05 BESS AREA
21	950-FDZ-06101	FZ-06 B-100 AREA
22	950-FDZ-06102	FZ-06 B-100 AREA

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FIRE & GAS DETECTION TECHNOLOGIES INC.

User Manual



FlameSpec **UV-IR**

FlameSpec **UV-IR-F**

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FlameSpec-UV-IR (F) UV/IR Flame Detector User Guide, October 2022

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1. Introduction

The **FlameSpec-UV-IR** flame detector provides ultra-fast response, high performance and reliable detection of a large variety of fires including hydrocarbon fires (visible and non-visible), as well as hydrogen fires (FLS-UV-IR only).

The detector is certified for use in hazardous area locations; it may also be used in other areas not classified as hazardous. The two cable/conduit entries either side of the lower part of the detector housing are for connecting power and outputs to associated signaling equipment.

The detector addresses slow growing fires as well as fast eruptions of fire using improved UV-IR technology.

The detector operates in all weather and light conditions. It will automatically record a fire event (1 min pre/post alarm) using the internal data logger.

During normal operation, the flame detector performs self-tests of its optics, electronics and software. These include a periodic BIT (Built-In-Test) in which the sensors and window cleanliness are tested.

This manual covers two UV/IR detector models:

- **FLS-UV-IR:** Hydrogen and hydrocarbons flame detection. UV radiation 0.18-0.26 micron range. Spectrum response of IR radiation in the 2.5 - 3.5 micron range.
- **FLS-UV-IR-F:** Hydrocarbon flame detection. Spectrum response of IR radiation in the 4.0-5.0 micron range.

1.1 Key Features

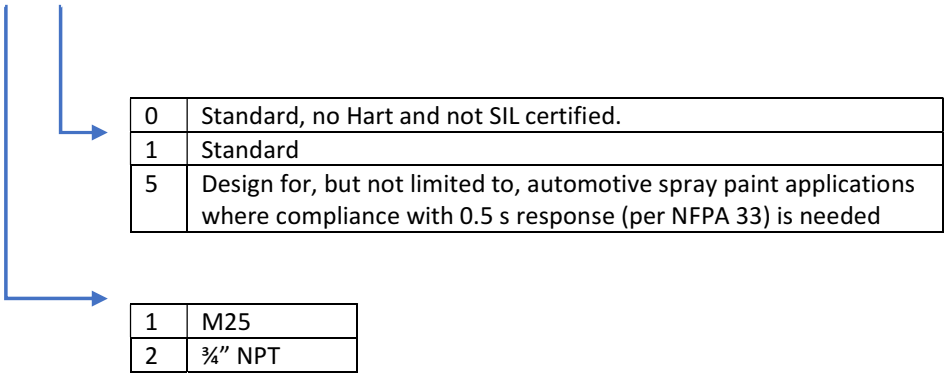
- **High immunity**: To false alarm
- **Ultra-fast detection mode:** Within 5 milliseconds for fireballs or explosions
- **Extreme sensitivity**: Up to 100 ft. (30m) for a 1ft2 (0.1m2) n-heptane pan fire
- **Built-in-Test (BIT)** - Automatic and manual self-test of window cleanliness and the overall operation of the detector.
- **Improved speed of response option** - (0.5s) for automotive applications in compliance with NFPA 33
- **Window heater -** to avoid condensation and icing.
- **Tilt mounting bracket -** for accurate detector positioning.
- **UV and IR warning levels - 0-20mA** - current output warning when elevated UV or IR radiation is detected.

1.2 Model Number Description

The model numbers are defined as follows:

FLS-UV-IR-F - A S X X

FLS-UV-IR - A S X X



0	Standard, no Hart and not SIL certified.
1	Standard
5	Design for, but not limited to, automotive spray paint applications where compliance with 0.5 s response (per NFPA 33) is needed

1	M25
2	¾" NPT

1.2.1 Enhanced performance option

Option 5: Design for, but not limited to, automotive spray paint applications where compliance with 0.5 s response (per NFPA 33) is needed

1.3 Internal tests

During normal operation, the flame detector performs self-tests of its optics, electronics, and software. These include a periodic BIT (Built-In-Test) in which the sensors and window cleanliness are tested. Any detected fault is indicated as shown in table 4 (in section 4.1). During "Dirty Window" fault the detection sensitivity is significantly reduced, while "Fault" refers to critical faults which totally prevent flame detection.

1.4 Product Overview



FIGURE 1 - FRONT VIEW OF THE FLS-UV-IR (F)



FIGURE 2 - REAR VIEW OF THE FLS-UV-IR (F)

1.5 Accessories

1.5.1 Mounting Bracket

The detector should be mounted using the stainless-steel tilt mount part number FLS-TMO-S01. This allows the detector to be securely attached to a wall, pole or other solid surface using appropriate fixings. See section2.5 and 2.6 for further details.



FIGURE 3 - TILT MOUNT

1.5.2 Weather Cover

The weather cover P/N FLS-WCO-S01 protects the detector from extreme weather conditions such heat, rain and snow



FIGURE 4 - WEATHER COVER

1.5.3 Pole mount

The pole mount enables the detectors to be installed with its tilt mount brackets. The pole mount kit we supply are suitable for 2-inch or 3-inch poles. Part number FLS-PMA-S23.



FIGURE 5 - POLE MOUNT

1.5.4 Air shield

The air shield P/N FLS-ASD-S01 allows installation of flame detectors in harsh weather conditions where they may be exposed to dust, sand, and other particulate matter. The connection point can be mounted in the 3, 9 or 12 o'clock locations.

- Air pressure source: Clean, dry, and oil-free air
- Pressure: 2-3 bar /30-45 psi
- Fitting: 7/16"—20UNF-2A
- Operation temperature: -55°C to +85°C / -67°F to +185°F

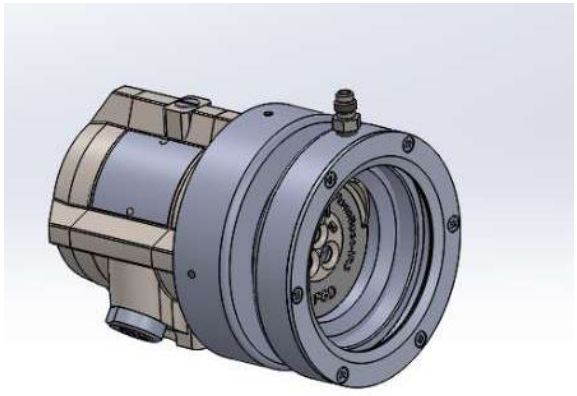


FIGURE 6 - AIR SHIELD

1.5.5 Flame Simulator

The FLS-UV-IR (F) may be tested using the FLS-FSIM-UV-IR-KIT. The FlameSpec flame simulator family provides a fast and convenient means of periodically testing the detector and control system end-to-end. Maintenance costs can be reduced as the detectors can be tested in situ without needing a hot work permit.

FlameSpec Flame Simulators emit UV and IR radiation which simulates a fire to the detectors. The simulators are lightweight, easy to use, with testing distances of up to 21.3 ft. (6.5m) and capable of more than 100 activations between battery charging. FlameSpec Flame Simulators are ATEX approved for use in hazardous Zone 1, Zone 2, Zone 11, Zone 22 areas.
Each simulator kit contains a carrying case, simulator, carrying strap, battery charger, user manual, Allen key and a tool for removing the simulator rear cover.



FIGURE 7 - FLAME SIMULATOR KIT



FIGURE 8 - FLS-FSIM-UV-IR FLAME SIMULATOR FRONT VIEW

1.5.6 Duct Mounts

Duct Mount DMX-S01

The FLS-DMX-S01 allows a standard (non-HD) detector to be mounted remotely from a potential fire source by allowing the device to look through cut hole in the side of a duct. This duct mount must be use with air shield FLS-ADS-S01

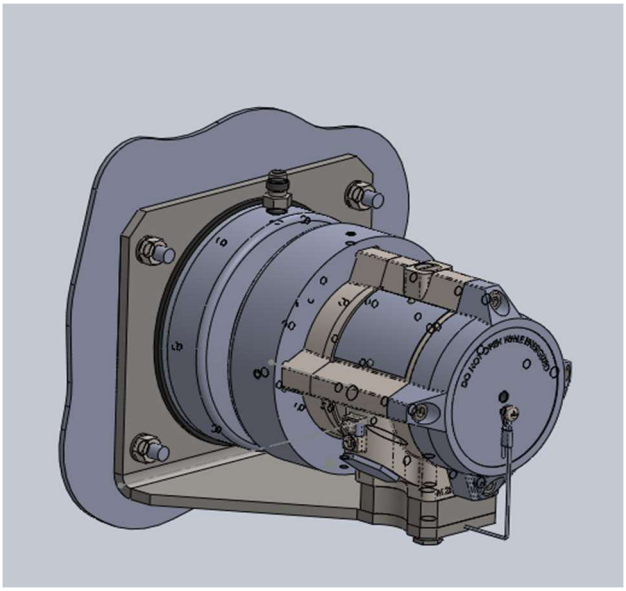


FIGURE 9 - DUCT MOUNT DMX-S01

Duct Mount DMW-S01

The FLS-DMW-S01 allows a standard detector to be mounted remotely from a potential fire source by allowing the device to look through a special sapphire window. It must be acknowledged that the detector cannot tell if this window becomes dirty and so a maintenance routine must be established to check the optical contamination of this window. Please note, the frequency of cleaning needed will vary from installation to installation. It is highly recommended therefore that a means of access be designed into the installation, as close as practicable to the assembly, for inspection and cleaning purposes.

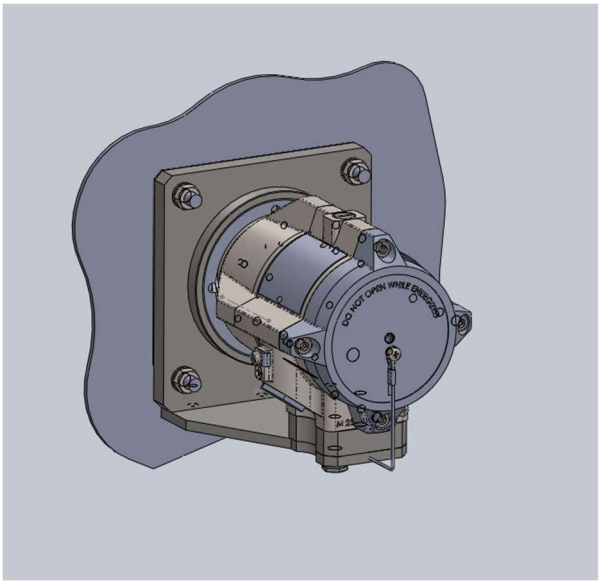


FIGURE 10 - DUCT MOUNT DMW-S01

2 Installation

This chapter does not attempt to cover all of the standard practices and codes of installation. Rather, it emphasizes specific points of consideration and provides some general rules for qualified personnel. You must always observe special safety precautions.

2.1 General Considerations

⚠ This section includes important information.

- To help obtain optimal performance, the detector should be aimed toward the center of the hazard or area to be monitored and protected ("detection zone") and have, to the extent that is required, an unobstructed view of the protected area. Whenever possible, the detector face should be tilted (aimed) down at an angle to prevent the accumulation of dust and dirt.
- Do not start an installation until the performance target, system configuration, installation location and coverage considerations have been defined by the responsible person.

To ensure optimal performance the following guidelines should be addressed:

Sensitivity

To determine the sensitivity level, the following points should be considered:

- The size of the fire to be detected at the determined distance.
- The type of flammable fuel.

Spacing and Location

Consider the following factors when determining the number of detectors and their locations in the protected area:

- The size and shape of the protected area
- The nature of the hazards, including materials stored or used and the protected objects
- The sensitivity of the detectors
- If there are any obstructed lines of sight
- The field of view of the detectors (See Figure 11 and Figure 12)

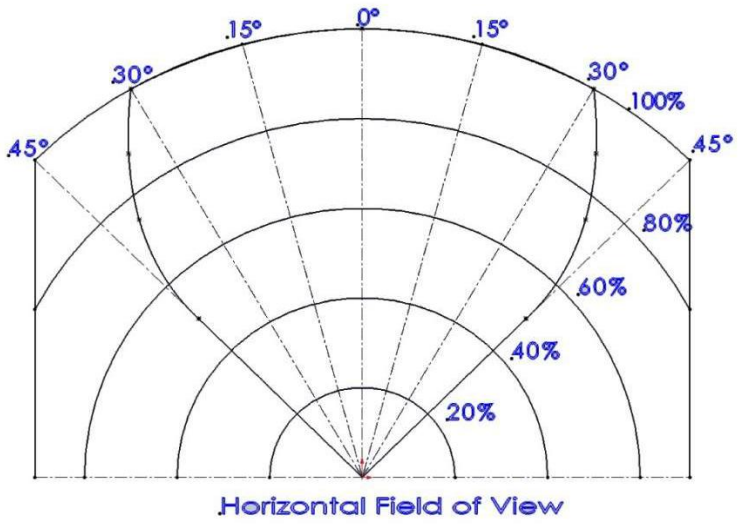


FIGURE 11 - HORIZONTAL FIELD OF VIEW

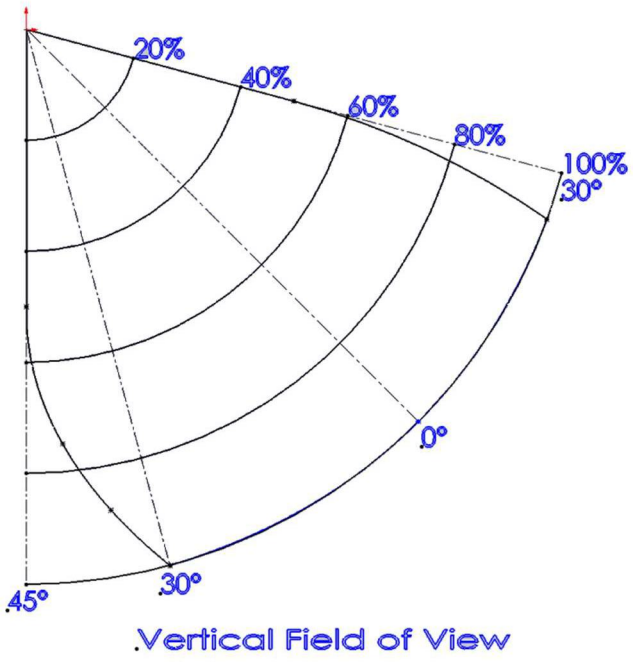


FIGURE 12 - VERTICAL FIELD OF VIEW

Environment

- Environmental conditions including but not limited to dust, snow or rain can reduce the detectors sensitivity and require additional consideration.

Hot Work

- Arc welding should not be performed within 15 ft. (5m) of the detector. It is recommended that the system be inhibited during welding operations in situations where the possibility of a false alarm cannot be tolerated.
- Gas welding requires a system inhibit, since the gas torch is an actual fire.
- Arc welding rods can contain organic binder materials in the flux that burn during the welding operation and are detectable by the device.
- Welding rods with clay binders do not burn and should not be detected. However, a system inhibit is always recommended, since the material being welded may be contaminated with organic substances (paint, oil, etc.) that will burn and may be of the size that should be detected.

2.2 Preparations for Installation

The installation must comply with national and local regulations and standards applicable to flame detectors (e.g., NFPA 72) and all local and common engineering practices. It is recommended to consult with the authority having jurisdiction.

Prior to installation:

- Make sure that you have all the components and tools required to complete the detector installation readily available before beginning installation. In cases where you cannot complete the installation in a single session, secure and seal the detectors and conduits before leaving site.
- Use color-coded conductors or suitable wire markings or labels for the wiring. You may use 14 to 17AWG (2.5 to 1mm^2) multi-strand wires for the site wiring. The selection of wire gauge should be based on the number of detectors used on the same line and the distance from the control unit, in compliance with specifications.
- Individually screen twisted pair cable is recommended for RS485 terminals.
- Use suitably rating wire for the application certification and temperatures.

2.3 Required Tools

The detector can be installed using the following tools:

Tool	Function
Hex. KEY 6 mm	Vertical alignment
Hex. KEY 10 mm	Horizontal alignment
Wrench 13 mm	Mounting the detector
Flat Screwdriver 6 mm	Ground screw connection
Flat screwdriver 3.5mm	Terminal connection

2.4 Certification Instructions

⚠ Warnings

- Do not open the detector, even when isolated, when flammable atmosphere present.
- The equipment may be used in hazardous areas with flammable gasses and vapors with apparatus groups IIC, IIB and IIA and with temperature classes T1, T2, T3, T4 and T5. See details of the explosion proof approvals in section 9.7.
- The equipment is certified for use in ambient temperatures in the range of -67°F to +167°F (-55°C to +75°C) or -67°F to +185°F (-55°C to +85°C) and should not be used in temperatures outside this range.
- Installation shall be carried out in accordance with the applicable code of practice by suitably trained personnel.

- Inspection and maintenance of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice.
- If the equipment is likely to come into contact with corrosive and/or other harsh substances, consult with the relevant technical persons to take suitable precautions to prevent the detector from being adversely affected, thus ensuring that the type of protection is not compromised.

  Harsh substances: For example, acidic liquids, gases, or solvents that may attack the windows, metals, seals, or polymeric materials.

  Suitable precautions: For example, regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.

⚠ Specific conditions for use

- The equipment is not intended to be repaired by the user. Repair of this equipment shall be carried out by the manufacturer in accordance with the applicable code of practice.
- The flame paths are not intended for repair. Contact the manufacturer if the flame paths are damaged.
- Consult the manufacturer for genuine replacement cover and housing to connection box fasteners. M6x1x18 Hexagonal Socket head fasteners with a minimum of ISO 4762 Grade A4 Class 80 are acceptable alternatives.
- One suitably certified stopping plug is supplied with the detector.
- The external earthing connection consists of cable lug with M5x10 stainless steel screw, the terminals is suitable for connection of a wire of maximum 2.5mm^2 / 14AWG.
- The internal terminals are suitable for connection of a wire equal to or greater than the power input wiring and at a minimum of 1mm^2 / 17AWG conductor.

2.5 Mounting the Tilt Mount

The tilt mount enables the detector to be rotated up to 45 degrees (horizontal/vertical) in all directions. The following installation instructions show how to use it to support the detector from below (the preferred method).

To install the tilt mount:

a) Mount the tilt mount base (Figure 13) to a solid structure using four suitable fixings through the four 7mm (0.28") diameter holes. Four captive screws with spring washers are provided in the tilt mount.

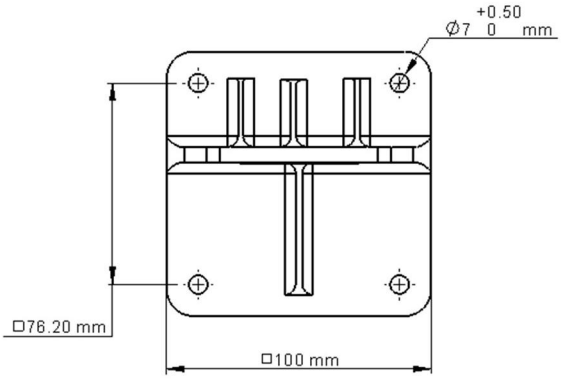


Figure 13: Tilt Mount Base - Plate View

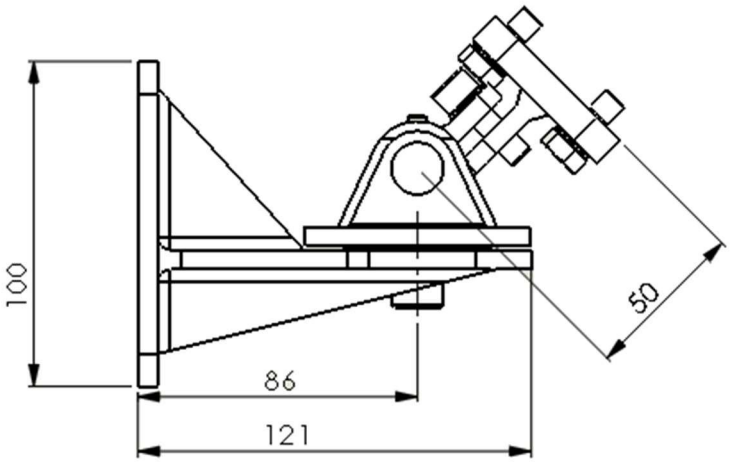


Figure 14: Tilt mount base – Side View

2.6 Mounting the detector

Referring to Figure 13, use the following steps to connect the detector to the tilt mount:

a) Place the detector, with its cable/conduit entries pointing down, on the holding plate of the tilt mount (item 2).

b) Secure the detector to the plate using the two hex screws and spring lock washers (items 3 and 4).

c) Loosen the locking screws (Items 5 and 6) in such a way that enables you to rotate the detector.

d) Point the detector towards the detection area and make certain that the view of the area is unobstructed.

e) Secure the detector in that position by tightening the locking screws (Items 5 and 6) on the tilt mount. (Make sure the detector is pointing in the correct direction).

The detector is now correctly mounted, aligned, and ready for electrical connection. Please refer to section 2.7 for wiring instructions, and section 3 for a description of the detector's configuration settings.

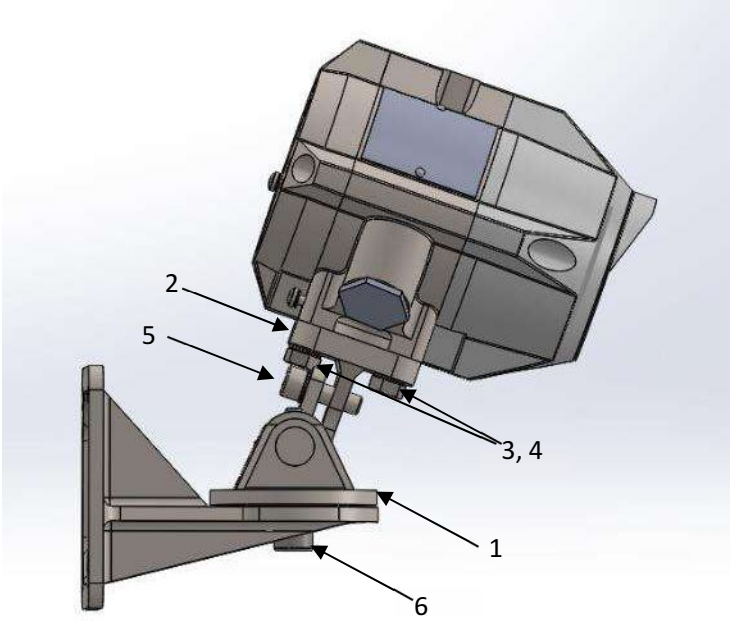


FIGURE 15 - DETECTOR ON TILT MOUNT – SIDE VIEW

ITEM NO.	ITEM NAME
1	TILT MOUNT ASSEMBLY
2	HOLDING PLATE
3,4	MOUNTING HEX SCREWS M8 AND LOCK WASHERS
5	HEX SOCKET LOCKING SCREW M8
6	HEX SOCKET LOCKING SCREW M12

2.7 Electrical Wiring

⚠ Warning

- The sensor module in the front half of the detector contains no serviceable components and should never be opened. Opening will invalidate the warranty of the detector. The terminal compartment at the back is the only part of the housing that should be opened by the user.
- The detector has 16 screw terminals as shown in the following figure and table:

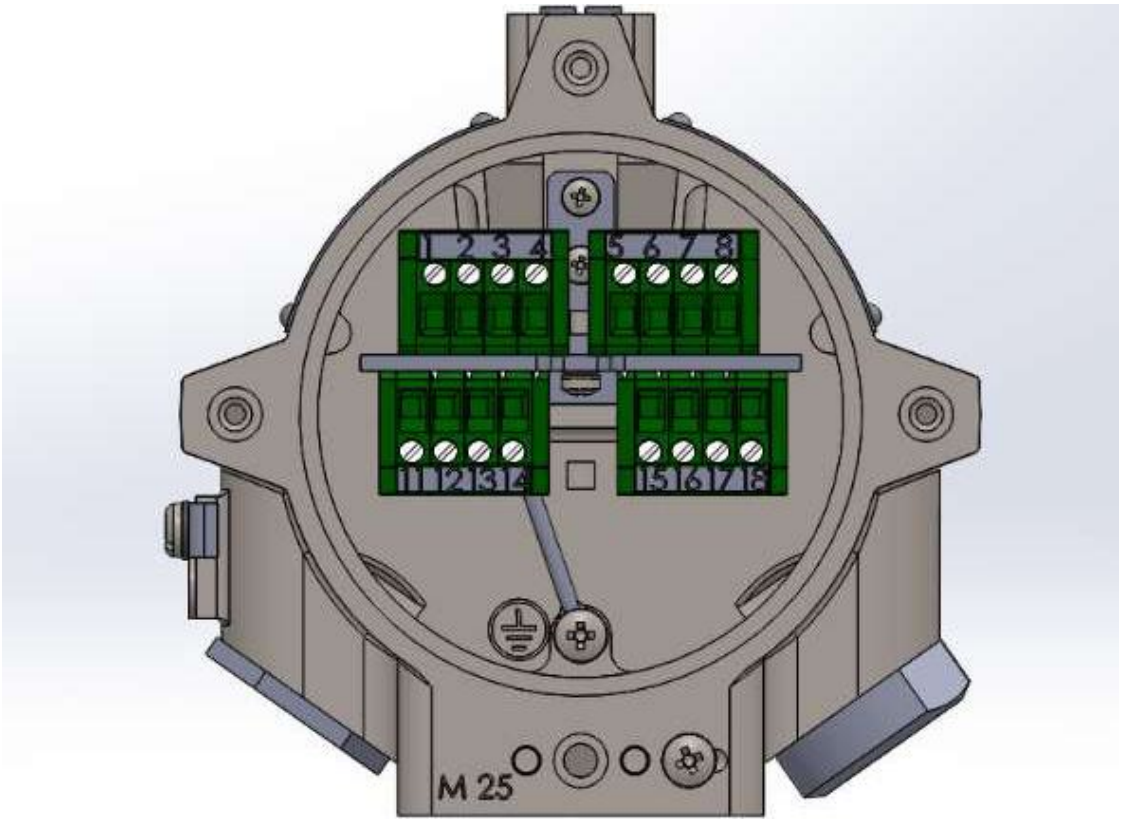


FIGURE 16 – TERMINAL VIEW

TABLE 1: TERMINAL CONNECTIONS

Pin #	Function	Description
Ground	Ground (earth)	Connected to a screw on the housing exterior.
1	24 VDC (+)	Power supply (18-32 VDC)
2	24 VDC (-)	Power supply return (0V)
3	0-20mA+ (In)	This output is used for analog 0-20 mA current output
4	0-20mA- (out)	
5	Fault Relay	A normally open SPST contact relay, that is energized (closed) when the detector is in normal operation and opens under fault condition.
6	Fault Relay COM	
7	Alarm Relay (NO)	A normally open SPST contact relay, that is open in normal operation, and closed when fire is detected. This relay can be configured to latch as described in section (3.4).
8	Alarm Relay COM	
11	24 VDC (+)	Power supply (18-32 VDC)
12	24 VDC (-)	Power supply return (0V)
13	Manual BIT activation	The manual BIT (built-in test) can be initiated by momentarily connecting this terminal and one of the "24 VDC (-)" terminals (2 or 12). See 3.10 Manual BIT – Alarm Output Test for more details.
14	Shield	This terminal should be left connected to the housing internal ground screw.
15	RS-485 (+)	RS-485 Modbus communication (also used by the "FGD Communicator" software)
16	RS-485 (-)	
17	Auxiliary Relay NO	A normally open SPST contact relay, that is open in normal operation, and closed according to the configuration used.
18	Auxiliary Relay COM	

2.8 Current Output (0-20mA) Wiring

The detector's 0-20mA current output can act as both a source or a sink transmitter and can be 3-wire or 4-wire connected.

The following drawing shows how to wire the detector to act as a current source isolated transmitter (4-wire connection):

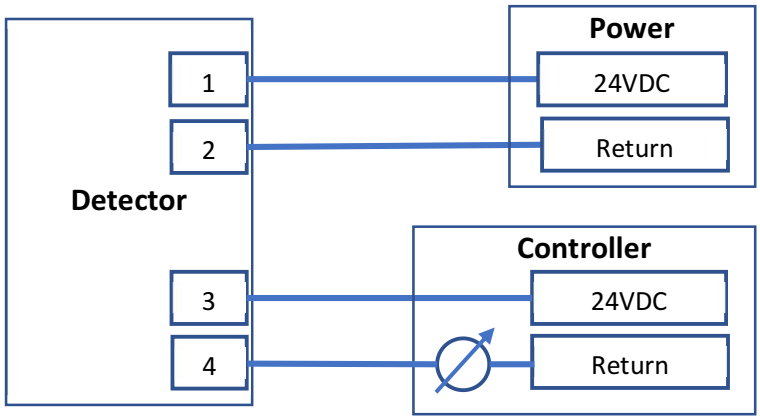


FIGURE 17 – SOURCE 4-WIRE SCHEME

The following drawing shows how to wire the detector to act as a current sink isolated transmitter (4-wire connection):

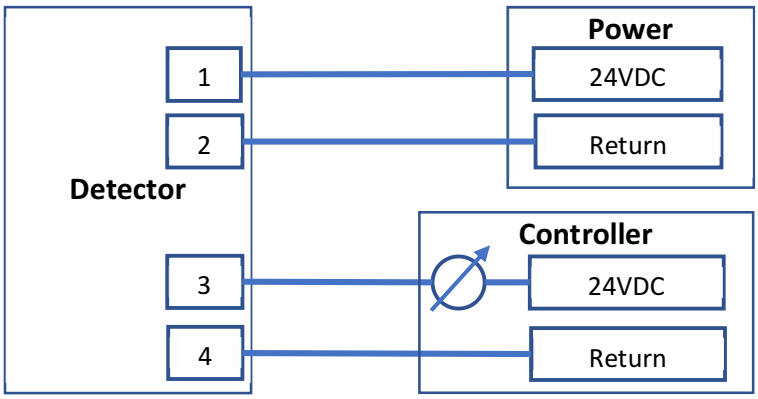


FIGURE 18 – SINK 4-WIRE SCHEME

The following drawing shows how to wire the detector to act as a current source non-isolated transmitter (3-wire connection):

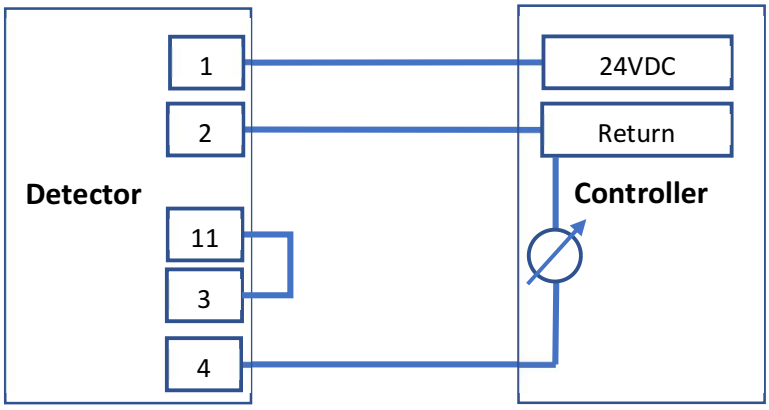


FIGURE 19 – SOURCE 3-WIRE SCHEME

Note: Link between 3 and 11 to be wired on site

The following drawing shows how to wire the detector to act as a current sink non-isolated transmitter (3-wire connection):

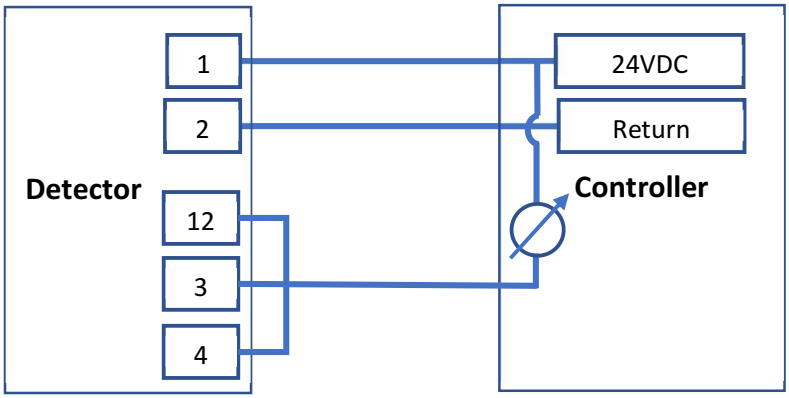


FIGURE 20 – SINK 3-WIRE SCHEME

Note: Link between 4 and 12 to be wired on site

2.9 4 Wire Relay Connection

This wiring option uses the fault and alarm relay and are connected to fire alarm panels. This connection allows to connect several detectors on 4 wires in a single loop. On the last detector there is a connected EOL resistor in the connection box. The value of the resistor depends on the control panel specification.

The number of detectors in a single loop depends on the control panels power supply capacity and length on wire width.

In fault condition, the fault relay will open the contact. The control panel will see an open loop and will report a fault.

In alarm condition, the alarm relay will close the contact and short the loop. With this configuration, the panel does not know which detector in the loop caused the alarm or fault. See figure below.

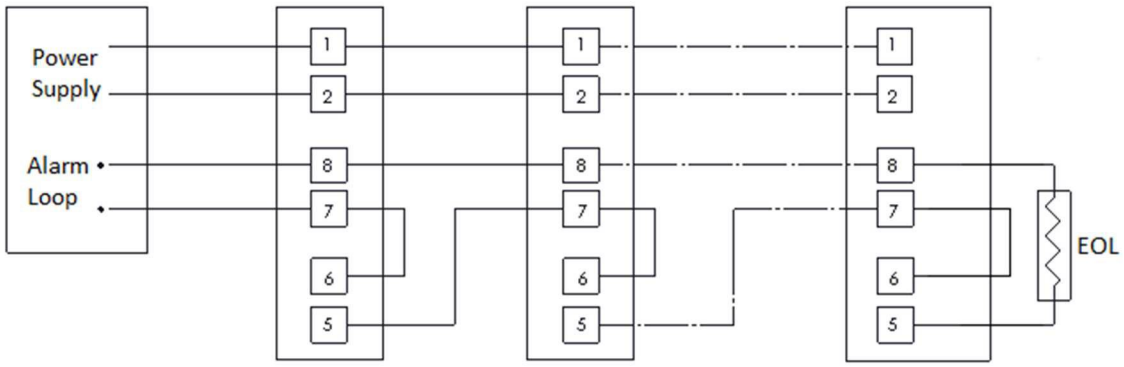


FIGURE 21 - 4 WIRE RELAY CONNECTION

2.10 RS-485 Communication Network

Using the RS-485 network capability of the detector and communicator software, it is possible to connect up to 32 detectors in an addressable system with only 4 wires (2 for power and 2 for communication). Using repeaters, the number of detectors can be much larger (32 detectors for each repeater) up to 247 on the same 4 wires. Using the RS-485 network, it is possible to read each detector's status (fault, alarm) and to initiate a BIT to each detector individually.

The detector communicates via RS-485 with a Modbus RTU compatible protocol. For more details on the communication protocol, please see manual F100P0013

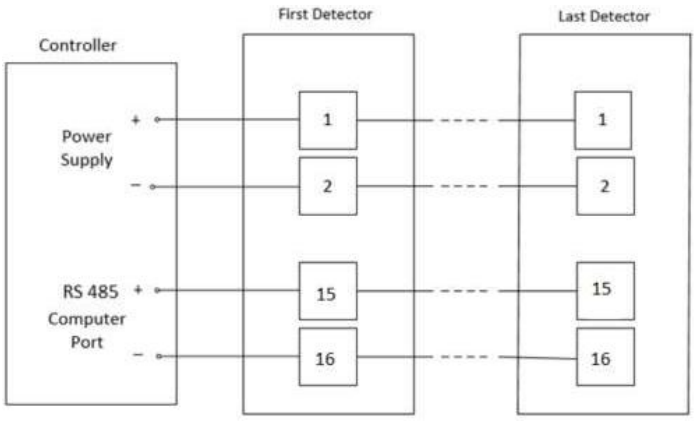


Figure 22: RS-485 Networking

2.11 Cabling Recommendations

The cable used should be appropriate for the hazardous area classification and meet local, national and company regulations.

In order to comply to EMC regulations, the cable must be shielded, and the detector grounded.

The use of industrial grade, suitably armored field cable is recommended). When using HART® communications, there are some additional considerations. In particular, low capacitance cable should be used. Further detailed information can be found at the HART® Communication Foundation's website www.hartcomm.org.

2.12 Earth/Ground Regime

Any earthing regime employed must avoid earth loops. The following information is provided to assist with proper earthing of the detector

- There is an earthing point on the outside of the detector enclosure for connection to Electrical ground

2.12.1 General recommendations

- In general, correctly engineered star earthing arrangements minimize earth current crosstalk and noise, improving the reliability and performance of instrumentation.
- The use of a single, screened / shielded cable for each field device ensures good screening / shielding and reduces crosstalk.

2.12.2 Field Cabling

- The entire length of the field cabling connected to a unit should be screened / shielded. The screen / shield should be connected to a low noise instrument earth at one end.
- The screens / shields of field cabling must not be connected in a manner that creates earth loops or that will result in the screens / shields carrying large currents from heavy plant or equipment.

2.12.3 Interference and noise

- Electrical equipment connected to the system should comply with applicable national or international EMC standards.
- Ideally, the 24 V supply reaching units should be free from large transients, fluctuations, or high frequency noise.
- In order to reduce the likelihood of radio frequency interference affecting the operation of units it is recommended that neither units nor their cabling are installed in close proximity to the antennae of high-powered radio, radar or satellite communication equipment.

3 Configuration options

Some functions of the detector can be configured using an RS-485 modem connected to a computer with the "FGD communicator" software. For details of how to download the software please contact technical support on: (+1) 714-671-8500 or via email at support@fg-detection.com

These configuration options are listed in the following table along with their factory default values.

TABLE 2: DETECTOR CONFIGURATION OPTIONS

Function	Options	Default Setting
Sensitivity	Low, Medium, High, Extreme	Medium
Ultra-fast detection	Disabled, Enabled	Disabled
Alarm Delay	0, 5, 10, 20 or 30 seconds	0 seconds (no delay)
Alarm Latch	Disabled, Enabled	Disabled
Enable Pre-Alarm 0-20mA	Disabled, Enabled	Disabled
Enable dirty window warning 0-20mA	Disabled, Enabled	Disabled
Aux. Relay	Alarm Pre-Alarm UV Detected IR Detected Dirty Window Warning	Alarm
Window Heater	Disabled, Enabled	Enabled
Modbus address	1 – 247	1
Manual BIT – Alarm Output Test	Disabled, Enabled	Disabled

- Note: Medium sensitivity setting allows detection of a 1x1ft^2 (0.1m^2) N-heptane pan fire at a distance of 50ft (15m).

3.1 Sensitivity

The detector can be configured to one of four sensitivity levels: low, medium, high, and extreme. The following table lists for each sensitivity setting the maximum distance, in which a standard fire[1] would be reliably detected.

TABLE 3: SENSITIVITY LEVELS

Sensitivity level	Detection distance in feet (meters)
Low	16 (5)
Medium	49 (15)
High	75 (23)
Extreme	98 (30)

Further details about the response characteristics of the detector at the different sensitivity settings and fuel types can be found in 10

3.2 Ultra-Fast Detection

The ultra-fast detection feature allows detection of fireballs and explosions at 5 milliseconds. If enabled, this feature is independent of other detection algorithms and alarm delays.

3.3 Alarm Delay

When a flame is detected, the flame detector delays the execution of the alarm outputs up to the configured time period. After this time delay, the detector re-evaluates the situation. If a flame is still detected the alarm outputs are activated.

3.4 Alarm Latch

If alarm latch is enabled, the detector outputs will remain active even after a flame is no longer detected. To reset the detector outputs the detector must be power cycled or a manual BIT initiated.

3.5 Enable Pre-Alarm 0-20mA

If the Pre-Alarm is enabled and Alarm Delay is greater than 0, the detector 0-20mA output will be 16mA and the red LED will blink in case of a pre-alarm fire condition.

[1] A standard fire is defined as a 1x1 ft^2 (0.1 m^2) N-heptane pan fire, with maximum wind speed of 6.5 ft/s (2 m/s).

3.6 Enable dirty window warning 0-20mA

If enabled, this feature assists predictive maintenance by indicating an alert when the BIT signal is reduced by 75% of the value needed to trigger a BIT fault failure. When activated, the milliampere output will drop to 3mA and the LED will remain steady green, it should be noted that a fire signal will override the dirty window warning. A process variable of optical contamination (BIT signal level) is accessible via HART and / or MODBUS. The value of the field ranges from 0 (clean) to 100% (BIT fault).

3.7 Auxiliary Relay

The Aux relay can be set to operate in parallel to the alarm relay, at pre-alarm level, when high IR or high UV energy is present or on “dirty window warning.

3.8 Window Heater

The detector is equipped with a heater to prevent condensation and icing on the window. If enabled, the heater is operated automatically depending on temperature.

3.9 Modbus Address

The detector can communicate with the “FGD communicator” software using a Modbus RTU compatible protocol on RS-485. This protocol allows for a network of detectors to be connected, each with a unique Modbus address. The address of the detector can be set to any value in the range 1–247.

3.10 Manual BIT – Alarm Output Test (Full loop test)

When enabled, the alarm outputs are activated when a **Manual** BIT is initiated. See section 4.2 – “Testing” for details.



WARNING

Make sure to disable all fire extinguishing actions or alarms connected to the detector when the manual BIT is initiated and the “Manual BIT – Alarm Output Test” is enabled as the Manual BIT will set the 0-20mA terminal to 20mA and close the alarm relay and auxiliary relay if configured.

4 Operation

On power up, the LED on the front of the detector flashes Yellow indicating the startup routine has begun. After approximately 30 seconds, if the startup is successful, the LED turns green, the 0-20mA output goes to 4mA and the fault relay is closed.

Detector configuration settings can be changed as described in section 2.7.

To restart the detector, turn off and then turn on the power.

4.1 Output Signals

The detector has the following output signals:

- Current output (0–20mA) with HART® 7
- Relays (Fault, Auxiliary and Alarm)
- RS-485
- Tri-color LED

TABLE 4: OUTPUT SIGNALS

	State					
State	Output	0 – 20mA	Fault Relay (NC)	Alarm Relay NO	Aux Relay (NO	LED
	Startup	1mA	Open	Open	Open	Flashing Yellow
	Fault	1mA	Open	Open	Open	Flashing Yellow
	BIT Fault	2mA	Open	Open	Open	Yellow
	Dirty Window Warning	3mA (1)	Closed	Open	Closed (2)	Green
	Normal	4mA	Closed	Open	Open	Green
	IR Radiation detected	8mA	Closed	Open	Closed (3)	Green
	UV Radiation detected	12mA	Closed	Open	Closed (4)	Green
	Pre Alarm	16mA (5)	Closed	Open	Closed (6)	Flashing red
	Fire Alarm	20mA	Closed	Closed	Closed	Red

1 – 3mA when “Enable dirty window warning 0-20mA” enabled. 4mA when “Enable dirty window warning 0-20mA” disabled.

2– Closed when “Aux Relay” set to “Dirty Window Warning”.

3– Closed when “Aux Relay” set to “IR Detected”.

4– Closed when “Aux Relay” set to “UV Detected”.

5 – 16mA when “Enable Pre-Alarm 0-20mA” enabled. 4mA when “Enable Pre-Alarm 0-20mA” disabled.

6– Closed when “Aux Relay” set to “pre-alarm”.

4.2 Testing

The detector has a Built-In-Test (BIT) capability to ensure proper operation and to indicate when the windows are dirty. The BIT process runs automatically at startup and periodically during the operation of the detector. The BIT can also be initiated manually by short circuiting the "Manual BIT" terminal and the "24 VDC (-) "terminal for one second (table 1) or by using the FGD communicator software (connected through RS-485).

In case of "Dirty Window" fault the detector may still detect flames but at a lower sensitivity.

When "Manual BIT – Alarm Output Test" feature is enabled (see section 3.10), a successful Manual BIT will activate the following alarm outputs for a few seconds:

1. The LED in the front of the detector will turn red.
2. The 0-20mA current output will be set to 20mA.
3. The alarm relay will close.

WARNING

Make sure to disable all fire extinguishing actions or alarms connected to the detector, when the manual BIT is initiated and the "Manual BIT – Alarm Output Test" is enabled, as the manual BIT will set the 0-20mA terminal to 20mA and close the alarm relay.

4.3 Flame Simulator

Flame simulators are often used by industry to perform detector testing during installation and periodic end to end testing of a flame detector alarm system. Refer to the FlameSpec Flame simulator manual F300V0020 for full instructions.

5 Maintenance

After powering up, the detector should work maintenance free. Regular checks should be in the form of a physical inspection and to periodically ensure the optical surfaces are clean (windows and reflective mirror). It is also recommended to perform a function test annually or in line with local requirements, whichever is the sooner.

WARNING

The sensor module in the front half of the detector contains no serviceable components and should never be opened. The terminal compartment at the back is the only part of the housing that should be opened by the user. Any violation of these instructions will invalidate the warranty.

5.1 Cleaning Procedure

To clean the detector:

a) Disconnect the power to the unit and disable/inhibit any extinguishing equipment that is connected to the unit.

b) Use water and detergent to clean the detector windows and underside of the reflector. Rinse with a soft cloth, cotton swab, or tissue.

c) Where dust, dirt or moisture accumulates on the window, first clean the window with a soft optical cloth and detergent, and then rinse with a clean soft cloth, cotton swab, or tissue. If contamination continues to be an issue consider using the air shield.

6 Troubleshooting

Use the table below to help troubleshoot any detector operational issues.

Detector Status	Possible Cause	Corrective Action
LEDs Off Fault Relay is open Current output at 0mA	No power to the unit	Check that the power is connected to the detector. Check power polarity. Check wiring in the detector.
Yellow LED constantly on Fault Relay is open Current output at 0mA – 1mA	Power problems	Check the voltage between the “24VDC (+)” and “24VDC (-)” terminals to verify that it is in the allowed range (see section 9.2)
Yellow LED constantly on Fault Relay is open 0−20mA at 2mA	BIT Fault	Clean detector window. Restart the detector (by turning the power off and then back on).
Green LED constantly on Fault Relay is closed 0−20mA at 3mA	Dirty Window Warning	Clean detector window. Restart the detector (by turning the power off and then back on).
Red LED constantly on Alarm Relay closed and current output is at 20mA	Detector is in alarm latch mode	Restart the detector (by turning the power off and then back on) or perform a manual BIT.
Alarm Relay closed and current output is at 20mA	Detector is exposed to a flame	Check cause of alarm. If caused by “friendly fire”, re-position the detector so that it is not affected by it.

7 Servicing

The detector contains no user serviceable parts. In the event the detector has been damaged or is deemed to not be working properly, it should be returned to the manufacturer for repair. For technical assistance and to request a returns authorization number contact technical support on: (+1) 714-671-8500 or via email at support@fg-detection.com. Refer to the detector warranty statement in section 12.

8 FGD Communicator Software

The FGD Communicator software can be used to configure and monitor the FlameSpec-UV-IR flame detector. The software communicates using Modbus over an RS-485 port to the detector. Modbus commands enable the user to configure parameters and monitor the status of the detector. For details of how to download the software and be sent a copy of the manual please contact technical support on: (+1) 714-671-8500 or via email at support@fg-detection.com.

9 Specifications

9.1 Fire Detection

- Detection time and distance:
- FLS-UV-IR:
  - 5ms - for fast fire burst or explosion
  - 1s - for 1ft^2 (0.1m^2) N-heptane pan fire at 0-50 ft (0-15m)
  - <2s - for 1ft^2 (0.1m^2) N-heptane pan fire at 50-100 ft (15-30m)
- FLS-UV-IR-F
  - 5ms - for fast fire burst or explosion
  - 1.5s - for 1ft^2 (0.1m^2) N-heptane pan fire at 0-50 ft (0-15m)
  - <3s - for 1ft^2 (0.1m^2) N-heptane pan fire at 50-100 ft (15-30m)
- Field of view: 90° Horizontal, 80° Vertical
- Time Delay: 0-30 seconds (adjustable)
- Built-in test: Automatic and Manual

9.2 Electrical Specifications

- Operating Voltage: 24 VDC nominal (18-32 VDC)
- Current Consumption:
  - Standby 120mA
  - Maximum 180mA all systems in operation (including window heater)
- Cable Entries: 2x conduit entries 3/4” 14NPT or M25x1.5; with one entry plugged with a certified stopper.
- Wiring: 14-17AWG (2.5-1.0mm^2)

9.3 Outputs

- Relays: Volt-free contacts rated 2A at 30 VDC
  - Alarm: Normally open
  - Auxiliary: Normally open
  - Fault[2]: Normally closed energized
- 0-20mA (stepped) current output: 3 wire and 4 (isolated) wire configurations (sink and source)

The 0-20 mA output at different detectors status are define at the below table.
The max load for the 0-20 mA is 500 ohm at 18-32 VDC. The 0-20 mA is sink isolated and can be configured as source.

Detector status	Output
Fault	0 mA or 1 mA ±0.1mA
BIT Fault	2 mA ±0.2mA
Dirty window warning	3 mA ±0.2mA
Normal	4 mA ±0.2mA
IR Detected	8 mA ±0.3mA
UV Detected	12 mA ±0.3mA
Pre-alarm	16 mA ±0.3mA
Alarm	20 mA ±0.3mA

- Tri-colour LED indication
- Modbus RTU compatible protocol on RS-485

9.4 Mechanical Specifications

- Size: 5.51 x 3.54× 3.54" (140×90×90mm)
- Weight:
  - Detector (Stainless Steel 316): 6.6 lbs. (3 kg)
  - Tilt mount (Stainless steel 316): 3.3 lbs. (1.5 kg)

9.5 Environmental Specifications

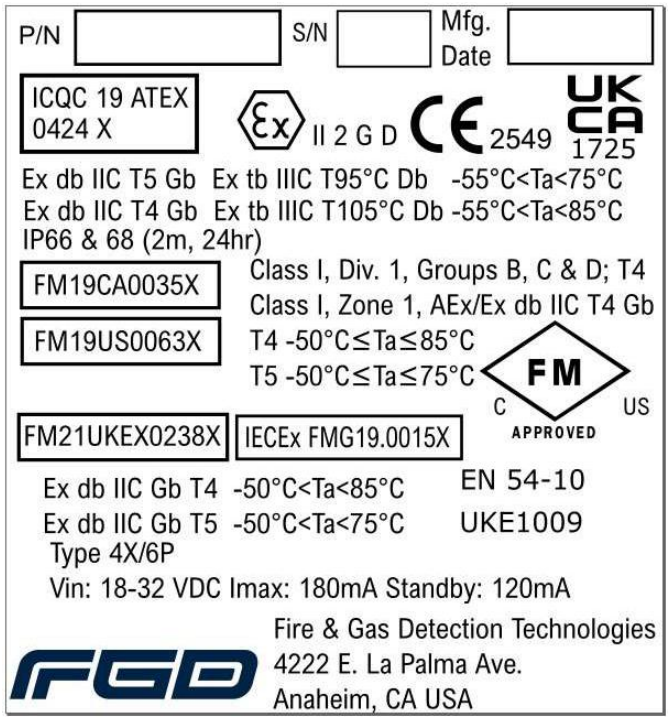
- Temperature Range:
  - Operating and storage -67°F to + 185°F (-55°C to +85°C)
- Humidity: up to 99%, non-condensing

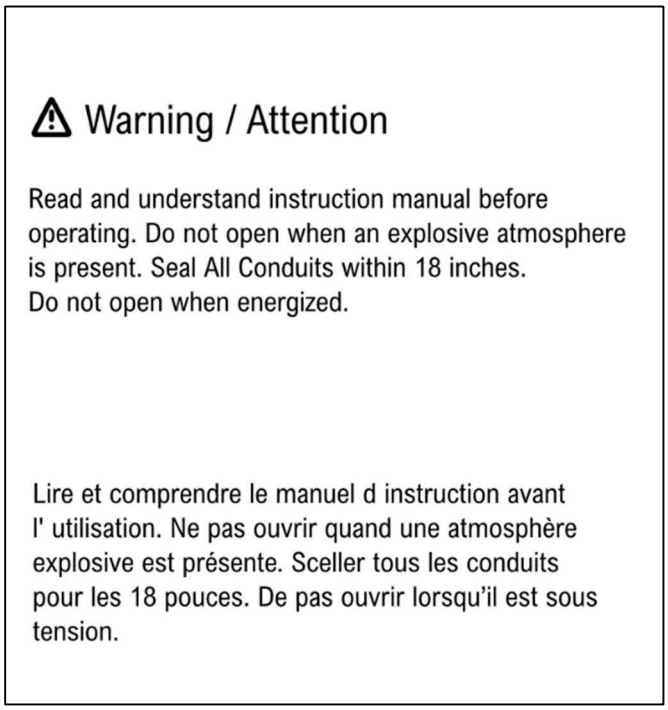
[2] The FAULT relay will normally be energized and the contact will be closed during normal operation of the detector. The contact will be open at fault condition or low voltage.

- Ingress Protection: IP66 & IP 68 (2m, 24hr); NEMA 4X & 6P

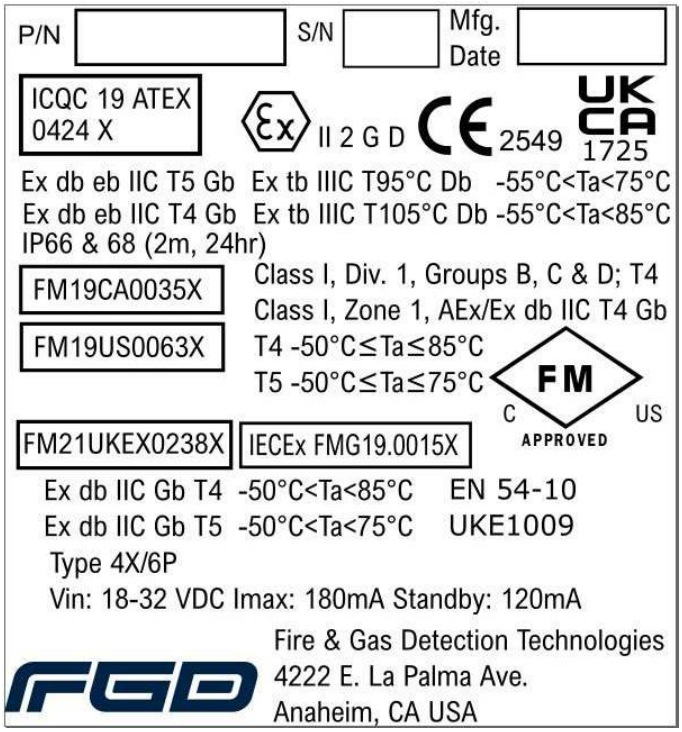
9.6 Product Labeling

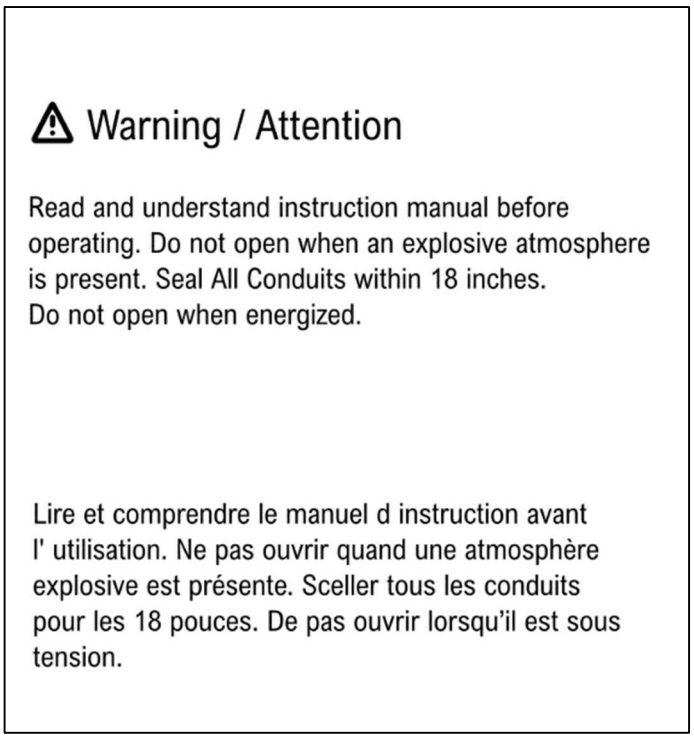
9.6.1 Ex db





9.6.2 Ex db eb


P/N
S/N
Mfg. Date
ICQC 19 ATEX 0424 X
II 2 G D
2549
UK CA 1725
Ex db eb IIC T5 Gb Ex tb IIIC T95°C Db -55°C<Ta<75°C
Ex db eb IIC T4 Gb Ex tb IIIC T105°C Db -55°C<Ta<85°C
IP66 & 68 (2m, 24hr)
FM19CA0035X
Class I, Div. 1, Groups B, C & D; T4
Class I, Zone 1, AEx/Ex db IIC T4 Gb
FM19US0063X
T4 -50°C≤Ta≤85°C
T5 -50°C≤Ta≤75°C
FM
C US
APPROVED
FM21UKEX0238X
IECEx FMG19.0015X
Ex db IIC Gb T4 -50°C<Ta<85°C EN 54-10
Ex db IIC Gb T5 -50°C<Ta<75°C UKE1009
Type 4X/6P
Vin: 18-32 VDC Imax: 180mA Standby: 120mA
Fire & Gas Detection Technologies
4222 E. La Palma Ave.
Anaheim, CA USA


⚠ Warning / Attention
Read and understand instruction manual before operating. Do not open when an explosive atmosphere is present. Seal All Conduits within 18 inches.
Do not open when energized.
Lire et comprendre le manuel d instruction avant l' utilisation. Ne pas ouvrir quand une atmosphère explosive est présente. Sceller tous les conduits pour les 18 pouces. De pas ouvrir lorsqu'il est sous tension.

9.7 Approvals

Note: All items are designed and tested to meet the relevant requirements.

- Explosion proof:
  - ATEX: II 2 G D
    Ex db IIC T5 Gb or Ex db eb IIC T5 Gb and Ex tb IIIC T95°C Db -55°C<Ta<75°C
    Ex db IIC T4 Gb or Ex db eb IIC T4 Gb and Ex tb IIIC T105°C Db -55°C<Ta<85°C
  - UKCA:
    Ex db IIC T5 Gb -50°C≤Ta≤75°C
    Ex db IIC T4 Gb -50°C≤Ta≤85°C
  - IECEx, PESO, InMetro:
    Ex db IIC T5 Gb -50°C≤Ta≤75°C
    Ex db IIC T4 Gb -50°C≤Ta≤85°C
  - FM & FMC:
    Class I, Div. 1, Groups B, C & D; T4
    Class I, Zone 1, AEx/Ex db IIC T4 Gb
    T4 -50°C≤Ta≤85°C
    T5 -50°C≤Ta≤75°C
- Performance:
  - ANSI FM 3260
  - EN 54-10
- Functional safety: Certified as SIL2 capable per IEC 61508:2010
- California Fire Marshall
- EAC CU TR

9.8 Electromagnetic Compatibility

The detector fully complies with EMC directive 2014/30/EU and protected against interference caused by RFI and EMI. The cables to the detector must be shielded and the detector must be grounded in order to comply to the EMC directive.

10 Performance FLS-UV-IR

The following tables show test results of detection distances and times for different fire scenarios. Each table lists results for a different sensitivity setting. For liquid fires the size of fire refers to the size of the pan, filled with the fuel. For gas fires the length of the plume is listed.

10.1 FLS-UV-IR-ASX1 (Standard mode)

Extreme Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	98 (30)	2.0
Gasoline	2 x 2 ft	197(60)	3.3
Gasoline	1 x 1 ft	98 (30)	1.8
Methane	32-in Plume	59 (18)	1.4
LPG	32-in Plume	75 (23)	1.2
Diesel	1 x 1 ft	75 (23)	2.6
JP5	1 x 1 ft	75 (23)	3.3
Kerosene	1 x 1 ft	75 (23)	1.8
Methanol	1 x 1 ft	52 (16)	0.8
Ethanol	1 x 1 ft	62 (19)	4.1
Isopropanol	1 x 1 ft	75 (23)	2.2
Polypropylene	1 x 1 ft	49 (15)	1.4
Paper	1 x 1 ft	33 (10)	1.2
Hydrogen	32-in Plume	66 (20)	6.4
Syngas*	32-in Plume	59 (18)	3.2

High Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	75 (23)	1.7
LPG	32-in Plume	56 (17)	1.6
JP5	1 x 1 ft	56 (17)	1.8
Methanol	1 x 1 ft	43 (13)	3.2

Medium Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	49 (15)	1.0
Gasoline	1 x 1 ft	49 (15)	1.3
Methane	32-in Plume	30 (9)	0.9
LPG	32-in Plume	33 (10)	1.2

Diesel	1 x 1 ft	36 (11)	1.2
JP5	1 x 1 ft	36 (11)	1.2
Kerosene	1 x 1 ft	36 (11)	0.9
Methanol	1 x 1 ft	30 (9)	1.3
Ethanol	1 x 1 ft	31 (9.5)	2.9
Isopropanol	1 x 1 ft	36 (11)	0.8
Polypropylene	1 x 1 ft	23 (7)	0.9
Paper	1 x 1 ft	23 (7)	1.0
Hydrogen	32-in Plume	33 (10)	1.0
Syngas*	32-in Plume	33 (10)	1.2

*Syngas mixture: 30% volume methane (CH_4), 70% volume hydrogen (H_2)

Low Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	16 (5)	1.0
LPG	32-in Plume	13 (4)	1.2
JP5	1 x 1 ft	16 (5)	1.2
Methanol	1 x 1 ft	10 (3)	2.7

10.2 False Alarm Immunity

The following table shows test results of false alarm immunity for detectors configured to “Extreme” sensitivity. For each radiation source a distance is listed. This is the minimum tested distance, from which the detectors did not alarm when exposed to the radiation source (either modulated or non-modulated).

False Stimuli only at Extreme Sensitivity

False Alarm Source	Maximum Distance in ft (m)
Sunlight, Direct, Reflected	No response at any distance
Incandescent frosted glass light, 300W	2 (0.5)
Fluorescent, 70W (3x23.3W)	2 (0.5)
Electric arc	2 (0.5)
Arc welding	10 (3)
Radiation heater, 1850W	2 (0.5)
Quartz lamp (1000W) shielded	2 (0.5)
Quartz lamp (500W) non-shielded	7 (2)
Mercury vapor lamp 160Wx3	2 (0.5)
Car Exhausts	2 (0.5)
Projector led	2 (0.5)
Solenoid bell	2 (0.5)
Soldering iron	2 (0.5)
Electric Drill	2 (0.5)

11 Performance FLS-UV-IR-F

The following tables show test results of detection distances and times for different fire scenarios. Each table lists results for a different sensitivity setting. For liquid fires the size of fire refers to the size of the pan, filled with the fuel. For gas fires the length of the plume is listed.

11.1 FLS-UV-IR-F-ASX1 (Standard mode)

Extreme Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	98 (30)	3.2
Gasoline	2 x 2 ft	197(60)	5.3
Gasoline	1 x 1 ft	98 (30)	3.4
Methane	32-in Plume	59 (18)	1.6
LPG	32-in Plume	75 (23)	1.2
Diesel	1 x 1 ft	75 (23)	4.3
JP5	1 x 1 ft	75 (23)	7.0
Kerosene	1 x 1 ft	75 (23)	2.9
Methanol	1 x 1 ft	59 (18)	3.6
Ethanol	1 x 1 ft	72 (22)	4.5
Isopropanol	1 x 1 ft	75 (23)	2.8
Polypropylene	1 x 1 ft	49 (15)	1.8
Paper	1 x 1 ft	33 (10)	2.6
Syngas*	32-in Plume	66 (20)	1.0

High Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	75 (23)	1.6
LPG	32-in Plume	56 (17)	1.6
JP5	1 x 1 ft	56 (17)	2.3
Methanol	1 x 1 ft	43 (13)	1.2

Medium Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	49 (15)	1.4
Gasoline	1 x 1 ft	49 (15)	2.7
Methane	32-in Plume	30 (9)	0.9
LPG	32-in Plume	33 (10)	1.3
Diesel	1 x 1 ft	36 (11)	1.6
JP5	1 x 1 ft	36 (11)	1.5
Kerosene	1 x 1 ft	36 (11)	1.4
Methanol	1 x 1 ft	30 (9)	1.3
Ethanol	1 x 1 ft	31 (9.5)	1.2
Isopropanol	1 x 1 ft	36 (11)	1.4
Polypropylene	1 x 1 ft	23 (7)	1.7
Paper	1 x 1 ft	23 (7)	2.0
Syngas*	32-in Plume	33 (10)	1.2

*Syngas mixture: 30% volume methane (CH_4), 70% volume hydrogen (H_2)

Low Sensitivity

Fuel	Size	Distance Feet (m)	Average Response Time (Seconds)
N-Heptane	1 x 1 ft	16 (5)	0.9
LPG	32-in Plume	13 (4)	1.0
JP5	1 x 1 ft	16 (5)	2.6
Methanol	1 x 1 ft	10 (3)	1.1

11.2 False Alarm Immunity

The following table shows test results of false alarm immunity for detectors configured to “Extreme” sensitivity. For each radiation source a distance is listed. This is the minimum tested distance, from which the detectors did not alarm when exposed to the radiation source (either modulated or non-modulated).

False Stimuli only at Extreme Sensitivity

False Alarm Source	Maximum Distance in ft (m)
Sunlight, Direct, Reflected	No response at any distance
Incandescent frosted glass light, 300W	2 (0.5)
Fluorescent, 70W (3x23.3W)	2 (0.5)
Electric arc	2 (0.5)
Arc welding	10 (3)
Radiation heater, 1850W	2 (0.5)
Quartz lamp (1000W) shielded	2 (0.5)
Quartz lamp (500W) non-shielded	7 (2)
Mercury vapor lamp 160Wx3	2 (0.5)
Car Exhausts	2 (0.5)
Projector led	2 (0.5)
Solenoid bell	2 (0.5)
Soldering iron	2 (0.5)
Electric Drill	2 (0.5)

12 Ordering Information

Part Number	Description
Flame Detector	
FLS-UV-IR-AS11	FlameSpec UV-IR, ATEX, FMus, FMc and IECEx certified, 316 SS, M25 Entries
FLS-UV-IR -AS21	FlameSpec UV-IR, ATEX, FMus, FMc and IECEx certified, 316 SS, 3/4” NPT Entries
FLS-UV-IR -AS15	As FLS-UV-IR-AS11 but with enhanced speed of response option – NFPA33
FLS-UV-IR -AS25	As FLS-UV-IR-AS21 but with enhanced speed of response option – NFPA33
FLS-UV-IR-F-AS11	FlameSpec UV-IR-F, ATEX, FMus, FMc and IECEx certified, 316SS, M25 Entries
FLS-UV-IR-F-AS21	FlameSpec UV-IR-F, ATEX, FMus, FMc and IECEx certified, 316 SS, 3/4” NPT Entries
FLS-UV-IR-F-AS15	As FLS-UV-IR-F-AS11 but with enhanced speed of response option – NFPA33
FLS-UV-IR-F-AS25	As FLS-UV-IR-F-AS21 but with enhanced speed of response option – NFPA33
Detector Tilt Mount	
FLS-TMO-S01	FlameSpec Stainless Steel Tilt Mount
Flame Simulator Kit	
FLS-FSIM-UV-IR-KIT	UV-IR FlameSpec Flame Simulator Kit Including Carry Case, Simulator, Carrying Strap, Charger and Manual
Flame Simulator Spare Parts	
FLS-FSIM-CASE	Carrying Case
FLS-FSIM-STRAP	Carrying Strap
FLS-FSIM-TOOL	Cover Removal Tool
FLS-FSIM-ALLEN	Allen Key
FLS-FSIM-CHRGR	Power Supply and Charger
FLS-FSIM-BATT	Replacement Battery
Flame Detector Accessories	
FLS-WCO-S01	Weather Cover, Stainless Steel
FLS-PMA-S23	Pole Mounting Adaptor, Stainless Steel, for 2- and 3-inch pipes
FLS-ADS-S01	Air Shield
FLS-DMW-SO1	Duct Mount Assembly, with sapphire window.
FLS-DMX-SO1	Duct Mount Assembly, without window, use with FLS-ASD-SO1 (sold separately)
Communications	
USB/RS485	RS485 to USB Converter (for connection of detector RS485 output to PC/Laptop for use with FGD Communicator Software)

13 Warranty

FIRE & GAS DETECTION TECHNOLOGIES INC. agrees to extend to Purchaser/Distributor a warranty on the FIRE & GAS DETECTION TECHNOLOGIES INC. supplied components of the FlameSpec products. FIRE & GAS DETECTION TECHNOLOGIES INC. warrants to Purchaser/Distributor that the products are free from defects in materials and workmanship for a period of five (5) years, commencing with the date of delivery to Purchaser/Distributor. FIRE & GAS DETECTION TECHNOLOGIES INC. expressly excludes damage incurred in transit from the factory or other damage due to abuse, misuse, improper installation, lack of maintenance or "Act of God" which are above and beyond its control. FIRE & GAS DETECTION TECHNOLOGIES INC. will, upon receipt of any defective product, transportation prepaid, repair or replace it at its sole discretion if found to have been defective when shipped. Said repair or replacement is FIRE & GAS DETECTION TECHNOLOGIES INC. sole liability under this warranty and FIRE & GAS DETECTION TECHNOLOGIES INC. liability shall be limited to repair or replacement of the component found defective and shall not include any liability for consequential or other damages. The customer is responsible for all freight charges and taxes due on shipments both ways. This warranty is exclusive of all other warranties express or implied.

Appendix A

HART 7 Communications

Highway Addressable Remote Transducer (HART®) establishes digital data communication over 4-20mA Current Loop cables. The HART protocol uses FSK modulation signals superimpose at low level on top of the 4-20mA current.

The HART implementation on the FlameSpec IR3/UV-IR Flame Detector allows the Control Unit to monitor the status of the detector, settings of User Configuration and initiate field diagnostics.

The HART protocol implemented in this flame detector is corresponds to HART rev. 7.0.

It supports HART Universal commands including Common Practice and Device Specific

Commands. For more detail information see manual F110V0050

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FIRE & GAS DETECTION TECHNOLOGIES INC.

User Manual



FlameSpec Flame Simulator Family

Safety

⚠ Warnings:

- **Do not try to open, modify or repair the Flame Simulator.**
- **Inspection and maintenance of this equipment should be performed by suitable trained personnel, in accordance with the applicable code of practice, e.g. EN 60079-17.**
- **Repair of this equipment should be performed by suitable trained personnel, in accordance with the applicable code of practice, e.g. EN 60079-19. Operation must be in accordance with recognized standards of the appropriate authority in the country concerned.**
- **Certification of this equipment relies upon use of the following materials in its construction:**
  Enclosure: Aluminum 6061T6
  Window: Sapphire glass
  Seals: EPDM
- **If the equipment is likely to come into contact with aggressive substances (described below), then it is the responsibility of the user to take suitable precautions (described below) to prevent the equipment from being adversely affected. This ensures that the type of protection provided by the equipment is not compromised.**
- **Examples of aggressive substances: acidic liquids or gases that may attack metals or solvents or may affect polymeric materials. Examples of suitable precautions: routine inspections, establishing resistance to specific chemicals from the material's data sheets.**

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FlameSpec Flame Simulator Family User Manual, Dec 2023

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1 Introduction

This manual describes the FlameSpec Flame Simulator Family. The family is comprised by three different models of simulator are available for testing each type of FlameSpec Detector (IR3, IR3-H2 and UV-IR). FlameSpec Flame Simulators provide fast and convenient means for periodic flame detector and end-to-end system verification in the field without removing the detector from the location or hazardous area. Maintenance costs are therefore reduced.
FlameSpec Flame Simulators emit either IR or UV - IR radiation (according to the model) in a special electromagnetic radiation pattern which simulates a fire to the detectors. The simulators are lightweight, easy to use, with testing distances of up to 30 ft (9m), for the IR3 variants and over 42 ft (13m) for the UV-IR. The IR3 version is capable of more than 1000 activations between battery charging.
FlameSpec Flame Simulators are ATEX approved for use in hazardous Zone 1, Zone 2, Zone 21, Zone 22 areas.

Each simulator kit contains a carrying case, simulator, carrying strap, battery charger, user manual, Allen key and a tool for removing the simulator rear cover.



FIGURE 1 - FLAME SIMULATOR KIT LAYOUT

1. Strap Range Tool
2. Flame simulator
3. Carrying Strap
4. Battery Charger
5. Adaptors
6. Carrying Case

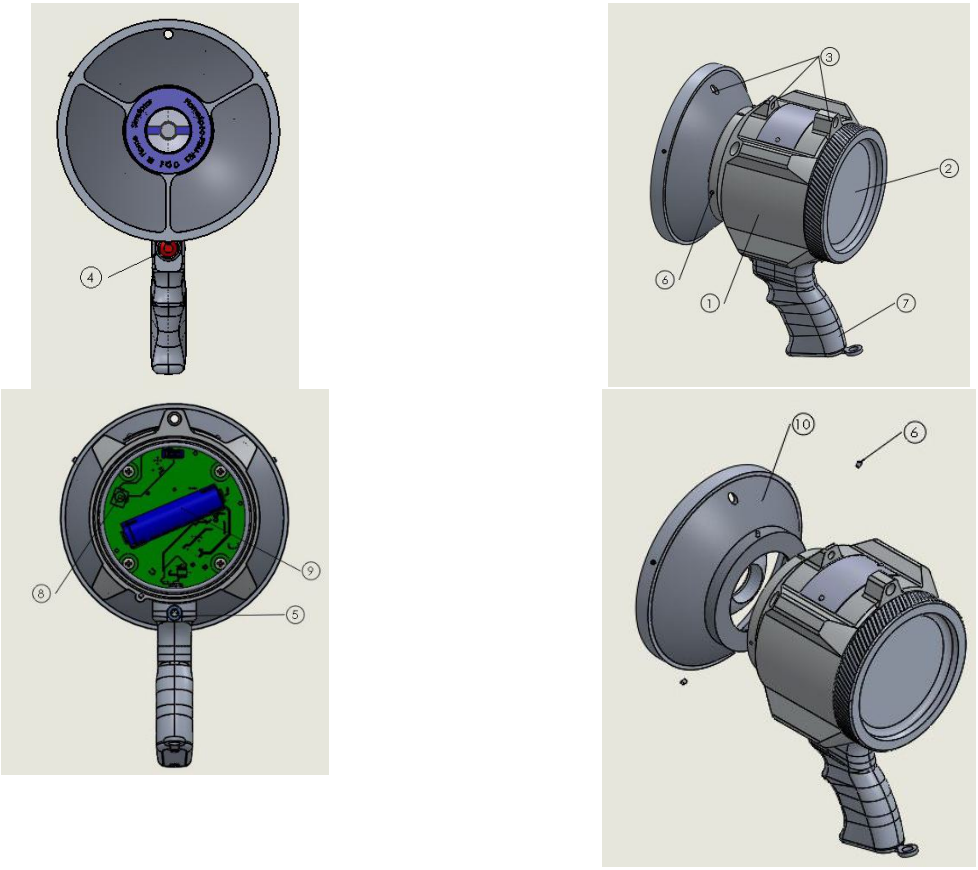
2 Operation

2.1 Flame simulator activation

⚠ Warnings:

- ***Testing using a flame simulator to simulate a fire to the detector may activate alarms or extinguishing systems in the area unless disabled/inhibited/bypassed.***
- ***All tests should be coordinated, and if needed, disconnect/disable the alarm and/or the extinguishing systems <u>before the test</u>, and reconnect after the test.***

Flame Simulator Key Components



1. Electronic Chamber
2. Battery Cover
3. Aiming Sights
4. Push Button
5. LED Status Indicator
6. Reflector screw
7. Handle
8. Charger Input
9. Battery
10. Reflector

1. Remove simulator from the case and verify the simulator battery is charged.
2. Ensure use of the correct flame simulator model according to the detector type.
3. Make sure you are testing within the specified distance, according to the detector sensitivity. See Table 1 below.
4. Point the flame simulator at center of detector by aligning the front and back aiming sights located on the top of the simulator (3).
5. The simulator should be aimed within +/- 30^{o} from the horizontal and vertical center line axis of the detector.
6. Press the push button (4) to activate, notice the flashing green LED. Wait for the flame detector to alarm (typically 10 seconds). Go to the next detector and repeat the test.

Note: the IR3 and IR3-H2 flame simulators DO NOT emit visible light.

Note: factory default settings for Detectors sensitivity are Medium.

Simulator Kit		**FLS-FSIM-IR3-KIT**	**FLS-FSIM-IR3-H2-KIT**	**FLS-FSIM-UV-IR-KIT**
Use with Detector Model		FLS-IR3-HD	FLS-IR3-H2-HD	FLS-UV-IR-HD
		FLS-IR3	FLS-IR3-H2	FLS-UV-IR
		ft. (m)	**ft. (m)**	**ft. (m)**
Detector Sensitivity Setting	**Extreme**	30.0 (9.0)	30.0 (9.0)	42.5 (13.0)
	High	20.0 (6.0)	20.0 (6.0)	26.0 (8.0)
	Medium	10.0 (3.0)	10.0 (3.0)	20.0 (6.0)
	Low	3.3 (1.0)[1]	3.3 (1.0)[1]	6.6 (2.0)

Note [1] Remove reflector.

3. LED Status, Faults & Warnings

The flame simulator has a tri-colour LED which indicates the operational status of the simulator as described in the table below.

LED Status	Indication	Action
Flashing green	Normal operation	Ready for use
Flashing orange	Battery at medium capacity	Charge battery for 3 hours
Solid orange	Unit is in fail mode	Return for repair
Solid red	No power	Recharge/replace the battery
Off	No power	Recharge/replace the battery
Flashing green LED but simulator fails to activate detector alarm	Detector is unable to read the signal from the Simulator	1. Check you are within the specified distance from the detector according to the detector's sensitivity setting. 2. Check detector is powered and operational. 3. Check simulator window is clean. 4. Check detector window is clean, and not in fault or indicating 2mA output to the panel indicating a dirty window. **Note: Any alarm delay set in the detector will require the simulator to be aimed at the detector for that period plus up to 10 more seconds.**

3 Servicing/Maintenance

⚠ Warnings:

- ***Do not try to open, modify or repair the Flame Simulator.***
- ***Repair, inspection or maintenance of this equipment should be performed by suitable trained personnel, in accordance with the applicable code of practice, e.g., EN 60079-19. Operation must be in accordance with recognized standards of the appropriate authority in the country concerned.***
- ***Charge battery in a safe area– Battery chamber should only be opened in a non-hazardous location.***

1. Periodically, the flame simulators front window should be cleaned using a soft cloth, water and a mild detergent. Clean and dry window.
2. Always make sure the flame simulator battery is fully charged prior to use.
3. To maintain the battery life, it should be fully charged at least once in a 3-month period.
4. Replace battery only with part number FLS-FSIM-BATT.

3.1 Simulator charging

⚠ Charge battery in a safe area – Battery chamber should only be opened in a non-hazardous location.

1. Release the locking screw using the Allen key.
2. Using strap wrench tool to remove the back-battery cover (2) of simulator by unscrewing
3. Connect supplied charger to charging jack (8) and connect charger to power supply, 110-220VAC.
4. Allow to charge for at least 3 hours until the green LED on the charger is seen.
5. Disconnect charger, close back-battery cover (2) and tighten using the removal tool.
6. Close the locking screw using the Allen key.

3.2 Battery replacement

⚠ **Battery replacement in a safe area– Battery chamber should only be opened in a non-hazardous location.**

1. Release the locking screw using the Allen key.
2. Using strap wrench tool to remove the back-battery cover (2) of simulator by unscrewing.
3. Disconnect the battery connector from the PCB.
4. Remove the Battery by pulling it out from the holder.
5. Put a new Battery in place and connect the connector.
6. Connect supplied charger to charging jack (8) and connect charger to power supply, 110-220VAC.
7. Allow to charge for at least 3 hours.
8. Disconnect charger, close back-battery cover (2) and tighten using the removal tool.
9. Close the locking screw using the Allen key.

4 Specifications

4.1 Mechanical

Size	3.9 x 3.9 x 7.8 inch (100 x 100 x 200mm)
Weight	3.96lbs. (1.8Kg)
Enclosure	Painted Aluminum LM25
Ingress protection	IP65 (NEMA 4X)

4.2 Electrical

Power	Li-ion 3.7V
Maximum current	0.5A (IR models) / 0.7A (UV-IR model)
Battery capacity	> 3000mAh
Charging time	3 Hours

4.3 Environmental

Temperature	
Storage:	-4°F (-20°C) to +122°F (+50°C)
Operation:	-4°F (-20°C) to +122°F (+50°C)
Humidity:	up to 99%, non-condensing

4.4 Approvals

ATEX:
Ex II 2 G D
Ex db ib op is IIC T6 Gb
Ex tb ib op is IIIC T85°C Db
-20°C to +50°C / -4°F to +122°F

4.5 Physical Dimensions.

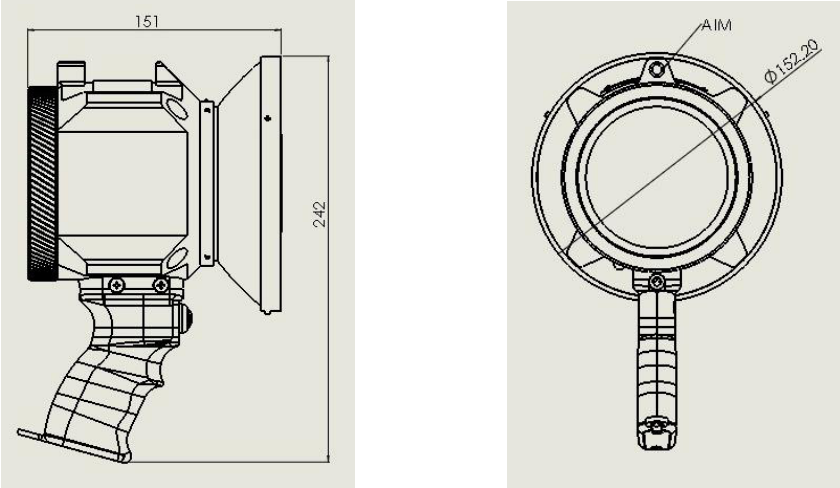


FIGURE 2 - DIMENSIONS (IN MM)

5 Ordering Information

Part Number	Description
Simulator Kits	
FLS-FSIM-IR3-KIT	FLS Flame Simulator Kit for IR3 Hydrocarbon Flame Detector. Includes Simulator in Durable Carry Case, with Carry Strap, Battery Charger, Wrench, and Allen Key.
FLS-FSIM-UV-IR-KIT	FLS Flame Simulator Kit for UV-IR Hydrocarbon/Non-Hydrocarbon Flame Detector. Includes Simulator in Durable Carry Case, with Carry Strap, Battery Charger, Wrench, and Allen Key.
FLS-FSIM-IR3-H2-KIT	FLS Flame Simulator Kit for IR3-H2 Flame Detector. Includes Simulator in Durable Carry Case, with Carry Strap, Battery Charger, Wrench, and Allen Key.
Accessories & Spares	
FLS-FSIM-CASE	FLS Durable Carry Case inc Foam Inserts
FLS-FSIM-STRAP	FLS Flame Simulator Carry Strap
FLS-FSIM-TOOL	FLS Tool / Wrench for Locking Flame Simulator Back Cover
FLS-FSIM-CHRGR	FLS Flame Simulator Battery Charger
FLS-FSIM-BATT	Replacement Battery

6 Warranty

FIRE & GAS DETECTION TECHNOLOGIES INC. agrees to extend to Purchaser/Distributor a warranty on the FIRE & GAS DETECTION TECHNOLOGIES INC. supplied components of the FlameSpec products. FIRE & GAS DETECTION TECHNOLOGIES INC. warrants to Purchaser/Distributor that the products are free from defects in materials and workmanship for a period of three (3) years, commencing with the date of delivery to Purchaser/Distributor. FIRE & GAS DETECTION TECHNOLOGIES INC. expressly excludes damage incurred in transit from the factory or other damage due to abuse, misuse, improper installation, lack of maintenance or "Act of God" which are above and beyond its control. FIRE & GAS DETECTION TECHNOLOGIES INC. will, upon receipt of any defective product, transportation prepaid, repair or replace it at its sole discretion if found to have been defective when shipped. Said repair or replacement is FIRE & GAS DETECTION TECHNOLOGIES INC. sole liability under this warranty and FIRE & GAS DETECTION TECHNOLOGIES INC. liability shall be limited to repair or replacement of the component found defective and shall not include any liability for consequential or other damages. The customer is responsible for all freight charges and taxes due on shipments both ways. This warranty is exclusive of all other warranties express or implied.

MANUAL FIRE ALARM

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-MFA-01101	FZ-01 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
2	950-MFA-01102	FZ-01 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
3	950-MFA-01103	FZ-01 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
4	950-MFA-02101	FZ-02 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
5	950-MFA-03101	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
6	950-MFA-03102	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
7	950-MFA-03103	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
8	950-MFA-03104	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
9	950-MFA-04101	FZ-04 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
10	950-MFA-04102	FZ-04 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
11	950-MFA-04201	FZ-04 MFA ACTIVATION - B-400 INDOOR	MANUAL FIRE ALARM ACTIVATION
12	950-MFA-04202	FZ-04 MFA ACTIVATION - B-300 INDOOR	MANUAL FIRE ALARM ACTIVATION
13	950-MFA-04203	FZ-04 MFA ACTIVATION - B-200 INDOOR	MANUAL FIRE ALARM ACTIVATION
14	950-MFA-05101	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
15	950-MFA-05102	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
16	950-MFA-05103	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
17	950-MFA-05104	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
18	950-MFA-06101	FZ-06 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
19	950-MFA-06102	FZ-06 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
20	950-MFA-06201	FZ-06 MFA ACTIVATION - B-100 INDOOR	MANUAL FIRE ALARM ACTIVATION
21	950-MFA-07101	FZ-07 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION

PUSH BUTTON TO SIS

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-ASD-01101	FZ-01 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
2	950-ASD-03101	FZ-03 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
3	950-ASD-04101	FZ-04 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
4	950-ASD-06101	FZ-06 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
5	950-ASD-07101	FZ-07 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
6	950-MOB-01101	FZ-01 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
7	950-MOB-03101	FZ-03 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
8	950-MOB-04101	FZ-04 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
9	950-MOB-06101	FZ-06 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
10	950-MOB-07101	FZ-07 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
11	950-ESD-01101	FZ-01 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
12	950-ESD-03101	FZ-03 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
13	950-ESD-04101	FZ-04 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
14	950-ESD-06101	FZ-06 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
15	950-ESD-07101	FZ-07 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
16	950-ESDD-01101	FZ-01 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
17	950-ESDD-03101	FZ-03 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
18	950-ESDD-04101	FZ-04 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
19	950-ESDD-06101	FZ-06 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
20	950-ESDD-07101	FZ-07 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION

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Technical manual

Fire alarm call point - SM87 PBL

Powering Business Worldwide

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1.0 Introduction

These fire alarm call point units have been designed for use in harsh environmental conditions.

2.0 Installation

General

A red high intensity LED can be fitted for alarm indication when ordered from MEDC.

As standard the LED is not provided with over current protection. The forward current (If) should be limited to 20mA

When installing and operating explosion-protected electrical equipment, requirements for selection, installation and operation should be referred to eg. IEC 60079-14 worldwide and the 'National Electrical Code' in North America. Additional national and/or local requirements may apply.

Ensure that all nuts, bolts and fixings are secure.

Ensure that only the correct UL listed stopping plugs are used to blank off unused gland entry points and that the NEMA/IP rating of the unit is maintained.

The SM87PBL is mounted via 4 x Ø 0.354" (9mm) fixing holes in the base.

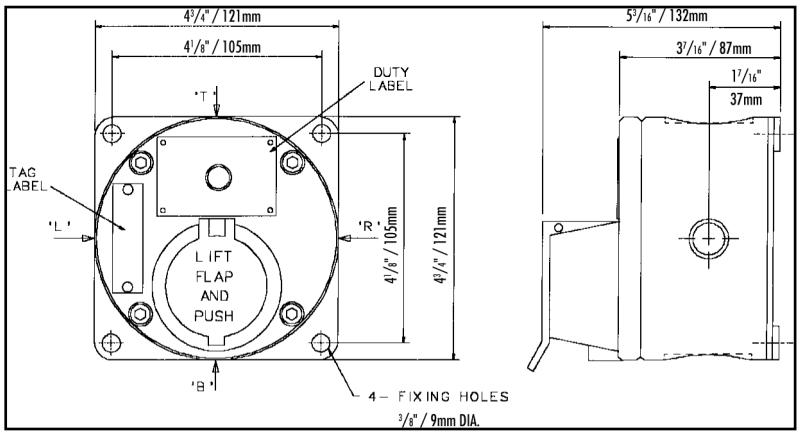
The fixing holes have been designed to accept an M8 caphead screw or bolt. MEDC recommend the use of stainless steel screws.

A red high intensity LED can be fitted for alarm indication when ordered from MEDC.

As standard the LED is not provided with over current protection. The forward current (If) should be limited to 20mA

General arrangement

All dimensions in inches and millimeters



Cable termination

Unscrew and remove the 4 off screws holding the cover assembly to the base. Keep in a safe, accessible location.

Twist the cover assembly gently clockwise and anti-clockwise, whilst pulling it away from the base. Remove to gain access to the interior of the base.

Cable termination should be in accordance with specifications applying to the application. MEDC recommend that all cables and cores should be fully identified.

Ensure that only correct UL Listed cable glands are used and that the assembly is shrouded and correctly earthed.

All cable glands should be of an equivalent NEMA/IP rating to that of the call point and integrated with the unit such that this rating is maintained.

The internal earth terminal (where fitted), must be used for the equipment grounding connection and the external terminal is for a supplementary bonding connection where local codes or authorities permit or require such a connection.

Once termination is complete, carefully push the cover assembly back onto the base, avoiding damage to the mating surfaces. Replace the 4 off screws into the holes in the cover assembly and tighten evenly, to ensure maintenance of the required gap between the cover & base.

3.0 Operation

The call point is operated by lifting the flap on the front of the unit, then depressing the stainless steel actuator underneath. The actuator remains latched in an operated position. To reset the call point, the key (provided with the unit) is inserted into the slot provided in the actuator front face and pulled back to the initial position. The key is then removed and the flap lowered.

4.0 Maintenance

During the working life of the call point, little or no maintenance is required. However, if abnormal or unusual environmental conditions occur due to plant damage or accident etc., then visual inspection is recommended.

If a fault should occur, it is recommended that the unit be returned to MEDC for repair. All parts are replaceable.

If you have acquired a significant quantity of units, it is recommended that spares are also made available. Please discuss your requirements with the Technical Sales Engineers at MEDC.

5.0 Warning statements

I. To reduce the risk of ignition of hazardous atmospheres, disconnect the equipment from the supply circuit before opening. Keep assembly tightly closed when in operation

II. To reduce the risk of ignition of hazardous atmospheres, conduit runs must have a sealing fitting connection within 18 inches of the enclosure

Avertissements

I. Afin de réduire le risque d'allumage et d'incendie dans des atmosphères dangereuses, déconnectez l'équipement du circuit d'alimentation avant de procéder à son ouverture. Maintenez l'appareil fermé hermétiquement lors de son utilisation

II. Afin de réduire le risque d'allumage et d'incendie dans des atmosphères dangereuses, les courses de conduits doivent être dotées d'un raccord d'étanchéité situé à 18 pouces ou moins du boîtier

6.0 Certification/approvals

Please refer to marking on the unit for specific approval details

- UL listed for use in USA (USL) — Class 1, Division 1, Groups C & D; Class 1, Zone 1, Groups IIA & IIB
- UL Standards — UL1203 & UL864
- Suitable for hazardous location fire-alarm applications

7.0 Certified temperature

-55°C to +55°C

-67°F to +131°F

8.0 Functional safety

Introduction

The SM87PB Call Point has been designed for use in potentially explosive atmospheres and harsh environmental conditions. The marine grade alloy or stainless enclosures are for use offshore or onshore, where light weight combined with corrosion resistance and strength is required.

The function of the call point is to raise an alarm manually once verification of a fire or emergency condition exists, by pushing the button.

The safety function of the SM87PB Call Point is to raise the alarm when the Button is pressed.

Under No fault (Normal) Operating conditions the SM87PB Push Button Unit will raise the alarm upon operating the switch via pushing the button.

Under fault conditions the failure mode of the Push Buttons is a failure to raise the alarm. For the failure rate associated with this failure mode please refer to the table below.

Assessment of functional safety

The SM87PB Call Point is intended for use in a safety system conforming to the requirements of IEC61508.

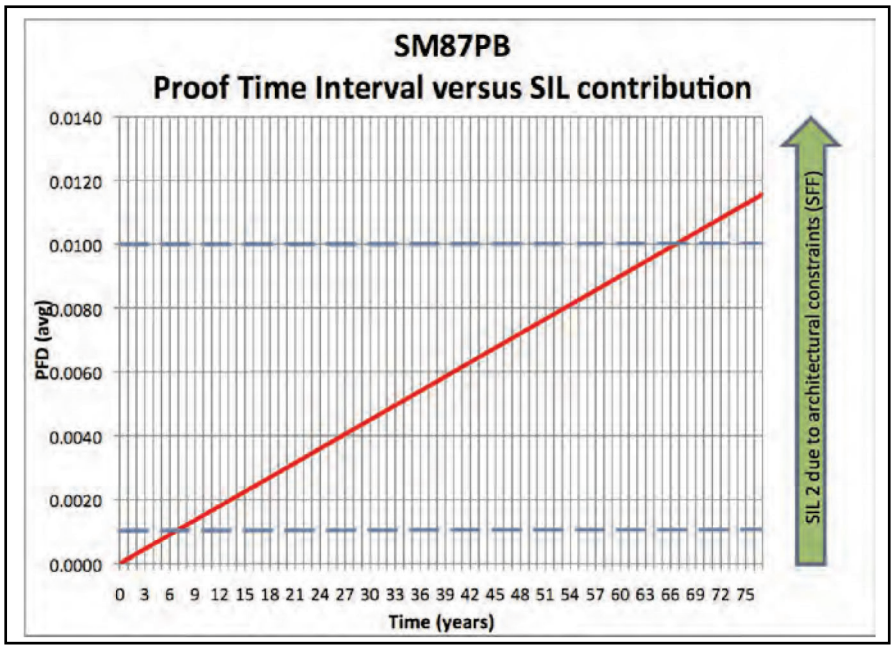
UL has conducted a Failure Modes Effect and Diagnostic Analysis (FMEDA) of the SM87PB Push Button unit against the requirements of IEC61508-2 using a proof test interval of 8760hrs.

The results are shown on the next page and are based on Route 1_H.

The Call Point is classed as a Type A device.

SM87PB Pushbutton

Safety Function of SM87PB Push Button: *'To raise the alarm upon pushing the button'*			
Architectural constraints:	Type A HFT=0 SFF= 79.7%	Proof Test Interval =8760Hrs MTTR = 8 Hrs	SIL2
Random hardware failures:	λ_{DD} = 0 λ_{DU} = 3.43E-08	λ_{SD} = 0 λ_{SU} = 1.34E-07	
Probability of failure on demand:	PFD_{AVG}=1.50E-04 (Low Demand Mode)	SIL3	
Probability of Dangerous failure on safety function:	PFH = 3.43E-08 (High Demand Mode)	SIL3	
Hardware safety integrity compliance[1]	Route 1_H		
Systematic safety integrity compliance	Route 1_S		
Systematic Capability	SC2		
Overall SIL-capability achieved	SIL 2 (Low Demand)* SIL 2 (High Demand)* *Limited to SIL 2 due to SFF value		



Conditions of safe use

The following conditions apply to the installation, operation and maintenance of the assessed equipment. Failure to observe these may compromise the safety integrity of the assessed equipment:

1. The user shall comply with the requirements given in the manufacturer's user documentation (This Safety Manual and Technical manual) in regard to all relevant functional safety aspects such as application of use, installation, operation, maintenance, proof tests, maximum ratings, environmental conditions, repair, etc;
2. Selection of this equipment for use in safety functions and the installation, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
3. **All information associated with any field failures of this product should be collected under a dependability management process (e.g., IEC 60300-3-2) and reported to the manufacturer.**
4. The unit should be tested at regular intervals to identify any malfunctions; in accordance with this safety manual.

GAS FLASH BEACON (AMBER)

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-XL-01101	FZ-01 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
2	950-XL-02101	FZ-02 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
3	950-XL-03101	FZ-03 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
4	950-XL-03103	FZ-03 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
5	950-XL-04101	FZ-04 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
6	950-XL-04103	FZ-04 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
7	950-XL-04201	FZ-04 GAS BEACON ACT. - B-400 INDOOR	FLAMMABLE GAS ALARM
8	950-XL-04203	FZ-04 GAS BEACON ACT. - B-300 INDOOR	FLAMMABLE GAS ALARM
9	950-XL-04205	FZ-04 GAS BEACON ACT. - B-200 INDOOR	FLAMMABLE GAS ALARM
10	950-XL-06101	FZ-06 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
11	950-XL-06103	FZ-06 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
12	950-XL-06201	FZ-06 GAS BEACON ACT. - B-100 INDOOR	FLAMMABLE GAS ALARM
13	950-XL-07101	FZ-07 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM

FIRE FLASH BEACON (RED)

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-XL-01102	FZ-01 FIRE BEACON ACTIVATION	FIRE ALARM
2	950-XL-02102	FZ-02 FIRE BEACON ACTIVATION	FIRE ALARM
3	950-XL-03102	FZ-03 FIRE BEACON ACTIVATION	FIRE ALARM
4	950-XL-03104	FZ-03 FIRE BEACON ACTIVATION	FIRE ALARM
5	950-XL-04102	FZ-04 FIRE BEACON ACTIVATION	FIRE ALARM
6	950-XL-04104	FZ-04 FIRE BEACON ACTIVATION	FIRE ALARM
7	950-XL-04202	FZ-04 FIRE BEACON ACT. - B-400 INDOOR	FIRE ALARM
8	950-XL-04204	FZ-04 FIRE BEACON ACT. - B-300 INDOOR	FIRE ALARM
9	950-XL-04206	FZ-04 FIRE BEACON ACT. - B-200 INDOOR	FIRE ALARM
10	950-XL-06102	FZ-06 FIRE BEACON ACTIVATION	FIRE ALARM
11	950-XL-06104	FZ-06 FIRE BEACON ACTIVATION	FIRE ALARM
12	950-XL-06202	FZ-06 FIRE BEACON ACT. - B-100 INDOOR	FIRE ALARM
13	950-XL-07102	FZ-07 FIRE BEACON ACTIVATION	FIRE ALARM

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Technical manual

Steady beacon - SM87LED

Powering Business Worldwide

1724000821-QC-DB-0006-02
290/659

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1.0 Introduction

These steady beacons have been designed for use in flammable atmospheres and harsh environmental conditions. The marine grade alloy or stainless steel enclosures are suitable for use offshore or onshore, where light weight combined with corrosion resistance and strength is required.

2.0 Installation

General

When installing and operating explosion-protected equipment, requirements for selection, installation and operation should be referred to e.g. IEE Wiring Regulations and the 'National Electrical Code' in North America. Additional national and/or local requirements may apply.

Ensure that all nuts, bolts and fixings are secure.

Ensure that only the correct listed or certified stopping plugs are used to blank off unused gland entry points and that the NEMA/IP rating of the unit is maintained.

The beacon is mounted via the 4 off Ø9mm fixing holes in the base of the unit. The fixing holes have been designed to accept an M8 screw or bolt.

MEDC recommend the use of stainless steel screws.

The unit has been designed and certified to operate at any attitude

Cable termination

CAUTION: Before removing the cover assembly, ensure that the power to the unit is isolated and gas and/or dust atmospheres are not present.

Unscrew the 4 off screws (5mm A/F hexagon key) holding the cover assembly to the base. Keep screws in a safe accessible place as they are not retained in the cover.

Gently twist the cover clockwise and anti-clockwise whilst pulling it away from the base of the enclosure to gain access to the interior.

Cable termination should be in accordance with specifications applying to the required application. MEDC recommends that all cables and cores should be correctly identified. Please refer to the wiring diagram provided with the product.

Ensure that only the correct listed or certified cable glands are used and that the assembly is shrouded and correctly earthed.

All cable glands should be of an equivalent NEMA/IP rating to that of the beacon and integrated with the unit such that this rating is maintained.

The internal earth terminal, where fitted, must be used for the equipment grounding connection and the external terminal is for a supplementary bonding connection where local codes or authorities permit or require such a connection.

Once termination is complete, carefully lower the cover assembly back onto the base, avoiding damage to the mating surfaces. Ensure the o-ring is correctly seated in its groove during re-assembly. Replace and evenly tighten the 4 off cover screws. Ensure the required gap (0.15mm max.) is maintained between the cover and the base.

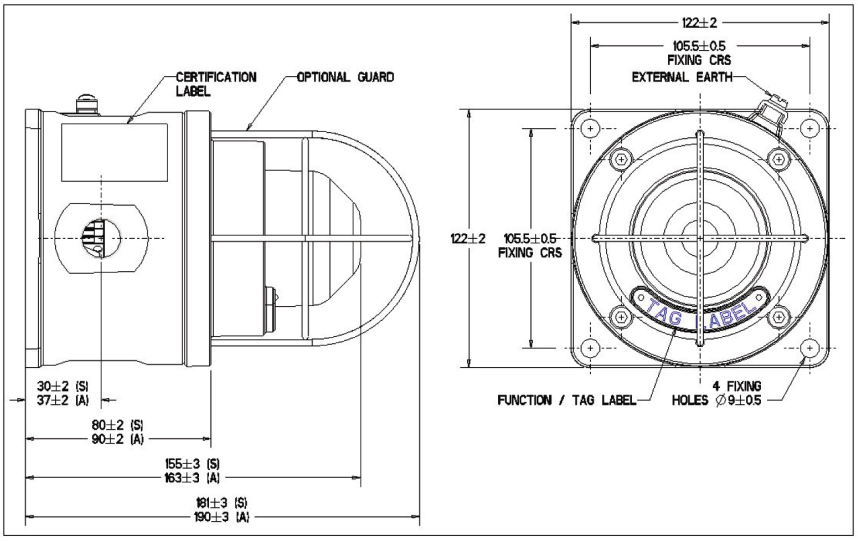
The purchaser/customer should make Eaton aware of any external effects or aggressive substances to which the equipment may be exposed.

Ensure equipment is protected from direct dust laden airflow which may cause charge transfer.

3.0 Operation

The operating voltage of the unit is stated on the certification label. The beacon can be initiated either directly or remotely depending on the type ordered. Please see the wiring documentation supplied with the unit for further information.

General arrangement



4.0 Maintenance

During the working life of the unit, it should require little or no maintenance. However, if abnormal or unusual environmental conditions occur due to plant damage or accident etc., then visual inspection is recommended.

If the unit requires cleaning, then only clean exterior with a damp cloth to avoid electro-static charge build up.

If a unit fault should occur, then the unit can be repaired by MEDC. All parts of the unit are replaceable.

If you acquired a significant quantity of units, then it is recommended that spares are also made available. Please discuss your requirements with the Technical Sales Engineers at MEDC.

Description	Part number
Cover assembly (Without lens guard fitted)	Contact MEDC
Cover assembly (With lens guard fitted)	Contact MEDC
O-ring (Alloy units)	PX99900312
O-ring (Stainless Steel units)	PX99900233
24Vdc Main PCB (Red/Amber)	PX99901003
24Vdc Main PCB (Green/Blue/Clear)	PX99901002
24Vdc Red LED Cluster	PX99900325
24Vdc Amber LED Cluster	PX99900413
24Vdc Green LED Cluster	PX99900138
24Vdc Blue LED Cluster	Contact MEDC
24Vdc Clear LED Cluster	Contact MEDC
48Vdc Main PCB	Contact MEDC
48Vdc LED Clusters	Contact MEDC
Cover screw for st. steel unit (4 off required)	PX99900584
Cover screw for alloy unit (4 off required)	PX99900818

5.0 Certification/approvals

IECEx units

Certified to IEC 60079-0, IEC 60079-1 and IEC 60079-31

Ex d unit (IEC certification No. IECEx BAS 09.0059)

Ex d IIC T55°C (-55°C to +40°C) Gb
Ex tb IIIC T55°C (-55°C to +40°C) Db IP66/IP67

or

Ex d IIC T70°C (-55°C to +55°C) Gb

Ex tb IIIC T70°C (-55°C to +55°C) Db IP66/IP67

The IECEx certificate and product label carry the IECEx equipment protection level marking

Gb
Db

Where Gb signifies suitability for use in a Zone 1 surface industries area in the presence of gas.

Where Db signifies suitability for use in a Zone 21 surface industries area in the presence of dust.

ATEX units

Certified to EN60079-0, EN60079-1 and EN60079-31

Ex d unit (ATEX certification No. Baseefa03ATEX0222)

Ex d IIC T55°C (-55°C to +40°C) Gb
Ex tb IIIC T55°C (-55°C to +40°C) Db IP66/IP67
or
Ex d IIC T70°C (-55°C to +55°C) Gb
Ex tb IIIC T70°C (-55°C to +55°C) Db IP66/IP67

The ATEX certificate and product label carry the ATEX group and category marking:

 II 2 GD

Where:

 Signifies compliance with ATEX
II Signifies suitability for use in surface industries
2 Signifies suitability for use in a zone 1 area
G Signifies suitability for use in the presence of gases
D Signifies suitability for use in the presence of dust

The ATEX certificate and product label also carry the following mark:



This signifies unit compliance to the relevant European directives, in this case 94/9/EC, along with the number of the notified body issuing the EC type examination certificate.

6.0 Functional safety

Introduction

The SM87LED Beacon has been designed for use in potentially explosive atmospheres and harsh environmental conditions. The marine grade alloy or stainless steel enclosures are suitable for use offshore or onshore, where light weight combined with corrosion resistance and strength is required.

The safety function of the Beacon is to provide an intermittent spherical visual warning light when the correct voltage is applied to the unit. The Beacon is designed to operate on a supply voltage tolerance of +/- 20.

The telephone initiate versions of the Beacon are not included in this safety manual.

Under No fault (Normal) Operating conditions the SM87LED Beacon will provide a spherical visual warning light when required by the system.

Under fault conditions the failure mode of the Beacon is a failure to provide a spherical visual warning light. For the failure rate associated with this failure mode please refer to the table below.

Assessment of functional safety

The SM87LED Call Point is intended for use in a safety system conforming to the requirements of IEC61508.

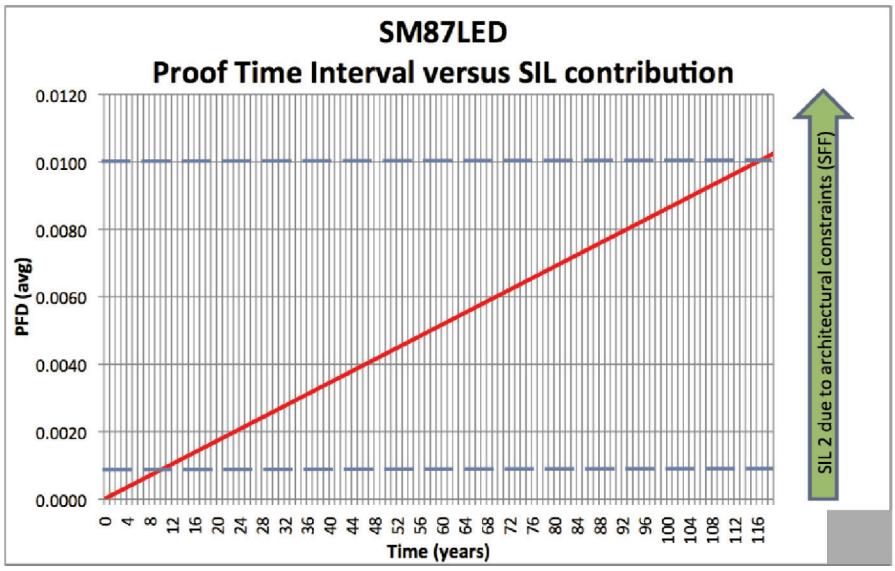
UL has conducted a Failure Modes Effect and Diagnostic Analysis (FMEDA) of the SM87LED Beacon against the requirements of IEC61508-2 using a proof test interval of 8760hrs.

The results are shown below and are based on Route 1_H

The Beacon is classed as a Type A device.

SM87LED Beacon

Safety Function of SM87LED Beacon: *'To provide a spherical visual warning light when energised'*			
Architectural constraints:	Type A HFT=0 SFF= 66%	Proof Test Interval =8760Hrs MTTR = 8 Hrs	SIL2
Random hardware failures:	λ_{DD} = 0 λ_{DU} = 1.96E-08	λ_{SD} = 0 λ_{SU} = 3.92E-08	
Probability of failure on demand:	PFD_{AVG}=8.62E-05 (Low Demand Mode)	SIL4	
Probability of Dangerous failure on safety function:	PFH = 1.96E-08 (High Demand Mode)	SIL3	
Hardware safety integrity compliance[1]	Route 1_H		
Systematic safety integrity compliance	Route 1_S		
Systematic Capability	SC2		
Overall SIL-capability achieved	SIL 2 (Low Demand)* SIL 2 (High Demand)* *Limited to SIL 2 due to SFF value		



Conditions of safe use

The following conditions apply to the installation, operation and maintenance of the assessed equipment. Failure to observe these may compromise the safety integrity of the assessed equipment:

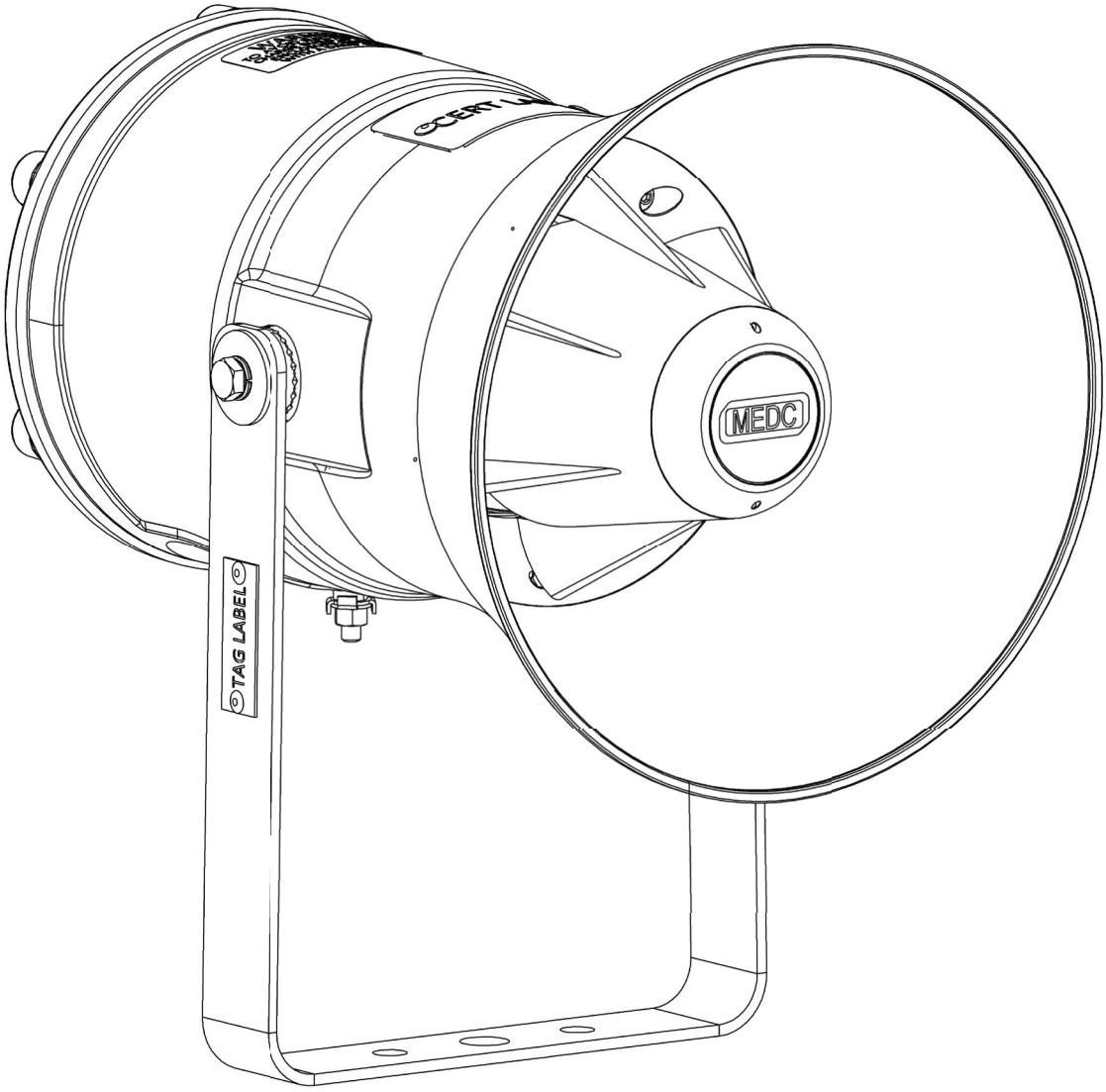
1. The user shall comply with the requirements given in the manufacturer's user documentation (This Safety Manual and Technical manual) in regard to all relevant functional safety aspects such as application of use, installation, operation, maintenance, proof tests, maximum ratings, environmental conditions, repair, etc;
2. Selection of this equipment for use in safety functions and the installation, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
3. **All information associated with any field failures of this product should be collected under a dependability management process (e.g., IEC 60300-3-2) and reported to the manufacturer.**
4. The unit should be tested at regular intervals to identify any malfunctions; in accordance with this safety manual.

SOUNDER

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-XZ-01101	FZ-01 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
2	950-XZ-01102	FZ-01 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
3	950-XZ-02101	FZ-02 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
4	950-XZ-03101	FZ-03 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
5	950-XZ-03102	FZ-03 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
6	950-XZ-04101	FZ-04 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
7	950-XZ-04102	FZ-04 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
8	950-XZ-04201	FZ-04 SOUNDER ACT. - B-400 INDOOR	EMERGENCY SHUTDOWN ALARM
9	950-XZ-04202	FZ-04 SOUNDER ACT. - B-300 INDOOR	EMERGENCY SHUTDOWN ALARM
10	950-XZ-04203	FZ-04 SOUNDER ACT. - B-200 INDOOR	EMERGENCY SHUTDOWN ALARM
11	950-XZ-05101	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
12	950-XZ-05102	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
13	950-XZ-05103	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
14	950-XZ-05104	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
15	950-XZ-06101	FZ-06 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
16	950-XZ-06201	FZ-06 SOUNDER ACT. - B-100 INDOOR	EMERGENCY SHUTDOWN ALARM
17	950-XZ-07101	FZ-07 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM

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Sounder – DB3BM



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In no event will Eaton be responsible to the purchaser or user in contract, in tort (including negligence), strict liability or other-wise for any special, indirect, incidental or consequential damage or loss whatsoever, including but not limited to damage or loss of use of equipment, plant or power system, cost of capital, loss of power, additional expenses in the use of existing power facilities, or claims against the purchaser or user by its customers resulting from the use of the information, recommendations and descriptions contained herein. The information contained in this manual is subject to change without notice.

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INTRODUCTION

This range of sounders, intended for use in potentially explosive gas and dust atmospheres is manufactured from either stainless steel or marine grade alloy with a rugged thermoplastic flare.

Stainless steel mounting bracket, cover screws and fixings are incorporated throughout thus ensuring a corrosion free product.

An uncertified version is available for use in non-explosive atmospheres.

GENERAL SAFETY MESSAGES AND WARNINGS

All instructions and safety messages in this manual must be followed to allow safe installation of the device. The device must only be installed and maintained by correctly trained site personnel/installers.

i. To reduce the risk of ignition of hazardous atmospheres and shock, do not apply power to the device until installation has been completed and the device is fully sealed and secured.

ii. To reduce the risk of ignition of hazardous atmospheres and shock, keep device tightly closed when the circuit is energised.

iii. Before removing the cover for installation or maintenance, ensure that the power to the device is isolated.

iv. Following installation, test the device to ensure correct operation.

v. Following installation ensure a copy of this manual is made available to all operating personnel

vi. When installing the device, requirements for selection, installation and operation should be referred to e.g. IEE Wiring Regulations and the 'National Electrical Code' in North America. Additional national and/or local requirements may also apply.

vii. Cable termination should be in accordance with the specification applying to the required application. MEDC recommends that all cables and cores should be correctly identified. Please refer to the wiring diagram in this manual (or separate diagram provided with the unit).

viii. Ensure that only the correct listed or certified cable glands are used and that the assembly is shrouded and correctly earthed.

ix. Ensure that only the correct listed or certified stopping plugs are used to blank off unused gland entry points in accordance with EN/IEC60079-14 clauses 16.3, 16.4 & 16.5 and that the NEMA/IP rating of the unit is maintained.

x. Maintain the IP rating of the unit by sealing glands in accordance with gland certification / manufacturer's instructions (i.e. use of a sealing washer or specific compound.)

xi. The internal grounding terminal shall be used for the grounding connection and the external terminal, if available, is for a supplementary bonding connection where local codes or authorities permit or require such a connection.

xii. When installing the device, MEDC recommends the use of stainless steel fasteners. Ensure that all nuts, bolts and fixings are secure.

xiii. The unit should be positioned such that debris, dust or water cannot settle in the re-entrant horn.

xiv. The unit should be positioned such that any solid object, not part of the equipment, is a minimum of 40mm from the Ex d flamepath joint.

xv. The front driver cover of the unit, situated underneath the thermoplastic main flare, which encloses the loudspeaker driver shall not be opened as it is not for field installation or maintenance use.

xvi. When the unit is used in dust atmospheres, the cable entries or blanking plugs used shall be sealed to maintain the IP6X rating, in accordance with the applicable installation codes

xvii. **WARNING** – Do not open when an explosive atmosphere is present

xviii. Cable temperature rise 30K

xix. Potential Electrostatic Charging Hazard, protect from direct airflow from exhaust ducts and the like that may cause a charge transfer. If the unit requires cleaning, only clean exterior with a damp cloth to avoid electrostatic charge build-up. Ensure the equipment is correctly earthed.

INSTALLATION

The unit is mounted via 2 off Ø9mm fixing holes in the U-shaped stirrup/mounting bracket. If required, the unit can be initially placed via the Ø13mm central hole in the stirrup. The unit can then be rotated to the required position and fixed via the other holes. If ordered with the unit, a swivel mounting bracket option is available to allow further rotational adjustment to the unit.The fixing holes have been designed to accept an M8 screw or bolt.

⚠ WARNING

The drilling of field wiring threaded entries is not permitted.

Access to Terminals

The cover is secured with 6 off M5 cover screws (4.0mm A/F hexagon key). Once the cover fixings are unscrewed, the cover can be lifted away from the enclosure to gain access to the interior. The cover fixings are captive and will remain in the cover. It is intended that the conductors used for supply and earth connections of the unit shall be 2.5mm² (14AWG) Max. For supply connections be aware that cable temperature rise may be up to 30K.

Once termination is complete, carefully replace the cover assembly back onto the body, avoiding damage to the mating surfaces. For aluminium alloy units, the enclosure/cover joints must be cleaned before replacing the cover. Tighten the cover screws evenly. Ensure the O-ring is seated correctly on the cover during re-assembly. Ensure the required maximum gap of 0.025mm is maintained between the cover and the base once assembled. To maintain the IP rating of the unit, the recommended torque on the cover screws is 3.0Nm.

Wiring details

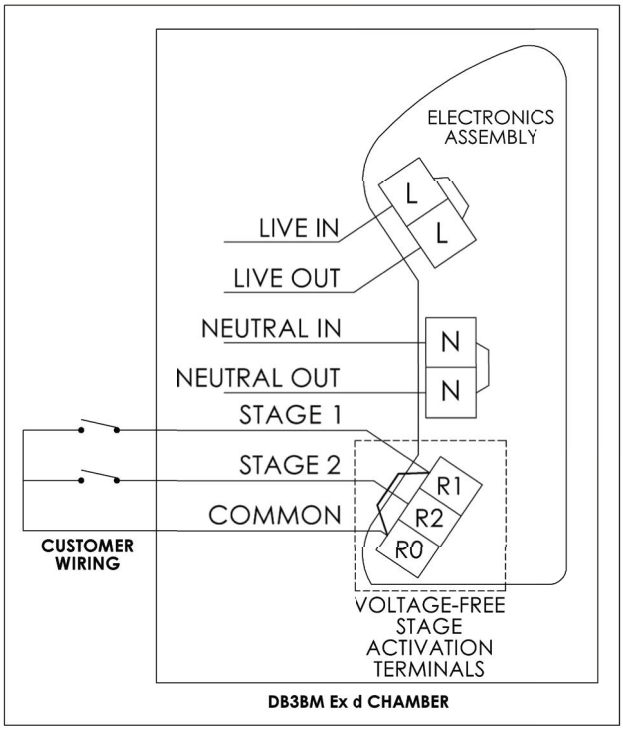
The unit is available in a number of basic configurations:

1. AC input, single stage.
2. AC input, dual stage with voltage-free stage selection.
3. DC input, up to 3 user selectable stages without monitoring.
4. DC input, up to 2 user selectable stages with EOL / monitoring (standard configuration).
5. DC input, up to 3 user selectable stages with optional EOL / monitoring (alternative configuration).
6. DC input, 5 user selectable stages with voltage free stage selection with or without monitoring.

AC input wiring details (Types 1 & 2)

- **Type 1:** Connect the live and neutral supply wires to the terminals as detailed in the wiring diagram. The unit will be supplied with the link between R1 and R0 fitted to the terminals. When power is applied to the unit, the stage 1 tone will be produced as selected on the 5- way DIP switch.
- **Type 2:** Connect the live and Neutral supply wires to the terminals as detailed in the wiring diagram. The unit will be supplied with no link fitted between R1 and R0. Connect wires and remote switches to terminals R0, R1 and R2 as shown. When power is initially applied to the unit, no tone will be produced. When the switch connected to R1 is closed, the stage 1 tone will be produced as selected by the 5-way DIP switch on the electronics assembly. When the switch connected to R2 is closed, the pre-selected tone for stage 2 is produced. See tone table 2 for details of pre-selected tones.

Note: Closing both switches will produce no tone.



DC input, 3 stage without monitoring wiring details (Type 3)

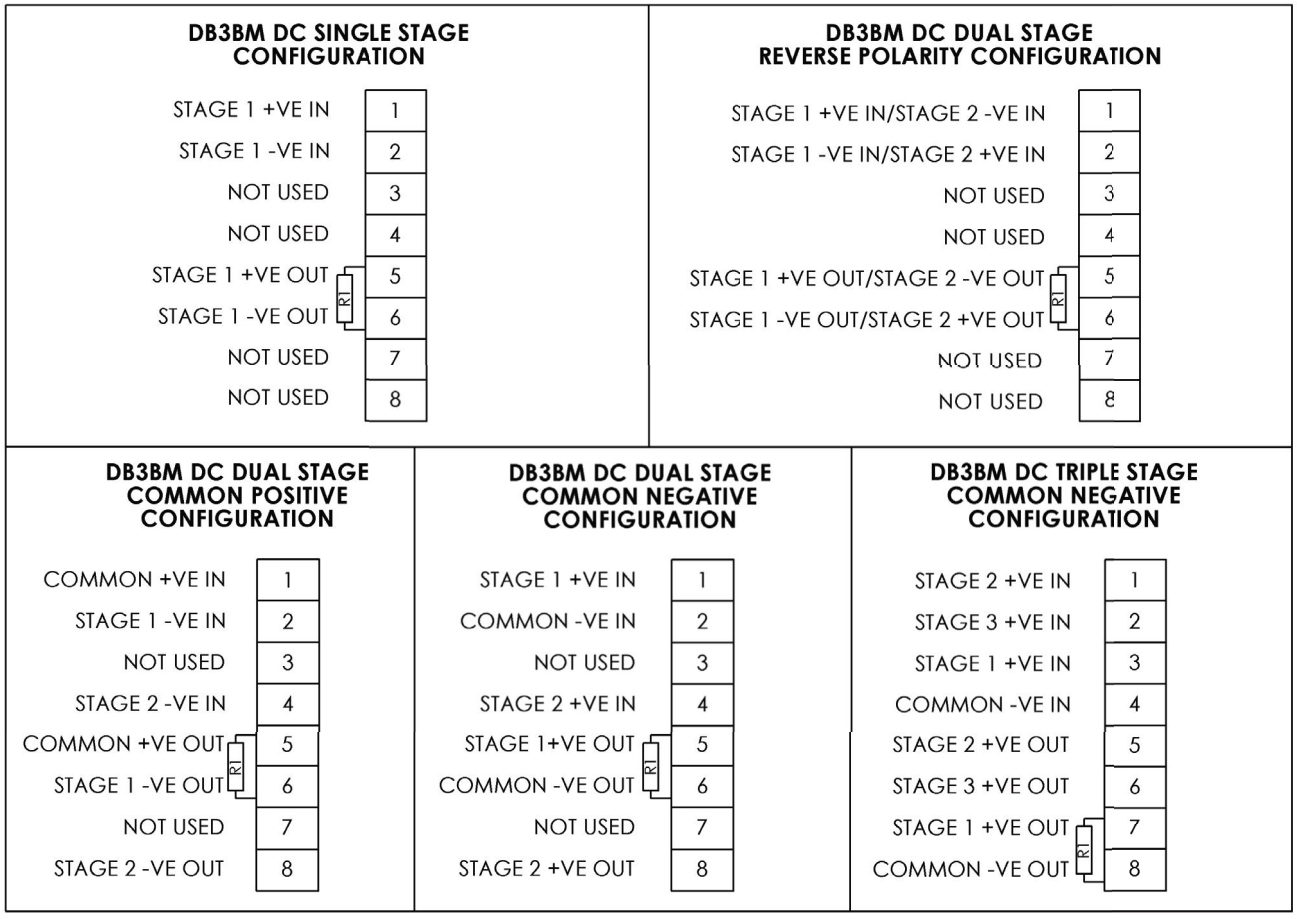
This type can be configured in a number of different ways depending on requirements. Independent tone selection for all 3 stages is via the 3 off 5-way DIP switches fitted to the electronics assembly:

- **2-wire system (Single stage):** Connect the positive and negative supply wires to the terminals as detailed in the wiring diagram.
- **2-wire system (Dual stage, reverse polarity):** Connect the positive and negative supply wires to the terminals as detailed in the wiring diagram. The second stage is produced by reversing the polarity of the supply to the unit.
- **3-wire system (Dual stage, common +ve):** Connect 3 supply wires to the terminals as detailed in the wiring diagram (1 common +ve wire and 2 -ve wires). Stage 1 is produced when power is applied across the common +ve and stage 1 -ve terminals. Stage 2 is produced when power is applied across the common +ve and stage 2 -ve terminals.
- **3-wire system (Dual stage, common -ve):** Connect 3 supply wires to the terminals as detailed in the wiring diagram (2 +ve wires and 1 common -ve wire). Stage 1 is produced when power is applied across the stage 1 +ve and common -ve terminals. Stage 2 is produced when power is applied across the stage 2 +ve and common -ve terminals.
- **4-wire system (Triple stage, Common -ve):** Connect 4 supply wires to the terminals as detailed in the wiring diagram (3 +ve wires and 1 common -ve wire). Stage 1 is produced when power is applied across the stage 1 +ve and common -ve terminals. Stage 2 is produced when power is applied across the stage 2 +ve and common -ve terminals. Stage 3 is produced when power is applied across the stage 3 +ve and common -ve terminals.

All versions are supplied with terminals to allow loop-in loop-out connection of the supply wires

Note: If an EOL resistor is specified on a DC unit, it will be fitted as standard across terminals 5 & 6 in the Exd chamber (see below. Re-position EOL as required for other configurations.

When positioning the EOL, ensure there is a minimum of 14mm free space between the resistor body and terminal block and ensure the resistor is not in contact with the PCB or housing.

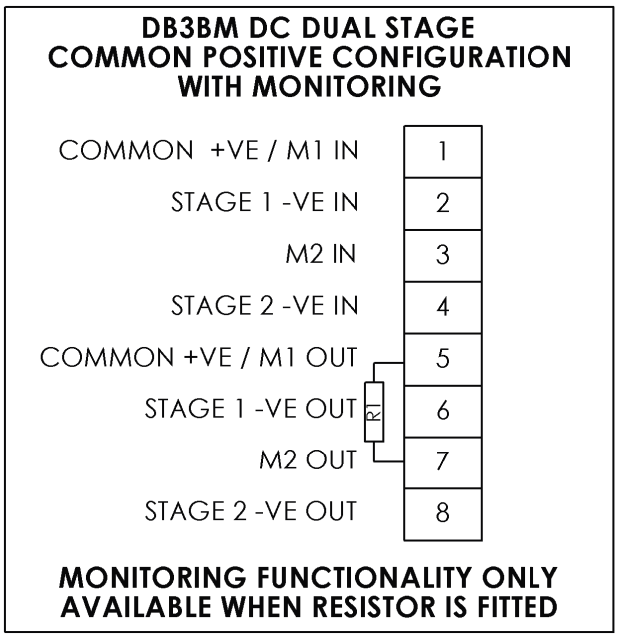


DC input, dual stage common +ve with monitoring (standard configuration) wiring details (Type 4)

Connect up to 4 supply wires to the terminals as detailed in the wiring diagram. Stage 1 is produced when power is applied across the common +ve and stage 1 -ve terminals. Stage 2 is produced when power is applied across the common +ve and stage 2 -ve terminals.

Monitoring functionality is obtained when the supply is connected across M1 & M2 terminals.

Note: monitored terminals are not polarity dependent



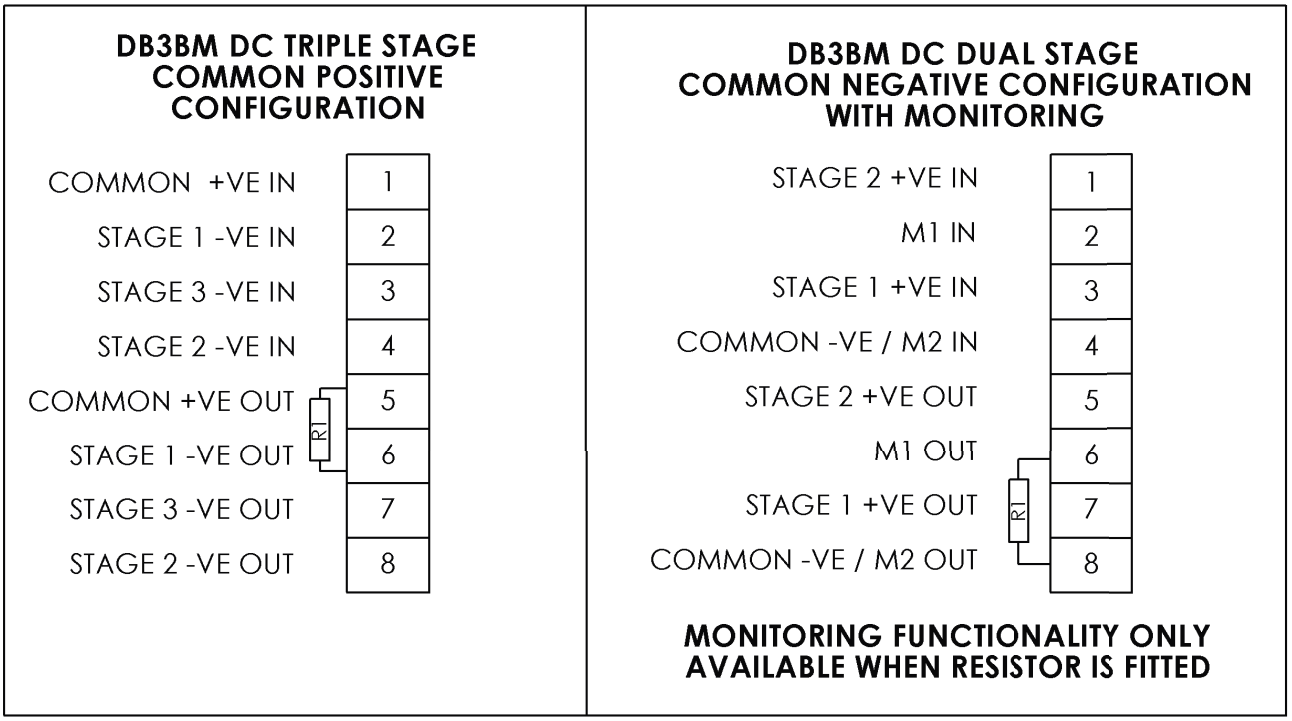
DC input, up to 3 stage with or without monitoring (alternative configuration) wiring details (Type 5)

Note: This alternative configuration must be specified when ordering the unit.

This type can be connected either as a three stage common –ve configuration, or if an optional EOL is specified if can be configured as a dual stage common –ve system with monitoring.

- 4-wire system (Triple stage, Common +ve): Connect 4 supply wires to the terminals as detailed in the wiring diagram (1 common +ve wire and 3 -ve wires). Stage 1 is produced when power is applied across the common +ve and stage 1 -ve terminals. Stage 2 is produced when power is applied across the common +ve and stage 2 -ve terminals. Stage 3 is produced when power is applied across the common +ve and stage 3 -ve terminals.
- 4-wire system (Dual stage, common –ve with monitoring): Connect up to 4 supply wires to the terminals as detailed in the wiring diagram. Stage 1 is produced when power is applied across the common -ve and stage 1 +ve terminals. Stage 2 is produced when power is applied across the common -ve and stage 2 +ve terminals.
  Monitoring functionality is obtained when the supply is connected across M1 & M2 terminals.

Note: monitored terminals are not polarity dependent

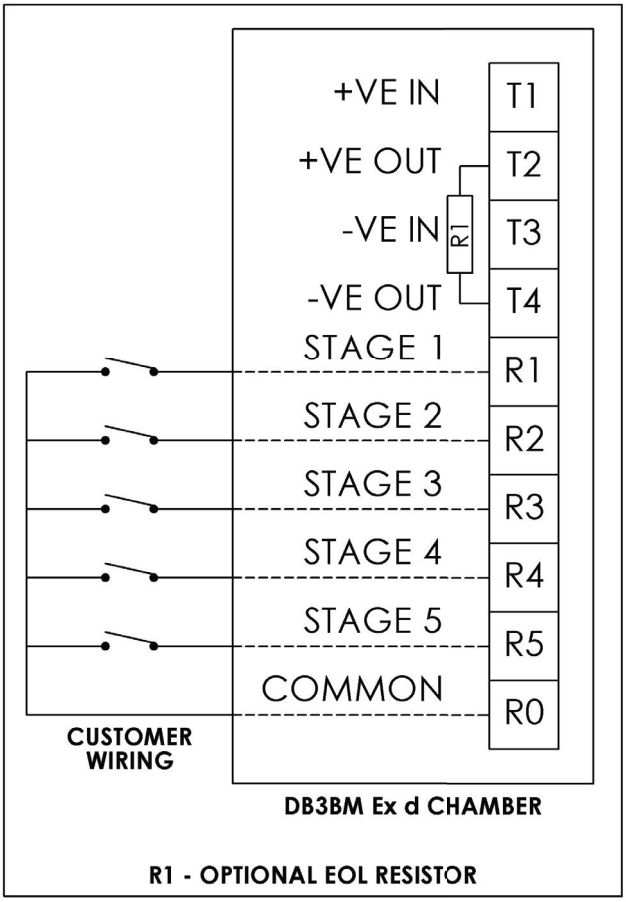


DC input with voltage free stage activation wiring details (Type 6)

Connect the positive (+ve) and negative (-ve) supply wires to the terminals as detailed in the wiring diagram. When power is applied to the unit, no tone will be produced initially. Connect wires and remote switches to terminals R0 to R5 as shown. When the switch connected to R1 is closed, the stage 1 tone will be produced as selected by the 5-way DIP switch on the electronics assembly. When any of the other switches connected to R2 to R5 is closed, the pre-selected tone for stages 2 to 5 are produced. See tone table 2 for details of pre-selected tones.

Note: Closing more than one switch at a time will result in no tone being produced.

If a resistor (R1) is fitted, monitoring functionality is obtained when the supply polarity is reversed.



OPERATION

The sounder is available in various AC input voltage versions and a single DC input voltage version.

For AC versions, the nominal operating voltage is stated on the unit label and the supply voltage tolerance is ±10%.

For DC versions, the absolute input voltage range is 11.0Vdc to 57.6Vdc.

If using End of line resistors the power dissipation must limited to a maximum of 3 Watts

The unit is fitted with a volume control which is positioned on the top face of the electronics assembly PCB. Maximum volume is obtained when this control is turned fully clockwise. When turned fully anti-clockwise the unit will emit no sound.

⚠ WARNING

Do not attempt to turn the volume control past its limits of movement as this may cause damage to the unit.

⚠ WARNING

The unit has a certified upper operating temperature limit of +85°C, however continuous operation is not recommended in ambient temperatures above +70°C.

Stages:

For all versions, a 5-way DIP switch selects the stage required for each stage. The settings for the standard stages are shown in the table below:

Tone table 1:

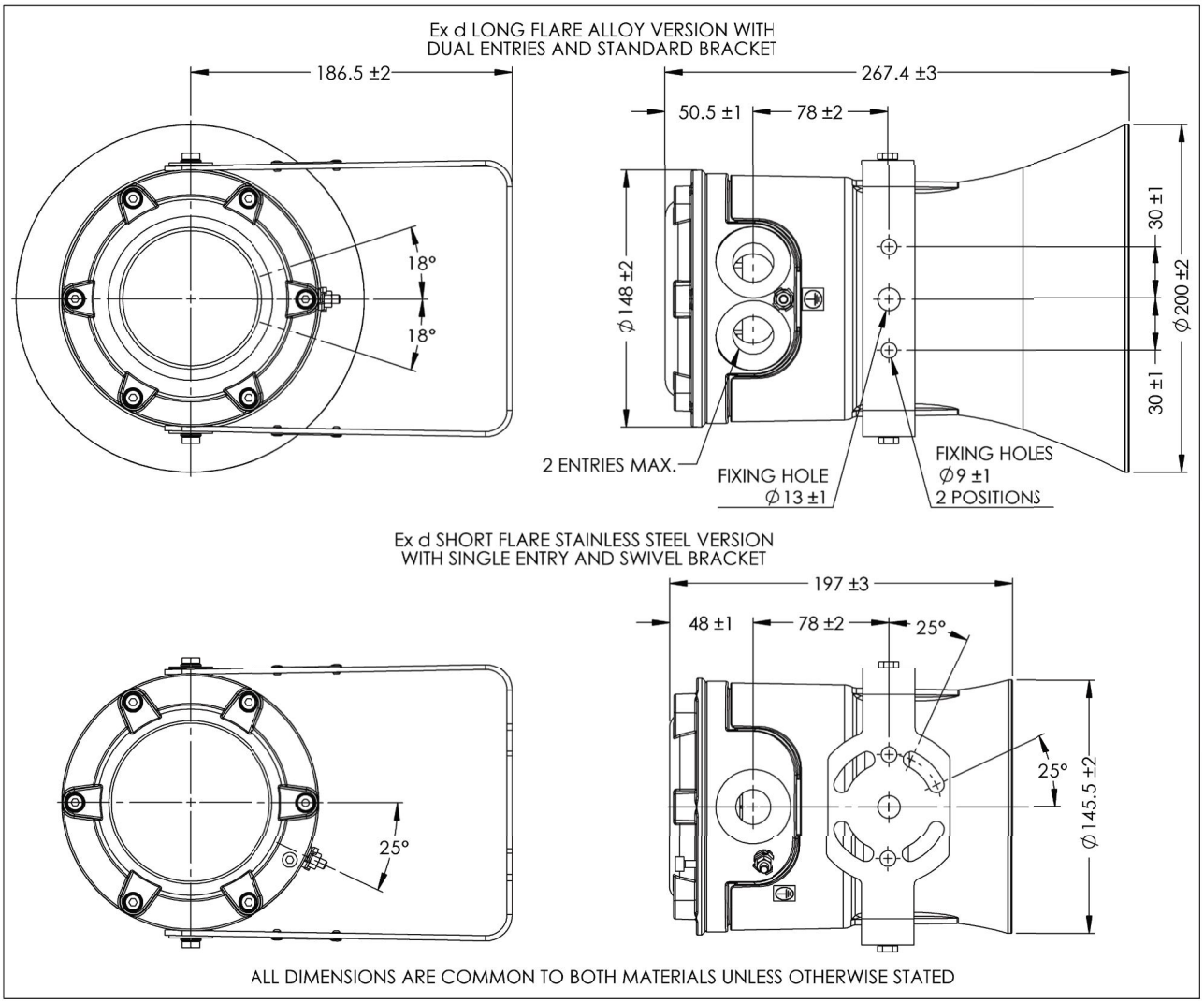
Tone No.	Tone Frequency / Description	Switch Setting 12345	Tone Description	Nominal Spl (Db(A) @ 1m)
1	Alt Stages 800/970 Hz at 1/4 sec	11111		110
2	Sweeping 800/970 Hz at 7 Hz	11110	Fast Sweep (LF)	108
3	Sweeping 800/970 Hz at 1 Hz	11101	Medium Sweep (LF)	110
4	Continuous at 2850 Hz	11100		104
5	Sweeping 2400-2850 Hz at 7 Hz	11011	Fast Sweep	107
6	Sweeping 2400-2850 Hz at 1 Hz	11010		109
7	Slow Whoop	11001	Slow Whoop	110
8	Sweep 1200-500 Hz at 1 Hz	11000	Din Stage	110
9	Alt Stages 2400/2850 Hz at 2 Hz	10111		107
10	Int Stage of 970 Hz at 1 Hz	10110	Back-up Alarm (LF)	111
11	Alt Stages 800/970 Hz at 7/8 Hz	10101		109
12	Int Stage at 2850 Hz at 1Hz	10100	Back-up Alarm (HF)	105
13	970 Hz at 1/4 sec on 1 sec off	10011		110
14	Continuous at 970 Hz	10010		110
15	554 Hz for 0.1S/440 Hz for 0.4S	10001	French Fire Sound	104
16	Int 660 Hz 150 mS on 150 mS off	10000	Swedish Fire Alarm	104
17	Int 660 Hz 1.8 sec on 1.8 sec off	01111	Swedish Fire Alarm	104
18	Int 660 Hz 6.5 sec on 13 sec off	01110	Swedish Fire Alarm	104
19	Continuous 660 Hz	01101	Swedish Fire Alarm	105
20	Alt 554/440 Hz at 1 Hz	01100	Swedish Fire Alarm	104
21	Int 660 Hz at 7/8 Hz	01011	Swedish Fire Alarm	105
22	Int 2850 Hz 150 mS on 100 mS off	01010	Pelican Crossing	104
23	Sweep 800-970 Hz at 50 Hz	01001	Low Freq. Buzz	108
24	Sweep 2400 -2850 Hz at 50 Hz	01000	High Freq. Buzz	108
25	3x970 Hz pulses 0.5 off, 1.5 off	00111		111
26	3x2850 Hz pulses 0.5on/0.5off, 1.5 off	00110		105
27	Int 3100 Hz 0.32s on/0.68s off	00101		104
28	Continuous 1400 Hz	00100		113
29	Spare / Custom tone	00011		
30	Spare / Custom tone	00010		
31	Spare / Custom tone	00001		
32	Spare / Custom tone	00000		

Note: If special tones were requested at the time of ordering, please see the separate tones list supplied with the unit for details of these special tones and their respective switch settings.

Tone table 2:

Tone No.	Tone Frequency / Description	Switch Setting 12345	Voltage free stage selection tone No.				
			DC				AC
Stage 1			Stage 2	Stage 3	Stage 4	Stage 5	Stage 2
1	Alt Tones 800/970Hz at 1/4 sec	11111	T14	T10	T11	T8	T14
2	Sweeping 800/970Hz at 7 Hz	11110	T14	T10	T1	T8	T14
3	Sweeping 800/970Hz at 1 Hz	11101	T14	T10	T1	T8	T14
4	Continuous at 2850Hz	11100	T14	T10	T1	T8	T14
5	Sweeping 2400-2850Hz at 7Hz	11011	T14	T10	T1	T8	T14
6	Sweeping 2400-2850Hz at 1Hz	11010	T14	T10	T1	T8	T14
7	Slow Whoop	11001	T14	T10	T1	T8	T14
8	Sweep 1200-500Hz at 1Hz	11000	T14	T10	T1	T6	T14
9	Alt Tones 2400/2850Hz at 2Hz	10111	T14	T10	T1	T8	T14
10	Int Tone of 970Hz at 1Hz	10110	T14	T12	T1	T8	T14
11	Alt Tones 800/970Hz at 7/8Hz	10101	T14	T10	T1	T8	T14
12	Int Tone at 2850Hz at 1Hz	10100	T14	T10	T1	T8	T14
13	970Hz at 1/4 sec on 1 sec off	10011	T14	T10	T1	T8	T14
14	Continuous at 970Hz	10010	T28	T10	T1	T8	T28
15	554Hz for 0.1S/440Hz for 0.4S	10001	T14	T10	T1	T8	T14
16	Int 660Hz 150 mS on 150 mS off	10000	T14	T10	T1	T8	T14
17	Int 660Hz 1.8 sec on 1.8 sec off	01111	T14	T10	T1	T8	T14
18	Int 660Hz 6.5 sec on 13 sec off	01110	T14	T10	T1	T8	T14
19	Continuous 660Hz	01101	T14	T10	T1	T8	T14
20	Alt 554/440Hz at 1Hz	01100	T14	T10	T1	T8	T14
21	Int 660Hz at 7/8Hz	01011	T14	T10	T1	T8	T14
22	Int 2850Hz 150 mS on 100 mS off	01010	T14	T10	T1	T8	T14
23	Sweep 800-970Hz at 50Hz	01001	T14	T10	T1	T8	T14
24	Sweep 2400-2850Hz at 50Hz	01000	T14	T10	T1	T8	T14
25	3x970Hz pulses 0.5 off, 1.5 off	00111	T14	T10	T1	T8	T14
26	3x2850Hz pulses 0.5on/0.5off, 1.5 off	00110	T14	T10	T1	T8	T14
27	Int 3100Hz 0.32s on/0.68s off	00101	T14	T10	T1	T8	T14
28	Continuous 1400Hz	00100	T14	T10	T1	T8	T14
29	Spare / Custom tone	00011					
30	Spare / Custom tone	00010					
31	Spare / Custom tone	00001					
32	Spare / Custom tone	00000					

GENERAL ARRANGEMENT



MAINTENANCE

During the working life of the unit, it should require little maintenance however; if abnormal or unusual environmental conditions occur due to plant damage or accident etc., then visual inspection is recommended.

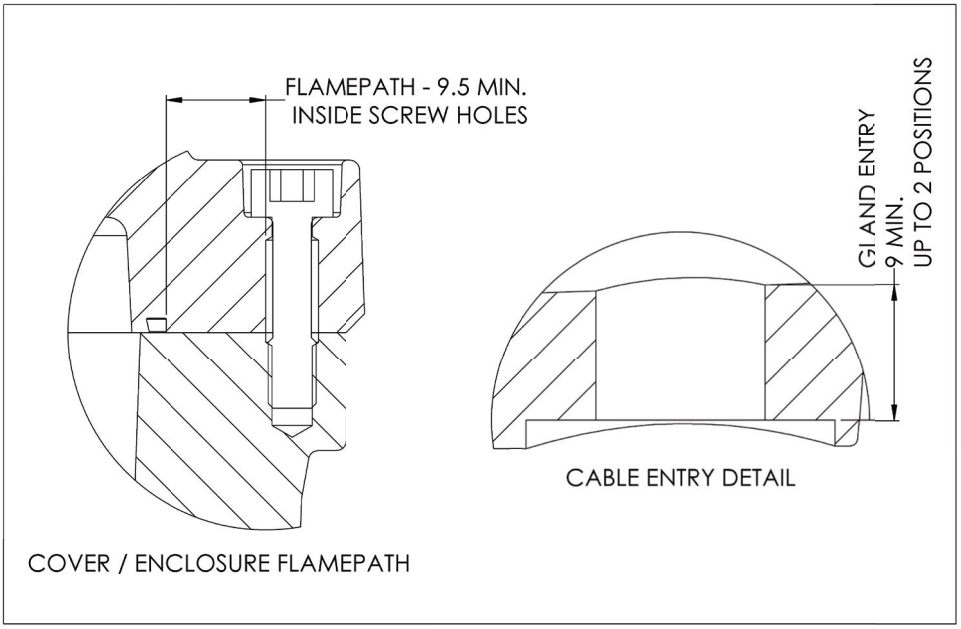
⚠ WARNING

The front driver cover of the unit, situated underneath the thermoplastic main flare, which encloses the loudspeaker driver shall not be opened as it is not for field installation or maintenance use.

See below diagram for details of the flameproof joints found in the unit.

⚠ WARNING

The flameproof joints details below are not intended to be repaired.



Corrosion inhibiting grease, such as petrolatum or soap-thickened mineral oils, may be applied to flameproof joint surfaces before assembly. The grease, if applied, shall be of a type that does not harden because of ageing, does not contain an evaporating solvent, and does not cause corrosion of the joint surfaces. Verification of suitability shall be in accordance with the grease manufacturer's specifications.

If the unit requires cleaning, then only clean exterior with a damp cloth to avoid electro-static charge build up.

If a unit fault should occur, then the unit can be repaired by MEDC

If you acquired a significant quantity of units, then it is recommended that spares are also made available. Please discuss your requirements with the Technical Sales Engineers at MEDC.

CERTIFICATION / APPROVALS

IECEx units

Ex d unit (IECEx certification No. IECEx ULD 21.0017X)
Ex db IIC T* ($T_{amb.}$) Gb
Ex tb IIIC T*°C ($T_{amb.}$) Db IP6X

See table below for ambient temperature ranges and T-ratings
The IECEx certificate and product carry the IECEx equipment protection level markings:

Gb and Db
Where: Gb signifies suitability for use in a Zone 1 surface industries area in the presence of gas.

Db signifies suitability for use in a Zone 21 surface industries area in the presence of dust.

ATEX / UKEX units

Ex d unit (ATEX certification No. UI 21 ATEX 2559X) (UKEX certification No UL21UKEX2209X)
Ex db IIC T* ($T_{amb.}$) Gb
Ex tb IIIC T*°C ($T_{amb.}$) Db IP6X

See table below for ambient temperature ranges and T-ratings

The ATEX / UKEX certificate and product carry the ATEX / UKEX group and category marking: Ⓔx II 2 G D

Ⓔx Signifies compliance with ATEX / UKEX
II Signifies suitability for use in surface industries
2 Signifies suitability for use in a Zone 1 area
G Signifies suitability for use in the presence of gasses
D Signifies suitability for use in the presence of dust

T-Ratings:

Max. Power rating	$T_{amb.}$	T_G	T_D
15W	-60°C to +85°C -60°C to +55°C -60°C to +40°C	T4 T5 T6	T135°C T100°C T85°C

These units also have the following approvals:

Ingress protection: Long Flare units IP66. Short Flare units IP65 Exd terminal chamber IP67 to IEC60529

SPECIAL CONDITIONS FOR SAFE USE

- For replacement purposes M5 x 0.8 x 20 mm long cover bolts shall be used and shall have a property class of A2-70 or stronger. Reduced shank fasteners must be used with covers employing threaded holes. Fully threaded fasteners must be used with covers employing plain clearance holes.
- The flameproof joints are not intended to be repaired.
- Potential Electrostatic Charging Hazard. If the unit requires cleaning, only clean exterior with a damp cloth to avoid electrostatic charge build-up. See instructions for further guidance
- If a metal certification label is attached to the horn it is known to be capable of retaining a 3.33 pF charge.

PUSH BUTTON DPDT CONTACT

POS.	TAG NUMBER	SERVICE
1	77-HS-001A	B-100 Fire Damper AHU1 Inlet Air
2	77-HS-001B	B-100 Fire Damper AHU1 Inlet Air
3	77-HS-002A	B-100 Fire Damper AHU2 Inlet Air
4	77-HS-002B	B-100 Fire Damper AHU2 Inlet Air
5	77-HS-003A	B-100 Fire Damper Exhaust Air
6	77-HS-003B	B-100 Fire Damper Exhaust Air
7	77-HS-004A	B-200 Fire Damper AHU3 Inlet Air
8	77-HS-004B	B-200 Fire Damper AHU3 Inlet Air
9	77-HS-005A	B-200 Fire Damper AHU4 Inlet Air
10	77-HS-005B	B-200 Fire Damper AHU4 Inlet Air
11	77-HS-006A	B-200 Fire Damper Exhaust Air
12	77-HS-006B	B-200 Fire Damper Exhaust Air
13	77-HS-007A	B-300 Fire Damper AHU5 Inlet Air
14	77-HS-007B	B-300 Fire Damper AHU5 Inlet Air
15	77-HS-008A	B-300 Fire Damper AHU5 Return Air
16	77-HS-008B	B-300 Fire Damper AHU5 Return Air
17	77-HS-009A	B-300 Fire Damper AHU6 Inlet Air
18	77-HS-009B	B-300 Fire Damper AHU6 Inlet Air
19	77-HS-010A	B-300 Fire Damper AHU6 Return Air
20	77-HS-010B	B-300 Fire Damper AHU6 Return Air
21	77-HS-011A	B-300 Fire Damper Exhaust Air
22	77-HS-011B	B-300 Fire Damper Exhaust Air
23	77-HS-012A	B-400 Fire Damper AHU7 Inlet Air
24	77-HS-012B	B-400 Fire Damper AHU7 Inlet Air
25	77-HS-013A	B-400 Fire Damper AHU7 Return Air
26	77-HS-013B	B-400 Fire Damper AHU7 Return Air
27	77-HS-014A	B-400 Fire Damper AHU8 Inlet Air
28	77-HS-014B	B-400 Fire Damper AHU8 Inlet Air
29	77-HS-015A	B-400 Fire Damper AHU8 Return Air
30	77-HS-015B	B-400 Fire Damper AHU8 Return Air
31	77-HS-016A	B-400 Fire Damper Exhaust Air
32	77-HS-016B	B-400 Fire Damper Exhaust Air

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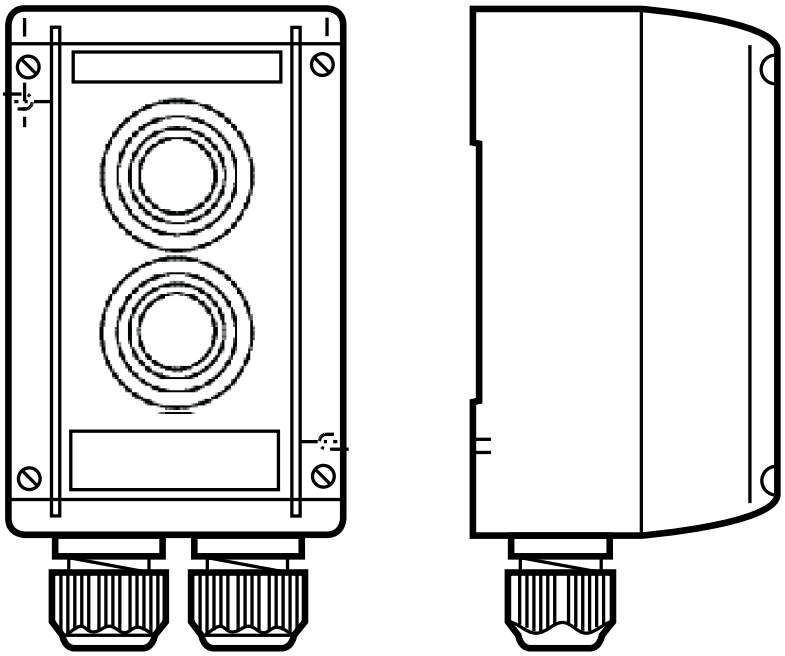
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Operating instructions
Mode d'emploi

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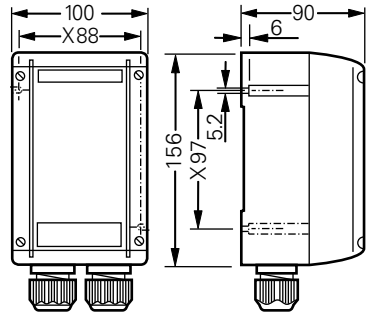
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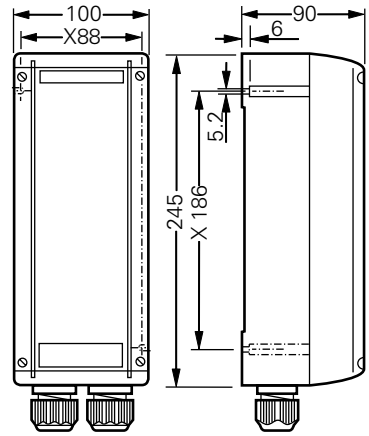
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8 Réparations/ Remise en état 32
9 Évacuation des déchets/ Recyclage 32

Déclaration de conformité, jointe séparément.

Maßbilder in mm



GHG 432



GHG 434

X = Befestigungsmaße

1 Technische Angaben

1.1 Komplette Steuergeräte

ATEX EU-Baumusterprüfbescheinigung:		BVS 22 ATEX E 032 X
Gerätekennzeichnung nach 2014/34/EU und Norm:		
	EN 60079-0	Ⓔx II 2 G Ex eb * IIC / IIB+H_2 / IIB T6/T5 Gb
		Ⓔx II 2 D Ex tb IIIC T80 °C Db
IECEx Konformitätsbescheinigung:		IECEx BVS 22.0029X
Gerätekennzeichnung:		
	IEC60079-0	Ex eb * IIC / IIB+H_2 / IIB T6/T5 Gb Ex tb IIIC T80 °C Db

* = die Kennzeichnung wird ergänzt, bzw. erweitert in Abhängigkeit der verwendeten Ex-Komponenten oder des verwendeten Gehäuse Zubehör (z.B. db, mb, ia, ib, ...).

Bemessungsspannung:	bis max. 690 V
Bemessungsstrom:	max. 16 A
Umgebungstemperaturbereich und zul. Lagertemperatur in Originalverpackung:	-20 °C ... +40 °C (Listenausführung)
Geprüfter Umgebungstemperaturberich: (Abweichende Temperaturen sind bei Sonderversionen möglich.)	-40 °C ... +55 °C

Nennstrom / Temperatur

Nennstrom	Querschnitt	Staubschutz	$T_{amb} \leq$ +40 °C	+40 °C $\leq T_{amb} \leq$ +55 °C
6 A			T6	T6
10 A	1,5 mm²	T80°C	T6	T5 (T6 bis T_{amb}=+54°C)
16 A			n/a	n/a
6 A			T6	T6
10 A	2,5 mm²	T80°C	T6	T6
16 A			T6	T6/T5*[1]
6 A			T6	T6
10 A	4 mm²	T80°C	T6	T6
16 A			T6	T6

*[1] nur mit geeigneten KLE und Leitungen mit erweitertem Betriebstemperaturbereich (service temp. range)

Schutzart nach EN/IEC 60529:	IP 66 (Listenausführung)
Schutzklasse nach EN/IEC 61140:	I- mit interner Erdungsplatte
	II – wird von den Kunststoffsteuergeräten erfüllt
PE-Anschlussklemmen:	2 x 4 mm²
Anschlussklemmen:	siehe Einbaukomponenten
Leitungseinführung (Listenausführung):	2 x M25 (1 x M25; 1 x mit Verschluss-Stopfen)

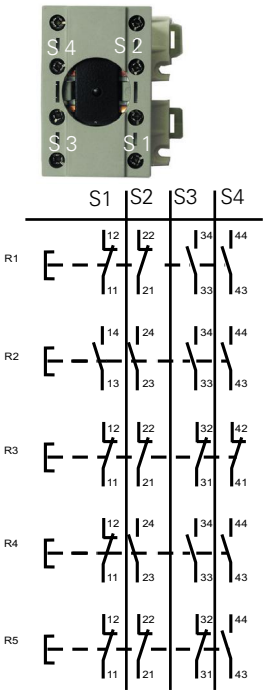
geeignete Leitungen und Prüfdrehmomente der Druckschraube

Kabel- und Leitungseinführung (KLE)		M12	M16	M20	M25	M32
Dichtung 1+2+3 (Ø mm / Nm)	min.				8,0 / 1,5	
	max. (1)				10,0 / 2,0	
Dichtung 1+2 (Ø mm / Nm)	min.		5,5 / 1,0	7,0 / 1,5	10,0 / 2,3	14,0 / 3,0
	max. (1)		7,0 / 1,0	9,0 / 1,4	13,0 / 2,6	17,0 / 4,0
Dichtung 1 (Ø mm / Nm)	min.	5,0 / 0,8	7,0 / 1,0	9,5 / 1,0	13,5 / 1,3	17,5 / 1,5
	max. (1)	7,0 / 1,0	10,0 / 1,4	13,0 / 1,7	17,5 / 2,3	21,0 / 1,3
Prüfdrehmomente Einschraubgewinde (Nm)		1,2	3,3	2,7	3,0	5,0

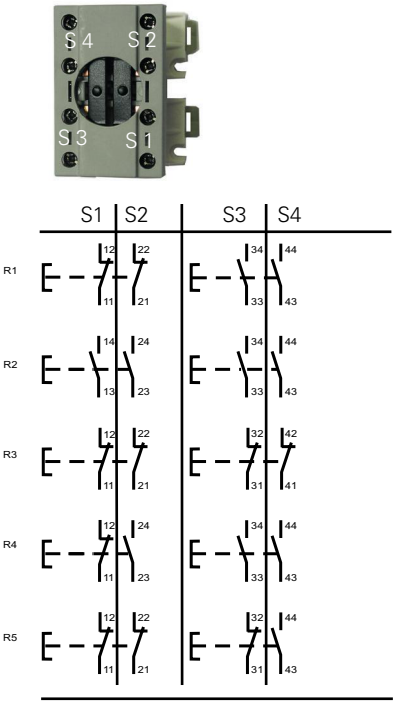
(1) Die Prüfungen der Klemmbereiche und Prüfdrehmomente wurden mit Metalldornen durchgeführt. Bei der Verwendung von Leitungen mit unterschiedlichen Fertigungstoleranzen und Materialeigenschaften kann der Klemmbereich variieren. Bitte verwenden Sie im Zwischenbereich eine geeignete Kombination aus Dichtungen, so dass bei zukünftigen Wartungsarbeiten an der KLE die Hutmutter nachgezogen werden kann.

Leergewicht:	
Steuergerät GHG 432	ca. 0,47 kg
Steuergerät GHG 434	ca. 0,70 kg
Prüfdrehmomente:	
Deckelschrauben / Anschlussklemmen	2,00 Nm
⚠ Gehäusematerial:	
Kennbuchstaben "Mat.: A"	schlagfestes Polyamid < 10^9 Ω
Kennbuchstaben "Mat.: B" und " Mat.: C"	schlagfestes Polyamid > 10^9 Ω

Drucktastersockel GHG41.11..R....; 1 x 4 polig



Drucktastersockel GHG41.11..R....; 2 x 2 polig



1.2 Drucktaster-, Schalter- und Potentiometersockel allgemein

EU-Baumusterprüfbescheinigung:	IBExU14ATEX1030U		
Gerätekennzeichnung nach 2014/34/EU			
und der Normenreihe EN 60079:	Ⓔx II 2 G Ex db eb IIC/IIB/IIB+H2 Gb		
	Ⓔx I M 2 Ex db eb I Mb		
IECEx Konformitätsbescheinigung:	IECEx IBE 14.0005U		
Gerätekennzeichnung			
der Normenreihe IEC 60079:	Ex db eb IIC/IIB/IIB+H2 Gb		
	Ex db eb I Mb		
Umgebungstemperaturbereich			
Ⓔx II 2 G ... IIC	-55 °C	...	+55 °C
Ⓔx II 2 G ... IIB	-60 °C	...	+55 °C
Ⓔx II 2 G ... IIB+H2	-55 °C	...	+55 °C
Betriebstemperaturbereich:			
Ⓔx II 2 G ... IIC	-55 °C	...	+80 °C
Ⓔx II 2 G ... IIB	-60 °C	...	+80 °C
Ⓔx II 2 G ... IIB+H2	-55 °C	...	+80 °C
Schutzart nach EN/IEC 60529			
Drucktaster DRT:	IP 66		(im eingebauten Zustand)
Doppeldrucktaster DDT:	IP 66		(im eingebauten Zustand)
Schlüsseltaster SLT:	IP 66		(im eingebauten Zustand)
Schlüsselschalter SLS:	IP 66		(im eingebauten Zustand)
Schlagtaster SGTE, SGT:	IP 66		(im eingebauten Zustand)
Steuerschalter SCT:	IP 66		(im eingebauten Zustand)

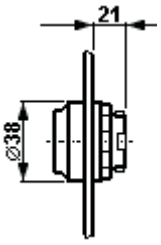
1.2.1 Drucktastersockel GHG41.11..R....; 2 polig für Drucktaster, Schlagtaster, Schalter und Schlüsseltaster

1.2.2 Drucktastersockel GHG41.11..R....; 4 polig für Drucktaster, Schlagtaster, Schalter und Schlüsseltaster

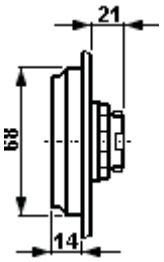
Bemessungsspannung:		bis max. 500 V				
Bemessungsstrom maximal	Bemessungsan-schlusssquerschnitt	Umgebungstemperatur maximal				
14 A	2,5 mm²	40 °C				
16 A	4,0 mm² starr	40 °C				
12 A	2,5 mm²	50 °C				
15 A	4,0 mm² starr	50 °C				
Schaltvermögen AC 15	(EN 60947-5-1):	250 V /	6 A	500 V /	4,0 A	
Schaltvermögen DC 13	(EN 60947-5-1):	24 V /	6 A	60 V /	0,8 A	110 V / 0,5 A
mit Goldspitzkontakten:		max. 400 mA				
Anschlussklemmen:		1x / 2x 0,5- 2,5 mm²;				
		1x 4,0 mm² starr				
Prüfdrehmoment Anschlussklemmen:		2,5 Nm				
Gewicht:	2 polig	ca. 0,15 kg				
	4 polig	ca. 0,35 kg				

Maßbilder Bedien- und Anzeigeelemente

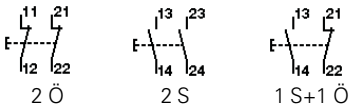
Anschlussbilder (Beispiele nicht vollständig)

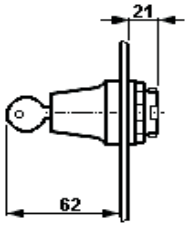


Drucktaster-
vorsatz

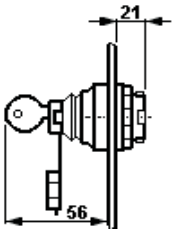


Doppeldrucktaster-
vorsatz

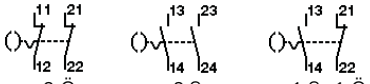


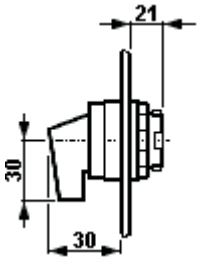


Schlüsselschaltervorsatz



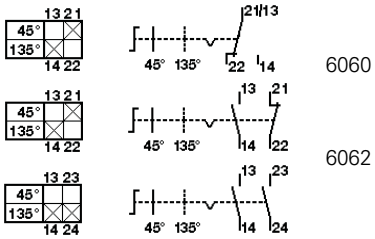
Schlüsseltastervorsatz

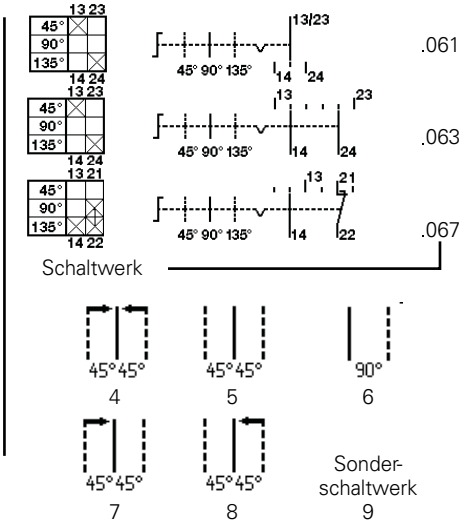




Schaltervorsatz Ex 41

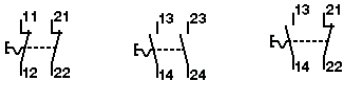
Schaltung

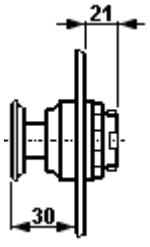




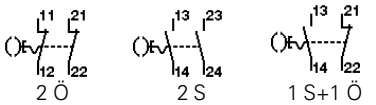


Schlagtastervorsatz "NOT- AUS"





Schlagtastervorsatz
X = Befestigungsmaße

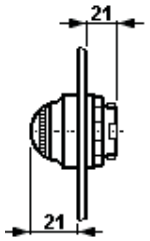


Maßangaben in mm

1.2.3 Potentiometer GHG41.16..R...;

Bemessungsspannung:	bis 250 V
Leistung:	1 W
Drehbereich:	270°
Skalierung:	0- 100%
Anschlussklemme/Prüfdrehmoment:	2 x 1,0- 2,5 mm²
	1 x 4,0 mm² starr
Prüfdrehmoment Anschlussklemmen	2,5 Nm
Gewicht:	ca. 0,15 kg

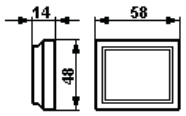
1.3 Signallampe GHG417 1805 R...;



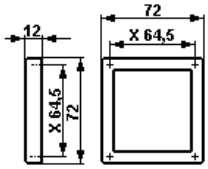
Signalvorsatz

EG-Baumusterprüfbescheinigung:		IBExU 12ATEX 1047 U			
Gerätekennzeichnung nach 2014/34/EU					
und der Normenreihe EN 60079:		Ⓔx II 2 G Ex db eb IIC Gb			
		Ⓔx II 2 G Ex db ia IIC Gb			
IECEx Konformitätsbescheinigung:		IECEx IBE 13.0031U			
Gerätekennzeichnung der Normenreihe IEC 60079:		Ex db eb IIC Gb Ex db ia IIC Gb			
Einsatztemperaturbereich:		-55 °C ... +80 °C			
Max. Betriebstemperaturbereich:		+80 °C			
(Abweichende Temperaturen sind bei Sonderversionen möglich)					
Bemessungsspannung/Bemessungsstrom:					
	"e" erhöhte Sicherheit (Ex db eb)	20 V	...	254 V AC/DC	4 ... 15 mA
	"e" erhöhte Sicherheit (Ex db eb)	12 V	...	24 V AC/DC	max. 24 mA
	"i" eigensichere Ausführung (Ex db ia)	10 V	...	30 V DC	max. 38,7 mA
Ex-i Daten:	U i	30 V			
	I i	100 mA			
	Ci	0			
	Li	0			
	Pi	750 mW			
Anschlussklemmen:		1x / 2x 0,5- 2,5 mm²; 1 x 4,0 mm² starr			
Prüfdrehmoment Anschlussklemmen		2,5 Nm			
Gewicht:		ca. 0,15 kg			

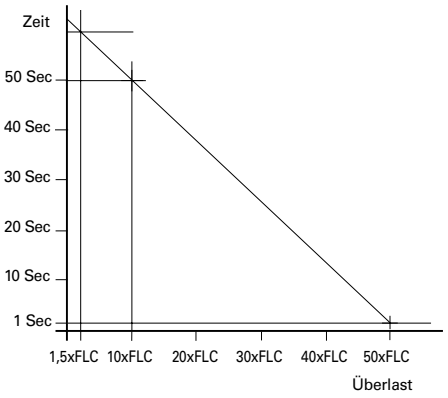
Maßbilder Bedienelemente



Messinstrumentenvorsatz AM 45



Messinstrumentenvorsatz AM 72



Überlast / Zeit

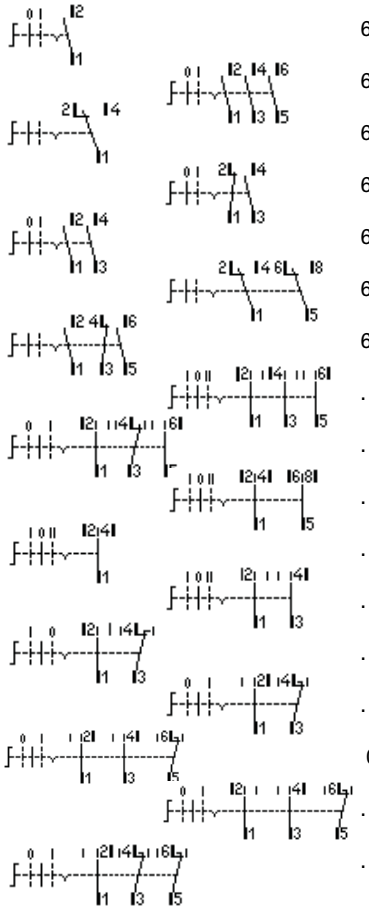
1.4 Messinstrument AM45 /AM72 GHG410 98 .. (1) R....

EU-Baumusterprüfbescheinigung:		BVS 14 ATEX E 125U	
Gerätekennzeichnung nach 2014/34/EU und der Normenreihe EN 60079:			
(1) Dreheisen	01 = VM 45 08 = VM 72	Ⓔx II 2 G Ex eb mb IIC Gb	
	02 = AM 45 09 = AM 72	Ⓔx II 2 G Ex eb IIC Gb / Ex eb mb IIC Gb	
(1) Drehspule	20 = AM 45 21 = AM 72	Ⓔx II 2 G Ex ib IIC Gb	
IECEx Konformitätsbescheinigung:		IECEx BVS 14.0082U	
Gerätekennzeichnung nach der Normenreihe IEC 60079:			
(1) Dreheisen	01 = VM 45 08 = VM 72	Ex eb mb IIC Gb	
	02 = AM 45 09 = AM 72	Ex eb IIC Gb / Ex eb mb IIC Gb	
(1) Drehspule	20 = AM 45 21 = AM 72	Ex ib IIC Gb	
Betriebstemperaturbereich:		-55 °C ... +80 °C	
Schutzart nach EN/IEC 60529:		IP 66 (im eingebauten Zustand)	
Bemessungsspannung:		bis max. 500 V	
		Dreheisen	Drehspule
Genauigkeit:		Klasse 2,5	Klasse 1,5
Überlastbereich:		10- fach - 25 sec.	10- fach -5 sek.
		25- fach - 4 sec.	
		50- fach - 1 sec.	
		anzeigend 1:1,5	
Bei Wandler-Geräten sind Sonderausführungen mit 1:2; 1:5; 1:6 und 1:8 möglich			
Messbereiche:	AM:	n / 1A; 5 A; 10 A	0 - 20 mA
		0 - 16 A / 25 A direkt	4 - 24 mA
	VM45:	6- 250 V	
	VM72:	6- 500 V	
Leistungsaufnahme:			
	VM45:	0,91- 1,76 VA	
	VM72:	0,91- 2,65 VA	
Spule:			26,5 Windungen
Innenwiderstand:			2,5 Ohm +- 30%
Li:			max. 0,1 mH
Ci:			max. 0,1 nF
Ui:			max. 30 V
I i :			max. 150 mA
Anschlussklemmen:		1x / 2x 0,5- 2,5 mm²	fein- / mehrdrähtig
		1 x 4,0 mm²	eindrähtig
Prüfdrehmoment Anschlussklemme:		2,5 Nm	
Gewicht	AM/VM 45:	ca. 0,35 Kg	
	AM/VM 72:	ca. 0,40 Kg	

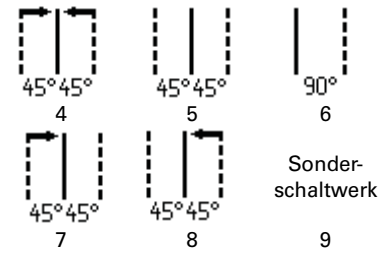
X = Befestigungsmaße

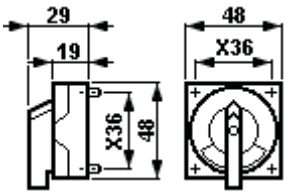
Anschlussbilder Schaltung

Steuerschalter Ex 23



Schaltwerk





Schaltervorsatz Ex 23

X = Befestigungsmaße

1.5 Steuerschalter Ex 23; GHG238 ....R....

EU-Baumusterprüfbescheinigung:		BVS 13 ATEX E 107U			
Gerätekennzeichnung nach 2014/34/EU und der Normenreihe EN 60079:		⟨Ex⟩ II 2 G Ex db eb IIB Gb ⟨Ex⟩ II 2 G Ex db eb IIC Gb ⟨Ex⟩ II 2 G Ex db ia/ib IIB Gb ⟨Ex⟩ II 2 G Ex db ia/ib IIC Gb ⟨Ex⟩ II 2 G Ex db eb I Mb			
IECEx Konformitätsbescheinigung:		IECEx BVS 13.0108U			
Gerätekennzeichnung der Normenreihe IEC 60079:		Ex db eb IIB Gb Ex db eb IIC Gb Ex db ia/ib IIB Gb Ex db ia/ib IIC Gb Ex db eb I Mb			
Betriebstemperaturbereich:	(IIB)	-60 °C	...	+80 °C	
	(IIC)	-55 °C	...	+80 °C	
Geprüfter Umgebungstemperaturbereich:	(IIB)	-60 °C	...	+55 °C	
	(IIC)	-55 °C	...	+55 °C	
Schutzart nach EN/IEC 60529:		IP 66	(im eingebauten Zustand)		
Bemessungsspannung:		bis max.500 V			
Bemessungsstrom:		10 A			
Schaltvermögen AC 15	(EN 60947-5-1):	230 V /	6,0 A	400 V /	6,0 A
Schaltvermögen DC 13	(EN 60947-5-1):	24 V /	6,0 A	230 V /	0,4 A
Zul. Kurzschlussvorsicherung:		16 A/gG bei 500 V			
Ausführung mit Goldspitzkontakten:		max. 400 mA			
Anschlussklemmen:		1x / 2x 0,5- 2,5 mm²;			
Prüfdrehmoment Anschlussklemme:		2,0 Nm			
Gewicht:		1 Etage	2 Etagen		
		ca. 0,20 Kg	ca. 0,35 Kg		

1.6 Klemmenblock

ATEX Konformitätsbescheinigung:		SEV 13 ATEX 0178 U
Gerätekennzeichnung nach 2014/34/EU und Norm:		
	EN 60079-0	⟨Ex⟩ II 2 G Ex eb IIC
IECEx Zertifikat		IECEx SEV 13.0012 U
Gerätekennzeichnung:	IEC60079-0	Ex eb IIC
Klemmentyp:		6 x MUT 4
Bemessungsspannung:		bis 352 V
Anschlussquerschnitt:		2 x 0,2- 4,0 mm²
Prüfdrehmoment Anschlussklemmen:		0,6- 0,8 Nm
Gewicht:		ca. 0,08 kg

1.7 Eigensichere Stromkreise

Sicherheitstechnische Maximalspannung U_m:	690 V_{eff}
	Galvanisch sicher getrennt von allen anderen Stromkreisen und von Erde

2 Legende

⚠ ***Achtung***

Dieses Symbol warnt vor einem möglichen Ausfall. Wird diese Warnung nicht beobachtet kann der Gesamtausfall der Vorrichtung oder des Systems oder des Betriebes erfolgen, an die es angeschlossen wird.

Besondere Bedingungen
Dieses Symbol weißt auf Hinweise zum sicheren Betrieb gemäß EU-Baumusterprüfbescheinigung / IECEx-Konformitätsbescheinigung hin.

2.1 Sicherheitshinweise

Zielgruppe:
Elektrofachkräfte und geeignet qualifizierte, unterwiesene Personen gemäß den nationalen Rechtsvorschriften, einschließlich der einschlägigen Normen für elektrische Geräte in explosionsgefährdeten Bereichen (EN/IEC 60079-14).

Die Steuergeräte GHG 432 und GHG 434 sind nicht für Zone 0 und Zone 20 geeignet.

Die Anforderungen der EN/IEC 60079-31 u.a. in Bezug auf übermäßige Staubablagerungen und Temperatur, sind vom Anwender zu beachten.

Die auf den Steuergeräten angegebene Temperaturklasse und Explosionsgruppe ist zu beachten.

Umbauten oder Veränderungen an den Steuergeräten sind nicht gestattet.

Sie sind bestimmungsgemäß in unbeschädigtem und einwandfreiem Zustand zu betreiben.

Vor Inbetriebnahme müssen die Steuergeräte entsprechend der im Abschnitt 6 genannten Anweisung geprüft werden.

Beachten Sie die nationalen Sicherheits- und Unfallverhütungsvorschriften und die nachfolgenden Sicherheitshinweise in dieser Betriebsanleitung, die wie dieser Text in Kursivschrift gefasst sind!

3 Normenkonformität

Das Betriebsmittel entspricht den aufgeführten Normen, in der separat beigelegten Konformitätserklärung.

Verweise auf Normen und Richtlinien in dieser Betriebsanleitung beziehen sich immer auf die aktuelle Version. Zusätzliche Ergänzungen (z.B. Jahreszahlangaben) sind zu beachten.

Bild 1 Messinstrumenten AM/VM72 und AM/VM45 für Wandleranschluss n/1A

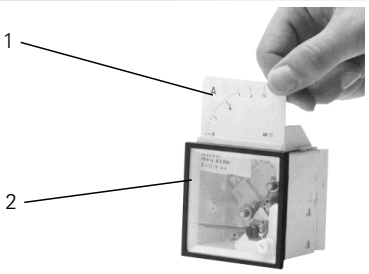
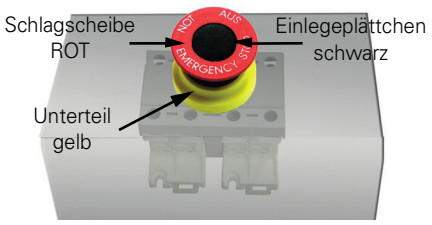


Bild 2 Schlagtaster mit verstärkter Verrastung GHG 410 1437R....



4 Verwendungsbereich

Die Steuergeräte mit den Einbaukomponenten (siehe „Technische Daten"), sind zum Einsatz in explosionsgefährdeten Bereichen der Zonen 1, 2 und 21, 22 gemäß
EN/IEC 60079-10-1 und EN/IEC 60079-10-2 geeignet!

Die eingesetzten Gehäusematerialien einschließlich der außenliegenden Metallteile bestehen aus hochwertigen Werkstoffen, die einen anwendungsgerechten Korrosionsschutz und Chemikalienresistenz in „normaler Industrieatmosphäre" gewährleisten:

– schlagfestes Polyamid

Bei einem Einsatz in extrem aggressiver Atmosphäre, können Sie zusätzliche Informationen über die Chemikalienbeständigkeit der eingesetzten Kunststoffe, bei Ihrer zuständigen Cooper Crouse-Hinds Niederlassung erfragen.

5 Verwendung / Eigenschaften

Die Steuergeräte GHG 432 und GHG 434 dienen zur Vor-Ort-Steuerung elektrischer Anlagen in explosionsgefährdeten Bereichen. Diese Geräte sind, abhängig vom Einzelfall, je nach Bedarf mit den verschiedenen Einbaukomponenten ausgerüstet.

Speziell gekennzeichnete Sonderausführungen der Steuergeräte können in „eigensicheren Stromkreisen" eingesetzt werden.

Die Sockel sind je nach Bedarf auch mit 0,6 W Widerständen, Feinsicherungen und Dioden bestückt (max. Verlustleistung 1 W).

Die für die „Eigensicherheit" maßgebenden elektrischen Grenzwerte sind zu beachten.

Die Ausführung mit Goldspitzkontakten ist für die Schaltung von Kleinspannungsstromkreisen geeignet. Maximale Strombelastung beachten („Technische Daten").
Die Ausführung mit Goldkontakten ist mit „G" auf den Sockeln oder farblich gekennzeichnet .

Um eine sichere Trennung der Taster- und Schalterkontakte zu gewährleisten, sind die Öffnerkontakte als Zwangsöffner ausgeführt.

Die Kleinsteuerschalter können durch Ausschneiden des Schaltkragens an der jeweiligen Abschließposition über ein Vorhängeschloss abgeschlossen werden (Ø Schlossbügel bis 5 mm).

Steuerschaltervorsätze Ex23 sind am Schaltkragen an der entsprechenden Abschließposition mit einer Bohrung Ø 5,5mm zu versehen und somit über oben genanntes Vorhängeschloss abschließbar.

Bild 1:
Die Messinstrumente AM 72 und AM 45 dienen zur Vor-Ort-Anzeige von elektrischen Größen. (Ausführung des Messwerkes, der Genauigkeit sowie Anschlussversion – siehe „Technische Daten").

Bei Messinstrumenten für Wandleranschluss n/1A (Bild 1, Pos 2) können über eine oben am Messinstrument angebrachte Klappe die Wechselskalen (Bild 1, Pos 1; Technische Daten) ausgetauscht werden.

Bild 2:
Der 4 polige Drucktastersockel kann mit den Standard CCH Bedienvorsätzen betrieben werden.

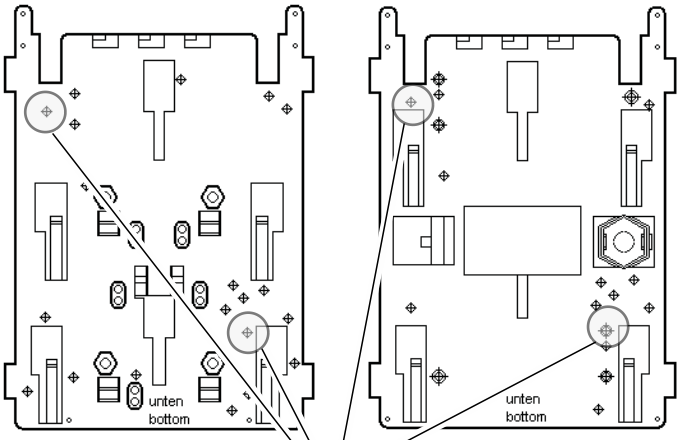
Soll der 4 polige Drucktastersockel mit einem Schlagtaster Not-AUS Vorsatz mit Verrastung betrieben werden, so muss dieser Vorsatz mit einer verstärkten Verrastung ausgestattet sein. Dieser Vorsatz ist an der roten Schlagscheibe
mit schwarzen Einlegeplättchen erkennbar und z. B. unter der CCH Artikelnummer GHG 410 1437R.... erhältlich.

Bild 3 Gerätehalter

Befestigungslöcher auf Gerätehalter Größe 2

Gerätehalter für Gitterrinnen- und Wandbefestigung

Gerätehalter für Rohrbefestigung

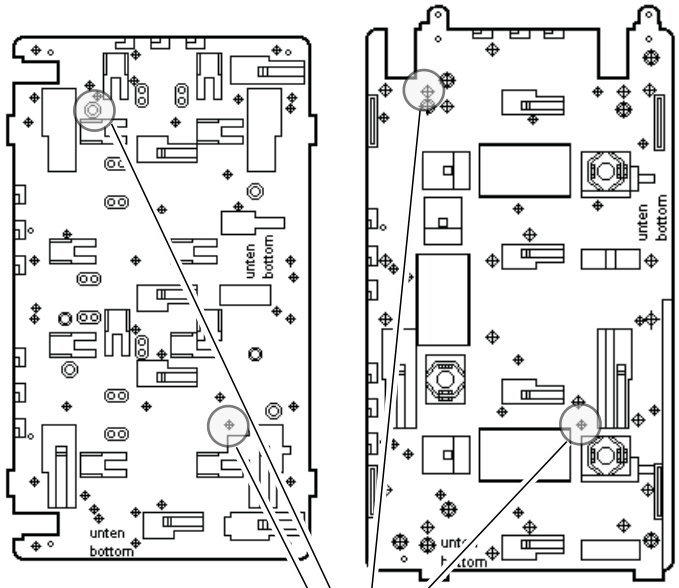


Befestigungs-löcher für Steuergerät GHG 432

Befestigungslöcher auf Gerätehalter Größe 3

Gerätehalter für Gitterrinnen- und Wandbefestigung

Gerätehalter für Rohrbefestigung



Befestigungs-löcher für Steuergerät GHG 434

Angaben aus Punkt 3 und 4 sind bei der Verwendung zu berücksichtigen.

Andere als die beschriebenen Anwendungen sind ohne schriftliche Erklärung der Fa. Cooper Crouse-Hinds / EATON nicht zulässig.

Beim Betrieb sind die in der Betriebsanleitung unter Punkt 7 genannten Anweisungen zu beachten.

Die Verantwortung hinsichtlich bestimmungsgemäßer Verwendung dieser Steuergeräte unter Bezugnahme der in dieser Anleitung vorhandenen Rahmenbedingungen (siehe „Technische Daten“) liegt allein beim Betreiber.

6 Installation

Für das Errichten / Betreiben sind die relevanten nationalen Vorschriften (z.B. Betr.Si.V, in Deutschland) sowie die allgemein anerkannten Regeln der Technik maßgebend
(EN/IEC 60079-14).

Unsachgemäße Installation der Steuergeräte können zum Verlust der Garantie führen.

6.1 Montage / Demontage

Die Montage der Steuergeräte GHG 43. kann ohne Öffnen der Gehäuse erfolgen.

Die Steuergeräte dürfen bei der Direktmontage an der Wand nur an den vorgesehenen Befestigungspunkten eben aufliegen.

Die gewählte Schraube muss der Befestigungsöffnung angepasst sein (siehe Maßbilder).

Sie dürfen die Öffnung nicht beschädigen
(z.B. Verwendung einer Unterlegscheibe).

Bei übermäßigem Anziehen der Befestigungsschrauben kann das Betriebsmittel beschädigt werden.

Bild 3:
Die Steuergeräte GHG 432 und GHG 434 sind zur Befestigung auf den Cooper Crouse-Hinds / EATON - Gerätehaltern mittels Form- oder selbstschneidenden Schrauben geeignet.

Die betreffende Montageanleitung ist zu beachten.

6.2 Öffnen des Gerätes/ Elektrischer Anschluss

Vor Öffnen der Geräte ist die Spannungsfreiheit sicherzustellen bzw. sind geeignete Schutzmaßnahmen zu ergreifen.

Der elektrische Anschluss des Betriebsmittels darf nur durch Elektrofachpersonal in Anlehnung an EN/IEC 60079-14 erfolgen.

Die ordnungsgemäß abisolierten Anschlussleitungen der Kabel sind unter Berücksichtigung einschlägiger Vorschriften anzuschließen.

Zur Aufrechterhaltung der Zündschutzart ist der Leiteranschluss mit besonderer Sorgfalt durchzuführen.

Die Isolation der Anschlussleitungen muss bis an die Klemme heranreichen. Der Leiter selbst darf nicht beschädigt sein.

Bei Mischbestückungen Ex-e / Ex-i sind die erforderlichen Mindestabstände einzuhalten (siehe z.B. EN/IEC 60079-11).

Bei geöffneten Geräten ist sicherzustellen (Spannungsfreiheit herstellen), dass keine Spannungsverschleppung auf die angeschlossenen eigensicheren Stromkreise übergreift.

Die minimal und maximal anschließbaren Leiterquerschnitte sind zu beachten (siehe technische Daten).

Alle Schrauben und / oder Muttern der Anschlussklemmen, auch die der nicht benutzten, sind fest anzuziehen.

Die Standardklemmen sind zum Direktanschluss von Leitern mit Kupferadern ausgelegt.

Das Schaltbild der Einbaukomponenten ist auf den Komponenten angegeben, dem Schaltgerät beigelegt oder aus der Betriebsanleitung zu entnehmen.

Bei verdrahteten Steuergeräten ist der dem Gerät beigelegte Anschlussplan zu beachten.

Werden die Einbaukomponenten (Messinstrument AM 72 und AM 45, Drucktastersockel, Signalleuchtensockel, Steuerschaltersockel, Potentiometersockel usw.) zur leichteren Verdrahtung aus der Profilschiene im Gehäuseboden der Steuergeräte ausgeschnappt, sind die Komponenten hiernach wieder vorschriftsmäßig in die entsprechende Einrastposition auf der Profilschiene einzusetzen.

Zum Entriegeln der Komponenten (u.a. auch die Messinstrumente AM72 + AM45), werden die Rasthaken nach außen gezogen.

Ein Schalten an der Achse des Steuerschaltersockels Ex 23 bei geöffnetem Gehäuse ist nicht zulässig (um die Gehäuse wieder korrekt schließen zu können).

Achtung: Die Einrastpositionen der Einbaukomponenten müssen mit den Einkerbungen der Profilschiene übereinstimmen !

Die Errichtungshinweise für eigensichere elektrische Betriebsmittel sind zu beachten.

Es ist sicherzustellen, dass die für den speziellen, eigensicheren Stromkreis zulässige äußere Kapazität und Induktivität nicht überschritten wird.

! Wird das Betriebsmittel in der Ausführung „Schutzisoliert" ausgeführt, kann das entsprechende Klebeschild (▣) GHG 905 1002 P0005 beim Hersteller angefordert werden.

! Wird die eingebaute Klemmentragschiene nicht komplett mit Reihenklemmen bestückt, muss die Klemmentragschiene in den Potentialausgleich mit einbezogen werden.

6.3 Kabel-und Leitungseinführungen (KLE); Verschlussstopfen

Es dürfen generell nur bescheinigte KLEs und Verschlussstopfen verwendet werden. Für bewegliche Leitungen sind Trompetenverschraubungen oder andere geeignete Einführungen mit zusätzlicher Zugentlastung zu verwenden.

Beim Einsatz von KLE mit einer niedrigeren als der für das Gerät zutreffenden IP-Schutzart (siehe Technische Daten) wird die IP-Schutzart des gesamten Gerätes reduziert.

Die für die eingesetzten KLE maßgebenden Montagerichtlinien sind zu beachten.

Eigensichere Stromkreise sind über die farblich (hellblau) gekennzeichneten KLE einzuführen.

Nicht benutzte Einführungsöffnungen sind mit einem bescheinigten Verschlussstopfen zu verschließen, um die Mindestschutzart herzustellen.

Es ist darauf zu achten, dass bei der Installation der KLE´s die für den Leitungsdurchmesser geeigneten Dichtungseinsätze verwendet werden.

Bei ausschneidbaren Dichtungseinsätzen ist sicherzustellen, dass der Einsatz ordnungsgemäß dem Leitungsdurchmesser angepasst wird.

Zur Sicherstellung der erforderlichen Mindestschutzart sind die KLEs fest anzuziehen.

Bei übermäßigem Anziehen kann die Schutzart beeinträchtigt werden.

Achtung: Beim Anziehen der Hutmutter der Metall - KLE (z.B. Typ ADE/ADL) ist die Verschraubung mit einem geeigneten Werkzeug gegen Verdrehen zu sichern.

Alle nicht benutzten metrischen Cooper Crouse-Hinds / EATON KLE sind mit dem bescheinigten Verschluss für metrische KLE zu verschließen.

6.4 Flansche und Metallplatten*

Müssen Flanschplatten demontiert werden
(z.B. zum Bohren von Einführungsöffnungen),
ist bei der Montage zur Aufrechterhaltung der Mindestschutzart auf den korrekten Sitz der Flanschplatte zu achten.

Von außen herangeführte PE-Leitungen sind auf die dafür vorgesehene PE-Klemme am Flansch anzuschließen. Der maximale Anschlussquerschnitt beträgt 6 mm²

Achtung: Metallflansche, Metallplatten und Metallverschraubungen müssen in den Potentialausgleich miteinbezogen werden.

* z.Zt. nicht bescheinigt für Kategorie II D

6.5 Schließen des Gerätes / Deckelverschluss

Beim Aufsetzen der Gehäusedeckel ist darauf zu achten, dass die Vorsätze korrekt mit den Einbaukomponenten übereinstimmen und der zum Gehäuseunterteil gehörige Deckel verwendet wird.

Alle Fremdkörper sind aus dem Gerät zu entfernen.

Zur Sicherstellung der erforderlichen Mindestschutzart sind die Deckelschrauben fest anzuziehen.

Bei übermäßigem Anziehen kann die Schutzart beeinträchtigt werden.

6.6 Inbetriebnahme

Vor Inbetriebnahme des Betriebsmittels sind die in den einzelnen nationalen Bestimmungen genannten Prüfungen durchzuführen.

Außerdem ist vor der Inbetriebnahme die korrekte Funktion und Installation des Betriebsmittels und der Einbaukomponenten (Messinstrument, Signalleuchte, Taster usw.) in Übereinstimmung mit dieser Betriebsanleitung und anderen anwendbaren Bestimmungen zu überprüfen.

Die Nullpunkteinstellung des Messinstrumentezeigers ist vor der Inbetriebnahme zu überprüfen. Gegebenenfalls mit der Justierschraube den Messgerätezeiger auf den Nullpunkt einjustieren.

Die Gasgruppe (II B bzw. II C) des eigensicheren Stromkreises ist zur Bewertung der Gasgruppe der Einbaukomponenten zu berücksichtigen.

Unsachgemäßer Betrieb der Steuergeräte kann zum Verlust der Garantie führen.

7 Instandhaltung / Wartung

Die für die Wartung / Instandhaltung von elektrischen Betriebsmitteln in explosionsgefährdeten Bereichen geltenden nationalen Bestimmungen sind einzuhalten (EN/IEC 60079-17).

Vor Öffnen des Gehäuses Spannungsfreiheit sicherstellen bzw. geeignete Schutzmaßnahmen ergreifen.

Bei eigensicheren Stromkreisen ist das Arbeiten unter Spannung zulässig.

Die erforderlichen Wartungsintervalle sind anwendungsspezifisch und daher in Abhängigkeit von den Einsatzbedingungen vom Betreiber festzulegen.

Im Rahmen der Wartung sind vor allem die Teile, von denen die Zündschutzart und Funktion abhängt, zu prüfen (z.B. Unversehrtheit und Dichtheit des Gehäuses, Unversehrtheit der Dichtungen und der Kabel- und Leitungseinführungen, Schaltwerksfunktion, sowie fester Sitz aller Schrauben.

Sollte bei einer Wartung festgestellt werden, dass Instandsetzungsarbeiten erforderlich sind, ist Abschnitt 8 dieser Betriebsanleitung zu beachten.

Reinigung:

Betriebsmittel mit der Kennzeichnung auf dem Typenschild "Mat.: B" oder "Mat.: C", sind wie folgt zu reinigen:

Wegen der Gefahr der elektrostatischen Aufladung darf das Betriebsmittel nur mit einem feuchten, nicht fasernden Tuch oder Schwamm gereinigt werden!

8 Reparatur / Instandsetzung /Änderung

Instandsetzungsarbeiten / Reparaturen dürfen nur mit Cooper Crouse-Hinds / EATON Originalersatzteilen vorgenommen werden.

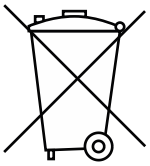
Bei Schäden an der druckfesten Kapselung ist nur ein Austausch zulässig. Im Zweifelsfalle ist das betroffene Betriebsmittel an Cooper Crouse-Hinds / EATON zur Reparatur zurückzugeben.

Reparaturen, die den Explosionsschutz betreffen, dürfen nur von Cooper Crouse-Hinds / EATON oder einer qualifizierten Elektrofachkraft in Übereinstimmung mit national geltenden Regeln durchgeführt werden. (EN/IEC 60079-19)

Umbauten oder Änderungen am Betriebsmittel sind nicht gestattet; ausgenommen ist das Anbringen von zusätzlichen KLEs im Rahmen der Zulassung des Betriebsmittels oder nach Angaben des Herstellers.

Bei Austausch einzelner Einbaukomponenten (Messinstrument, Taster usw.) ist Pkt. 6.2 „Öffnen des Gerätes /Elektrischer Anschluss“ zu beachten.

9 Entsorgung /Wiederverwertung

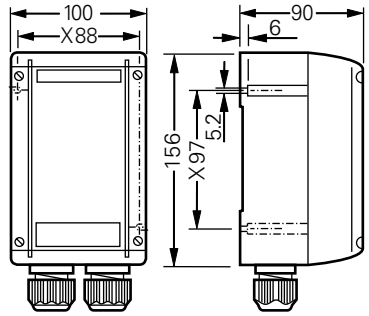


Bei der Entsorgung des Betriebsmittels sind die jeweils geltenden nationalen Abfallbeseitigungsvorschriften zu beachten.

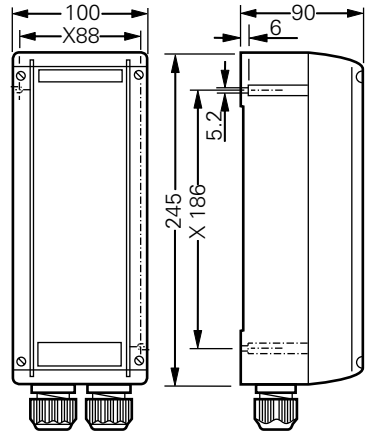
Zusätzliche Informationen zur Entsorgung des Produktes können Sie bei Ihrer zuständigen Cooper Crouse-Hinds / EATON Niederlassung erfragen.

Programmänderungen und-ergänzungen sind vorbehalten.

Dimensions in mm



GHG 432



GHG 434

X = fixing dimensions

1 Technical data

1.1 Control unit assemblies

EU-Type Examination Certificate:		BVS 22 ATEX E 032 X
Marking acc. to 2014/34/EU and standard:		
	EN 60079-0	Ⓔx II 2 G Ex eb * IIC / IIB+H_2 / IIB T6/T5 Gb
		Ⓔx II 2 D Ex tb IIIC T80 °C Db
IECEx type examination certificate:		IECEx BVS 22.0029X
Category of application:		
	IEC60079-0	Ex eb * IIC / IIB+H_2 / IIB T6/T5 Gb Ex tb IIIC T80 °C Db

* = The marking is supplemented or expanded depending on the Ex components used or the housing accessories used (e.g. db, mb, ia, ib, ...)

Rated voltage:	up to max. 690 V
Rated current:	max. 16 A
Ambient temperature range and perm.storage temperature in original packing::	-20 °C ... +40 °C (catalogue version)
Approved ambient temperature range: (Deviating temperatures possible with special versions.)	-40 °C ... +55 °C

Rated Current / temperature

Rated current	Cross section	Dust protection	$T_{amb} \leq$ +40 °C	+40 °C $\leq T_{amb} \leq$ +55 °C
6 A			T6	T6
10 A	1.5 mm²	T80°C	T6	T5 (T6 bis T_{amb}=+54°C)
16 A			n/a	n/a
6 A			T6	T6
10 A	2.5 mm²	T80°C	T6	T6
16 A			T6	T6/T5*1
6 A			T6	T6
10 A	4 mm²	T80°C	T6	T6
16 A			T6	T6

*1 only with suitable KLE and cables with an extended service temperature range

Degree of protection to EN/IEC 60529:	IP 66 (standard version)
Insulation class acc. to EN/IEC 61140:	I – with internal earthing plate
	II – plastic terminal boxes fulfil this requirement
PE- terminal:	2 x 4 mm²
Terminals:	see built-in components
Cable entries (catalogue version):	2 x M25 (1 x M25, 1 x with blanking plug)

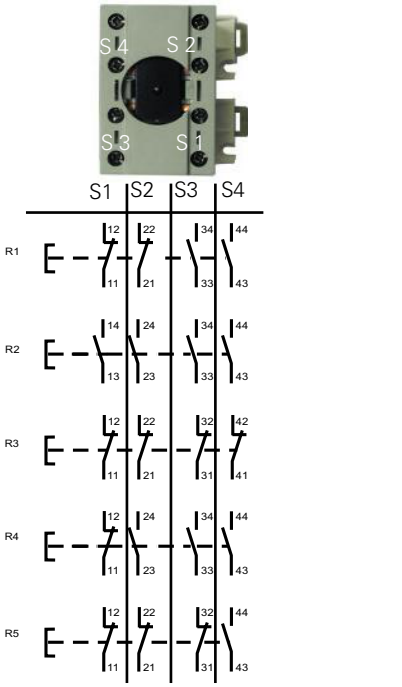
suitable cables and test torques of the pressure screw

Cabel entry:			M12	M16	M20	M25	M32
seal 1+2+3		min.				8.0 / 1.5	
(Ø mm / Nm)		max. (1)				10.0 / 2.0	
seal 1+2		min.		5.5 / 1.0	7.0 / 1.5	10.0 / 2.3	14.0 / 3.0
(Ø mm / Nm)		max. (1)		7.0 / 1.0	9.0 / 1.4	13.0 / 2.6	17.0 / 4.0
seal 1		min.	5.0 / 0.8	7.0 / 1.0	9.5 / 1.0	13.5 / 1.3	17.5 / 1.5
(Ø mm / Nm)		max. (1)	7.0 / 1.0	10.0 / 1.4	13.0 / 1.7	17.5 / 2.3	21.0 / 1.3
Test torque for screw in thread cable entry (Nm)			1.2	3.3	2.7	3.0	5.0

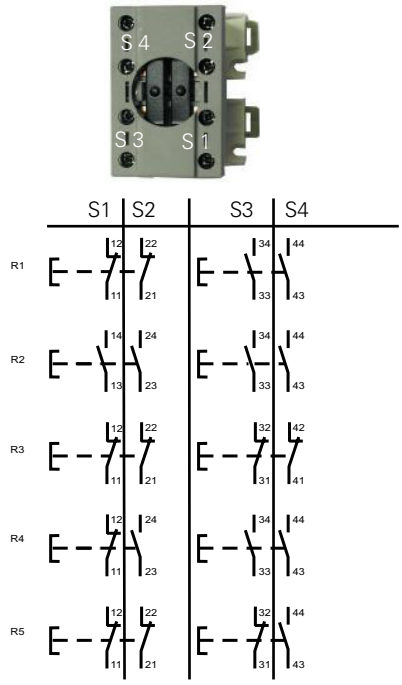
(1) The tests of clamping ranges and torque values were performed with metal mandrel. The clamping range can vary by using cables with different manufacturing tolerances and material properties. Please use a suitable combination of seals in the intermediate area, so that the cap nut can be tightened in future maintenance work on the cable entry.

Empty weight:	
Control unit GHG 432	approx. 0.47 kg
Control unit GHG 434	approx. 0.70 kg
Test torques:	
Cover screws	2.00 Nm
⚠ Enclosure material:	
Identification letter "Mat.: A"	impact resistant polyamide < 10^9 Ω
Identification letter "Mat.: B" and "Mat.: C"	impact resistant polyamide > 10^9 Ω

Contact arrangement
Actuator GHG41.11..R....; 1 x 4 pole



Actuator GHG41.11..R....; 2 x 2 pole



1.2 Actuator, switch and potentiometer general

EU-Type Examination Certificate:	IBExU14ATEX1030U		
Marking acc. to 2014/34/EU			
and standard of series EN 60079:	Ⓔx II 2 G Ex db eb IIC/IIB/IIB+H2 Gb		
	Ⓔx I M 2 Ex db eb I Mb		
IECEx type examination certificate:	IECEx IBE 14.0005U		
Category of application			
standard of series IEC 60079:	Ex db eb IIC/IIB/IIB+H2 Gb		
	Ex db eb I Mb		
Ambient temperature range:			
Ⓔx II 2 G ... IIC	-55 °C		+55 °C
Ⓔx II 2 G ... IIB	-60 °C		+55 °C
Ⓔx II 2 G ... IIB+H2	-55 °C		+55 °C
Operating temperature:			
Ⓔx II 2 G ... IIC	-55 °C	...	+80 °C
Ⓔx II 2 G ... IIB	-60 °C	...	+80 °C
Ⓔx II 2 G ... IIB+H2	-55 °C	...	+80 °C
Degree of protection to EN/IEC 60529			
pushbutton DRT:	IP 66		(installed condition)
double pushbutton DDT:	IP 66		(installed condition)
key-operated pushbutton SLT:	IP 66		(installed condition)
operated switch SLS	IP 66		(installed condition)
mushroom-head pushbutton SGTE, SGT	IP 66		(installed condition)
Mini-control switch SCT	IP 66		(installed condition)

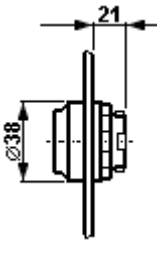
1.2.1 Actuator GHG41.11..R....; 2 pole for push button, Mushroom head p.b., switch and Key-operated pushbutton

1.2.2 Actuator GHG41.11..R....; 4 pole for push button, Mushroom head p.b., switch and Key-operated pushbutton

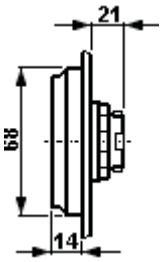
Rated voltage:		up to 500 V				
Rated current	Rated supply terminal	Permissible ambient temperature max.				
14 A	2.5 mm²	40 °C				
16 A	4.0 mm² single wire	40 °C				
12 A	2.5 mm²	50 °C				
15 A	4.0 mm² single wire	50 °C				
Switching capacity acc. to AC 15	(EN 60947-5-1):	250 V /	6 A	500 V /	4,0 A	
Switching capacity acc. to DC 13	(EN 60947-5-1):	24 V /	6 A	60 V /	0,8 A	110 V / 0,5 A
with gold-tipped contacts:		max. 400 mA				
Supply terminal:		1x / 2x 0.5- 2.5 mm²;				
		1 x 4.0 mm² single wire				
Test torques:		2.5 Nm				
Weight:	2 pole	approx. 0.15 kg				
	4 pole	approx. 0.35 kg				

Dimensions drawings actuator and indicator elements

Dimensions in mm



Puschbutton actuator



Double pushbutton actuator

Contact arrangements



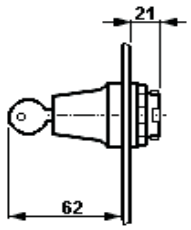
2 NC



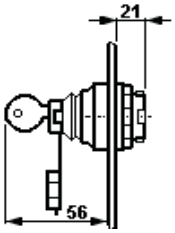
2 NO



1 NO + 1NC



Key-operated switch actuator



Key-operated pushbutton actuator



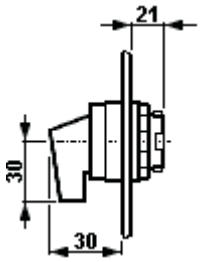
2 NC



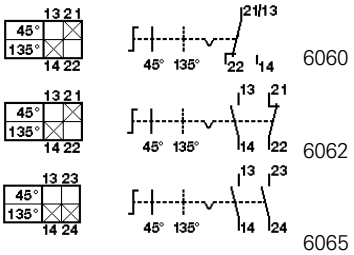
2 NO

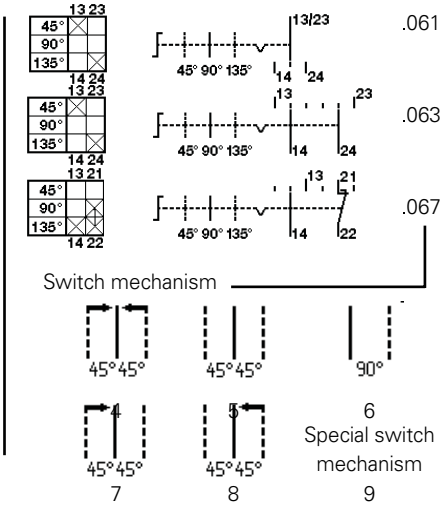


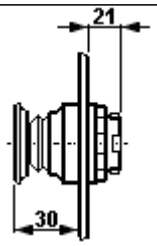
1 NO + 1NC



Circuity Code







Mushroom-head pushbutton actuator "EMERGENCY STOP"



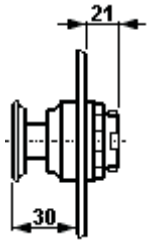
2 NC



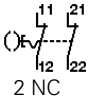
2 NO



1 NO + 1 NC



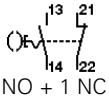
Mushroom-head pushbutton actuator
X = fixing dimensions



2 NC



2 NO

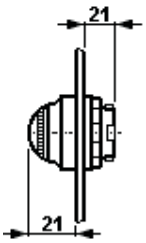


1 NO + 1 NC

Dimensions in mm

1.2.3 Potentiometer GHG41.16..R...;

Rated voltage:	up to 250 V	
Rating:	1 W	
Turning range:	270°	
Scale:	0- 100 %	
Supply terminal/Test torques:	2 x 1.0- 2.5 mm²	2.5 Nm
Weight:	approx. 0.15 kg	

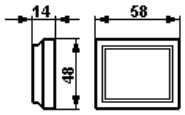


Front element of signal lamp

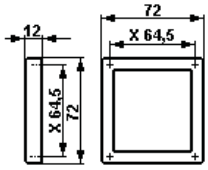
1.3 Signallamp GHG417 1805 R...;

EC-Type Examination Certificate:		IBExU 12ATEX 1047 U			
Marking acc. to 2014/34/EU and standard of series EN 60079:		Ⓔx II 2 G Ex db eb IIC Gb Ⓔx II 2 G Ex db ia IIC Gb			
IECEx type examination certificate:		IECEx IBE 13.0031U			
Category of application standard of series IEC 60079:		Ex db eb IIC Gb Ex db ia IIC Gb			
Permissible operating temperature range:		-55 °C ... +80 °C			
Max. service temperature		+80 °C			
(Other temperatures possible with special versions)					
Rated voltage /Rated current:					
	"e" increased safety (Ex db eb)	20 V	... 254 V	AC/DC	4 ... 15 mA
	"e" increased safety (Ex db eb)	12 V	... 24 V	AC/DC	max. 24 mA
	"i" intrinsically safe version (Ex db ia)	10 V	... 30 V	DC	max. 38.7 mA
Ex-i Datas:	U i	30 V			
	I i	100 mA			
	Ci	0			
	Li	0			
	Pi	750 mW			
Supply terminal:		1x / 2x 0.5- 2.5 mm²; 1 x 4.0 mm² solid			
Test torques:		2.5 Nm			
Weight:		approx. 0.15 kg			

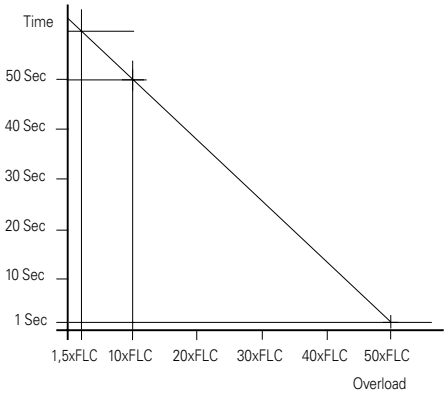
Dimensions of actuator elements



Glass for measuring instrument AM 45



Glass for measuring instrument AM 72



X = fixing dimensions

Dimensions in mm

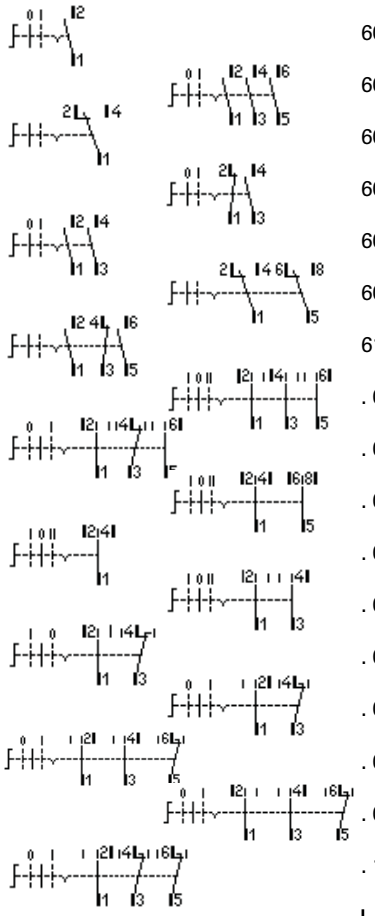
1.4 AM45 / AM72 measuring instrument GHG410 98.. (1) R....

EU-Type Examination Certificate:		BVS 14 ATEX E 125U	
Marking acc. to 2014/34/EU and standard of series EN 60079:			
(1) Moving iron	01 = VM 45 08 = VM 72	⟨Ex⟩ II 2 G	Ex eb mb IIC Gb
	02 = AM 45 09 = AM 72	⟨Ex⟩ II 2 G	Ex eb IIC Gb / Ex eb mb IIC Gb
(1) Moving coil	20 = AM 45 21 = AM 72	⟨Ex⟩ II 2 G	Ex ib IIC Gb
IECEx type examination certificate:		IECEx BVS 14.0082U	
Category of application to standard of series IEC 60079:			
(1) Moving iron	01 = VM 45 08 = VM 72	Ex eb mb IIC Gb	
	02 = AM 45 09 = AM 72	Ex eb IIC Gb / Ex eb mb IIC Gb	
(1) Moving coil	20 = AM 45 21 = AM 72	Ex ib IIC Gb	
Operating temperature:		-55 °C ... +80 °C	
Perm. ambient temperature packing:		-55 °C ... +80 °C	
Degree of protection to EN/IEC 60529:		IP 66 (installed condition)	
Rated voltage:		to max. 500 V	

		Moving iron	Moving coil
Measuring accuracy:		class 2.5	class 1.5
Overload range:		10- fold - 25 sec.	10- fold -5 sec.
		25- fold - 4 sec.	
		50- fold - 1 sec.	
		telltale 1:1.5	
Special versions with 1:2; 1:5; 1:6 and 1:8 are possible for c.t.-versions			
Measuring range:	AM:	n / 1A; 5 A; 10 A	0 - 20 mA
		0 - 16 A / 25 A direct	4 - 24 mA
	VM45:	6- 250 V	
	VM72:	6- 500 V	
Power consumption:			
	VM45:	0.91 - 1.76 VA	
	VM72:	0.91 - 2.65 VA	
Coil:			26.5 turns
Internal resistance:			2.5 Ohm +- 30%
Li:			max. 0.1 mH
Ci:			max. 0.1 nF
Ui:			max. 30 V
I i :			max. 150 mA
Supply terminals:		1x / 2 x 1.5- 2.5 mm²	fine- / multi wire
		1 x 4.0 mm²	solid wire
Test torques:		2.5 Nm	
Weight:	AM/VM 45:	appox. 0.35 Kg	
	AM/VM 72:	approx. 0.40 Kg	

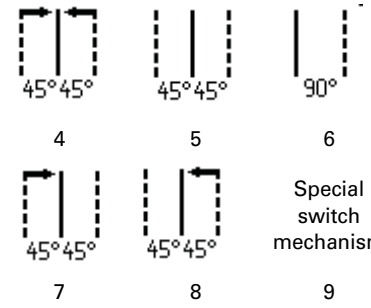
Contact arrangement Code

Ex 23 control switch



6011
6019
6060
6062
6065
6033
6170
. 021
. 023
. 024
. 061
. 063
. 066
. 067
. 049
. 037
. 191

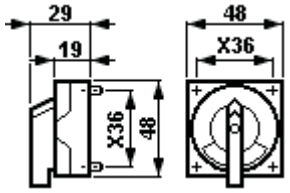
Switch mechanism



4 5 6

Special switch mechanism

7 8 9



Switch actuator Ex 23

1.5 Ex 23 control switch; GHG238 ....R....

EU-Type Examination Certificate:		BVS 13 ATEX E 107U			
Marking acc. to 2014/34/EU and standard of series EN 60079:		⟨Ex⟩ II 2 G Ex db eb IIB Gb ⟨Ex⟩ II 2 G Ex db eb IIC Gb ⟨Ex⟩ II 2 G Ex db ia/ib IIB Gb ⟨Ex⟩ II 2 G Ex db ia/ib IIC Gb ⟨Ex⟩ II 2 G Ex db eb I Mb			
IECEx type examination certificate:		IECEx BVS 13.0108U			
Category of application standard of series IEC 60079:		Ex db eb IIB Gb Ex db eb IIC Gb Ex db ia/ib IIB Gb Ex db ia/ib IIC Gb Ex db eb I Mb			
Operating temperature:	(IIB)	-60 °C	...	+80 °C	
	(IIC)	-55 °C	...	+80 °C	
Tested ambient temperature range:	(IIB)	-60 °C	...	+55 °C	
	(IIC)	-55 °C	...	+55 °C	
Degree of protection to EN/IEC 60529:		IP 66		(installed condition)	
Rated voltage:		to max.500 V			
Rated current:		10 A			
Switching capacity acc. to AC 15	(EN 60947-5-1):	230 V / 6.0 A		400 V / 6,0 A	
Switching capacity acc. to DC 13	(EN 60947-5-1):	24 V / 6.0 A		230 V / 0,4 A	
Perm. short-circuit back-up fuse:		16 A/gG to 500 V			
Design with gold-tipped contacts:		to max. 400 mA			
Supply terminals:		1x / 2x 0.5- 2.5 mm²;			
Test torques supply terminals:		2.0 Nm			
Weight:		1 level		2 levels	
		approx. 0.20 kg		approx. 0.35 kg	

1.6 Terminal block

ATEX certificate:		SEV 13 ATEX 0178 U
Marking acc. to 2014/34/EU and standard:		
	EN 60079-0	⟨Ex⟩ II 2 G Ex eb IIC
IECEx certificate:		IECEx SEV 13.0012 U
Category of application:	IEC60079-0	Ex eb IIC
Type of terminal:		6 x MUT 4
Rated voltage:		up to 352 V
Conductor cross-section:		2 x 0.2- 4.0 mm²
Test torques:		0.6- 0.8 Nm
Weight:		approx. 0.08 kg

1.7 Intrinsically safe circuits:

Intrinsically safe circuits: Max. safe voltage U_m:	690 V_{eff}
	Safe galvanic isolation from all other circuits and earth

X = fixing dimensions

2 Safety instructions

Target group:
For skilled electricians and suitable qualified, instructed personnel in accordance with national legislation, including the relevant standards and, where applicable, in acc. with IEC/EN 60079-14 on electrical apparatus for explosive atmospheres.

The control units GHG 432 and GHG 434. are not suited for use in Zone0 and Zone 20.

The requirements of the IEC/EN 60079-31 regarding excessive dust deposits and temperature to be considered from the user.

The temperature class and type of protection stated on the apparatus shall be observed.

Modifications or changes to the control units are not permitted.

They shall be used for their intended purpose and shall be in a perfect and clean state.

Prior to being put into operation, the control units shall be checked in accordance with the instructions as per section 6.

The national safety rules and regulations for the prevention of accidents, as well as the safety instructions included in these operating instructions, that, like this text, are set in italics, shall be observed!

3 Conformity with standards

The control units are conform to the standards specified in the Declaration of conformity, enclosed separately.

References to standards and directives in these operating instructions always relate to the latest version. Other additions (e.g. details relating to the year) shall be observed.

Fig. 1 Measuring instruments AM/VM72 and AM/VM45 for c.t. connection n/1A

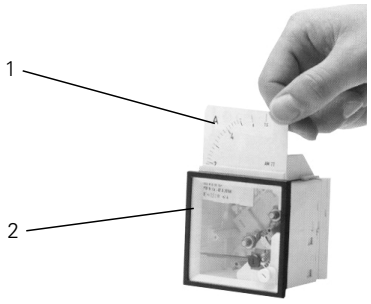
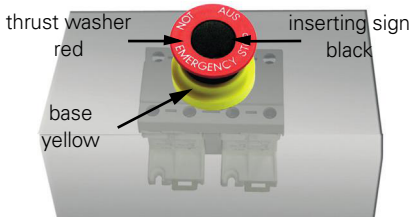


Fig. 2 Mushroom-head pushbutton actuator "EMERGENCY STOP" GHG 410 1437R....



4 Field of application

The control units are intended for use in potentially explosive atmospheres in zones 1, 2 and zones 21, 22 in accordance with IEC/EN 60079-10-1 and IEC/EN 60079-10-2.

The enclosure materials used, including any external metal parts, are high quality materials that ensure a corrosion resistance and resistance to chemical substances according to the requirements for use in a "normal industrial atmosphere"

– impact resistant polyamide
– special steel AISI 316 L.

In case of use in an extremely aggressive atmosphere, please refer to manufacturer.

5 Application / Properties

The control units GHG 432 and 434 are intended for the local control of electrical installations in potentially explosive atmospheres. The units are fitted with built-in components according to the respective application.

Specially marked special versions of the control units can be used in "intrinsically safe circuits".

Where required, the bases are fitted with 0.6 W resistors, fine-wire fuses and diodes (max. power dissipation 1 W).

The electrical limiting values that are decisive for the intrinsic safety shall be observed.

The version with gold-tipped contacts is suited for switching extra-low voltage circuits. Special attention shall be paid to the maximum current load (see "Technical data", pages 12 and 13). The contact chamber of the gold-tipped version is marked with the letter "G" or colour-coded.

To ensure a safe and reliable disconnection, the normally closed contacts are designed as compulsory opening contacts.

When the switch collar of small control switches is cut out at the respective locking position, they can be padlocked (padlock shackle Ø up to 5 mm).

Ex 23 control switch actuator elements shall be provided with a drilled hole, Ø 5.5 mm, at the respective position on the switch collar and can then be padlocked as described above.

Fig. 1:
The measuring instruments AM 72 and AM 45 are used for the local indication of electrical values. See "Technical data" for details of measuring mechanism, accuracy and connection.

With measuring instruments for c.t. connection n/1A (Fig. 1, item 2) the interchangeable scales can be exchanged via a flap on the upper part of the measuring instrument (Fig. 1, item 1).

Fig. 2:
The 4 pole pushbutton contact can be added with the standard CCH actuators.

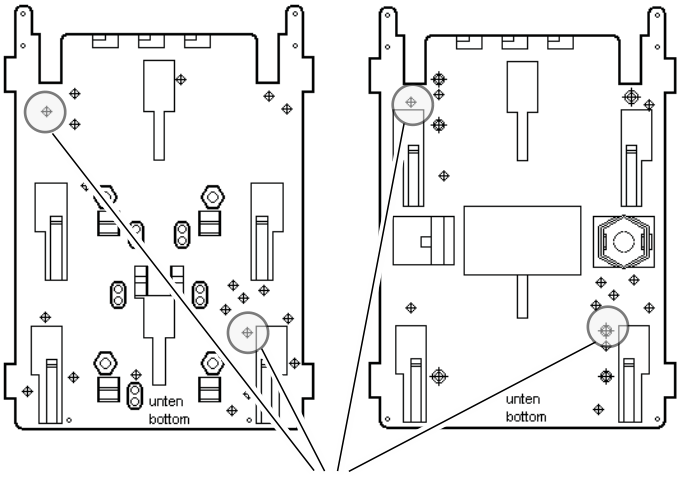
If the 4 pole pushbutton contact is added with an Emergency STOP Mushroom-head pushbutton actuator, then you have to use the actuators with CCH order number GHG 410 1437R.
This actuators can be recognize by the red thrust washer and black inserting sign.

Fig. 3 Mounting plates size

Fastening holes of apparatus mounting plates size 2

Apparatus mounting plate
for trellis and wall mounting

Apparatus mounting plate
for pipe mounting

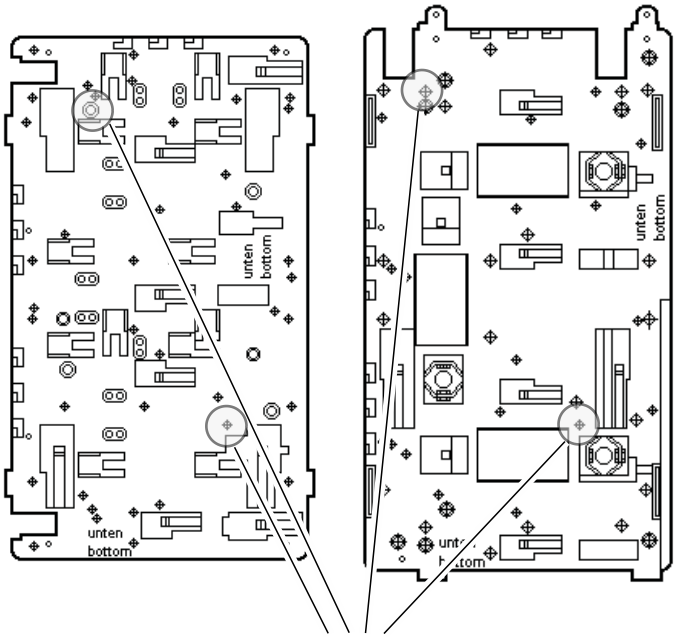


Fastening
holes for
control unit
GHG 432

Befestigungslöcher auf Gerätehalter Größe 3

Apparatus mounting plate
for trellis and wall mounting

Apparatus mounting plate
for pipe mounting



Fastening
holes for
control unit
GHG 434

The data according to sections 3 and 4 shall be taken into account during use.

Applications other than those described are not permissible without a written declaration of consent from Messrs. Cooper Crouse-Hinds / EATON .

During operation the instructions stated in section 7 of the operating instructions shall be observed.

The sole responsibility with respect to the suitability and proper use of the control switches with regard to the basic requirements of these instructions (see "Technical data") lies with the operator.

6 Installation

The relevant national regulations(e.g. Betr.Si.V, the equipment safety law for Germany) and the generally recognized rules of engineering apply for the installation and operation
(IEC/EN 60079-14).

The improper installation and operation of control units may result in the invalidation of the guarantee.

6.1 Mounting

The control units GHG 43. can be mounted without opening the enclosure.

When the control units are mounted directly onto the wall, they shall rest evenly only on the fastening points provided for this purpose.

The screw chosen shall fit the fixing hole (see dimensional drawings) and shall not damage the hole (e.g. use of a washer).

The apparatus shall be fixed diagonally with a minimum of 2 screws.

If the screws are overtightened, the apparatus may be damaged.

Fig. 3:
The control units GHG 432 and GHG 434 are suited for mounting on Cooper Crouse-Hinds / EATON apparatus holders by means of self-cutting screws.

See the respective mounting instructions.

6.2 Opening apparatus/ Electrical connection

Before opening the apparatus, it is necessary to ensure that there is no voltage or to take suitable protective measures.

The electrical connection of the may only be carried out by specialists (IEC/EN 60079-14).

The properly bared conductors of cables shall be connected with due regard to the respective regulations.

To maintain the explosion protection, conductors shall be connected with special care.

The insulation shall reach up to the terminal. The conductor itself shall not be damaged.

In the case of mixed Ex-e / Ex-i installations, the required minimum clearances shall be maintained (see, for example, IEC/EN 60079-11).

When apparatus is open, it is necessary to ensure (disconnect voltage supply) that no voltage is carried over into the connected intrinsically safe circuits.

The minimum and maximum conductor cross sections that can be connected shall be observed (see technical data).

All screws and/or nuts of connection terminals, including those not in use, shall be tightened down securely.

The standard terminals are designed for the direct connection of conductors with copper wires.

The circuit diagram of the built-in components is shown on the components or attached to them, or it is shown in the operating instructions.

If, to facilitate wiring, the built-in components
(AM 72 and AM 45 measuring instruments, pushbutton contact block, signal lamp bases, control switch contact blocks, potentiometer bases, etc.) are snapped off the rail on the bottom of the enclosure, the components shall be snapped back properly into the same notch on the rail.

To snap off components (including the measuring instruments AM 72 and AM 45), pull the hooks outwards to release them.

Switching at the switch shaft of the switch contact block Ex 23 when the enclosure is open is not permitted. (to ensure that the switch can be closed again correctly).

Warning: the engaging positions of the built-in components shall matches the notches on the rail!

The installation instructions for intrinsically safe electrical apparatus shall be observed.

It is necessary to ensure that the permissible external capacitance and inductance of the special intrinsically safe circuits are not exceeded.

! In the case of building up the electrical equipment in the "protective insulation" version, appropriate sticker
(▢) GHG 905 1002 P0005 can be requested by the manufacturer.

! If the inserted terminal rail is not equipped completely with line-up terminals, the terminal rail must be included in the equipotential earth connection also.

6.3 Cable entries (KLE); blanking plugs

Generally only certified cable entries and blanking plugs may be used.

Flexible cables shall be used with trumpet-shaped cable glands or other suitable entries with additional pull relief.

When using cable entries with a degree of protection that is lower than the IP protection of the apparatus, the degree of IP protection for the complete unit is reduced (see Technical Data).

The relevant mounting directives for cables entries being used shall be observed.

Intrinsically safe circuits shall be fed through cable entries that are colour-coded (light blue).

In order to ensure the minimum degree of protection, any unused entry holes shall be sealed with certified blanking plugs.

When fitting cable entries, care has to be taken that the sealing inserts are suitable for the cable diameter.

In the case of sealing inserts that are cut out, it is necessary to ensure that the insert is properly adapted to the cable diameter.

In order to ensure the required minimum degree of protection, the cable entries shall be tightened down securely.

Overtightening can impair the degree of protection.

Warning: When tightening the cap nut of the metal cable entry (e.g. type ADE; ADL), a suitable tool shall be used to safeguard the gland against twisting.

Any unused metric Cooper Crouse-Hinds / EATON cable entries shall be sealed with the blanking plug certified for these metric cable entries.

6.4 Flange and metal plates*

If flange plates have to be dismantled, (e.g. to drill entry holes), when replacing the plates, in order to maintain the minimum degree of protection, it is necessary to ensure that the flange plate and the fixing clamp fit correctly.

PE conductors fed from outside shall be connected to the PE terminal provided on the flange. the maximum terminal cross section is 6 mm².

Warning: Metal flanges, metal plates and metal glands shall be incorporated in the potential equalization.

* not yet certified for category II D

6.5 Closing apparatus / Cover closure

When fitting the enclosure cover onto the base, it is necessary to ensure that the actuator elements correspond correctly with the built-in components and that the enclosure cover for the respective base is being used.

Any foreign matter shall be removed from the apparatus.

To ensure the required minimum degree of protection, the cover screws shall be tightened down.

Overtightening may impair the degree of protection.

6.6 Putting into operation

Before putting the apparatus into operation, the tests specified in the individual national regulations shall be performed.

In addition to this, before being put into ope-ration, the correct functioning of the apparatus and of the built-in components (measuring instruments, signal lamps, pushbuttons, etc.) shall be checked in accordance with these operating instructions and other applicable regulations.

The zero setting of the measuring instrument needle shall be checked before putting it into operation. If necessary, the measuring instrument needle shall be set to zero using the adjustment screw.

The gas group (IIB or IIC) of the intrinsically safe circuit shall be taken into consideration for the evaluation of the gas group of the built-in components.

The improper operation of control units may result in the invalidation of the guarantee.

7 Maintenance / Servicing

The valid national regulations for the servicing / maintenance of electrical apparatus for use in potentially explosive atmospheres shall be observed (IEC/EN 60079-17).

Prior to opening the enclosure, it is necessary to ensure that the voltage supply has been isolated or to take suitable protective measures.

Working with live circuits is permissible for intrinsically safe circuits.

The necessary intervals between servicing depend upon the specific application and shall be stipulated by the operator according to the respective operating conditions.

During servicing, above all, the parts on which the explosion protection depend and function, (e.g. intactness of the flameproof components, the enclosure, the seals and cable entries), the switch mechanism function of the control switch, efficacyof the gaskets and the cable entries and tight fit of all screws shall be checked.

If, in the course of servicing, it is ascertained, that repairs are necessary, section 8 of these operating instructions shall be observed.

Cleaning:

Apparatus marked "Mat.: B" or "Mat.: C" on the type lable have to be cleaned as follows:

Because of the risk of an electrostatic charge, the junction boxes shall only be cleaned with a damp, non fibrous cloth or sponge!

8 Repairs / Overhaul / Modification

Only original Cooper Crouse-Hinds / EATON parts shall be used for carrying out repairs.

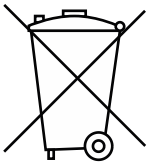
In the event of damage to the flameproof encapsulation, replacement of these components is mandatory. In case of doubt, the respective apparatus shall be sent to Cooper Crouse-Hinds / EATON for repair.

Repairs that affect the explosion protection may only be carried out by Cooper Crouse-Hinds / EATON or by a qualified electrician in compliance with the respective national regulations (IEC/EN 60079-19).

Apparatus modifications or design changes are not permitted; excepted from this is the fitting of additional cable entries within the scope of the apparatus approvals or acc. to the instructions given by the manufacturer.

When replacing individual built-in components (pushbuttons, etc.) section 6.2 "Opening apparatus / Electrical connection" shall be observed.

9 Disposal / Recycling

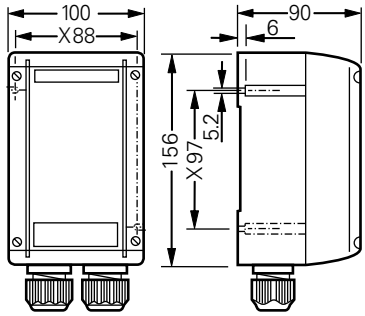


When the apparatus is disposed of, the respective national regulations on waste disposal will have to be observed.

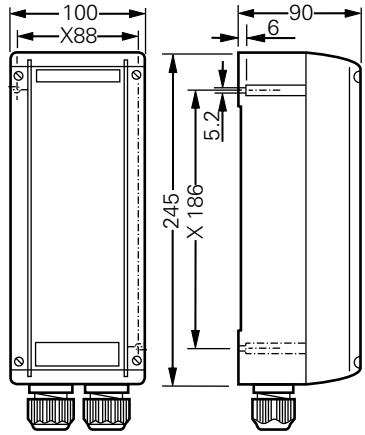
In case of disposal you can obtain additional information from your Cooper Crouse-Hinds /EATON branch.

Subject to modifications or supplement of the product range.

Dimensions en mm



GHG 432



GHG 434

X = dimensions de fixation

1 Caractéristiques techniques

1.1 Boites de commande complete

Attestation d'examen UE de type:		BVS 22 ATEX E 032 X
Marquage selon 2014/34/UE et directive:		
	EN 60079-0	Ⓔx II 2 G Ex eb * IIC / IIB+H_2 / IIB T6/T5 Gb
		Ⓔx II 2 D Ex tb IIIC T80 °C Db
IECEx Certificat de Conformité:		IECEx BVS 22.0029X
Marquage selon:		
	IEC60079-0	Ex eb * IIC / IIB+H_2 / IIB T6/T5 Gb Ex tb IIIC T80 °C Db

* = le marquage est complété ou élargi en fonction des composants Ex utilisés ou des accessoires de logement utilisés (par exemple. db, mb, ia, ib, ...).

Tension nominale:	jusqu'à 690 V
Courant nominal:	16 A au maxi
Température ambiante admissible et Temp. de stockage dans l'emballage original:	-20 °C ... +40 °C (modèles de liste)
Température ambiante approuvée: (D'autres températures possibles avec des modèles spéciaux.)	-40 °C ... +55 °C

Courant nominal / température

courant nominal	Borne de raccordement:	housse de protection	Tamb ≤ +40 °C	+40 °C ≤ Tamb ≤ +55 °C
6 A			T6	T6
10 A	1,5 mm²	1,5 mm²	T6	T5 (T6 bis T_{amb}=+54°C)
16 A			n/a	n/a
6 A			T6	T6
10 A	2,5 mm²	2,5 mm²	T6	T6
16 A			T6	T6/T5*[1]
6 A			T6	T6
10 A	4 mm²	4 mm²	T6	T6
16 A			T6	T5

*[1] uniquement avec KLE adapté et câbles avec une plage de température de service étendue

Indice de protection selon EN/IEC 60529:	IP 66 (standard catalogue)
Classe d'isolation selon EN/IEC 61140:	I – avec plaque métalique
	II – est remplie par les boites de bornes d'éclairage
Borne PE:	2 x 4 mm²
Bornes de connexion:	voir Composants
Entrées de câble (standard catalogue):	2 x M25 (1 x M25; 1 x avec bouchon de fermeture)

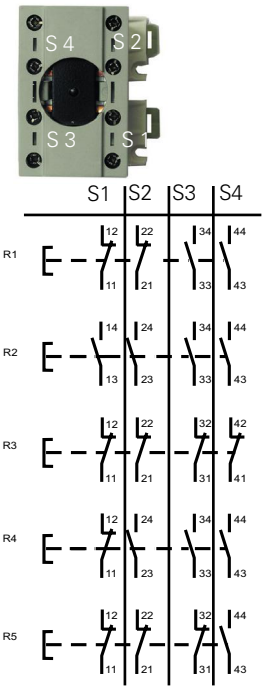
câbles appropriés et couples d'essai de la vis de pression

Entrée de câble			M12	M16	M20	M25	M32
Garniture 1+2+3 (Ø mm / Nm)	1 2 3	min.				8,0 / 1,5	
		max. (1)				10,0 / 2,0	
Garniture 1+2 (Ø mm / Nm)	1 2	min.		5,5 / 1,0	7,0 / 1,5	10,0 / 2,3	14,0 / 3,0
		max. (1)		7,0 / 1,0	9,0 / 1,4	13,0 / 2,6	17,0 / 4,0
Garniture 1 (Ø mm / Nm)	1	min.	5,0 / 0,8	7,0 / 1,0	9,5 / 1,0	13,5 / 1,3	17,5 / 1,5
		max. (1)	7,0 / 1,0	10,0 / 1,4	13,0 / 1,7	17,5 / 2,3	21,0 / 1,3
Couple d' essai pour l'entrée de câble (Nm)			1,2	3,3	2,7	3,0	5,0

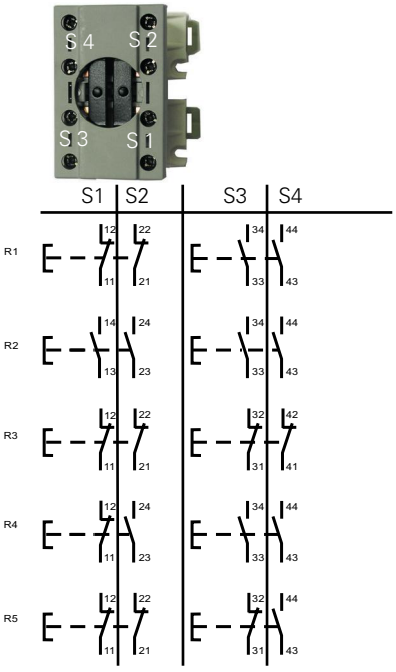
(1) Les tests des plages de serrage et les valeurs de couple de serrage ont été réalisés avec un mandrin métallique. La plage de serrage peut varier légèrement selon le type de câble et les propriétés des matériaux utilisés. Pour les plages de serrage intermédiaires, veuillez utiliser des garnitures d'étanchéité qui laisseront la possibilité de resserrer le chapeau du presse étoupe lors de futures opérations de maintenance.

Boite de commande GHG 432	env. 0,47 kg
Boite de commande GHG 434	env. 0,70 kg
Couples de serrage testés:	
Vis du couvercle	2,00 Nm
⚠ Matériau du boîtier:	
Lettre d'identification "Mat.: A"	polyamide anti-choc < 10^9 Ω
Lettre d'identification "Mat.: B" et "Mat.: C"	polyamide anti-choc > 10^9 Ω

Schémas de connexion GHG41.11..R....;
1 x 4 pole



Schémas de connexion GHG41.11..R.... ;
2 x 2 pole



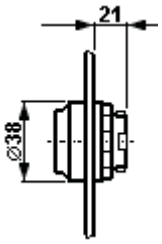
1.2 Modules général bouton-poussoir, interrupteur, potentiomètre

Attestation d'examen CE de type:		IBExU14ATEX1030U	
Marquage selon 2014/34/UE et directive:			
	EN 60079-0	Ⓔx II 2 G	Ex db eb IIC/IIB/IIB+H2 Gb
		Ⓔx I M 2	Ex db eb I Mb
IECEx Certificat de Conformité:		IECEx IBE 14.0005U	
Marquage selon:			
	IEC 60079-0	Ex db eb IIC/IIB/IIB+H2 Gb	
		Ex db eb I Mb	
Plage de température ambiante			
	Ⓔx II 2 G ... IIC	-55 °C	+55 °C
	Ⓔx II 2 G ... IIB	-60 °C	+55 °C
	Ⓔx II 2 G ... IIB+H2	-55 °C	+55 °C
Température de fonctionnement:			
	Ⓔx II 2 G ... IIC	-55 °C ...	+80 °C
	Ⓔx II 2 G ... IIB	-60 °C ...	+80 °C
	Ⓔx II 2 G ... IIB+H2	-55 °C ...	+80 °C
Indice de protection selon EN/CEI 60529			
bouton-poussoi DRT:		IP 66	(état installé)
double bouton-poussie DDT:		IP 66	(état installé)
key-operated pushbutton SLT:		IP 66	(état installé)
key-operated pushbutton SLT:		IP 66	(état installé)
operated switch SLS		IP 66	(état installé)
mushroom-head pushbutton SGTE, SGT		IP 66	(état installé)
Mini-control switch SCT		IP 66	(état installé)

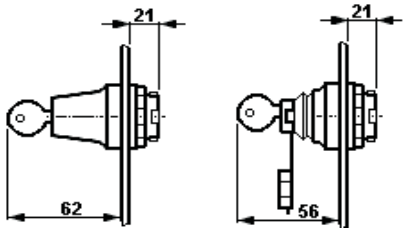
1.2.1 Bouton-poussoir GHG41.11. (état installé).R....; 2 pole et interrupteurer
1.2.2 Bouton-poussoir GHG41.11..R....; 4 pole et interrupteur

Tension nominale:		jusqu'à 500 V			
Courant nominal maxi	Borne de connexion	Température ambiante admissible maxi			
14 A	2,5 mm²	40 °C			
16 A	4,0 mm² rigide	40 °C			
12 A	2,5 mm²	50 °C			
15 A	4,0 mm² rigide	50 °C			
Puissance de coupure AC15	(EN 60947-5-1):	250 V / 6 A	500 V / 4,0 A		
Puissance de coupure DC13	(EN 60947-5-1):	24 V / 6 A	60 V / 0,8 A	110 V / 0,5 A	
Modèle à pointes de contact d'or:		400 mA au maxi			
Borne de raccordement:		1x / 2x 0,5- 2,5 mm²;;			
		1 x 4,0 mm² rigide			
Couples de serrage testés bornes de connexion:		2,5 Nm			
Poids:	2 pole	env. 0,15 kg			
	4 pole	env. 0,35 kg			

Dimensions des éléments de comman de et d'affichage

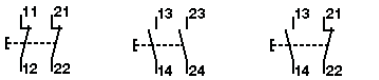


Face avant de-
bouton-poussoi

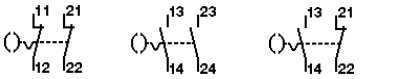


double bouton-poussier

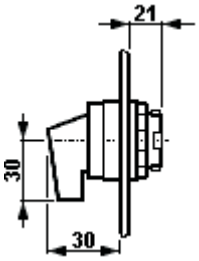
Schémas de connexion

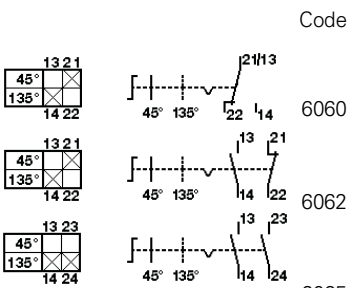


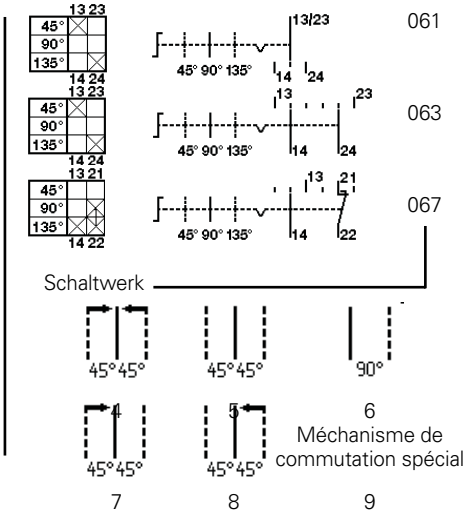
2 NF 2 NO 1 NO + 1NF



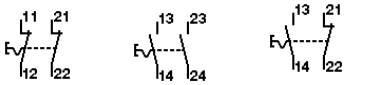
2 NF 2 NO 1 NO + 1 NF



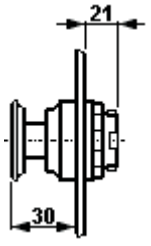


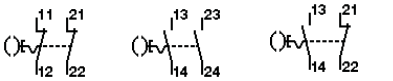






2 NF 2 NO 1 NO + 1 NF





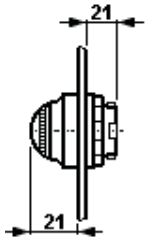
2 NF 2 NO 1 NO + 1 NF

Valeurs en mm

1.2.3 Potentiomètre GHG41.16..R...;

Tension nominale:	jusqu'à 250 V
Puissance:	1 W
Indice de protection selon EN/CEI 60529:	IP 66 (état installé)
Domaine de rotation:	270°
Echelle:	0- 100%
Borne de raccordement:	1x / 2x 0,5- 2,5 mm²;
Couples de serrage testés bornes de connexion:	2,5 Nm
Poids:	env. 0,15 kg

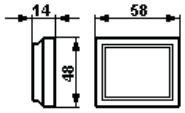
1.3 Lampe de signalisation GHG417 1805 R...



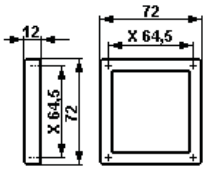
Lampe de signalisation

Attestation d'examen CE de type:		IBExU 12ATEX 1047 U			
Marquage selon 2014/34/UE					
et normes de la série EN 60079:		Ⓔx II 2 G Ex db eb IIC Gb Ⓔx II 2 G Ex db ia IIC Gb			
IECEx Certificat de Conformité:		IECEx IBE 13.0031U			
Marquage selon normes de la série IEC 60079:		Ex db eb IIC Gb Ex db ia IIC Gb			
Température ambiante admissible en fonctionnement:		-55 °C ...	+80 °C		
Max. température de service:		+80 °C			
(d'autres valeurs sont possibles avec des modèles spéciaux.)					
Tension nominale / courant nominal:					
	"e" une sécurité accrue (Ex db eb)	20 V ...	254 V	AC/DC	4 ... 15 mA
	"e" une sécurité accrue (Ex db eb)	12 V ...	24 V	AC/DC	max. 24 mA
	"i" version à sécurité intrinsèque (Ex db ia)	10 V ...	30 V	DC	max. 38,7mA
Données de Ex-i:	U i	30 V			
	I i	100 mA			
	Ci	0			
	Li	0			
	Pi	750 mW			
Borne de connexion:		1x / 2x 0,5- 2,5 mm²; 1 x 4,0 mm² rigide			
Couples de serrage testés bornes de connexion:		2,5 Nm			
Poids:		env. 0,15 kg			

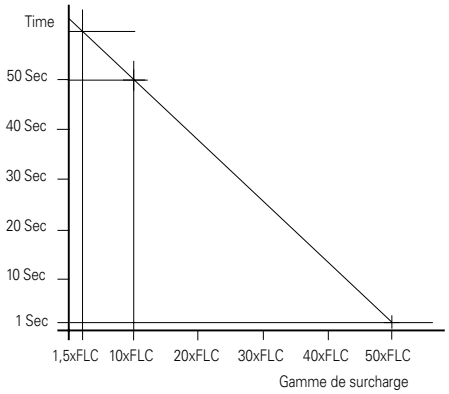
Dimensions des éléments de commande



Tête d'instrument de mesure AM 45



Tête d'instrument de mesure AM 72

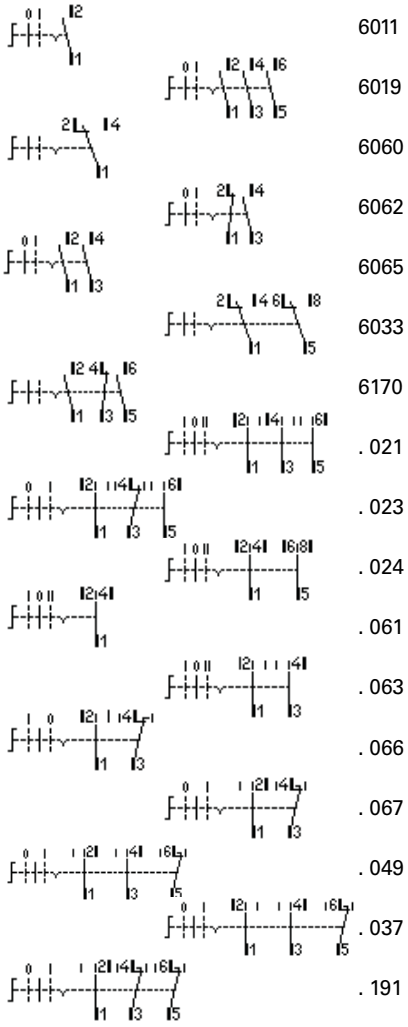


X = dimensions de fixation

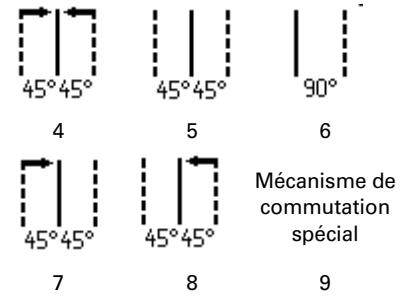
1.4 Instrument de mesure AM45 / AM72 GHG410 98.. [1] R....

Attestation d'examen CE de type:		BVS 14 ATEX E 125U	
Marquage selon 2014/34/UE et normes de la série EN 60079:			
[1] ferromagnétique	01 = VM 45 08 = VM 72	Ⓔx II 2 G Ex eb mb IIC Gb	
	02 = AM 45 09 = AM 72	Ⓔx II 2 G Ex eb IIC Gb / Ex eb mb IIC Gb	
[1] magnéto-électrique	20 = AM 45 21 = AM 72	Ⓔx II 2 G Ex ib IIC Gb	
IECEx Certificat de Conformité:		IECEx BVS 14.0082U	
Marquage selon normes de la série IEC 60079:			
[1] ferromagnétique	01 = VM 45 08 = VM 72	Ex eb mb IIC Gb	
	02 = AM 45 09 = AM 72	Ex eb IIC Gb / Ex eb mb IIC Gb	
[1] magnéto-électrique	20 = AM 45 21 = AM 72	Ex ib IIC Gb	
Température de fonctionnement:		-55 °C ... +80 °C	
Température de stockage dans l'emballage d'orgine:		-55 °C ... +80 °C	
Indice de protection selon EN/CEI 60529:		IP 66 (état installé)	
Tension nominale:		500 V au maxi	
		ferromagnétique	magnéto-électrique
Justesse:		Classe 2,5	Classe 1,5
Gamme de surcharge:		10- fois à - 25 sec.	10- fois à -5 sec.
		25- fois à - 4 sec.	
		50- fois à - 1 sec.	
		telltale 1:1,5	
Des versions spéciales avec 1:2 ; 1:5 ; 1:6 et 1:8 sont possibles pour les unités de transformateur d'intensité			
Etendue de mesure:	AM:	n / 1A; 5 A; 10 A	0 - 20 mA
		0 - 16 A / 25 A direct	4 - 24 mA
	VM45:	6- 250 V	
	VM72:	6- 500 V	
Consommaton d'énergie:			
	VM45:	0,91- 1,76 VA	
	VM72:	0,91- 2,65 VA	
Coil:			26,5 tours
Résistance interne:			2,5 Ohm +- 30%
Li:			max. 0,1 mH
Ci:			max. 0,1 nF
Ui:			max. 30 V
I i :			max. 150 mA
Borne de raccordement:		1x / 2x 0,5- 2,5 mm²	fine- / brin
		1 x 4,0 mm²	solide
Couples de serrage testés bornes de connexion:		2,5 Nm	
Poids	AM/VM 45:	appox. 0,35 Kg	
	AM/VM 72:	approx. 0,40 Kg	

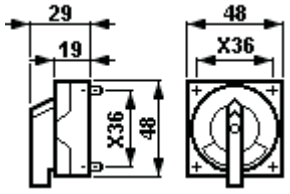
Schémas des connexions
Commutateur decommande
Ex 23/ Couplage



Mécanisme de commutation



Mécanisme de commutation spécial



Commutateur de commande
Ex 23; GHG238 ....R....

1.5 Commutateur de commande Ex 23; GHG238 ....R....

Attestation d'examen CE de type:	BVS 13 ATEX E 107U				
Marquage selon 2014/34/UE					
et normes de la série EN 60079:	Ⓔx II 2 G	Ex db eb IIB Gb			
	Ⓔx II 2 G	Ex db eb IIC Gb			
	Ⓔx II 2 G	Ex db ia/ib IIB Gb			
	Ⓔx II 2 G	Ex db ia/ib IIC Gb			
	Ⓔx II 2 G	Ex db eb I Mb			
IECEx Certificat de Conformité:	IECEx BVS 13.0108U				
Marquage selon					
normes de la série IEC 60079:	Ex db eb IIB Gb				
	Ex db eb IIC Gb				
	Ex db ia/ib IIB Gb				
	Ex db ia/ib IIC Gb				
	Ex db eb I Mb				
Température de fonctionnement: (IIB)	-60 °C	...	+80 °C		
(IIC)	-55 °C	...	+80 °C		
Plage de température ambiante testée: (IIB)	-60 °C	...	+55 °C		
(IIC)	-55 °C	...	+55 °C		
Température de stockage dans l'emballage d'orgine	-60 °C	...	+80 °C		
Indice de protection selon EN/CEI 60529:	IP 66		(état installé)		
Tension nominale:	au max.500 V				
Courant nominal maximum:	10 A				
Puissance de coupure AC 15 (EN 60947-5-1):	230 V /	6,0 A		400 V /	6,0 A
Puissance de coupure DC 13 (EN 60947-5-1):	24 V /	6,0 A		230 V /	0,4 A
Fusible de court-circuit adm. placé en amont:	16 A/gG to 500 V				
Modèle à pointes de contact d'or:	au. max. 400 mA				
Borne de raccordement:	1x / 2x 0,5- 2,5 mm²;				
Couples de serrage testés bornes de connexion:	2,0 Nm				
Poids:	1 étage		2 étages		
	env. 0,20 Kg		env. 0,35 Kg		

1.6 Bornier

ATEX Certificat:		SEV 13 ATEX 0178 U
Marquage selon 2014/34/UE et directive:		
	EN 60079-0	Ⓔx II 2 G Ex eb IIC
IECEx Certificat:		IECEx SEV 13.0012 U
Marquage selon:	IEC60079-0	Ex eb IIC
Type de borne:		6 x MUT 4
Tension nominale:		jusqu'à 352 V
Section transversale du conducteur:		2 x 0,2- 4,0 mm²
Couples de serrage testés bornes de connexion:		0,6- 0,8 Nm
Poids:		env. 0,08 kg

1.7 Circuit à sécurité intrinsèque

Tension maximale pour sécurité technique U_m:	690 V_{eff}
	isolation galvanique de tous les autres circuits à sécurité intrinsèque et de la terre

2 Consignes de sécurité

Groupe cible:
Pour les électriciens qualifiés et les personnels ayant reçu les formations adéquates, conformément à la législation nationale en vigueur et, si applicable, à la norme CEI/EN 60079-14 sur les installations électriques pour les atmosphères explosives.

Les boites de commande GHG 432 et GHG 434 ne conviennent pas à un emploi en zone 0.

Les exigences des CEI/EN 60079-31 en ce qui concerne des dépôts de poussière démesurés et une température doivent être considérées par l'utilisateur.

Il n'est pas permis de transformer ou de modifier les boites de commande.

Seuls des boites de commande intactes et parfaites devront être employées pour la fonction qui leur est dévolue.

Des réparations qui portent sur la protection contre l'explosion, ne devront être exécutées que par Cooper Crouse-Hinds / EATON ou par un électricien qualifié en conformité avec la règlementation nationale en vigueur.

Avant la mise en service, les boites de commande doivent être vérifiées selon l'instruction donnée dans la section 6.

Respectez les prescriptions nationales de sécurité et de prévoyance contre les accidents ainsi que les consignes de sécurité figurant en italique dans ce mode d'emploi.

3 Conformité avec les normes

Les Appareils sont conformes aux normes reprises dans la déclaration de conformité, jointe séparément.

Les références aux normes et directives dans cette notice se réfèrent toujours à la dernière version. Les suppléments éventuels doivent également être respectés.

Fig. 1 Instruments de mesure pour connexion au transformateur d'intensité n/1A; AM/VM72 et AM/VM45

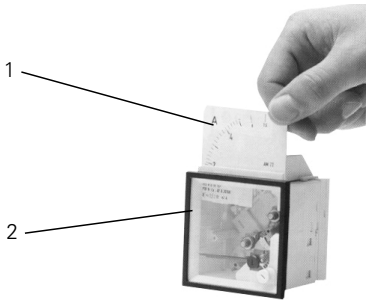
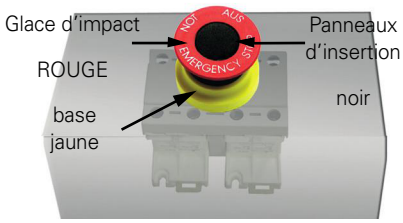


Fig. 2 Têtede bouton-poussoir à frapper GHG 410 1437R....



4 Domaine d'utilisation

Ces boites de commande comportant les composants décrits dans le chapitre Caractéristiques techniques répondent aux exigences d'une utilisation en atmosphère explosible, zones 1, 2 et 21, 22 selon la norme CEI/EN 60079-10-1 et CEI/EN 60079-10-2.

Pour l'enveloppe, et les pièces métalliques extérieures, des matières de qualité supérieure (polyamide anti-choc) qui assurent une protection appropriée contre la corrosion et une résistance aux agents chimiques en "atmosphère normale" ont été employées:

– polyamide anti-choc
– acier spécial AISI 316 L

En cas d'utilisation en atmosphère extrèmement corrosive, vous pouvez obtenir des informations complémentaires sur la résistance chimique des plastiques utilisés chez la succursale Cooper Crouse-Hinds de votre région.

5 Utilisation / Propriétés

Les boites de commande GHG 432 et GHG 434 servent à la commande sur place d'installations électriques en atmosphère explosive.
Selon de l'emploi spécifique et suivant le cas, les appareils seront dotés des composants encastrés appropriés.

Des modèles spéciaux de boites de commande conçus sur demande peuvent être employés dans des circuits à sécurité intrinsèque.

Suivant le cas, les socles sont aussi dotés de résistances de 0,6 W, de fusibles pour faible intensité et de diodes
(puissance dissipée de 1 W maxi).

Dans ce cas, les valeurs électriques limites de la sécurité intrinsèque sont à respecter.

Le modèle à pointes de contact or est employé pour la coupure de valeurs de tension peu élevées. La tension maximale admise doit être observée (voir Caractéristiques techniques). Ce modèle est reconnaissable au marquage "G" sur le socle.

Afin d'obtenir une déconnexion fiable, des contacts de rupture forcée ont été montés comme contacts normaux.

Si le collet de commutation des poignées est découpé à la position de verrouillage respective, il est possible de les cadenasser dans cette position (Ø de l'étrier jusqu'à 5 mm).

Les têtes du commutateur de commande Ex23 doivent être munies d'un perçage de 5,5 mm Ø sur leur collet de commutation et peuvent ainsi être bloquées avec un cadenas comme cité ci-dessus.

Fig. 1:
L'instrument de mesure AM 72 et AM 45 sert à l'indication sur place des grandeurs électriques. Le type du mécanisme de mesure, la justesse et le type de raccordement sont indiqués dans les caractéristiques techniques.

En cas d'instruments de mesure pour connexion au transformateur d'intensité n/1A (fig. 1, pos. 2), un volet disposé sur la partie supérieure de l'instrument de mesure permet d'échanger les echelles (fig. 1, pos. 1)

Fig. 2:
On peut actionner 4 bases de traceur de pression polige avec le type d'état CCH résolutions de contrôle.

Si 4 bases de traceur de pression polige avec un traceur d'impact la résolution doit être actionnée avec des mécanisme de verrouillage, cette résolution doit être équipée avec un mécanisme de verrouillage renforcée.

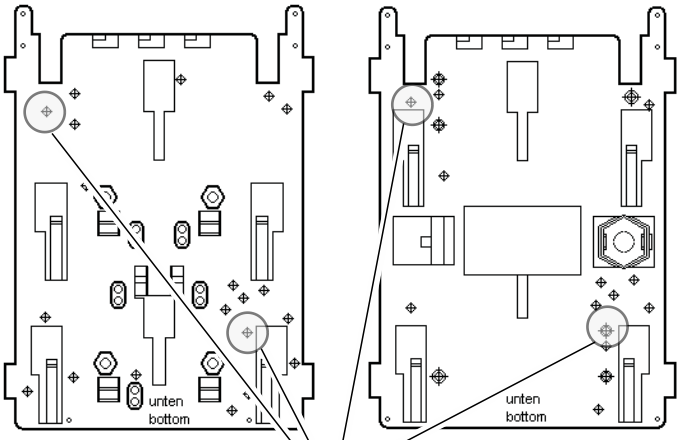
Cette résolution est à la glace d'impact rouge avec des panneaux d'insertion noirs de manière perceptible et p. ex. sous le CCH un numéro d'article GHG 410 1437R….

Fig. 3 Mounting plates size

Trous de fixation sur porte-appareils taille 2

Porte-appareil pour fixation au mur et au conduit de grille

Porte-appareil pour fixation aux tubes

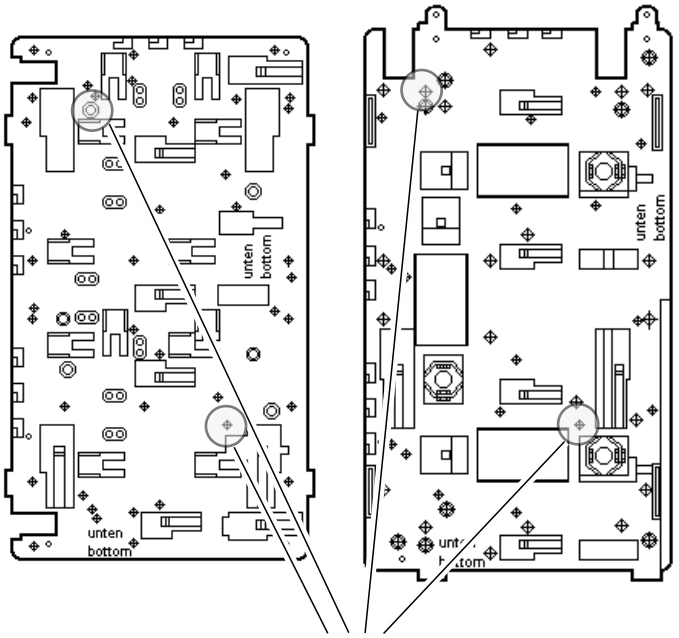


Trous de fixation pour boite de commande GHG 432

Trous de fixation sur porte-appareils taille 3

Porte-appareil pour fixation au mur et au conduit de grille

Porte-appareil pour fixation aux tubes



Trous de fixation pour boite de commande GHG 434

Pour l'emploi, les consignes des sections 3 et 4 devront être respectées.

Des emplois autres que ceux décrits ne sont admis qu'avec le consentement par écrit de la part de Cooper Crouse-Hinds / EATON .

Lors de l'exploitation, les instructions selon point 7 de ce mode d'emploi doivent être respectées.

Seul l'utilisateur est responsable de l'emploi comme prévu de cette boites de commande, en tenant compte des conditions générales existant dans l'établissement (voir Caractéristiques techniques).

6 Installation

Pour l'installation et l'exploitation de ces appareils, la règlementation nationale en vigueur (en Allemagne par ex. Betri.Si.V, loi de sécurité des appareils) ainsi que les règles de la technique généralement reconnues devront être respectées. (CEI/EN 60079-14)

L'installation incorrecte de ces boites à commande peut annuler la garantie.

6.1 Montage

Le montage des boites de commande GHG 43. peut se faire sans ouvrir l'enveloppe.

En cas de montage directement au mur, les boites de commande ne doivent reposer au niveau du mur que sur les points de fixation prévus.

La vis choisie doit être en rapport avec le pas de fixation (voir plan coté).

Elle ne doit pas avarier lepas devis (par ex. emploi d'une rondelle).

Si les vis sont forcées, l'appareil peut être endommagé.

Les boites de commande GHG 432 et GHG 434 peuvent être montées sur des porte-appareils Cooper Crouse-Hinds / EATON au moyen de vis autotaraudeuses.

Les instructions respectives pour le montage devront être respectées.

6.2 Ouverture de l'appareil /Raccordement électrique

Avant ouverture des boîtiers, on s'assurera de la mise hors tension et de la prise de mesures de sécurité.

Le raccordement électrique de l'appareil ne doit se faire que par un personnel qualifié CEI/EN 60079-14).

En tenant compte des règlements respectifs, les conducteurs dûment dénudés des câbles sont raccordés.

Afin de maintenir le mode de protection, la connexion des conducteurs doit se faire très soigneusement.

L'isolation doit couvrir le conducteur jusqu'à la borne. Le conducteur lui-même ne doit pas être endommagé.

Si l'appareil comporte des composants Ex-i et Ex-e, les distances minimales requises sont à respecter (voir par ex. CEI/EN 60079-11).

On s'assurera qu'il n'y a aucun reste de tension dans les circuits à sécurité intrinsèque lorsque l'appareil est ouvert.

Les sections minimales et maximales admissibles des conducteurs doivent être respectées (voir caractéristiques techniques).

Toutes les vis et/ou écrous des bornes de connexion, aussi celles des bornes non utilisées, doivent être serrées à fond.

La borne standard installée au choix est prévue pour raccordement direct des conducteurs en cuivre.

Le schéma des connexions des composants encastrés est soit indiqué sur ceux-ci, soit joint à l'appareil. Il peut encore être exposé dans la notice d'utilisation.

En cas de boîtes de commande câblées, le schéma des connexions joint à l'appareil doit être respecté.

Si, pour faciliter le câblage, les composants encastrés (instrument de mesure AM 72 et AM 45, socle de bouton-poussoir, socle de lampe de signalisation, socle de commutateur de commande, socle de potentiomètre etc.) sont déchiquetés du profilé sur le cadre d'encastrement monté dans les boites de commande, les composants devront être correctement remis dans la position d'encliquetage correspondante sur le profilé du cadre d'encastrement.

Afin de faire décliqueter les composants (instruments de mesure AM72 et AM 45), les crochets à crans sont tirés vers l'extérieur pour les déverrouiller.

Il n'est pas permis de faire une opération de commutation sur l'axe du socle d'interrupteurs Ex 23 lorsque l'enveloppe est ouverte (afin de pouvoir refermer le commutateur correctement).

Attention: Les positions d'encliquetage des composants encastrés doivent correspondre aux encoches du profilé.

Les instructions pour le montage du matériel électrique à sécurité intrinsèque doivent être respectées.

Il faut assurer que la capacitance et l'inductance extérieures admissibles pour le circuit spécifique à sécurité intrinsèque ne soient pas dépassées.

! Si le moyen opérationnel est exporté dans la mise en oeuvre "protection d'isolation", l'autocollant correspondant (□) GHG 905 1002 P0005 peut être demandé pour le fabricant.

! Si le rail terminal inséré n'est pas équipé complètement avec des bornes de ligne, le rail terminal doit être inclus dans le raccordement équipotentiel de la terre également.

6.3 Entrées de câble / Bouchons de fermeture

Généralement, seuls des bouchons de fermeture et des entrées de câble certifiés doivent être utilisés. Pour des câbles flexibles il faudra utiliser des presse-étoupes en forme de trompette ou d'autres entrées appropriées avec décharge de traction supplémentaire.

Lorsque des entrées de câble avec un indice de protection IP inférieur à celui de la boîte à bornes sont employées, l'indice de protection IP de l'ensemble sera réduit.

Les directives pour le montage qui s'appliquent aux entrées de câble utilisées, doivent être respectées.

Pour les circuits à sécurité intrinsèque, seules les entrées de câble EX-i (reconnaissables à leur couleur bleu clair) devront être utilisées.

Des ouvertures d'entrée non utilisées doivent être fermées avec un bouchon de fermeture certifié pour établir l'indice de protection minimum.

Lors du montage des entrées de câble il faudra veiller à ce que des garnitures d'étanchéité correspondant au diamètre du câble soient utilisées.

En cas de garnitures qui doivent être coupées sur mesure, il faudra faire attention à ce que la garniture soit adaptée au diamètre du câble.

Les entrées de câble doivent être serrées à fond pour maintenir l'indice de protection minimum.

Au cas où elles seraient forcées, cela pourrait être nuisible à l'indice de protection.

Attention : Lors du serrage de l'écrou borgne de l'entrée de câble métallique (par ex. type ADE; ADL), on veillera à éviter toute distorsion en utilisant un outil approprié.

Toutes les entrées de câble métriques Cooper Crouse-Hinds / EATON non utilisées doivent être fermées avec un bouchon de fermeture certifié pour des entrées de câble métriques.

6.4 Plaques à brides*

Si les plaques à brides doivent être démontées (pour perçage d'entrées de câble, par exemple) il faudra veiller lors du montage au maintien de l'indice de protection en replaçant correctement la plaque ainsi que les brides de serrage.

Des conducteurs PE amenés de l'extérieur doivent être connectés à la borne PE prévue à cet effet sur la bride. La section maximale est de 6 mm²

Attention: les brides métalliques, les plaques de fond métalliques et les presse-étoupe métal-liques doivent être reliés au même potentiel.

* pour le moment, pas encore certifié Catégorie II D

6.5 Fermeture de l'appareil / Fermeture à couvercle

Lorsque le couvercle est posé sur l'enveloppe, il faut veiller à ce que les têtes de commande soient en concordance exacte avec les composants encastrés et que seul le couvercle appartenant à la partie inférieure de l'enveloppe soit utilisé.

Tout corps étranger doit être ôté de l'appareil.

Les vis de couvercle doivent être serrées à fond afin de maintenir l'indice de protection minimum.

Si les vis sont forcées, cela peut être nuisible à l'indice de protection.

6.6 Mise en service

Avant la mise en service de l'appareil, les vérifications spécifiées dans les règlements nationaux individuels devront être exécutées.

De plus, on vérifiera que son fonctionnement et son installation sont correcte de telle sorte à respecter les instructions de ce mode d'emploi et des autres règlements applicables

Avant la mise en service, le positionnement à zéro de l'aiguille devra être vérifié. Le cas échéant, on utilisera la vis de réglage.

La classification du gaz (II B ou II C) du circuit à sécurité intrinsèque est à prendre en compte pour le classement des composants encastrés.

L'utilisation incorrecte de ces boites à bornes peut annuler la garantie.

7 Maintien/Entretien

La règlementation nationale en vigueur pour le maintien et l'entretien du matériel électrique pour atmosphère explosive doit être respectée (CEI/EN 60079-17).

Avant d'ouvrir l'enveloppe, débrancher l'appareil ou prendre des mesures préventives appropriées.

En cas de circuits à sécurité intrinsèque, des travaux sont permis sous tension.

Les intervalles de service requis dépendent de l'emploi spécifique et devront donc être fixés par l'utilisateur en tenant compte des conditions d'utilisation.

Lors de l'entretien des commutateurs, surtout les composants qui sont essentiels à leur mode de protection contre l'explosion et function, doivent être vérifiés (par ex. intégrité des composants antidéflagrants et du boitier, efficacité des joints de couvercle et resserrement des entrées de câble, ajustement serré de toutes les vis) ainsi que le fonctionnement du mécanisme de commutation.

Si, lors d'un entretien, on constate que des travaux d'entretien sont nécessaires, il faudra suivre le point 8 de ce mode d'emploi.

Nettoyage:

Les appareils marqués "Mat. : B" ou "Mat. : C" sur la plaque signalétique doivent être nettoyés comme suit :

Vu le risque d' une charge électrostatique, le Boites de dérivation ne doit être nettoyé qu'avec un chiffon humide et non fibreux ou qu'avec une éponge!

8 Réparations/Remise en état

Des réparations ne doivent être exécutées qu'à l'aide des pièces de rechange d'origine Cooper Crouse-Hinds / EATON .

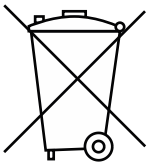
En cas de défauts sur l'enveloppe antidéfla-grante, seul un remplacement est admissible. Dans le doute, l'appareil défectueux devra être renvoyé à Cooper Crouse-Hinds / EATON pour réparation.

Des réparations qui portent sur la protection contre l'explosion, ne devront être exécutées que par COOPER CROUSE-HINDS / Cooper Crouse-Hinds / EATON ou par un électricien qualifié en conformité avec la règlementation nationale en vigueur (CEI/EN 60079-19).

Il n'est pas permis de transformer ou de modifier ces appareils, sauf pour le montage des entrées de câble supplémentaires en conformité avec leur homologation.

Pour remplacer des composants encastrés individuels (instrument de mesure, bouton-poussoir etc.), l'alinéa 6.2 "Ouverture de l'appareil/ Raccordement électrique" devra être respecté.

9 Évacuation des déchets/Recyclage



Lors de l'évacuation de ce matériel électrique, la règlementation nationale respective en vigueur devra être respectée.

En cas d'élimination, vous pouvez obtenir des informations supplémentaires auprès de votre branche Cooper Crouse-Hinds / EATON.

Sous réserve de modification ou de supplément de cette série de produits.

CZ: "Tento návod k použití si můžete vyžádat ve svém mateřském jazyce u příslušného zastoupení společnosti Cooper Crouse-Hinds/CEAG ve vaší zemi."

DK: "Montagevejledningen kan oversættes til andre EU-sprog og rekvireres hos Deres Cooper Crouse-Hinds/CEAG leverandør"

E: "En caso necesario podrá solicitar de su representante Cooper Crouse-Hinds/CEAG estas instrucciones de servicio en otro idioma de la Union Europea"

EST: "Seda kasutusjuhendit oma riigikeeles võite küsida oma riigis asuvast asjaomasest Cooper Crouse-Hindsi/CEAG esindusest."

FIN: "Tarvittaessa tämän käyttöohjeen käännös on saatavissa toisella EU:n kielellä Teidän Cooper Crouse-Hinds/CEAG - edustajaltanne"

GR: *Εαν χρειασθει, μεταφραση των οδηγιων χρησε ως σε αλλη γλωσσα της* EE, *μπορει να ζητηθει απο τον Αντιπροσωπο της* Cooper Crouse-Hinds/CEAG"

H: "A kezelési útmutatót az adott ország nyelvén a Cooper Crouse-Hinds/CEAG cég helyi képviseletén igényelheti meg."

I: "Se desiderate la traduzione del manuale operativo in un´altra lingua della Comunit à Europea potete richiederla al vostro rappresentante Cooper Crouse-Hinds/CEAG"

LT: Šios naudojimo instrukcijos, išverstos į Jūsu gimtąją kalbą, galite pareikalauti atsakingoje "Cooper Crouse-Hinds/CEAG" atstovybėje savo šalyje.

LV: "Šo ekspluatācijas instrukciju valsts valodā varat pieprasīt jūsu valsts atbildīgajā Cooper Crouse-Hinds/CEAG pārstāvniecībā."

M: Jistgħu jitolbu dan il-manwal fil-lingwa nazzjonali tagħhom mingħand ir-rappreżentant ta' Cooper Crouse Hinds/CEAG f'pajjiżhom.

NL: "Indien noodzakelijk kan de vertaling van deze gebruiksinstructie in een andere EU-taal worden opgevraagd bij Uw Cooper Crouse-Hinds/CEAG - vertegenwoordiging"

P: "Se for necessária a tradução destas instruções de operação para outro idioma da União Europeia, pode solicita-la junto do seu representante Cooper Crouse-Hinds/CEAG"

PL: Niniejszą instrukcję obsługi w odpowiedniej wersji językowej można zamówić w przedstawicielstwie firmy Cooper-Crouse-Hinds/CEAG na dany kraj.

S: "En översättning av denna montage- och skötselinstruktion till annat EU - språk kan vid behov beställas från Er Cooper Crouse-Hinds/CEAG- representant"

SK: "Tento návod na obsluhu Vám vo Vašom rodnom jazyku poskytne zastúpenie spoločnosti Cooper Crouse-Hinds/CEAG vo Vašej krajine."

SLO: "Navodila za uporabo v Vašem jeziku lahko zahtevate pri pristojnem zastopništvu podjetja Cooper Crouse-Hinds/CEAG v Vaši državi."

RUS: "При необходимости, вы можете запрашивать перевод данного руководства на другом языке ЕС или на русском от вашего Cooper Crouse-Хиндс / CEAG - представителей."

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Base Load Power Hub (BLPH)

FIRE AND GAS FIELD EQUIPMENT

INSTRUMENT DATA SHEETS

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ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

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Sign	Date
V. Barratta	25-10-2024

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02	10/10/2024	As Built (AB)	E. Balestri	M. Ossani	S. Montanari
01	08/07/2024	Accepted for Construction (AFC)	E. Balestri	M. Ossani	S. Montanari
00	30/05/2024	Issue for Review (IFR)	E. Balestri	M. Ossani	S. Montanari

FORES ENGINEERING

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15	GAS DETECTOR HYDROGEN Dräger Polytron® 8200 CAT DQ d S 4-20/HART®	X							
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POS.	TAG NUMBER	SERVICE
1	950-SDZ-04201	FZ-04 B-400 AMBIENT
2	950-SDZ-04202	FZ-04 B-400 AMBIENT
3	950-SDZ-04203	FZ-04 B-400 AMBIENT
4	950-SDZ-04207	FZ-04 B-300 AMBIENT
5	950-SDZ-04208	FZ-04 B-300 AMBIENT
6	950-SDZ-04209	FZ-04 B-300 AMBIENT
7	950-SDZ-04213	FZ-04 B-200 AMBIENT
8	950-SDZ-04214	FZ-04 B-200 AMBIENT
9	950-SDZ-04215	FZ-04 B-200 AMBIENT
10	950-SDZ-06201	FZ-06 B-100 AMBIENT
11	950-SDZ-06202	FZ-06 B-100 AMBIENT
12	950-SDZ-06203	FZ-06 B-100 AMBIENT
13	950-SDZ-04204	FZ-04 B-400 AMBIENT
14	950-SDZ-04205	FZ-04 B-400 AMBIENT
15	950-SDZ-04206	FZ-04 B-400 AMBIENT
16	950-SDZ-04210	FZ-04 B-300 AMBIENT
17	950-SDZ-04211	FZ-04 B-300 AMBIENT
18	950-SDZ-04212	FZ-04 B-300 AMBIENT
19	950-SDZ-04216	FZ-04 B-200 AMBIENT
20	950-SDZ-04217	FZ-04 B-200 AMBIENT
21	950-SDZ-04218	FZ-04 B-200 AMBIENT
22	950-SDZ-06204	FZ-06 B-100 AMBIENT
23	950-SDZ-06205	FZ-06 B-100 AMBIENT
24	950-SDZ-06206	FZ-06 B-100 AMBIENT

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ZETTLER MX

M600Ex Intrinsically Safe Fire Detectors

ZETTLER

M600Ex Fire Detection Range

Our sophisticated Ex system for use in hazardous atmospheres, introduces to the market a range of conventional I.S. fire detectors. In addition to the unobtrusive size and styled shape a number of design features have been incorporated including single visit to the ceiling installation and a service and maintenance detector park position.



Features

- Intelligent Universal Smoke/Heat/CO detector
- Low profile, discreet and unobtrusive
- Superior performance and reliability
- Designed for fast, easy installation
- Optional locking kit
- May be used in systems that meet BS5839 Pt 1
- Integral and remote alarm LED
- Certified to ATEX: Ex II 1GD and Cenelec: Ex ia IIC T5/ Ex iaD 20 T100°C
- Complies to EN54-7 for Smoke Detectors and EN54-5 for Heat Detectors

General

Included within the range is the High Performance Optical Smoke (HPO) Detector and a combined Carbon Monoxide and Heat Detector. The complete range has been designed to meet the requirements of BS (British Standards) and EN (European Standards) for fire detectors. The detectors also carry the new CE mark.

M600Ex Series Conventional Detectors

The M600Ex Series provides the detector part of an automatic fire detection system, as defined in BS5839 Pt1:2002. The M600Ex Series Conventional or two state detector is one that provides two output states to the controller, either 'normal' or a 'fire alarm' condition.

The detectors along with callpoints are grouped into zones, with each zone being connected to the control panel, by a two wire circuit. Each zone having a separate zone indicator at the control panel. Safety barriers are used to maintain the intrinsically safe status of the circuit under all conditions.

Application

As each type of fire detector responds to a particular 'fire product' the relative speed of response of the detector is therefore dependent upon the type of fire being detected. The range of M600Ex detectors have been designed to provide the earliest possible warning of a fire condition, with a minimum possibility of false/unwanted alarms.

As smoke is normally present at an early stage in most fires, smoke type detectors are therefore considered the most useful. When considering the type of smoke detector for the application, the probable type of fuel for the fire should be considered. For general fire detection, where there is an equal possibility of either a 'fast' or 'slow' fire developing, the intelligent high performance optical detector provides an excellent detection response.

In situations where the installation of smoke detectors would cause an unacceptable level of false alarms (i.e. kitchens, laundry areas) heat detectors may be installed. The M600Ex series provides a selection of heat detectors, from Rate of Rise to fixed temperature, because of the wide variety of applications that fire detectors are expected to cover, it is recommended that reference to BS5839 Pt1:2002 is made to aid selection.

High Performance Optical Smoke Detector MR601TEx



These detectors react to the whole range of fire products from slow smouldering fires, producing visible particles to open flaming fires producing large numbers of very hot smaller sized aerosols. It combines optical and heat detector technology to detect clear burning fire products which hitherto could only be easily detected by ion-chamber detectors.

For normal ambient conditions, the high performance optical detector behaves as a normal optical detector. Only when a rapid rise in temperature is detected does the sensitivity of the detector increase and the presence of smoke will confirm a fire condition which will be transmitted as an alarm level.

Heat Detector MD601Ex and MD611Ex



These detectors use two networked thermistors in a bridge configuration to provide a fast response, that depends both on absolute temperature and rate of rise of temperature.

The rate of rise/fixed temperature heat detectors can be used in areas where smoke sensors are unsuitable due to environmental conditions (smoke, dust etc.). Such areas include kitchens, locker rooms, canteens, garages, loading bays etc.

Enhanced Carbon Monoxide Fire and Heat Detector MDU601Ex



The MDU601Ex detector is a combined CO and Rate-of-Rise Heat detector where the sensitivity of the CO detector is enhanced in response to a fast rate of change of temperature.

Maybe used in dusty environments instead of the MR601TEx Detector

Technical Specifications

Mechanical

Detector Material:	FR110 "Bayblend" fire resistant
Dimensions:	See diagram below
Weight:	0.2 Kg detector and base (approx)
Colour:	White

Environmental

Operating Temp. Range:	-20°C to +70°C
	-10°C to +55°C (MDU601Ex only)
Storage Temp :	-25°C to +80°C
	-20°C to +55°C (MDU601Ex only)
Relative Humidity :	95% non condensing
	90% non condensing
	(MDU601Ex fonly)

Electrical

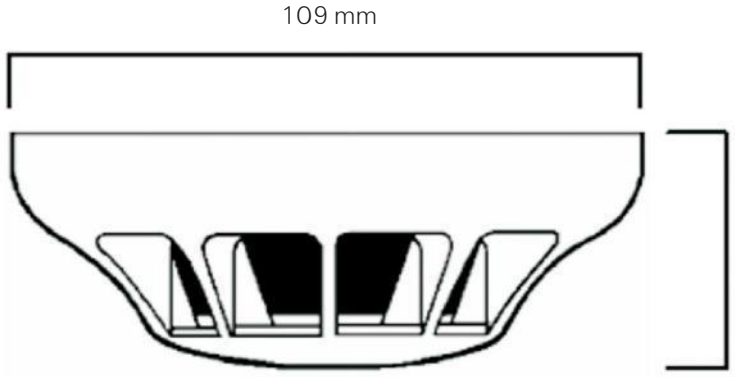
Supply Voltage:	16 to 28 vdc
Quiescent Current:	100µA typical
Alarm Current:	48 mA typical
Reset Time:	0.5 - 5 seconds
Wiring Connections:	SEM Terminal 2 x 1.5 mm^2

Electromagnetic Compatibility

ESD:	to EN50130-4
Radiated Immuntity:	to EN50130-4
Fast Transient:	to EN50130-4
Slow High Energy:	to EN50130-4
Conducted Immunity:	to EN50130-4
Emissions:	to EN61000-6-3

Approvals

These detectors have the following approvals:
LPCB Loss Prevention Certification Board VdS Verband der Sachversicherer



ZETTLER, is a leading brand of fire detection products in the European market. The ZETTLER fire detection product line includes a wide range of EN54 CPD approved fire detection products carrying approvals and cross-listings, including VdS and NF. The ZETTLER product lines are available through ZETTLER Authorised Distributors as well as many Johnson Controls offices around the world.

Tyco Fire & Security GmbH, Victor von Bruns Strasse 21, CH-8212 Neuhausen am Rheinfall, Switzerland

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Fig. 8: Conduit Junction Box
1–Fixing centre

4B-DHM deckhead mounting

The Deckhead Mounting is designed to be used in particularly damp or dirty environments. The kit is illustrated in Figure 9.

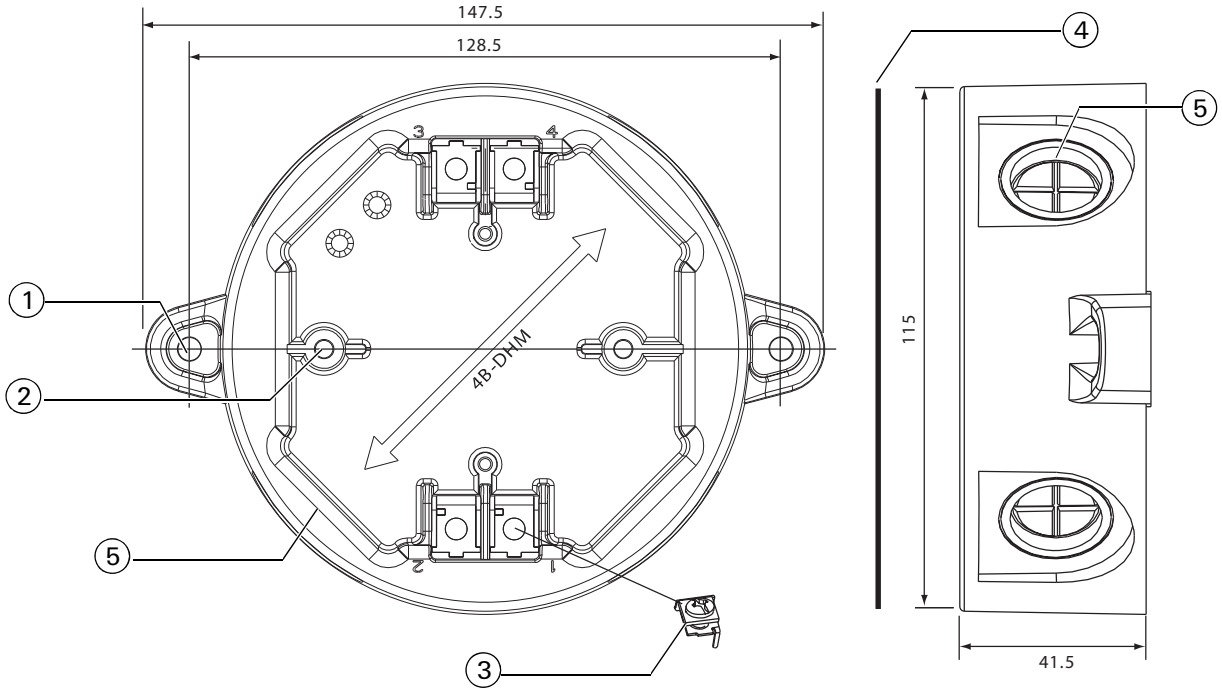


Fig. 9: 4B-DHM deckhead mounting
1–Fixing hole (x 2). 5 mm diameter
2–Detector base mounting post (x 2)
3–Base accessory terminal (only one factory fitted – more can be ordered)
4–Sealing gasket
5–Gland/conduit knockout, 4 positions. 20 or 25 mm diameter

The Deckhead Mounting Kit comprises:

- The mounting housing.
- Two self tapping posidrive pan head screws to secure the detector base.
- Sealing gasket.

4B-DHM Technical specification

- Weight: 200 g
- Material
  - Body: glass filled P.B.T.
  - Base Accessory Terminal: annealed spring steel
  - Base Accessory Terminal Screw: stainless steel
- Environmental

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- Storage Temperature: -30 °C to +75 °C
- Operating Temperature: -25 °C to +70 °C
- Relative Humidity: up to 95 % RH (non-condensing)

To install the 4B-DHM

1 Note that the item numbers in this procedure refer to Figure 9. Remove gland/conduit knockouts (Item 5) as appropriate. For the larger 25 mm diameter, a hole cutter is required.

2 Note the alignment required for detector Status Indicator LED visibility.

An arrow is embossed in the bottom of the 4B-DHM. Mount the 4B-DHM so this arrow is aligned in the direction required for visual inspection of the detector Status Indicator LED.

3 Choose a mounting position that that is flat in the area contacting the housing.

To mount using welding, now jump to the section "4B-DHM Installation – welded" on page 7. Otherwise carry on at the next step.

4 Fix the 4B-DHM to the surface by screwing through the fixing holes – item 1 in Figure 9.

For the screws, use two No. 8 x 1" countersunk zinc plated and passivated steel screws, for example.

5 Remove the backing from the sealing gasket (Item 4 in Figure 9). Carefully stick the gasket to the front surface of the 4B-DHM. Fit the gasket round the rim, so that it will form a seal with the detector base.

6 Fit the LED Apperture Plug to the base – see the section "LED aperture plug" on page 3.

7 Secure the base to the 4B-DHM using the supplied two 4.2 x 25mm self tapping posidrive pan head screws.

4B-DHM Installation – welded

You will have jumped here from Step 3 in the procedure "To install the 4B-DHM" on page 7.

The 4B-DHM can be fixed to metal surfaces using welding. Two screws are inserted into the back of the 4B-DHM. These screws are then welded to the surface.

To fix the 4B-DHM using welding

1 Position the 4B-DHM so the flat base (that contacts the mounting surface) is towards you. This position corresponds to Figure 10. The item numbers in Figure 10 are referred to in this procedure.

2 Using pliers, nibble away the thin knockout section in the circular wall (Item 4).

3 Cover the knockouts and surrounding area with high temperature masking tape. This provides protection from weld spatter. Clear the tape from over the knockouts with a knife.

4 Insert screws (not supplied) into the holes (Item 1). Use 6.3 x 25mm (No. 14 x 1") self tapping screws.

5 Using a double sided adhesive pad (Item 2), or tape, fix the 4B-DHM to the surface.

6 Weld the screw heads to the surface. Use Mig/ Tig welding for approximately 1.5 seconds per weld. For access, use the knockouts you removed previously.

7 Remove the masking tape and clean away any deposits.

8 Jump back to Step 5 in the procedure "To install the 4B-DHM".

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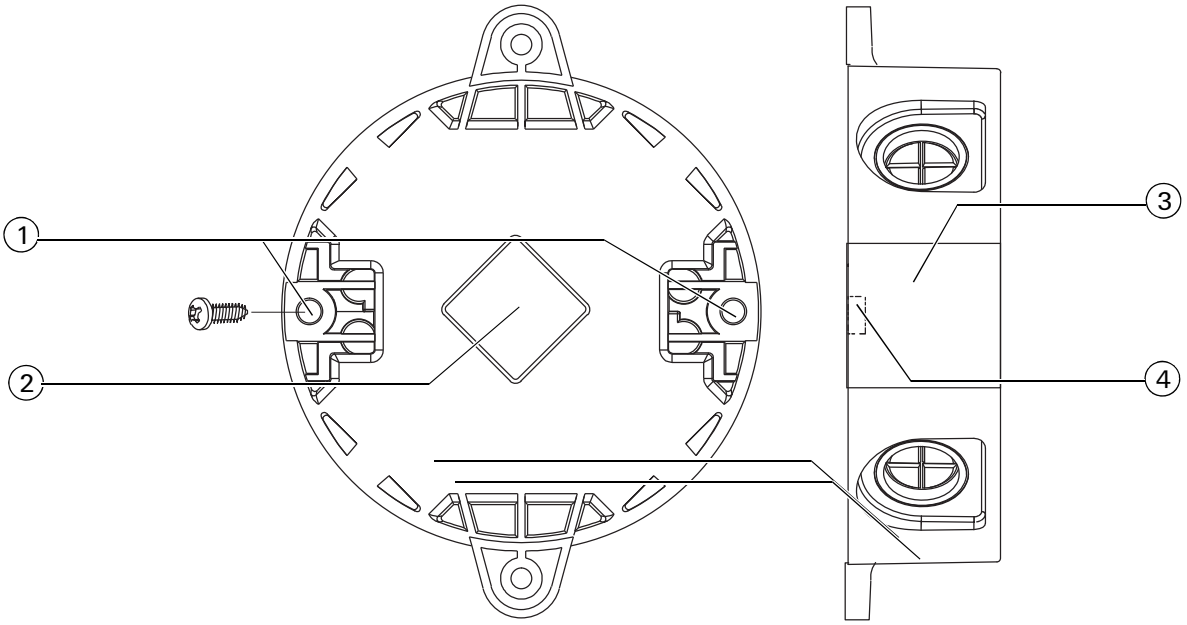


Fig. 10: 4B-DHM welding option
1–Screw holes
2–Double sided adhesive pad or tape
3–masking tape
4–Knockout

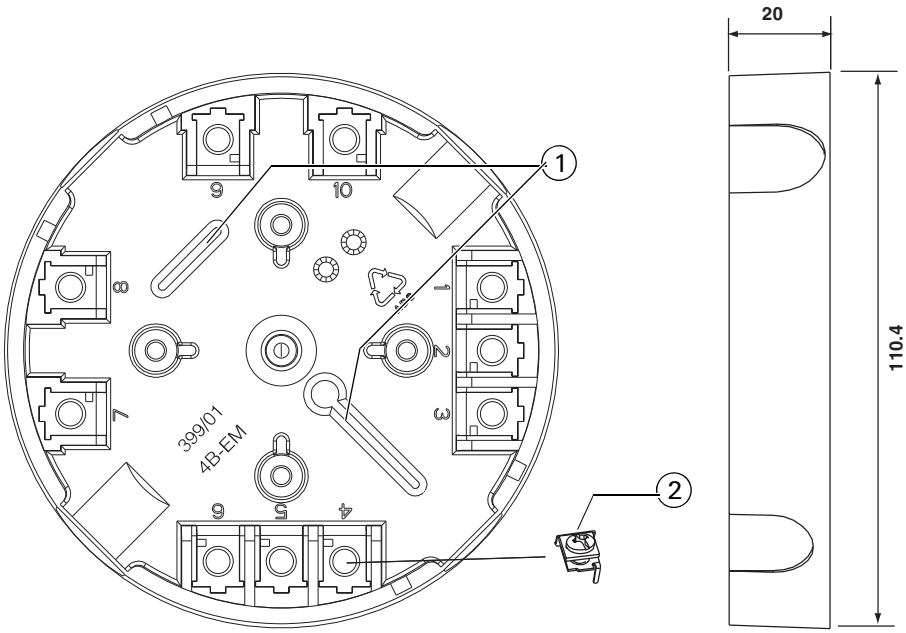


Fig. 11: 4B-EM Euro mounting box
1–Mounting slots
2–Base accessory terminal (only one factory fitted – more can be ordered)

4B-EM european mounting box

The European Mounting Box is shown in Figure 11).

This is intended for use in EC countries using 18 mm and 21 mm cable breakouts.

The housing is secured with two No. 8 x 1 inch countersunk zinc plated and passivated steel screws (or equivalent).

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solo™
detectortesters

*A **single** testing system.*
*A **complete** range of testing tools.*





detectortesters
testing technology from No Climb

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solo™ detectortesters

A complete range of test and maintenance equipment for smoke, heat and CO detectors.

Testing equipment must be proven to be safe for the engineer and the system, it needs to be cost-effective, versatile, portable, approved by all detector manufacturers and in compliance with international codes and standards.

The Solo range meets all of these requirements.

SMOKE DETECTOR TESTING



SIGNALING UL LISTED Fire Alarm Equipment 77TL Smoke Detector Accessory

Solo 330 Aerosol Dispenser

Codes and standards require functional tests to introduce (simulated) smoke through the detector vents and into the sensing chamber. The Solo 330 dispenser is the most popular device for achieving this, benefiting as it does, from a cup big enough for the great majority of detectors but still small enough not to be obstructive and unwieldy.

- UL Listed
- Approved by leading detector manufacturers
- Dispenser and patented diaphragm contain particles – conserves test gas / smoke
- Strong – to withstand rigours of daily use
- Spring-loaded mechanism – for effective, economic aerosol delivery
- Clear cup – enables view of the detector LED while testing
- Universal – suits most detectors
- Designed for use at height and at angles
- Interchangeable with all other tools on Solo poles
- Lifetime Warranty



Solo 330 for use with **Solo A3** & **C3** Aerosols

Solo 332 is available for larger diameter detectors.

Solo 332
Aerosol Dispenser



> "...the testing system is high quality and is very well liked by our technicians and customers alike. The use of this product helps TSS fulfill its goal as the premiere fire alarm company in NYC"
>
> John Bonanno
> **TSS Integrated Systems**

DETECTOR TESTING AEROSOLS

Solo A10S Smoke Aerosol
Non-Flammable Solution

The new HFC-Free smoke aerosol for the functional testing of smoke detectors. Like all Solo products, Solo A10S is approved by leading detector manufacturers and offers the reliability and quality expected by the industry.

- **Simple** to use
- **Fast** activation – via Solo 330 dispenser
- **Rapid** clearing
- **Compatible** with leading detector brands



Choosing the right aerosol

Chemicals used in detector test equipment need to be compatible with the plastics from which the detectors are manufactured. Not all test aerosols offer this compatibility which can lead to problems such as stress cracking in detectors, residue build up, damage to components and harm to the environment. Solo aerosols are the most thoroughly researched solutions – approved by leading detector manufacturers, third parties and fire engineers.

- **UL & ULC Certified**
- **Approved** by world leading detector manufacturers
- **Non-flammable** (same as Solo A3)
- **HFC-Free** – fully compliant with latest regulations: Protecting the global environment
- **Silicone Free** – prevents detector contamination: Protecting the local environment

Solo A10S is available in the standard 250ml can.



Ordering information	Product Code:
Solo A10S 250ml	SOLO A10S-001
Sold in multiples of 12	

detectortesters

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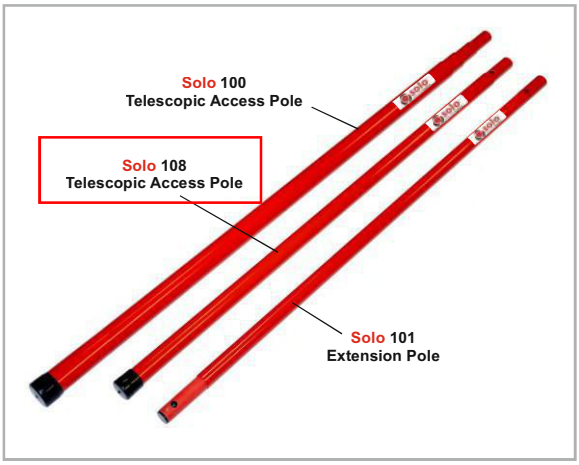
TELESCOPIC ACCESS POLES



Solo 100/101/108 Telescopic Access Poles

The core element of the Solo range is the telescopic and extension access poles which are extremely lightweight and quickly extend to provide access to detectors up to 9 metres*.

- Light – easy to use at height, on-site, day after day
- Non-whip – even at height
- Certified non-conductive – protecting both the engineer and overhead live equipment from inadvertent shorts
- Available in one, two or four telescopic sections
- Lifetime Warranty



*See Product Selector for details on height guide.

HYDROGEN POINT DETECTORS

POS.	TAG NUMBER	SERVICE
1	950-GDZ-02101	H2 GD FZ-02 H2 STORAGE VESSELS AREA
2	950-GDZ-02102	H2 GD FZ-02 H2 STORAGE VESSELS AREA
3	950-GDZ-02103	H2 GD FZ-02 H2 STORAGE VESSELS AREA
4	950-GDZ-02104	H2 GD FZ-02 H2 STORAGE VESSELS AREA
5	950-GDZ-02105	H2 GD FZ-02 H2 STORAGE VESSELS AREA
6	950-GDZ-02106	H2 GD FZ-02 H2 STORAGE VESSELS AREA
7	950-GDZ-02107	H2 GD FZ-02 H2 STORAGE VESSELS AREA
8	950-GDZ-02108	H2 GD FZ-02 H2 STORAGE VESSELS AREA
9	950-GDZ-02109	H2 GD FZ-02 H2 STORAGE VESSELS AREA
10	950-GDZ-02110	H2 GD FZ-02 H2 STORAGE VESSELS AREA
11	950-GDZ-02111	H2 GD FZ-02 H2 STORAGE VESSELS AREA
12	950-GDZ-02112	H2 GD FZ-02 H2 STORAGE VESSELS AREA
13	950-GDZ-02113	H2 GD FZ-02 H2 STORAGE VESSELS AREA
14	950-GDZ-02114	H2 GD FZ-02 H2 STORAGE VESSELS AREA
15	950-GDZ-02115	H2 GD FZ-02 H2 STORAGE VESSELS AREA
16	950-GDZ-02116	H2 GD FZ-02 H2 STORAGE VESSELS AREA
17	950-GDZ-04201	H2 GD FZ-04 B-400 HVAC AIR INTAKE
18	950-GDZ-04202	H2 GD FZ-04 B-400 HVAC AIR INTAKE
19	950-GDZ-04203	H2 GD FZ-04 B-400 HVAC AIR INTAKE
20	950-GDZ-04204	H2 GD FZ-04 B-400 AMBIENT
21	950-GDZ-04205	H2 GD FZ-04 B-400 AMBIENT
22	950-GDZ-04206	H2 GD FZ-04 B-400 AMBIENT
23	950-GDZ-04207	H2 GD FZ-04 B-300 HVAC AIR INTAKE
24	950-GDZ-04208	H2 GD FZ-04 B-300 HVAC AIR INTAKE
25	950-GDZ-04209	H2 GD FZ-04 B-300 HVAC AIR INTAKE
26	950-GDZ-04210	H2 GD FZ-04 B-300 AMBIENT
27	950-GDZ-04211	H2 GD FZ-04 B-300 AMBIENT
28	950-GDZ-04212	H2 GD FZ-04 B-300 AMBIENT
29	950-GDZ-04213	H2 GD FZ-04 B-200 HVAC AIR INTAKE
30	950-GDZ-04214	H2 GD FZ-04 B-200 HVAC AIR INTAKE
31	950-GDZ-04215	H2 GD FZ-04 B-200 HVAC AIR INTAKE
32	950-GDZ-04216	H2 GD FZ-04 B-200 AMBIENT
33	950-GDZ-04217	H2 GD FZ-04 B-200 AMBIENT
34	950-GDZ-04218	H2 GD FZ-04 B-200 AMBIENT
35	950-GDZ-05101	H2 GD FZ-05 BESS AREA
36	950-GDZ-05102	H2 GD FZ-05 BESS AREA
37	950-GDZ-05103	H2 GD FZ-05 BESS AREA
38	950-GDZ-05104	
39	950-GDZ-05105	
40	950-GDZ-05106	
41	950-GDZ-06201	H2 GD FZ-06 B-100 HVAC AIR INTAKE
42	950-GDZ-06202	H2 GD FZ-06 B-100 HVAC AIR INTAKE
43	950-GDZ-06203	H2 GD FZ-06 B-100 HVAC AIR INTAKE
44	950-GDZ-06204	H2 GD FZ-06 B-100 AMBIENT
45	950-GDZ-06205	H2 GD FZ-06 B-100 AMBIENT
46	950-GDZ-06206	H2 GD FZ-06 B-100 AMBIENT
47	950-GDZ-03104	H2 GD FZ-03 ELECTROLYZER PK AREA
48	950-GDZ-03105	H2 GD FZ-03 ELECTROLYZER PK AREA
49	950-GDZ-01103	H2 GD FZ-03 ELECTROLYZER PK AREA

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Dräger Polytron® 8200 CAT
Detection of flammable gases and vapors

The Dräger Polytron® 8200 CAT is an advanced explosion-proof transmitter for the detection of combustible gases in the lower explosion limit (LEL). It uses a catalytic bead DrägerSensor® Ex that will detect most flammable gases and vapors. In addition to a 3-wire 4 to 20-mA analog output with relays it also offers HART®, Modbus and Fieldbus protocols, making it compatible with most control systems.



Dräger. Technology for Life®

Benefits

Fast and stable – the DrägerSensor® Ex

The built-in DrägerSensor® Ex is based on the proven catalytic bead measuring principle. It has excellent long-term stability with outstanding poison resistance. And this is the reason for its durability. Due to the novel gas inlet opening, the sensor responds to gas in only a few seconds. This allows you to react immediately with countermeasures and prevent the development of a flammable atmosphere.

Easy device management via digital communication

The Dräger Polytron 8200 is equipped with digital interfaces allowing for quick and easy remote interrogation of the transmitter's state. Integration with existing asset management systems such as PACTware™ is possible via DTM. In addition to the common HART® communication system, the fieldbus interfaces PROFIBUS® PA, FOUNDATION fieldbus™ H1, and Modbus RTU are also available.

Same design, same operating principle

The Dräger Polytron 8200 belongs to the Polytron 8000 series. All transmitters in this series have the same design and user interface. This allows for uniform operation with reduced training and maintenance requirements. The large graphic backlit display shows status information clearly and in an easy to use format. The measured gas concentration, selected gas type, and measuring unit are displayed during normal operation. Colored LEDs (green, yellow and red) provide additional alarm and status information.

The Polytron 8200 is operated by means of a magnetic wand over contact surfaces.

Three relays for controlling external equipment

Upon request, the Dräger Polytron 8200 can also be supplied with three integrated relays. This enables you to use it as an independent gas detection system with two arbitrarily adjustable concentration alarms and one fault alarm. Audible alarms, signal lights or similar devices can thus be controlled locally without an additional cable between the transmitter and central controller.

Safe, robust housing for every application

Polytron 8200 features a Class I, Div. 1 rated explosion proof enclosure made from aluminium or stainless steel, making it suitable for a wide range of environmental conditions.

Make the impossible possible with the remote sensor

A remote explosion proof junction allows installation of the sensor up to 350' away from the transmitter in difficult to access areas. A permanently attached remote calibration adapter allows for remote bump testing or calibration from the Polytron display by using permanently attached tubing that takes the calibration gas to the sensor.

Technical Data

Dräger Polytron® 8200 CAT			
Type	Explosion proof / flameproof enclosed transmitter (“d”)		
Gases	Flammable gases and vapors		
Measuring ranges	DQ	0 to 100 % LEL	
	LC	0 to 10 % LEL	
Display	Backlit graphic LCD; 3 Status LEDs (green/yellow/red)		
Performance Characteristics	Accuracy/repeatability	Zero	≤ 1 % LEL
		Span	≤ 1 % LEL
		Long-term drift	≤ 3 % LEL after 6 months
	Response time	T50	< 7 seconds (methane)
		T90	< 13 seconds (methane)
Electrical data	Signal output analog	Normal operation	4 to 20 mA, 3- or 4-wire, sink or source
		Maintenance	Constant 3.4 mA (adjustable)
		Fault	< 1.2 mA
	Signal output digital	HART® w/ 3- or 4-wire, PROFIBUS® PA, FOUNDATION fieldbus™ H1 and Modbus RTU w/ 5-wires	
	Power supply	10 to 30 V DC	
	Power consumption (max.)	DQ w/o relay, non-remote	105 mA at 24 V
		DQ w/ relay, remote	145 mA at 24 V
	Relay specification (option)	2 alarm relays and 1 fault relay, SPDT 5 A @ 230 VAC, 5 A @ 30 VDC	
Environmental conditions (see sensor data sheet)	Temperature	-40 to 80 °C (-40 to 176 °F) without relay -40 to 70 °C (-40 to 158 °F) with relay- -50 to 85 °C (-122 to 185 °F) remote sensor	
	Pressure	23.6 to 38.4 inch Hg / 800 to 1,200 mbar	
	Humidity	5 to 95% r. h., non-condensing	
Housing	Transmitter housing	Epoxy coated copper-free aluminium or stainless steel SS316 L	
	Sensor housing	Stainless steel 303	
	Enclosure protection type	NEMA 4X & 7, IP65/66/67	
	Cable entry point	3/4" NPT threaded holes or M20 cable gland	
	Dimensions (H x W x D)	11.0" x 5.9" x 5.1" / 280 x 150 x 130 mm	
	Weight, approx.	Aluminium	4.9 lbs / 2.2 kg
		SS316 L	8.8 lbs / 4.0 kg
Approvals*	UL & CSA	Class I, Div 1, Groups A, B, C, D; Class II, Div 1, Groups E, F, G; Class I, Zone 1, Group IIC; T-Code T6/T4	
	IECEx	Ex db IIC T6/T4 Gb, -40 ≤ Ta ≤ +40/+70 °C;	
	ATEX	II 2G Ex db IIC T6/T4 Gb, -40 ≤ Ta ≤ +40/+70 °C;	
	CE markings	ATEX (Directive 2014/34/EU) Electromagnetic Compatibility (Directive 2014/30/EU) Low Voltage (Directive 2014/35/EU)	
	Shipping approvals (for DQ sensor only)	DNV GL, ABS, LR, CCS, RMRS	
	MED approval (for DQ sensor only)	Certificate No. MEDB0000411	

Technical Data

	DEKRA Performance approval (for DQ sensor only)	Certificate No. BVS 13 ATEX G 001 X
	SIL 2 certified by TUEV Sued	Certificate No. Z10 053474 0023

* All docking station versions are only ATEX/IECEx approved

Ordering Information

Dräger Polytron® 8200 CAT	Approval Code	Order Number
Dräger Polytron® 8200 CAT DQ d A 4-20/HART®	XTR 0410	83 44 439
Dräger Polytron® 8200 CAT DQ d A 4-20/HART® relay	XTR 0411	83 44 440
Dräger Polytron® 8200 CAT DQ d S 4-20/HART®	XTR 0510	83 44 448
Dräger Polytron® 8200 CAT DQ d S 4-20/HART® relay	XTR 0511	83 44 449
Dräger Polytron® 8xx0 Kit (Custom configuration e. g. LC sensor or bus communication)		83 44 800

Accessories		Order Number
Magnetic wand		45 44 101
Pipe mount bracket		45 44 198
Aluminum junction box for remote sensor ‘d’		45 44 099
Stainless steel junction box for remote sensor ‘d’		45 44 098
Duct mount kit		68 12 725
IR Connection Kit Polytron® 5000/8000		45 44 197
PolySoft licence (1 year)		83 28 600
PolySoft licence (subscription)		83 28 601
Splash guard		68 12 510
Weather protection kit Dräger Polytron® 5/6/8xxx		37 02 198
Gassing adapter	PE, w/o tubing	68 06 978
	PE incl. tubing	46 09 314
Calibration adapter Viton®		68 10 536
Process adapter (Stainless steel) for DQ		68 12 470
Process adapter (Stainless steel) for LC		68 12 465

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FOUNDATION fieldbus™ is a registered trademark of the Fieldbus Foundation™.
PROFIBUS® is a registered trademark of PROFIBUS and PROFINET International (PI).
PACTware™ is a registered trademark of Pepperl+Fuchs GmbH.
Viton® is a registered trademark of the DuPont company.
Windows® is a registered trademark of Microsoft Corporation.

HYDROGEN ULTRASONIC LEAK DETECTORS

POS.	TAG NUMBER	SERVICE
1	950-GDZ-01101	H2 GD FZ-01 FUEL CELL PK AREA
2	950-GDZ-01102	H2 GD FZ-01 FUEL CELL PK AREA
3	950-GDZ-02117	H2 GD FZ-02 H2 STORAGE VESSELS AREA
4	950-GDZ-02118	H2 GD FZ-02 H2 STORAGE VESSELS AREA
5	950-GKDZ-02119	H2 GD FZ-02 H2 STORAGE VESSELS AREA
6	950-GDZ-02120	H2 GD FZ-02 H2 STORAGE VESSELS AREA
7	950-GDZ-03101	H2 GD FZ-03 ELECTROLYZER PK AREA
8	950-GDZ-03102	H2 GD FZ-03 ELECTROLYZER PK AREA
9	950-GDZ-03103	H2 GD FZ-03 ELECTROLYZER PK AREA

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Dräger Polytron® 8900 UGLD
Ultrasonic Gas Leak Detector

The Dräger Polytron® 8900 UGLD transmitter is an early warning area monitor for detecting high-pressure gas leaks in outdoor industrial process environments. Thanks to an ultrasonic acoustic sensor, it responds earlier than conventional gas detectors because it registers the sound of leaking gas instead of measuring the concentration of accumulated gas clouds. As gas escapes, leaks are immediately detected in the surrounding area, regardless of the wind direction.



Dräger. Technology for Life®

Benefits

Ultrasonic sensor technology – the early warning system for gas leaks

Typical gas detection systems used to monitor pressurised gas pipes or containers in industrial environments only detect a gas leak if the gas is in the immediate vicinity of the gas sensor. Environmental influences such as wind can delay or prevent a gas cloud from being detected by gas sensors. On the contrary, the Dräger Polytron 8900 UGLD is not affected by environmental factors and detects a high-pressure gas leak as soon as gas escapes. Effective early gas leak warnings can prevent unnecessary shutdowns, saving time and money.

A perfect complement to your gas detection system

The Dräger Polytron 8900 extends the Polytron 8000 series family with acoustic gas leak detection. All transmitters in this series have the same design and an identical user interface. A common user interface ensures that little training or maintenance is required for existing users. The Polytron 8900 UGLD perfectly complements existing flame and gas detection systems with reliable early gas leak warnings.

Delivers results that are easy to understand

For easy interpretation of results, the measured values on the display of the Polytron 8900 UGLD are shown from 0 to 100 percent of the full scale decibel sensitivity range. The ultrasound level is immediately displayed and transmitted without the use of difficult to interpret artificial intelligence. Alarms are configured at a specific level above a predetermined background noise level. Additionally, a time delay of up to 30 seconds can be set in the control system.

Can even detect gas leaks in loud industrial environments

Loud process areas generate noise which is mostly in the audible spectrum. Gas leaks from pressurized vessels above 10 bar generate both audible sound and inaudible ultrasound. Since Polytron 8900 is tuned to measure in the ultrasound spectrum, it can easily identify gas leaks with a leak rate of 100 g/sec in a 65 ft radius circle.

Robust design and fully-sealed sensor

The Polytron 8900 UGLD is an explosion-proof transmitter with a sensor housed in a galvanically-isolated, intrinsically-safe enclosure. The sensor is an ultrasonic microphone that is completely sealed in PVCC, making it impervious to water and dirt. It provides reliable readings without the need for an additional environmental protection baffle. Regular calibration is not necessary, but unlike some other UGLDs on the market, calibration is possible and easy. The expected lifespan of the ultrasonic sensor is more than 10 years.

Technical Data

Dräger Polytron® 8900 UGLD

Type	Explosion proof / flameproof enclosed transmitter (“d”) or combined with increased safety (“d/e”)			
Gases	Flammable and toxic gases such as hydrogen, methane, ethylene, propane, CO_2, nitrogen and hydrogen sulphide			
Measurement ranges	0-100% equivalent to 55-110 dB; typical alarm setting 10% UGLD signal above background			
Display	Back-lit graphic LCD display; 3 status LEDs (green/yellow/red)			
Sensor Type	PVCC coated piezoelectric microphone with built-in automatic self-test sound generator			
Sensor Performance	Response Time	< 3 sec.		
	Minimum Pressure	> 2 bar (29 psi) Methane		
	Coverage Radius	6.5ft -65 ft depending on gas type, leak rate and background noise		
	Frequency Range	18 kHz - 80 kHz		
Electrical data	Analogue signal output	Normal operation	4 to 20 mA	
		Maintenance	Constant 3.4 mA or	
			4 mA ±1 mA	
			1 Hz modulation; (adjustable)	
		Fault	< 1,2 mA	
	Digital signal output	HART®		
	Power supply	10 to 30 V DC, 3-wire		
	Power consumption	w/ relay, remote	100 mA at 24 V	
	Relay specification	Two alarm relays and one error relay, SPDT 5 A @ 230 VAC, 5 A @ 30 VDC		

Environmental conditions (See sensor data sheet)	Temperature	-40 to 70°C (-40 to 158°F) with relays
	Pressure	700 to 1,300 mbar
	Humidity	0 to 100 % relative humidity
Housing	Transmitter housing	Stainless steel SS316L
	Sensor housing	Polyamide 6
	Housing protection type	NEMA 4X & 7, IP65/66/67
	Cable entry	Three ¾" NPT thread openings or M20 cable gland
	Dimensions (H × W × D)	11.02" x 5.90" x 5.12" inches
	Weight, approx.	11 lbs
Approvals	UL	Class I, Div 1, Groups A, B, C, D; Class I, Zone 1, Group IIC; T-Code T4
	CSA*	Class I, Div 1, Groups A, B, C, D; Class I, Zone 1, Group IIC; T-Code T4
	IECEx	Ex db [ia] IIC T4 Gb, -40 ≤ Ta ≤ +40 / +70 °C Ex db eb [ia] IIC T4 Gb, -40 ≤ Ta ≤ +40/ +70°C; “e” version;
	ATEX	II 2G Ex db [ia] IIC T4 Gb, -40 ≤ Ta ≤ +40 / +70 °C II 2G Ex db eb [ia] IIC T4 Gb, -40 ≤ Ta ≤ +40/+70°C; “e” version
	CE Markings	ATEX (Directive 2014/34/EU) Electromagnetic compatibility (Directive 2014/30/EU) Low voltage (Directive 2014/35/EU)
	Marine approval*	DNV-GL

Technical Data

	SIL 2	Certificate TÜV Süd

* Pending

Ordering Information

Dräger Polytron® 8900 UGLD	Approval code	Part number
Polytron® 8900 UGLD d S 4-20/HART® Relay Stainless Steel Ex d Housing with 4-20mA HART® output and 3 Relays	ETR 0521	83 28 030

Accessories		Part number
Magnetic Wand		45 44 101
Remote Sensing Head with wall mount kit		83 28 021
Connecting cable with plug for the Remote Sensing Head	5 m	83 23 305
	15 m	83 23 315
	30 m	83 23 330
UGLD Calibration and Bump Test Kit w/o Air Cylinder		83 28 042
Zero Air Gas Cylinder 103L for Calibration and Bump Test Kit		45 10 058
Pole Mount Kit		45 44 198
Polysoft Basic (one year license)		83 28 600
Polysoft Basic (Subscription – yearly fee)		83 28 601
IR Connection Kit (requires PolySoft)		45 44 197

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OXYGEN POINT DETECTORS

POS.	TAG NUMBER	SERVICE
1	950-GDZ-03107	O2 DET. FZ-03 ELECTROLYZER PK AREA
2	950-GDZ-03108	O2 DET. FZ-03 ELECTROLYZER PK AREA
3	950-GDZ-03109	O2 DET. FZ-03 ELECTROLYZER PK AREA

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Dräger Polytron® 8100 EC
Detector for toxic gases and oxygen

The Polytron® 8100 EC is Dräger's top of the line explosion-proof transmitter for the detection of toxic gases or oxygen. It uses a high performance plug and play electrochemical DrägerSensor to detect a specific gas. Besides having a 3-wire 4 to 20 mA analog output with relays, it also offers HART®, Modbus and Fieldbus protocol, making it compatible with most control systems.



Dräger. Technology for Life®

Benefits

Durable, intelligent and sensitive – the DrägerSensor®

With unique electrochemical DrägerSensors, Polytron 8100 can detect over 100 toxic gases and oxygen. These long life sensors provide continuous detection even under the harshest conditions. DrägerSensors offer the industry's widest temperature and humidity range between -40 °C to +65 °C (-40 °F to +150 °F). The built-in memory contains all calibration and configuration information: therefore the sensor ships pre calibrated and is ready for immediate operation. An intelligent sensor self-test function allows for predictive maintenance. The intrinsically safe connection of the sensor eliminates the need for a flame arrestor, giving you faster response times and higher sensitivity.

Easy device management via digital communication

The Dräger Polytron 8100 is equipped with digital interfaces allowing for quick and easy remote interrogation of the transmitter's state. Integration with existing asset management systems such as PACTware™ is possible via DTM. In addition to the common HART® communication system, the fieldbus interfaces with PROFIBUS® PA, FOUNDATION fieldbus™ H1, and Modbus RTU are also available.

Same design, same operating principle

The Dräger Polytron 8100 belongs to the Polytron 8000 series. All transmitters in this series have the same design and user interface. This allows for uniform operation with reduced training and maintenance requirements. The large graphic backlit display shows status information clearly and in an easy to use format. The measured gas concentration, selected gas type, and measuring unit are displayed during normal operation. Colored LEDs (green, yellow and red) provide additional alarm and status information. The Polytron 8100 is operated by means of a magnetic wand over contact surfaces.

Three relays for controlling external equipment

Upon request, the Dräger Polytron 8100 can also be supplied with three integrated relays. This enables you to use it as an independent gas detection system with two arbitrarily adjustable concentration alarms and one fault alarm. Audible alarms, signal lights or similar devices can thus be controlled locally without an additional cable between the transmitter and central controller.

Safe, robust housing for every application

Polytron 8100 features a Class I, Div. 1 rated explosion proof enclosure made from epoxy coated aluminium or 316L stainless steel, making it suitable for a wide range of environmental conditions.

Remote sensor option does not require conduit

The remote sensor enclosure allows you to install the sensor separately from the transmitter. This 'external' installation makes it easier to use if the sensor has to be installed in a difficult to access or unfavorable position.

Technical Data

Dräger Polytron® 8100 EC

Type	Explosion proof / flameproof enclosed transmitter (“d”)		
Gases	Toxic gases and oxygen, dependent on the sensor used		
Measuring ranges	Customized adjustment, see sensor data sheet		
Display	Backlit graphic LCD; 3 Status LEDs (green/yellow/red)		
Performance Characteristics	see sensor datasheet		
Electrical data	Signal output analog	Normal operation	4 to 20 mA, 3- or 4-wire, sink or source
		Maintenance	Constant 3.4 mA (adjustable)
		Fault	< 1.2 mA
	Signal output digital	HART® w/ 3- or 4-wire, PROFIBUS® PA, FOUNDATION fieldbus™ H1 and Modbus RTU w/ 5-wires	
	Power supply	10 to 30 V DC	
	Power consumption (max.)	w/o relay, non-remote	80 mA at 24 V
		w/ relay, remote	100 mA at 24 V
	Relay specification (option)	2 alarm relays and 1 fault relay, SPDT 5 A @ 230 VAC, 5 A @ 30 VDC	
Environmental conditions (see sensor data sheet)	Temperature	-40 to 65 °C (-40 to 149 °F) without relay	
		-40 to 65 °C (-40 to 149 °F) with relay	
	Pressure	20.7 to 38.4 inch Hg / 700 to 1,300 mbar	
	Humidity	0 to 100 % r. h., non-condensing	
Housing	Transmitter housing	Epoxy coated copper-free aluminium or stainless steel SS316 L	
	Sensor housing	Polyamide	
	Enclosure protection type	NEMA 4X & 7, IP65/66/67	
	Cable entry point	3/4" NPT threaded holes or M20 cable gland	
	Dimensions (H x W x D), approx.		11.0" x 5.9" x 5.1" / 280 x 150 x 130 mm
	Weight, approx.	Aluminium	6.6 lbs / 3.0 kg
		SS316 L	11.0 lbs / 5.0 kg
Approvals	UL & CSA	Class I, Div 1, Groups A, B, C, D;	
		Class II, Div 1, Groups E, F, G;	
		Class I, Zone 1, Group IIC;	
		T-Code T6/T4	
	IECEx	Ex db [ia] IIC T6/T4 Gb,	
		-40 ≤ Ta ≤ +40/+70 °C;	
	ATEX	II 2G Ex db [ia] IIC T6/T4 Gb,	
		-40 ≤ Ta ≤ +40/+70 °C;	
	FM Performance (H_2S sensor)	Certificate No: FM16NUS0015	
		FM 6340:2014, FM Class 3810:2005,	
		ISA–92.00.01-2010	
	CE marking	ATEX (Directive 2014/34/EU)	
		Electromagnetic Compatibility (Directive 2014/30/EU)	
		Low Voltage (Directive 2014/35/EU)	
	Marine approvals	DNV GL, ABS, LR, CSS, RMRS	
	MED approval	Certificate no. MEDB0000411	
	DEKRA Performance approval (for O_2 sensors only)	Certificate no. BVS 13 ATEX G 001 X	
		EN 60079-29-16:2016	
	SIL 2 certified by TUEV Sued	Certificate no. Z10 053474 0023	

Ordering Information

Dräger Polytron® 8100 EC	Approval Code	Order Number
Dräger Polytron® 8100 EC d A 4-20/HART®	ETR 0400	83 44 403
Dräger Polytron® 8100 EC d A 4-20/HART® relay	ETR 0401	83 44 404
Dräger Polytron® 8100 EC d S 4-20/HART®	ETR 0500	83 44 412
Dräger Polytron® 8100 EC d S 4-20/HART® relay	ETR 0501	83 44 413
Dräger Polytron® 8xx0 Custom Configuration, e.g. Modbus – visit www.draeger.com/polytron to configure yours		83 44 800

Electrochemical DrägerSensors	Order Number
DrägerSensor® AC	68 10 595
Initial Operation Set for DrägerSensor AC	68 09 381
DrägerSensor® Cl_2	68 09 665
DrägerSensor® $COCl_2$	68 09 930
DrägerSensor® CO	68 09 605
DrägerSensor® CO LS	68 09 620
DrägerSensor® CO LH	68 12 570
DrägerSensor® H_2	68 09 685
DrägerSensor® H_2O_2 HC	68 09 675
DrägerSensor® H_2O_2 LC	68 09 705
DrägerSensor® H_2S LC	68 09 610
DrägerSensor® H_2S HC	68 09 710
DrägerSensor® H_2S	68 10 435
DrägerSensor® HCl	68 09 640
DrägerSensor® HCN	68 09 650
DrägerSensor® HCN LC	68 13 200
DrägerSensor® Hydrides	68 09 635
DrägerSensor® Hydrides SC	68 09 980
DrägerSensor® PH_3/AsH_3	68 09 695
DrägerSensor® Hydrazine	68 10 180
DrägerSensor® NH_3 LC	68 09 680
DrägerSensor® NH_3 HC	68 09 645
DrägerSensor® NH_3 TL	68 13 095
DrägerSensor® NH_3 FL	68 13 260
DrägerSensor® NO LC	68 09 625
DrägerSensor® NO_2	68 09 655
DrägerSensor® NO_2 LC	68 13 205
DrägerSensor® O_3	68 14 005
DrägerSensor® O_2 LS	68 09 630
DrägerSensor® OV1	68 10 740
DrägerSensor® OV2	68 10 745
DrägerSensor® SO_2	68 09 660

Accessories	Order Number
Magnetic wand	45 44 101
Sensor Test Dongle	83 17 619
Diagnostic Dongle	83 17 860
Pipe mount bracket	45 44 198
Duct mount kit	68 12 725
Duct mount adapter for remote EC sensing head	83 17 617
Remote adapter RS stainless steel	83 23 404

Ordering Information

IR Connection Kit Polytron® 5000/8000			45 44 197
PolySoft licence (1 year)			83 28 639
PolySoft licence (subscription)			83 28 640
EC Sensing Head Remote w/ mount kit			68 12 684
Connection cable w/ plug for		16 ft / 5 m	83 23 305
Remote EC Sensing Head		49 ft / 15 m	83 23 315
		98 ft / 30 m	83 23 330
Splash guard			68 12 510
Weather protection kit Dräger Polytron® 5/6/8xxx			37 02 198
Calibration adapter FKM Viton®			68 10 536
Gassing adapter		PE incl. tubing	45 09 314
Dust filter (not for Cl_2, HCl, H_2O_2, O_3, N_2H_4)			68 09 595
Dust filter (SO_2)			68 12 224
Selective filter A2F (CO, CO LS, H_2)			68 09 684
Selective filter K2F ($COCl_2$)			68 09 933
Selective filter NF (HCl)			68 09 643
Selective filter HSF (Hydrides)			68 09 862
Selective filter D3F (CO)			68 12 435
Selective filter MF (PH_3, AsH_3)			68 09 638
Selective filter K1F (SO_2)			68 09 663

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Viton® is a registered trademark of the DuPont company.
Windows® is a registered trademark of Microsoft Corporation.

GAS CALIBRATION KIT

2x Calibration set Hydrogen Point Detector
1x Draeger: Carrying case for 2 test gas cylinders
1x Draeger: Calibration gas 99.999 Vol.% N2 in Air
1x Draeger: Calibration gas 2 Vol.% H2 in Air
1x Draeger: Regulator 0.5 L/min
2x Hose Isoversinic 1,5 m
2x Calibration adapter V
1x Magnetic wand

1x Calibration set Oxygen Point Detector
1x Draeger: Carrying case for 2 test gas cylinders
1x Draeger: Calibration gas 99.999 Vol.% N2 in Air
1x Draeger: Calibration gas 18 Vol.% O2 in N2
1x Draeger: Regulator 0.5 L/min
2x Hose Isoversinic 1,5 m
2x Calibration adapter V
1x Magnetic wand

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FLAME DETECTOR

POS.	TAG NUMBER	SERVICE
1	950-FDZ-01101	FZ-01 FUEL CELL PK AREA
2	950-FDZ-01102	FZ-01 FUEL CELL PK AREA
3	950-FDZ-01103	FZ-01 FUEL CELL PK AREA
4	950-FDZ-01104	FZ-01 FUEL CELL PK AREA
5	950-FDZ-02101	FZ-02 H2 STORAGE VESSELS AREA
6	950-FDZ-02102	FZ-02 H2 STORAGE VESSELS AREA
7	950-FDZ-02103	FZ-02 H2 STORAGE VESSELS AREA
8	950-FDZ-02104	FZ-02 H2 STORAGE VESSELS AREA
9	950-FDZ-03101	FZ-03 ELECTROLYZER PK AREA
10	950-FDZ-03102	FZ-03 ELECTROLYZER PK AREA
11	950-FDZ-03103	FZ-03 ELECTROLYZER PK AREA
12	950-FDZ-03104	FZ-03 ELECTROLYZER PK AREA
13	950-FDZ-04101	FZ-04 B-400/B-300/B-200 AREA
14	950-FDZ-04102	FZ-04 B-400/B-300/B-200 AREA
15	950-FDZ-04103	FZ-04 B-400/B-300/B-200 AREA
16	950-FDZ-04104	FZ-04 B-400/B-300/B-200 AREA
17	950-FDZ-05101	FZ-05 BESS AREA
18	950-FDZ-05102	FZ-05 BESS AREA
19	950-FDZ-05103	FZ-05 BESS AREA
20	950-FDZ-05104	FZ-05 BESS AREA
21	950-FDZ-06101	FZ-06 B-100 AREA
22	950-FDZ-06103	FZ-06 B-100 AREA

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FlameSpec
UV-IR
UV-IR Flame Detector



The FlameSpec UV-IR will detect fires and explosions extremely quickly, thereby allowing mitigation steps to be initiated more rapidly to limit event escalation.

Introduction

The FlameSpec-UV-IR flame detector provides ultra-fast response, high performance and reliable detection of a large variety of fires including hydrocarbon fires (visible and non-visible), as well as hydrogen and methane/hydrogen mixed fires. The detector addresses slow growing fires as well as fast eruptions of fire using improved UV-IR technology. The detector operates in all weather and light conditions.

Key Benefits

- High immunity to false alarm
- High sensitivity – up to 100 ft. (30m) for a 1 ft^2 (0.1m^2) n-heptane pan fire.
- Hydrocarbon and non-hydrocarbon flame detection.
- Ultra-fast detection mode detection within 5 milliseconds for fireballs or explosions
- High speed (<0.5s) model [X5] available for compliance with NFPA 33.
- Four sensitivity levels.
- Universal outputs, 3 and 4 wire, 4-20 mA sink / source, Fire, Auxiliary and Fault Relays. RS485 port using Modbus RTU.
- Event logger – alarms, faults and other relevant events are logged to non-volatile memory
- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and overall detector operation.
- Dirty optics warning for preventive maintenance needs.
- HART® 7, for configuration & maintenance - option available.
- Window heater to avoid condensation and icing.
- Stainless steel tilt mount with horizontal and vertical adjustment.
- Functional safety - SIL 2 capable - option available.
- Detect high UV (sparks and arcs) or IR levels via auxiliary relay and 4-20mA.

FIRE & GAS DETECTION TECHNOLOGIES INC.

Fire and Gas Detection Technologies Inc. | 4222 E. La Palma Ave. Anaheim, CA 92807 USA
Tel: (+1) 714-671-8500 | support@fg-detection.com

Version: F110V0010.08 • May 2023

FlameSpec UV-IR

UV-IR Flame Detector

Model: FLS-UV-IR

Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp.Time (s)
N-Heptane	1 x 1 ft.	Extreme	98 (30)	2.0
N-Heptane	1 x 1 ft.	High	75 (23)	1.7
N-Heptane	1 x 1 ft.	Medium	49 (15)	1.0
N-Heptane	1 x 1 ft.	Low	16 (5)	1.0
Gasoline	2 x 2 ft.	Extreme	197 (60)	3.3
Gasoline	1 x 1 ft.	Extreme	98 (30)	1.8
Gasoline	1 x 1 ft.	Medium	49 (15)	1.3
Methane	32-in Plume	Extreme	59 (18)	1.4
Methane	32-in Plume	Medium	30 (9)	0.9
LPG	32-in Plume	Extreme	75 (23)	1.2
LPG	32-in Plume	High	56 (17)	1.6
LPG	32-in Plume	Medium	33 (10)	1.2
LPG	32-in Plume	Low	13 (4)	1.2
Diesel	1 x 1 ft.	Extreme	75 (23)	2.6
Diesel	1 x 1 ft.	Medium	36 (11)	1.2
JP5	1 x 1 ft.	Extreme	75 (23)	3.3
JP5	1 x 1 ft.	High	56 (17)	1.8
JP5	1 x 1 ft.	Medium	36 (11)	1.2
JP5	1 x 1 ft.	Low	16 (5)	1.2
Kerosene	1 x 1 ft.	Extreme	75 (23)	1.8
Kerosene	1 x 1 ft.	Medium	36 (11)	0.9
Methanol	1 x 1 ft.	Extreme	52 (16)	0.8
Methanol	1 x 1 ft.	High	43 (13)	3.2
Methanol	1 x 1 ft.	Medium	30 (9)	1.3
Methanol	1 x 1 ft.	Low	10 (3)	2.7
Ethanol	1 x 1 ft.	Extreme	62 (19)	4.1
Ethanol	1 x 1 ft.	Medium	31 (9.5)	2.9
Isopropanol	1 x 1 ft.	Extreme	75 (23)	2.2
Isopropanol	1 x 1 ft.	Medium	36 (11)	0.8
Polypropylene	1 x 1 ft.	Extreme	49 (15)	1.4
Polypropylene	1 x 1 ft.	Medium	23 (7)	0.9
Hydrogen	32-in Plume	Extreme	66 (20)	6.4
Hydrogen	32-in Plume	Medium	33 (10)	1.0
Syngas (30%CH_4:70%H_2)	32-in Plume	Extreme	59 (18)	3.2
Syngas (30%CH_4:70%H_2)	32-in Plume	Medium	33 (10)	1.2

FlameSpec UV-IR

UV-IR Flame Detector

Model: FLS-UV-IR

Immunity to False Alarm

False Alarm Source	Modulated		Unmodulated	
	Distance ft. (m)	Response	Distance ft. (m)	Response
Sunlight, Direct, Reflected		No Alarm		No Alarm
Incandescent frosted glass light, 300W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Fluorescent, 70W (3x23.3W)	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Electric arc	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Arc welding	10.0 (3.0)	No Alarm	10.0 (3.0)	No Alarm
Radiation heater, 2000W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Halogen lamp (500W) non-shielded	7.0 (2.0)	No Alarm	7.0 (2.0)	No Alarm
Halogen lamp (1000W)	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Mercury vapor lamp 160Wx3	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Exhausts	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Projector led	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Solenoid bell	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
soldering iron	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Electric Drill	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm

FlameSpec UV-IR

UV-IR Flame Detector

Model: FLS-UV-IR

FIRE DETECTION	**Detection time and distance**	5ms for fast burst of explosion 1s for 1 ft² (0.1m²) n-heptane pan fire at 0–50 ft. (0–15m) < 2s for 1 ft² (0.1m²) n-heptane pan fire at 50–100 ft. (15–30m)
	Sensitivity Range	4 sensitivity ranges: Extreme, High, Medium, Low
	Field of view (IR detection)	90° Horizontal, 80° Vertical
	Time Delay	0-30 seconds
	Built in Test	Automatic and Manual
ELECTRICAL SPECIFICATIONS	**Operating Voltage**	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 120mA 180mA all systems in operation (including window heater)
	Electrical Entries	2x cable and conduit entries 3/4" NPT(F) or M25x1.5
	Wiring	14-17 AWG (2.5–1.0 mm²)
OUTPUTS	**Relays**	SPST volt-free contacts rated 2A at 30 VDC 3 relays: Alarm & Auxiliary – normally open; Fault – normally closed
	0-20mA (stepped) current output	3 wire and 4 wire (isolated) configurations (sink and source) HART® rev 7.0 (option available)
	Indication	Tri-color LED (Green, Yellow, Red)
	Modbus	RTU compatible on RS-485
MECHANICAL SPECIFICATIONS	**Size**	5.51 x 3.54 × 3.54" (140×90×90mm)
	Weight	Detector (Stainless Steel 316): 6.6 lbs. (3.0 kg) Tilt mount (Stainless Steel 316): 3.3 lbs. (1.5 kg)
ENVIRONMENTAL SPECIFICATIONS	**Temperature Range**	Operating: -67°F to +185°F (-55°C to +85°C) Storage: -67°F to +185°F (-55°C to +85°C)
	Humidity	Up to 99% (RH), non-condensing
	Ingress Protection	IP66 & 68 (2m, 24hr); NEMA 4X & 6P
APPROVALS	**ATEX**	ATEX: II 2 G D Ex db IIC T5 Gb or Ex db eb IIC T5 Gb and Ex tb IIIC T95°C Db -55°C<Ta<75°C Ex db IIC T4 Gb or Ex db eb IIC T4 Gb and Ex tb IIIC T105°C Db -55°C<Ta<85°C
	IECEx, INMETRO & PESO	Ex db IIC T5 Gb -50°C≤Ta≤75°C Ex db IIC T4 Gb -50°C≤Ta≤85°C
	FMus & FMc	Class I, Div. 1, Groups B, C & D; T4 Class I, Zone 1, AEx/Ex db IIC T4 Gb T4 -50°C≤Ta≤85°C T5 -50°C≤Ta≤75°C
	EAC CU TR	1Ex d IIC T5 Gb or 1Ex de IIC T5 Gb and Ex tb IIIC T95°C Db -55°C≤Ta≤75°C 1Ex d IIC T4 Gb or 1Ex de IIC T4 Gb and Ex tb IIIC T105°C Db -55°C≤Ta≤85°C
	Performance	ANSI FM 3260 EN 54-10
	Functional safety	Certified SIL2 capable per IEC 61508:2010 High & Low demand (option available)

ACCESSORIES		
	Tilt mount, model FLS-TMO-S01	**High vibration mounting bracket, model FLS-MIL-S01**
	Weather cover, model FLS-WCO-S01	**Flame simulator, model FLS-FSIM-UV-IR-KIT**
	2" & 3" pole mount adapter, model FLS-PMA-S23	**Airshield, model FLS-ASD-S01**
	Duct mount with window, model FLS-DMW-S01	**Duct mount for airshield, model FLS-DMX-S01**

WARRANTY	**5 years**

FIRE & GAS DETECTION TECHNOLOGIES INC.

Fire and Gas Detection Technologies Inc. | 4222 E. La Palma Ave. Anaheim, CA 92807 USA
Tel: (+1) 714-671-8500 | support@fg-detection.com
Specifications subject to change without notice.

FlameSpec
FLS-FSIM
Flame Simulator Family



The FlameSpec Flame Simulator range provides fast and convenient detector verification in the field.

Introduction

Flame simulators are often used by industry to perform detector testing during commissioning and periodic system testing. FlameSpec simulators differ from many competing products because they test the active sensors and detection algorithms of the devices without using "bypass" techniques to trick the detector into responding.

The FSIM range is lightweight, simple to use and has a modern ergonomic design. Suitable for use in hazardous areas, the FSIM-IR3 has an extended trigger distance of up to 30 feet (10 meters) from the detector.

Three FSIM models are available, depending on the FlameSpec Detector to be tested, IR3, IR3-H2 and UV-IR.

Key Benefits

- Tests the active sensors and detection algorithms, without using "bypass" techniques.
  - No tricks, detector performance assured.
- Works from distance up to 30 feet (10 meters).
  - Reduces the need for scaffolding.
- Hazardous area use approved.
  - Hot work permits not needed required.
- Lightweight and simple to use.
  - More than 1,000 activations between charges.
- Includes carrying strap, protective storage case, battery charger and operating instructions.
- Easy to transport & supplied with everything needed.
- Complementary to FlameSpec Detector inbuilt test features.
  - Enables full end to end (loop) system test.

FIRE & GAS DETECTION TECHNOLOGIES INC.

Fire and Gas Detection Technologies Inc. | 4222 E. La Palma Ave., Anaheim, CA 92807
Tel: (+1) 714-671-8500 | support@fg-detection.com

Version: F300V0010.04 • Oct 2023
1724000821-QC-DB-0036-02

FlameSpec-FLS-FSIM

Flame Simulator Family

	Simulator Kits Part Nos	FLS-FSIM-IR3-KIT	FLS-FSIM-IR3-H2-KIT	FLS-FSIM-UV-IR-KIT
	Detector type	FLS-IR3[1] FLS-IR3-HD[1]	FLS-IR3-H2 FLS-IR3-H2-HD	FLS-UV-IR FLS-UV-IR-HD
OPERATION DISTANCES	**Detector Sensitivity**	ft. m	ft. m	ft. m
	Extreme	30 9.0	30 9.0	42.5 13.0
	High	20 6.0	20 6.0	26 8.0
	Medium	10 3.0	10 3.0	20 6.0
	Low	3.3[2] 1.0[2]	3.3[2] 1.0[2]	6.6 2.0
ELECTRICAL SPECIFICATIONS	**Operating Voltage nominal, V**	3.7	3.7	3.7
	Number of activations between charging	~1000	~1000	~50
	Battery Capacity, mAh	>3000	>3000	>3000
	Charging time, hours	up to 3	up to 3	up to 3
	Indication	3 Color LED (Green, Yellow, Red)		
	All Simulator Models			
MECHANICAL SPECIFICATIONS	**Size**	3.9 x 3.9 x 7.8" (100 x 100 x 200mm)		
	Weight	3.96 lbs. (1.8 kg)		
	Simulator Enclosure Material	Painted Aluminum LM25		
ENVIRONMENTAL SPECIFICATIONS	**Ingress Protection**	IP65 (NEMA 4X)		
	Humidity	up to 99% (RH), non-condensing		
	Operating temperature	Min: −4°F (−20°C) Max: +122°F (+50°C)		
APPROVALS	**Explosion proof**	ATEX Ex II 2 G Ex db ib op is IIC T6 Gb Ex II 2 D Ex tb ib op is IIIC T85°C Db -20°C<Ta<+50°C		
ACCESSORIES included in kits	**Carrying Case**	FLS-FSIM-CASE		
	Carrying Strap	FLS-FSIM-STRAP		
	Cover Tool	FLS-FSIM-TOOL		
	Allen Key	FLS-FSIM-ALLEN		
	Battery Charger	FLS-FSIM-CHRGR		
WARRANTY	**3 Years**			

[1]not CO2L variant
[2]with collimator removed

FIRE & GAS DETECTION TECHNOLOGIES INC.

Fire and Gas Detection Technologies Inc. | 4222 E. La Palma Ave., Anaheim, CA 92807
Tel: (+1) 714-671-8500 | support@fg-detection.com

MANUAL FIRE ALARM

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-MFA-01101	FZ-01 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
2	950-MFA-01102	FZ-01 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
3	950-MFA-01103	FZ-01 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
4	950-MFA-02101	FZ-02 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
5	950-MFA-03101	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
6	950-MFA-03102	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
7	950-MFA-03103	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
8	950-MFA-03104	FZ-03 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
9	950-MFA-04101	FZ-04 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
10	950-MFA-04102	FZ-04 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
11	950-MFA-04201	FZ-04 MFA ACTIVATION - B-400 INDOOR	MANUAL FIRE ALARM ACTIVATION
12	950-MFA-04202	FZ-04 MFA ACTIVATION - B-300 INDOOR	MANUAL FIRE ALARM ACTIVATION
13	950-MFA-04203	FZ-04 MFA ACTIVATION - B-200 INDOOR	MANUAL FIRE ALARM ACTIVATION
14	950-MFA-05101	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
15	950-MFA-05102	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
16	950-MFA-05103	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
17	950-MFA-05104	FZ-05 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
18	950-MFA-06101	FZ-06 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
19	950-MFA-06102	FZ-06 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION
20	950-MFA-06201	FZ-06 MFA ACTIVATION - B-100 INDOOR	MANUAL FIRE ALARM ACTIVATION
21	950-MFA-07101	FZ-07 MFA ACTIVATION	MANUAL FIRE ALARM ACTIVATION

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SM87BG & SM87PB manual call point range

Ex d, Ex ia, weatherproof



Overview

These manual fire alarm, emergency shutdown break-glass and pushbutton units have been designed for the most arduous environmental conditions.

The units are both easy to install and maintain. Intrinsically safe Ex ia and flameproof Ex d versions of each model are available.

A choice of either stainless steel or alloy makes the range suitable for either the offshore or onshore industries. Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 0, Zone 1 and Zone 2 use*
- ATEX certified
- UL listed for USA and Canada (SM87PBL only). Class I, Div 1, Groups C & D
- ULC certified (SM87PBL only) for Class I, Zone 1 Groups C & D
- CSA certified
- IECEx certified
- Brazilian (INMETRO) certified
- Russian Fire certified
- PESO certified (Ex d only)
- SIL 2 certified (SM87PB only)
- IP66 and IP67
- DNV type approval (IEC 60945) (SM87PB only)
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Robust yet lightweight
- Easy to maintain

*Model dependent

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Powering Business Worldwide

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Certifications

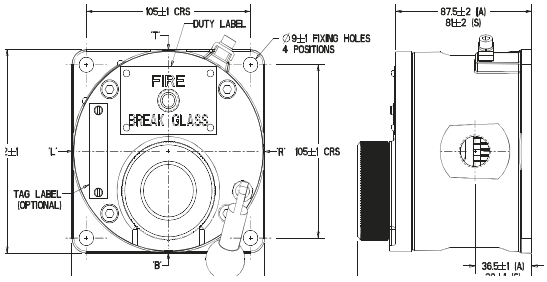
ATEX Ex d	Cert. no. Baseefa03ATEX0075. ATEX Approved Ex II 2GD Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db. IP66/IP67
ATEX Ex ia	Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1GD Certified to: EN60079-0, EN60079-11 Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da
IECEx Ex d	Cert. no. IECEx BAS 09.0060 Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°/T100°C Db. IP66/IP67
IECEx Ex ia	Cert. no. IECEx BAS 10.0033X Certified to: IEC60079-0, IEC60079-11, Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da
UL	Listing no. E186629 UL listed to Class 1, Div 1. Groups C & D. (SM87PBL)
ULC	Cert. no. 20091023-E320282 ULC certified for Class I, Zone 1 Groups C & D (SM87PBL)
CSA Explosion proof	Class 1, Div 1 & 2. Group D Ex d IIC T5/T6 Gb
CSA Intrinsically safe	Class 1, Div 1 & 2. Groups A-D
INMETRO Ex d	Ex db IIC T5/T6 Gb
Type Approvals	DNV (IEC 60945) (Stainless Steel SM87PB only)
SIL	SM87PB only - SIL2 Certification to IEC61508. Cert no. 20151118-4786827453
CCC	Ex d IIC T5/T6 Gb, Ex tD A21 IP66/IP67 T85°C/T100°C

Specifications

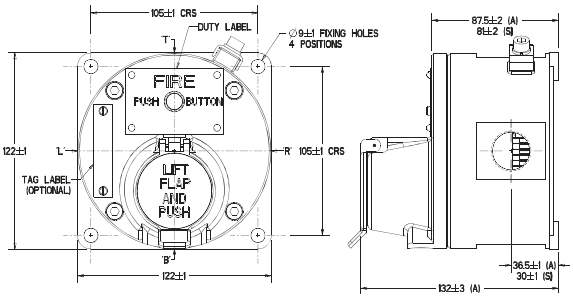
Material	Grade 316 ANC4B stainless steel or LM 25 TF marine grade alloy
Finish	Paint finish as standard or to customer specification
Voltage	Ex d 24V a.c./d.c. Ex ia 28V
Rating	2A
Switches	2 pole c/o, wired to terminals Optional up to 4 pole (UL version 2 pole only)
Optional indicator	A red high intensity LED can be fitted for alarm indication As standard the LED is not provided with over current protection. The forward current (If) should be limited to 20mA
Certified temp	Ex d* –55°C to +70°C. Ex ia* –55°C to +60°C –20°C to +55°C (LED version only) UL –40°C to +70°C, –20°C to +55°C (LED version only) CSA Explosion proof - Class 1, Div 1 & 2. –50°C to +55°C CSA - Ex d IIC –55°C to +70°C CSA Intrinsically safe - Class 1, Div 1 & 2 –50°C to +40°C *Note: includes ATEX, IECEx & INMETRO versions
Weight	3·8 kg. steel (approx.) or 2.5 kg. alloy (approx)
Ingress protection	IP66 & IP67. SM87PB IP68 (35m for 40 hours)
Entries	Up to 4 x M20 or M25 ISO Ex d/Ex ia Up to 4 x ½" or ¾" NPT UL Stainless steel version comes with two entries as standard. Units ordered with a single entry ordering code are supplied with 2x entries inc. plug on the opposite side
Terminals	Will accept up to 1·5mm² cable
Resistor values	470R minimum (d.c. & I.S. units only)

General arrangement drawing (all dimensions in mm)

Break glass



Push button



Both the Ex ia units and the Ex d units have the same external appearance. Also the internal components are identical throughout the range. Each unit can be wired for either NO, NC or CO contacts to customer specification

Ordering requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box

Unit	Model	Material	Certification	Entries	Duty label	Tag label	Options	Finish
SM87	PBL	S	D	1B1R	O	Y	HD	R

Material*	Code
Stainless steel	S
Alloy	A

*UL version only available in alloy

Model*	Code
Breakglass latching	BGL
Lift flap breakglass latching	LBGL
Push button latching key reset	PBL
Push button only momentary action	PBM

*UL and ULC versions only available in PBL model

Certification	Code
Ex ia	I
Ex d	D
IECEx - Ex ia	IJ
IECEx - Ex d	DJ
UL	UL
ULC	UC
CSA - Intrinsically Safe	IC
CSA - Ex proof	DC
INMETRO - Ex d	DM
CCC	DQ

Entries	Code
M20	1
M25	2
½" NPT	3
¾" NPT	4
Other	5
Position	
Top	*T
Bottom	*B
RHS	*R
LHS	*L

*Prefix position with size code i.e. 1T1B = M20 Top and Bottom

Duty label	Code
Fire breakglass	1
Push button	2
Fire push button	3
ESDO abandon	4
Burning house logo	5
Fire/FEU	6†
Other	O*
None	N

*Please specify
†This option must be used when ordering a red callpoint for ULC Fire Alarm applications

Tag label	Code
Required	Y*
Not required	N

*Please specify

Options	Code
Not required	N
LED	A
Resistor series	G*
Resistor EOL	H*
Diode	D*
3 pole c/o switch	T
4 pole c/o switch	F

*Please specify

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/black stripes	X
Special	S*

*Please specify

PUSH BUTTON TO SIS

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-ASD-01101	FZ-01 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
2	950-ASD-03101	FZ-03 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
3	950-ASD-04101	FZ-04 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
4	950-ASD-06101	FZ-06 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
5	950-ASD-07101	FZ-07 ABANDON SHUTDOWN ACTIVATION	ABANDON ACTIVATION
6	950-MOB-01101	FZ-01 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
7	950-MOB-03101	FZ-03 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
8	950-MOB-04101	FZ-04 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
9	950-MOB-06101	FZ-06 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
10	950-MOB-07101	FZ-07 MAN OVER BOARD ACTIVATION	MAN OVER BOARD ACTIVATION
11	950-ESD-01101	FZ-01 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
12	950-ESD-03101	FZ-03 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
13	950-ESD-04101	FZ-04 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
14	950-ESD-06101	FZ-06 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
15	950-ESD-07101	FZ-07 ESD-1 PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN ACTIVATION
16	950-ESDD-01101	FZ-01 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
17	950-ESDD-03101	FZ-03 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
18	950-ESDD-04101	FZ-04 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
19	950-ESDD-06101	FZ-06 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION
20	950-ESDD-07101	FZ-07 ESD-1D PUSH BUTTON ACTIVATION	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION

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SM87BG & SM87PB manual call point range

Ex d, Ex ia, weatherproof



Overview

These manual fire alarm, emergency shutdown break-glass and pushbutton units have been designed for the most arduous environmental conditions.

The units are both easy to install and maintain. Intrinsically safe Ex ia and flameproof Ex d versions of each model are available.

A choice of either stainless steel or alloy makes the range suitable for either the offshore or onshore industries. Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 0, Zone 1 and Zone 2 use*
- ATEX certified
- UL listed for USA and Canada (SM87PBL only). Class I, Div 1, Groups C & D
- ULC certified (SM87PBL only) for Class I, Zone 1 Groups C & D
- CSA certified
- IECEx certified
- Brazilian (INMETRO) certified
- Russian Fire certified
- PESO certified (Ex d only)
- SIL 2 certified (SM87PB only)
- IP66 and IP67
- DNV type approval (IEC 60945) (SM87PB only)
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Robust yet lightweight
- Easy to maintain

*Model dependent

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Certifications

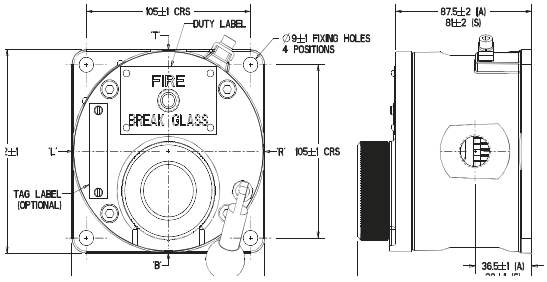
ATEX Ex d	Cert. no. Baseefa03ATEX0075. ATEX Approved Ex II 2GD Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db. IP66/IP67
ATEX Ex ia	Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1GD Certified to: EN60079-0, EN60079-11 Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da
IECEx Ex d	Cert. no. IECEx BAS 09.0060 Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°/T100°C Db. IP66/IP67
IECEx Ex ia	Cert. no. IECEx BAS 10.0033X Certified to: IEC60079-0, IEC60079-11, Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da
UL	Listing no. E186629 UL listed to Class 1, Div 1. Groups C & D. (SM87PBL)
ULC	Cert. no. 20091023-E320282 ULC certified for Class I, Zone 1 Groups C & D (SM87PBL)
CSA Explosion proof	Class 1, Div 1 & 2. Group D Ex d IIC T5/T6 Gb
CSA Intrinsically safe	Class 1, Div 1 & 2. Groups A-D
INMETRO Ex d	Ex db IIC T5/T6 Gb
Type Approvals	DNV (IEC 60945) (Stainless Steel SM87PB only)
SIL	SM87PB only - SIL2 Certification to IEC61508. Cert no. 20151118-4786827453
CCC	Ex d IIC T5/T6 Gb, Ex tD A21 IP66/IP67 T85°C/T100°C

Specifications

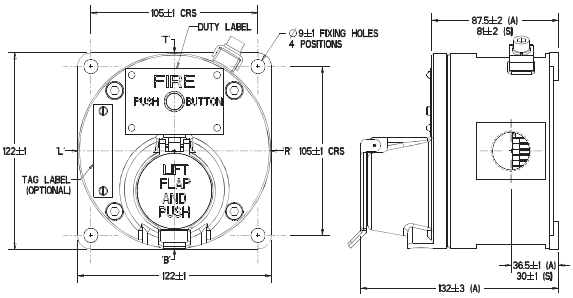
Material	Grade 316 ANC4B stainless steel or LM 25 TF marine grade alloy
Finish	Paint finish as standard or to customer specification
Voltage	Ex d 24V a.c./d.c. Ex ia 28V
Rating	2A
Switches	2 pole c/o, wired to terminals Optional up to 4 pole (UL version 2 pole only)
Optional indicator	A red high intensity LED can be fitted for alarm indication As standard the LED is not provided with over current protection. The forward current (If) should be limited to 20mA
Certified temp	Ex d* –55°C to +70°C. Ex ia* –55°C to +60°C –20°C to +55°C (LED version only) UL –40°C to +70°C, –20°C to +55°C (LED version only) CSA Explosion proof - Class 1, Div 1 & 2. –50°C to +55°C CSA - Ex d IIC –55°C to +70°C CSA Intrinsically safe - Class 1, Div 1 & 2 –50°C to +40°C *Note: includes ATEX, IECEx & INMETRO versions
Weight	3·8 kg. steel (approx.) or 2.5 kg. alloy (approx)
Ingress protection	IP66 & IP67. SM87PB IP68 (35m for 40 hours)
Entries	Up to 4 x M20 or M25 ISO Ex d/Ex ia Up to 4 x ½" or ¾" NPT UL Stainless steel version comes with two entries as standard. Units ordered with a single entry ordering code are supplied with 2x entries inc. plug on the opposite side
Terminals	Will accept up to 1·5mm² cable
Resistor values	470R minimum (d.c. & I.S. units only)

General arrangement drawing (all dimensions in mm)

Break glass



Push button



Both the Ex ia units and the Ex d units have the same external appearance. Also the internal components are identical throughout the range. Each unit can be wired for either NO, NC or CO contacts to customer specification

Ordering requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box

Unit	Model	Material	Certification	Entries	Duty label	Tag label	Options	Finish
SM87	PBL	S	D	1B1R	O	Y	HD	Y

Material*	Code
Stainless steel	S
Alloy	A

*UL version only available in alloy

Model*	Code
Breakglass latching	BGL
Lift flap breakglass latching	LBGL
Push button latching key reset	PBL
Push button only momentary action	PBM

*UL and ULC versions only available in PBL model

Certification	Code
Ex ia	I
Ex d	D
IECEx - Ex ia	IJ
IECEx - Ex d	DJ
UL	UL
ULC	UC
CSA - Intrinsically Safe	IC
CSA - Ex proof	DC
INMETRO - Ex d	DM
CCC	DQ

Entries	Code
M20	1
M25	2
½" NPT	3
¾" NPT	4
Other	5
Position	
Top	*T
Bottom	*B
RHS	*R
LHS	*L

*Prefix position with size code i.e. 1T1B = M20 Top and Bottom

Duty label	Code
Fire breakglass	1
Push button	2
Fire push button	3
ESDO abandon	4
Burning house logo	5
Fire/FEU	6†
Other	O*
None	N

*Please specify
†This option must be used when ordering a red callpoint for ULC Fire Alarm applications

Tag label	Code
Required	Y*
Not required	N

*Please specify

Options	Code
Not required	N
LED	A
Resistor series	G*
Resistor EOL	H*
Diode	D*
3 pole c/o switch	T
4 pole c/o switch	F

*Please specify

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/black stripes	X
Special	S*

*Please specify

GAS FLASH BEACON (AMBER)

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-XL-01101	FZ-01 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
2	950-XL-02101	FZ-02 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
3	950-XL-03101	FZ-03 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
4	950-XL-03103	FZ-03 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
5	950-XL-04101	FZ-04 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
6	950-XL-04103	FZ-04 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
7	950-XL-04201	FZ-04 GAS BEACON ACT. - B-400 INDOOR	FLAMMABLE GAS ALARM
8	950-XL-04203	FZ-04 GAS BEACON ACT. - B-300 INDOOR	FLAMMABLE GAS ALARM
9	950-XL-04205	FZ-04 GAS BEACON ACT. - B-200 INDOOR	FLAMMABLE GAS ALARM
10	950-XL-06101	FZ-06 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
11	950-XL-06103	FZ-06 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM
12	950-XL-06201	FZ-06 GAS BEACON ACT. - B-100 INDOOR	FLAMMABLE GAS ALARM
13	950-XL-07101	FZ-07 GAS BEACON ACTIVATION	FLAMMABLE GAS ALARM

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SM87HXB 5 joule xenon and SM87LED high intensity LED beacon range

Ex d, weatherproof



Overview

These certified beacons have been designed for use in harsh environmental conditions. The stainless steel or marine grade alloy enclosures are suitable for use offshore or onshore, where lightweight combined with corrosion resistance and strength is required. Units can be painted to customer specification and fitted with identification labels.

LED version available, offering extended lifetimes.

Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 1 and Zone 2 use
- Ex d IIC T4/T5/T6
- ATEX approved, Ex II 2GD
- IECEx certified Gb, Db
- UL listed for USA and Canada
  - Class I, Div 1, Groups C & D
  - Class I, Zone 1, AExd IIB
- CSA certified
- CQST certified*
- INMETRO certified*
- SIL 2 certified
- CCOE certified
- IP66 and IP67
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Xenon or LED versions
- Various lens colours
- Optional lens guard
- Telephone or relay initiated

*Depending on version

ATEX IECEx INMETRO

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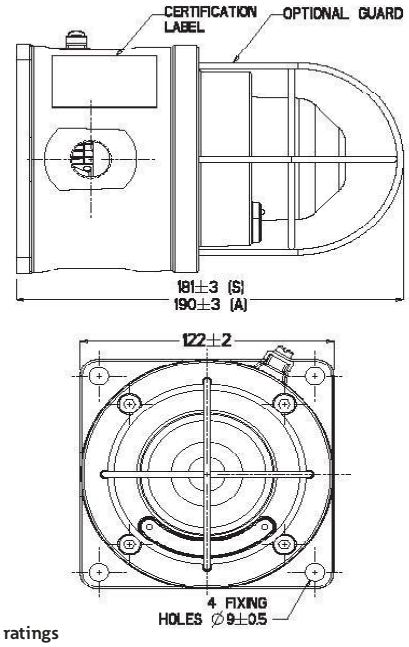
Certifications

ATEX Ex d	Cert. no. Baseefa 03ATEX0222 Certified to: EN60079-0, EN60079-1, EN60079-31 SM87HXB: Ex II 2GD, Ex d IIC T5/T6 Gb, Ex tb IIIC T65°C/T80°C/T95°C Db SM87LED: Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55°C/T70°C Db
IECEx Ex d	Cert. no. IECEx BAS 09.0059 Certified to: IEC60079-0, IEC60079-1, IEC60079-31 SM87HXB: Ex d IIC T5/T6 Gb, Ex tb IIIC T65°C/T80°C/T95°C Db SM87LED: Ex d IIC T6 Gb, Ex tb IIIC T55°C/T70°C Db
UL	Listing no. E187894 Class I, Div 1, Groups C & D Class I, Zones 1. (SM87HXB & SM87XBT only)
CSA	Cert no. 96406. (SM87HXB only) Certified to: C22.2 Nos 0, 0.4, 0.5, 9, 30-M1986, 94-M91, 137-M1981 Class I, Div 1. Group D
INMETRO Ex d	SM87HXB: Ex db IIC T5/T6 Gb, Ex tb IIIC T80°C/T95°C Db SM87LED: Ex db IIC T6 Gb, Ex tb IIIC T70°C Db
CQST Ex d	SM87HXB: Ex d IIC T5/T6 Gb, Ex tb IIIC T65°C/T80°C/T95°C Db
SIL	SIL2 certification to IEC61508. Cert. No. 20151119-4786827453

Specifications

Material	SM87HXBS and SM87LEDS: Grade 316 ANC4B stainless steel SM87HXBA and SM87LEDA: LM25 TF marine grade alloy Lens: glass UL version available only in marine grade alloy
Finish	Epoxy paint finish as standard
Certified temp	SM87HXB: ATEX, IECEx, CQST, INMETRO -55°C to +70°C (T5) -55°C to +55°C (T6) UL -55°C to +70°C CSA -50°C to +40°C SM87LED: ATEX, IECEx, CQST, INMETRO -55°C to +55°C* (T6) * Operating temperature is -20°C to +55°C
Weight	SM87HXBS & SM87LEDS: 3.8kg each (approx) SM87HXBA & SM87LEDA: 2kg. each (approx)
Ingress protection	IP66 & IP67
Entries	Up to 4 x M20 / M25 ISO or 1/2" / 3/4" NPT
Terminals	SM87HXB SM87LED: Terminal suitable for 2.5mm2 cable
Relay initiate	Initiation by telephone ringing tone or low voltage control signals
Labels	Duty & tag labels optional

General arrangement drawing (all dimensions in mm)



Electrical ratings

	d.c.		a.c. 50/60Hz				
Voltage	24	48	110	120	220	240	254
Tube energy (Joules) SM87HXB	5	5	6	7	6	7	8
Current consumption SM87HXB	393	175	250	275	120	135	153
Current consumption SM87LED (mA)	165	85	N/A	N/A	N/A	N/A	N/A
Effective intensity (Cd)	29	29	32	39	32	39	44
Peak intensity (Cd)	22213	22213	25061	30187	25061	30187	34174

NOTE: The above figures (Cd) are for a clear lens @ 1Hz flash rate

Multiplying factor for coloured lenses

Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.36

The photometric data given above has been verified by BSI. Reports are available if required

LED light output - steady or flashing (customer selectable)

	Red	Blue	Amber	Green
Total LED output (candela)	192	64	64	17

LED/lens colour: red, blue, green, amber, yellow (not LED) or clear
Flash rate: 90fpm as standard, other flash rates available on request

Flash rate: 60fpm

Ordering requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box

Model	Certification	Voltage	Lens/LED colour	Guard	Entries	Tag/duty	Options	Finish
SM87LEDS	B	024	A	Y	1B1R	Y	N	R

Model

Voltage	Code
Xenon (stainless steel)	SM87HXBS
Xenon (alloy)	SM87HXBA
LED Exd (stainless steel)	SM87LEDS
LED Exd (alloy)	SM87LEDA

Certification

Certification	Code
ATEX	B
IECEx	J
UL	UL†
CSA	C‡
Chinese(CQST)	Q
INMETRO	DM

† Only SM87HXBA is available UL certified
‡ Only SM87HXB

Voltage

Voltage	Code
24 V d.c.	024
48 V d.c.	048
110 V a.c. not LED	110
120 V a.c. not LED	120
220 V a.c. not LED	220
240 V a.c. not LED	240
254 V a.c. not LED	254

Lens/LED colour

Colour	Code
Clear	C
Red	R
Blue	B
Green	G
Amber	A
Yellow (not LED)	Y

Guard

Guard	Code
None	N
Yes	Y

Entries

Entries	Code
M20	1
M25	2
1/2" NPT	3
3/4" NPT	4
Top	*T
Bottom	*B
RHS	*R
LHS	*L

* Prefix position with entry size code
e.g. 1T1B=M20 Top and Bottom entries

Tag/duty

Label	Code
None	N
Yes	Y*

* Please specify wording (Note: 15 characters maximum)

Options

Options	Code
Telephone	T*‡
Relay	R*‡
EOL resistor	E*†
None	N

* Not available on UL versions
† Please specify
‡ For SM87LED please specify if steady or flashing is required

Finish

Colour	Code
Red	R
Blue	B
Yellow	Y
Yellow/ black stripe	X
Grey	G
White	W
Special	S*

*Please specify

FIRE FLASH BEACON (RED)

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-XL-01102	FZ-01 FIRE BEACON ACTIVATION	FIRE ALARM
2	950-XL-02102	FZ-02 FIRE BEACON ACTIVATION	FIRE ALARM
3	950-XL-03102	FZ-03 FIRE BEACON ACTIVATION	FIRE ALARM
4	950-XL-03104	FZ-03 FIRE BEACON ACTIVATION	FIRE ALARM
5	950-XL-04102	FZ-04 FIRE BEACON ACTIVATION	FIRE ALARM
6	950-XL-04104	FZ-04 FIRE BEACON ACTIVATION	FIRE ALARM
7	950-XL-04202	FZ-04 FIRE BEACON ACT. - B-400 INDOOR	FIRE ALARM
8	950-XL-04204	FZ-04 FIRE BEACON ACT. - B-300 INDOOR	FIRE ALARM
9	950-XL-04206	FZ-04 FIRE BEACON ACT. - B-200 INDOOR	FIRE ALARM
10	950-XL-06102	FZ-06 FIRE BEACON ACTIVATION	FIRE ALARM
11	950-XL-06104	FZ-06 FIRE BEACON ACTIVATION	FIRE ALARM
12	950-XL-06202	FZ-06 FIRE BEACON ACT. - B-100 INDOOR	FIRE ALARM
13	950-XL-07102	FZ-07 FIRE BEACON ACTIVATION	FIRE ALARM

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SM87HXB 5 joule xenon and SM87LED high intensity LED beacon range

Ex d, weatherproof



Overview

These certified beacons have been designed for use in harsh environmental conditions. The stainless steel or marine grade alloy enclosures are suitable for use offshore or onshore, where lightweight combined with corrosion resistance and strength is required. Units can be painted to customer specification and fitted with identification labels.

LED version available, offering extended lifetimes.

Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 1 and Zone 2 use
- Ex d IIC T4/T5/T6
- ATEX approved, Ex II 2GD
- IECEx certified Gb, Db
- UL listed for USA and Canada
  - Class I, Div 1, Groups C & D
  - Class I, Zone 1, AExd IIB
- CSA certified
- CQST certified*
- INMETRO certified*
- SIL 2 certified
- CCOE certified
- IP66 and IP67
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Xenon or LED versions
- Various lens colours
- Optional lens guard
- Telephone or relay initiated

*Depending on version

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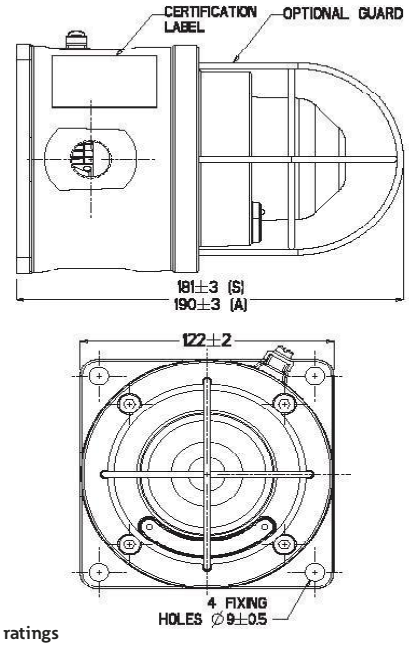
Certifications

ATEX Ex d	Cert. no. Baseefa 03ATEX0222 Certified to: EN60079-0, EN60079-1, EN60079-31 SM87HXB: Ex II 2GD, Ex d IIC T5/T6 Gb, Ex tb IIIC T65°C/T80°C/T95°C Db SM87LED: Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55°C/T70°C Db
IECEx Ex d	Cert. no. IECEx BAS 09.0059 Certified to: IEC60079-0, IEC60079-1, IEC60079-31 SM87HXB: Ex d IIC T5/T6 Gb, Ex tb IIIC T65°C/T80°C/T95°C Db SM87LED: Ex d IIC T6 Gb, Ex tb IIIC T55°C/T70°C Db
UL	Listing no. E187894 Class I, Div 1, Groups C & D Class I, Zones 1. (SM87HXB & SM87XBT only)
CSA	Cert no. 96406. (SM87HXB only) Certified to: C22.2 Nos 0, 0.4, 0.5, 9, 30-M1986, 94-M91, 137-M1981 Class I, Div 1. Group D
INMETRO Ex d	SM87HXB: Ex db IIC T5/T6 Gb, Ex tb IIIC T80°C/T95°C Db SM87LED: Ex db IIC T6 Gb, Ex tb IIIC T70°C Db
CQST Ex d	SM87HXB: Ex d IIC T5/T6 Gb, Ex tb IIIC T65°C/T80°C/T95°C Db
SIL	SIL2 certification to IEC61508. Cert. No. 20151119-4786827453

Specifications

Material	SM87HXBS and SM87LEDS: Grade 316 ANC4B stainless steel SM87HXBA and SM87LEDA: LM25 TF marine grade alloy Lens: glass UL version available only in marine grade alloy
Finish	Epoxy paint finish as standard
Certified temp	SM87HXB: ATEX, IECEx, CQST, INMETRO -55°C to +70°C (T5) -55°C to +55°C (T6) UL -55°C to +70°C CSA -50°C to +40°C SM87LED: ATEX, IECEx, CQST, INMETRO -55°C to +55°C* (T6) * Operating temperature is -20°C to +55°C
Weight	SM87HXBS & SM87LEDS: 3.8kg each (approx) SM87HXBA & SM87LEDA: 2kg. each (approx)
Ingress protection	IP66 & IP67
Entries	Up to 4 x M20 / M25 ISO or 1/2" / 3/4" NPT
Terminals	SM87HXB SM87LED: Terminal suitable for 2.5mm2 cable
Relay initiate	Initiation by telephone ringing tone or low voltage control signals
Labels	Duty & tag labels optional

General arrangement drawing (all dimensions in mm)



Electrical ratings

	d.c.		a.c. 50/60Hz				
Voltage	24	48	110	120	220	240	254
Tube energy (Joules) SM87HXB	5	5	6	7	6	7	8
Current consumption SM87HXB	393	175	250	275	120	135	153
Current consumption SM87LED (mA)	165	85	N/A	N/A	N/A	N/A	N/A
Effective intensity (Cd)	29	29	32	39	32	39	44
Peak intensity (Cd)	22213	22213	25061	30187	25061	30187	34174

NOTE: The above figures (Cd) are for a clear lens @ 1Hz flash rate

Multiplying factor for coloured lenses

Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.36

The photometric data given above has been verified by BSI. Reports are available if required

LED light output - steady or flashing (customer selectable)

	Red	Blue	Amber	Green
Total LED output (candela)	192	64	64	17

LED/lens colour: red, blue, green, amber, yellow (not LED) or clear
Flash rate: 90fpm as standard, other flash rates available on request

Flash rate: 60fpm

Ordering requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box

Model	Certification	Voltage	Lens/LED colour	Guard	Entries	Tag/duty	Options	Finish
SM87LEDS	B	024	R	Y	1B1R	Y	N	R

Model

Voltage	Code
Xenon (stainless steel)	SM87HXBS
Xenon (alloy)	SM87HXBA
LED Exd (stainless steel)	SM87LEDS
LED Exd (alloy)	SM87LEDA

Certification

Certification	Code
ATEX	B
IECEx	J
UL	UL†
CSA	C‡
Chinese(CQST)	Q
INMETRO	DM

† Only SM87HXBA is available UL certified
‡ Only SM87HXB

Voltage

Voltage	Code
24 V d.c.	024
48 V d.c.	048
110 V a.c. not LED	110
120 V a.c. not LED	120
220 V a.c. not LED	220
240 V a.c. not LED	240
254 V a.c. not LED	254

Lens/LED colour

Colour	Code
Clear	C
Red	R
Blue	B
Green	G
Amber	A
Yellow (not LED)	Y

Guard

Guard	Code
None	N
Yes	Y

Entries

Entries	Code
M20	1
M25	2
1/2" NPT	3
3/4" NPT	4
Top	*T
Bottom	*B
RHS	*R
LHS	*L

* Prefix position with entry size code
e.g. 1T1B=M20 Top and Bottom entries

Tag/duty

Label	Code
None	N
Yes	Y*

* Please specify wording (Note: 15 characters maximum)

Options

Options	Code
Telephone	T*‡
Relay	R*‡
EOL resistor	E*†
None	N

* Not available on UL versions
† Please specify
‡ For SM87LED please specify if steady or flashing is required

Finish

Colour	Code
Red	R
Blue	B
Yellow	Y
Yellow/ black stripe	X
Grey	G
White	W
Special	S*

*Please specify

SOUNDER

POS.	TAG NUMBER	SERVICE	DUTY LABEL
1	950-XZ-01101	FZ-01 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
2	950-XZ-01102	FZ-01 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
3	950-XZ-02101	FZ-02 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
4	950-XZ-03101	FZ-03 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
5	950-XZ-03102	FZ-03 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
6	950-XZ-04101	FZ-04 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
7	950-XZ-04102	FZ-04 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
8	950-XZ-04201	FZ-04 SOUNDER ACT. - B-400 INDOOR	EMERGENCY SHUTDOWN ALARM
9	950-XZ-04202	FZ-04 SOUNDER ACT. - B-300 INDOOR	EMERGENCY SHUTDOWN ALARM
10	950-XZ-04203	FZ-04 SOUNDER ACT. - B-200 INDOOR	EMERGENCY SHUTDOWN ALARM
11	950-XZ-05101	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
12	950-XZ-05102	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
13	950-XZ-05103	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
14	950-XZ-05104	FZ-05 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
15	950-XZ-06101	FZ-06 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM
16	950-XZ-06201	FZ-06 SOUNDER ACT. - B-100 INDOOR	EMERGENCY SHUTDOWN ALARM
17	950-XZ-07101	FZ-07 SOUNDER ACTIVATION	EMERGENCY SHUTDOWN ALARM

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DB3BM sounders range up to 116dB

Ex d, weatherproof



Overview

The DB3BM is a high power explosion proof sounder, introduced as a replacement for the current DB1 / DB1H with improved functionality and performance. Certified for use in a wide range of temperatures from -60°C to +85°C the Ex enclosure is manufactured in either marine grade alloy or stainless steel with a rugged thermoplastic flare providing a corrosion free and aesthetically pleasing product.

Capable of producing 116 dB @ 1m and with a range of pre-recorded tones, the DB3BM includes an integral volume control which is ideal when a lower output is required.

The unit is provided with versatile control options allowing compatibility with a wide range of control methods and PLCs.

The standard DC unit provides 3 tone stages, each stage has 28 tones available which can be independently selected. The unit can be controlled by reversing the polarity of the power supply (2 stage) or providing a common negative and switching between multiple positive supplies.

The DB3BM proves its versatility by additionally being able to work with a common positive supply and switching the negatives. The tone stages of the DB3BM can also be controlled via voltage free contacts provided by a control panel.

The flexibility of the range continues with a wide range of supply voltages. The short flare option is a worthy addition to the range offering a high SPL in a compact unit.

Features

- UKEX / ATEX / IECEx
  Ex db IIC T4/T5/T6 Gb
  Ex tb IIIC T4/T5/T6 Db
- Certified temperature: –60°C to +85°C
- IP66 & IP67 (terminal only)
- Up to 116 dB output @ 1 m
- Integral volume control
- 28 tones, user selectable
- 3 stage unit remotely switchable
- Tones can be programmed to customer's specification
- DC supply voltage between 12 V and 48 V
- End of line resistor option
- Sounder & beacon combination units available, for further details contact MEDC
- Ex enclosure – marine grade alloy or stainless steel
- Flare - high impact thermoplastic polyester
- Stainless steel mounting bracket and cover screws
- Mounting bracket has ratchet facility as standard
- Swivel bracket standard on Stainless steel unit, optional on Alloy units



Stainless steel body, short flare version

ATEX IECEx UKCA

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No liability is accepted for any consequence of use.

Certifications

ATEX Ex db	Cert. no. UL 21 ATEX02559X. Certified to: EN IEC 60079-0, EN 60079-1, 31 Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db, IP66 (IP65 short flare)
IECEx Ex db	Cert. no. IECEx ULD 21.0017X. Certified to: IEC60079-0,1,31 Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db, IP66 (IP65 short flare)
UKEX Ex db	Cert. no. UL21UKEX2209X. Certified to: EN IEC 60079-0, EN 60079-1, 31 Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db IP66 (IP65 short flare)
Safe Area	EN 61010-1, EN 60529, EN61000-6

Specifications

Material	Ex enclosure – marine grade alloy or stainless steel Flare - flame retardant, high impact, UV stable, thermoplastic polyester (UV stability tested to ISO 4892 part 3) Hardware - bracket, fixings and captive cover screws in 316 stainless steel
Fire retardancy	Outer flare - thermoplastic polyester. V0 flammability rating
Finish	Body – alloy: painted black. Stainless steel: painted black. Flare - natural black, natural red or painted as specified
Voltage	DC: 12 - 48 V. AC: Up to 254 V. if using EOL resistor/s the maximum power dissipation must be limited to 3 W.
Weight	Alloy - 4.4 kg, stainless steel 8.35 kg based on long flare DC unit
Ingress protection	IP66 & IP67 (terminal only). IP65 short flare
Entries	Up to 2 x M20 or M25 or ½"or ¾" NPT. Blanking plug available
Terminals	AC: 4 x 1.5mm² (loop in / out power), 3 x 2.5mm² (tone selection) (standard unit only) DC: 8 x 2.5mm² (8 for loop in / out power and tone selection) (standard unit only)
Mounting arrangement	Stainless steel bracket with ratchet facility, optional swivel bracket available. Swivel standard on stainless steel unit
Labels	Optional duty and tag labels available
Tone information	28 tones per stage. Additional custom tones available (contact MEDC) Suitable for use with 200 Hz tones
Relative Humidity	99% Non-condensing

Tone activation and selection

Voltage	Unit	No.of stages	Tone activation	Tone selection
DC	Standard	1	Apply power	1 x DIP switch
		2	Reverse polarity	2 x DIP switches
			Common -ve with 2 +ve supplies	2 x DIP switches
			*Common +ve with 2 -ve supplies	2 x DIP switches
		3	Common -ve with 3 +ve supplies	3 x DIP switches
	Alternative tone activation (Option M)	2	*Common -ve with 2 +ve supplies	2 x DIP switches
		3	Common +ve with 3 -ve supplies	3 x DIP switches
	Alternative tone activation (remote) (Option R)	1-5	Volt free activation (remote switching)	1 x DIP switch for stage 1. Tone pre-selected for subsequent stages
AC	Standard	1	Apply power	1 x DIP switch
	Alternative tone activation (remote) (Option R)	1-2	Volt free activation (remote switching)	1 x DIP switch for stage 1. Tone preselected for the 2nd stage

*Reverse polarity line monitoring can be used with common positive or negative switching to give up to 2 operational stages and a 3rd monitoring connection. An EOL resistor can be fitted as shown in the technical manual. All connection details are shown in the technical manual.

Current consumption: Based on a continuous 970Hz tone

Voltage	Current for IIC unit	Current for IIIC unit
12 Vdc	700 mA	716 mA
24 Vdc	329 mA	339 mA
48 Vdc	171 mA	173 mA
110 Vac	115 mA	122 mA
120 Vac	106 mA	113 mA
220 Vac	59 mA	63 mA
230 Vac	52 mA	55 mA
240 Vac	55 mA	58 mA
254 Vac	59 mA	63 mA

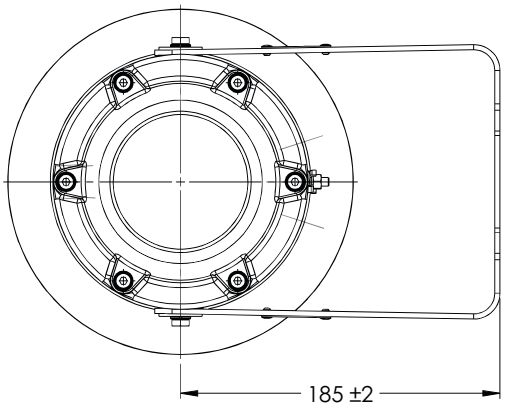
Certified temperature	Ex d/UL min	Max
	-60°C	+85°C

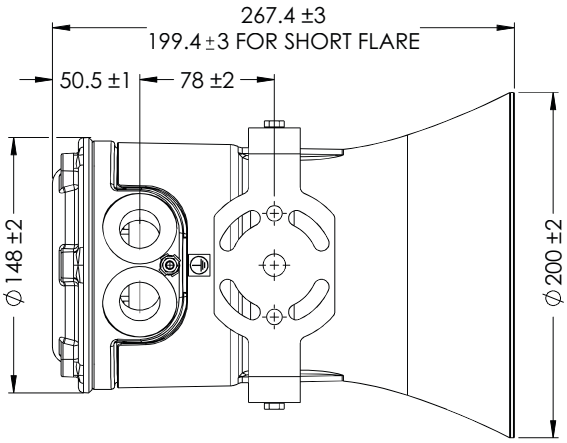
Operating temperature at launch (DC Only): -40 °C min +85 °C max
-55 °C as standard to follow. Please contact MEDC for low temperature options

Max output (dB) 1400Hz @ 1m	Short Flare	Long Flare
	113 dB	116 dB

For Labels and Entries select any option as required. For Options select either (N) None or (E) EOL as required
Tolerance +/-3dB. Please see the technical manual for tone specific SPL values

General arrangement drawing (all dimensions in mm)





Ordering requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box

Model: DB3BM

Material: S

Finish	Code
Alloy	A
Stainless Steel	S

Ex Certification: D

Ex Certification	Code
UKEX/ATEX Ex d	D
IECEx Ex d	J
Weatherproof	W

Voltage: 048

Voltage	Code
12-48 Vdc	048‡
110 Vac	110
120 Vac	120*
220 Vac	220
230 Vac	230
240 Vac	240*
254 Vac	254

*Complies with UL regulated power supply requirements

Labels: DT

Labels	Code
None	N
Duty	D*
Tag	T*

*Please specify

Entries: 1B

Entries	Code
1 x M20	1B
2 x M20	2B
2 x M20 inc 1 x plug	2BP
1 x ½"NPT	1C
2 x ½" NPT	2C
2 x ½" NPT inc 1 x plug	2CP
1 x M25	1D
2 x M25	2D
2 x M25 inc 1x plug	2DP
1 x ¾" NPT	1E
2 x ¾" NPT	2E
2 x ¾" NPT inc 1x plug	2EP

Options: N

Options	Code
None	N
Swivel bracket	B‡
EOL	E*
Alternative tone activation	M**
Volt free activation (remote)	R**
Short flare	S
Custom tones (not std 27)	TΔ

‡ Alloy only - stainless steel has swivel as standard
*Specify value max power dissipation is 3W
**These options cannot be selected together
ΔSpecify details

Finish: R (RAL 3020)

Finish	Code
Natural black	N
Natural red	R
Yellow	Y
Grey	G
Blue	B
Special	S*

*Please specify

PUSH BUTTON DPDT CONTACT

POS.	TAG NUMBER	SERVICE
1	77-HS-001A	B-100 Fire Damper AHU1 Inlet Air
2	77-HS-001B	B-100 Fire Damper AHU1 Inlet Air
3	77-HS-002A	B-100 Fire Damper AHU2 Inlet Air
4	77-HS-002B	B-100 Fire Damper AHU2 Inlet Air
5	77-HS-003A	B-100 Fire Damper Exhaust Air
6	77-HS-003B	B-100 Fire Damper Exhaust Air
7	77-HS-004A	B-200 Fire Damper AHU3 Inlet Air
8	77-HS-004B	B-200 Fire Damper AHU3 Inlet Air
9	77-HS-005A	B-200 Fire Damper AHU4 Inlet Air
10	77-HS-005B	B-200 Fire Damper AHU4 Inlet Air
11	77-HS-006A	B-200 Fire Damper Exhaust Air
12	77-HS-006B	B-200 Fire Damper Exhaust Air
13	77-HS-007A	B-300 Fire Damper AHU5 Inlet Air
14	77-HS-007B	B-300 Fire Damper AHU5 Inlet Air
15	77-HS-008A	B-300 Fire Damper AHU5 Return Air
16	77-HS-008B	B-300 Fire Damper AHU5 Return Air
17	77-HS-009A	B-300 Fire Damper AHU6 Inlet Air
18	77-HS-009B	B-300 Fire Damper AHU6 Inlet Air
19	77-HS-010A	B-300 Fire Damper AHU6 Return Air
20	77-HS-010B	B-300 Fire Damper AHU6 Return Air
21	77-HS-011A	B-300 Fire Damper Exhaust Air
22	77-HS-011B	B-300 Fire Damper Exhaust Air
23	77-HS-012A	B-400 Fire Damper AHU7 Inlet Air
24	77-HS-012B	B-400 Fire Damper AHU7 Inlet Air
25	77-HS-013A	B-400 Fire Damper AHU7 Return Air
26	77-HS-013B	B-400 Fire Damper AHU7 Return Air
27	77-HS-014A	B-400 Fire Damper AHU8 Inlet Air
28	77-HS-014B	B-400 Fire Damper AHU8 Inlet Air
29	77-HS-015A	B-400 Fire Damper AHU8 Return Air
30	77-HS-015B	B-400 Fire Damper AHU8 Return Air
31	77-HS-016A	B-400 Fire Damper Exhaust Air
32	77-HS-016B	B-400 Fire Damper Exhaust Air

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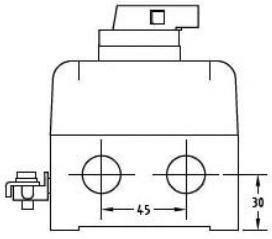


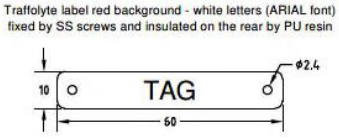
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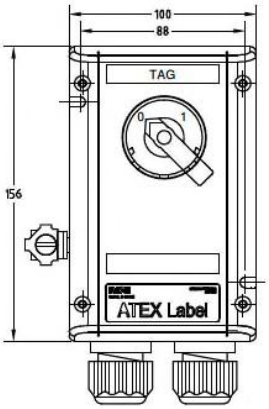
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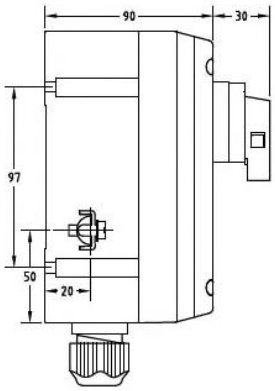
	Ex-control stations Type 432 I Type 434	
Marking accd. to 2014/34/EU	Ⓔx II 2 G Ex ed ib m IIC T6 Ⓔx II 2 D Ex tD A21 IP66 T80 °C	
EC-Type Examination Certificate	PTB 00 ATEX 3117	
IECEx Certificate of Conformity	IECEx BKI 04.0003	
Marking accd. to IECEx	Ex e II T6, Ex e ib IIC T6, Ex ed IIC T6 or Ex ed ib IIC T6	
Permissible ambient temperature	–20 °C up to +40 °C –55 °C up to +55 °C (option)	
Rated voltage	690 V AC (with control switch GHG 23 up to 500 V)	
Rated current	16 A (with control switch GHG 23 max. 10 A)	
Rated making-/rated breaking capacity accd. EN 60947-5-1	Ex41 AC-15: U_e 250 V / I_e 6 A U_e 500 V / I_e 4 A DC-13: U_e 24 V / I_e 6 A U_e 110 V / I_e 0.5 A	Ex23 AC-15: U_e 230 V / I_e 6 A U_e 500 V / I_e 4 A DC-13: U_e 24 V / I_e 2 A U_e 230 V / I_e 0.5 A
Connecting terminals	2 x 4 mm²	
Protection class	I	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	2 x M25 cable gland incl. 1 blanking plug or optional 2 x M20 thread	
Enclosure material	Polyamide	
Enclosure colour	black	

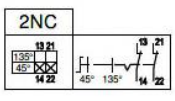
	Type 432
Dimensions (L x W x H)	156 x 100 x 90 mm
Weight (empty)	0.47 kg

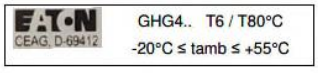


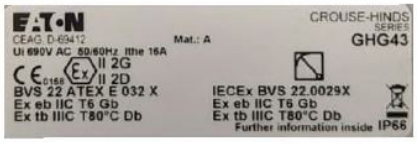












Technical data:
Manufactured by Eaton Crouse-Hinds Division
Model: GHG 432
Certificate No.
PTB 00 ATEX 3117
IECEx BKI 04.0003
Marking: ATEX and IECEx
II 2G Ex de IIC T6 Gb
II 2D Ex tb IIIC T80°C Db
-20°C ≤ tamb ≤ +55°C
Ui 690V
IP65

Specific characteristics:
- Polyamide (PA), black
- Closed with stainless steel screw
- M6 internal/external stainless steel earth stud

Components:
- No. 1 black selector switch with 2 position 2NC

Entries bottom side B:
- No. 2 M20 threaded holes

No. 1 1,6x60x10 mm white text on red background traffolyte tag fixed with stainless steel screws on the cover, sealed on the back with PU adhesive and engraved

Also a certification label fixed with back self adhesive on the cover

Base Load Power Hub (BLPH)

F&G FIELD EQUIPMENT

VENDOR ASSET AND TAG REGISTER

Document Number:1724000821-IN-LIS-00008

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
V. Barratta	13-12-2024

Rev.	Date	Description	Prepared	Reviewed	Approved
01	21/11/2024	Accepted for Construction (IFC)	L. Pizzigati	M. Ossani	S. Montanari
00	02/10/2024	Issue for Review (IFR)	L. Pizzigati	M. Ossani	S. Montanari

FORES ENGINEERING

File: 1724000821-IN-LIS-00008-01.xlsx

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1	Cover	X	X						
2	Table of Contents	X	X						
3	Revision / Change Log	X	X						
4	VENDOR ASSET AND TAG REGISTER	X	X						
5	VENDOR ASSET AND TAG REGISTER	X	X						
6	VENDOR ASSET AND TAG REGISTER	X	X						
7	VENDOR ASSET AND TAG REGISTER	X	X						
8	VENDOR ASSET AND TAG REGISTER	X	X						
9	VENDOR ASSET AND TAG REGISTER		X						

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (IFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

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Tag Number	Tag Description	Physical Class Name	Location	System/SubSystem Code	Purchase Order Number	Vendor Company Name	Manufacturer Company Name	Model Number	Equipment Manufacturer Serial Number	Model Part No	Hazardous Area Equip Relevant	Hazardous Area Certificate Standard	Hazardous Area Certifying Authority	Hazardous Area Certificate Number	Atex Classification	Explosion Protection Examination Certificate Document Number	Layout Drawing	Datasheet	Assembly/Dimensional Drawing	General Arrangement	Operating & Maintenance Manual	Wiring Diagram	Spare Parts List	Lubricant Document Reference	Criticality	Remarks
950-SDZ-04201	FZ-04 SMOKE DETECT. IN B-400 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-400 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4050816	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04202	FZ-04 SMOKE DETECT. IN B-400 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-400 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4050799	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04203	FZ-04 SMOKE DETECT. IN B-400 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-400 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4050827	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04207	FZ-04 SMOKE DETECT. IN B-300 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-300 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4050834	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04208	FZ-04 SMOKE DETECT. IN B-300 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-300 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051785	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
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950-SDZ-04213	FZ-04 SMOKE DETECT. IN B-200 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-200 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051769	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04214	FZ-04 SMOKE DETECT. IN B-200 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-200 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051786	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04215	FZ-04 SMOKE DETECT. IN B-200 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-04 B-200 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051705	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-06201	FZ-06 SMOKE DETECT. IN B-100 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-06 B-100 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051704	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-06202	FZ-06 SMOKE DETECT. IN B-100 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-06 B-100 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051745	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-06203	FZ-06 SMOKE DETECT. IN B-100 HVAC AIR INTAKE	SMOKE DETECTOR	FZ-06 B-100 HVAC AIR INTAKE	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051716	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04204	FZ-04 SMOKE DETECT. IN B-400 I&T EQUIP. ROOM	SMOKE DETECTOR	FZ-04 B-400 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051764	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
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950-SDZ-04206	FZ-04 SMOKE DETECT. IN B-400 I&T EQUIP. ROOM	SMOKE DETECTOR	FZ-04 B-400 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051754	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04210	FZ-04 SMOKE DETECT. IN B-300 A.C UPS ROOM	SMOKE DETECTOR	FZ-04 B-300 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051736	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04211	FZ-04 SMOKE DETECT. IN B-300 A.C UPS ROOM	SMOKE DETECTOR	FZ-04 B-300 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051777	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04212	FZ-04 SMOKE DETECT. IN B-300 A.C UPS ROOM	SMOKE DETECTOR	FZ-04 B-300 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051708	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04216	FZ-04 SMOKE DETECT. IN B-200 LV SWGR ROOM	SMOKE DETECTOR	FZ-04 B-200 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051744	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04217	FZ-04 SMOKE DETECT. IN B-200 LV SWGR ROOM	SMOKE DETECTOR	FZ-04 B-200 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051770	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-04218	FZ-04 SMOKE DETECT. IN B-200 LV SWGR ROOM	SMOKE DETECTOR	FZ-04 B-200 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051724	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-06204	FZ-06 SMOKE DETECT. IN B-100 HV/MV SWGR ROOM	SMOKE DETECTOR	FZ-06 B-100 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051762	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-06205	FZ-06 SMOKE DETECT. IN B-100 HV/MV SWGR ROOM	SMOKE DETECTOR	FZ-06 B-100 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051768	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-SDZ-06206	FZ-06 SMOKE DETECT. IN B-100 HV/MV SWGR ROOM	SMOKE DETECTOR	FZ-06 B-100 AMBIENT	950	1724000821	Fores Engineering	TYCO	MR601TEx	4051782	MR601TEx		EN IEC 60079-0:2018	SGS Fimko Oy	BAS 01 ATEX 1134 X	II 1 GD	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02101	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2193	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02102	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2196	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02103	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2197	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02104	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTB-1620	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02105	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2185	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02106	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2201	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02107	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2206	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02108	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2198	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02109	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2203	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02110	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2204	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02111	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTB-1618	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02112	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2192	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02113	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2207	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02114	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2200	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02115	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTB-1615	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02116	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTC-2208	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04201	FZ-04 H2 DETECT. IN B-400 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTB-1611	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04202	FZ-04 H2 DETECT. IN B-400 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTB-1625	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04203	FZ-04 H2 DETECT. IN B-400 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT Dig d S 4-20/HART®	ARTB-1631	Polytron® 8200 CAT Dig d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1085X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 092402X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		

Tag Number	Tag Description	Physical Class Name	Location	System/SubSystem Code	Purchase Order Number	Vendor Company Name	Manufacturer Company Name	Model Number	Equipment Manufacturer Serial Number	Model Part No	Hazardous Area Equip Relevant	Hazardous Area Certificate Standard	Hazardous Area Certifying Authority	Hazardous Area Certificate Number	Atex Classification	Explosion Protection Examination Certificate Document Number	Layout Drawing	Datasheet	Assembly/Dimensional Drawing	General Arrangement	Operating & Maintenance Manual	Wiring Diagram	Spare Parts List	Lubricant Document Reference	Criticality	Remarks
950-GDZ-04204	FZ-04 H2 DETECT. IN B-400 I&T EQUIP. ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2205	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04205	FZ-04 H2 DETECT. IN B-400 I&T EQUIP. ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2202	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04206	FZ-04 H2 DETECT. IN B-400 I&T EQUIP. ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1613	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04207	FZ-04 H2 DETECT. IN B-300 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1635	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04208	FZ-04 H2 DETECT. IN B-300 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0199	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04209	FZ-04 H2 DETECT. IN B-300 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1633	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04210	FZ-04 H2 DETECT. IN B-300 AC UPS ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1619	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04211	FZ-04 H2 DETECT. IN B-300 AC UPS ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1628	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04212	FZ-04 H2 DETECT. IN B-300 AC UPS ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1627	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04213	FZ-04 H2 DETECT. IN B-200 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0202	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04214	FZ-04 H2 DETECT. IN B-200 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1616	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04215	FZ-04 H2 DETECT. IN B-200 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1621	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04216	FZ-04 H2 DETECT. IN B-200 LV SWGR ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1614	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04217	FZ-04 H2 DETECT. IN B-200 LV SWGR ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1610	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-04218	FZ-04 H2 DETECT. IN B-200 LV SWGR ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2199	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-05101	FZ-05 H2 DETECT. IN BESS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1626	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-05102	FZ-05 H2 DETECT. IN BESS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1623	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-05103	FZ-05 H2 DETECT. IN BESS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1622	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-05104	FZ-05 H2 DETECT. IN BESS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARSD-0457	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-05105	FZ-05 H2 DETECT. IN BESS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1612	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-05106	FZ-05 H2 DETECT. IN BESS AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1617	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-06201	FZ-06 H2 DETECT. IN B-100 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1634	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-06202	FZ-06 H2 DETECT. IN B-100 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1629	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-06203	FZ-06 H2 DETECT. IN B-100 HVAC AIR INTAKE	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 HVAC AIR INTAKE	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1639	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-06204	FZ-06 H2 DETECT. IN B-100 HV/MV SWGR ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1637	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-06205	FZ-06 H2 DETECT. IN B-100 HV/MV SWGR ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0204	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-06206	FZ-06 H2 DETECT. IN B-100 HV/MV SWGR ROOM	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 AMBIENT	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARSD-0466	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03104	FZ-03 H2 DETECT. IN ELECTROLYZER PACKAGE AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1624	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03105	FZ-03 H2 DETECT. IN ELECTROLYZER PACKAGE AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1630	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-01103	FZ-03 H2 DETECT. IN ELECTROLYZER PACKAGE AREA	HYDROGEN POINT DETECTORS	H2 GD FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0194	Polytron® 8200 CAT DQ d S 4-20/HART®		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR) DEMKO 09 ATEX 0924202X (SENSOR) CML 18ATEX 1320X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-01101	FZ-01 H2 DETECT. IN FUEL CELL PACKAGE AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-01 FUEL CELL PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1680	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-01102	FZ-01 H2 DETECT. IN FUEL CELL PACKAGE AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-01 FUEL CELL PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1685	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02117	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1682	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02118	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1676	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GKDZ-02119	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1684	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-02120	FZ-02 H2 DETECT. IN HYDROGEN STORAGE VESSELS AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1687	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03101	FZ-03 H2 DETECT. IN ELECTROLYZER PACKAGE AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1688	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03102	FZ-03 H2 DETECT. IN ELECTROLYZER PACKAGE AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1683	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03103	FZ-03 H2 DETECT. IN ELECTROLYZER PACKAGE AREA	ULTRASONIC GAS DETECTOR	H2 GD FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1681	Polytron® 8900 UGLD d S 4-20/HART® Relay		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03107	FZ-03 OXYGEN IN ELECTROLYZER PACKAGE AREA	OXYGEN POINT DETECTORS	O2 DET. FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron 8100 EC d S 4-20/Hart	ARTA-4693	Polytron 8100 EC d S 4-20/Hart		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03108	FZ-03 OXYGEN IN ELECTROLYZER PACKAGE AREA	OXYGEN POINT DETECTORS	O2 DET. FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron 8100 EC d S 4-20/Hart	ARTA-4680	Polytron 8100 EC d S 4-20/Hart		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-GDZ-03109	FZ-03 OXYGEN IN ELECTROLYZER PACKAGE AREA	OXYGEN POINT DETECTORS	O2 DET. FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	Dräger	Polytron 8100 EC d S 4-20/Hart	ARTA-4689	Polytron 8100 EC d S 4-20/Hart		EN IEC 60079-0:2018	PTB	PTB 11 ATEX 1005X (TR) BVS 13 ATEX G 001X (TR)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-01101	FZ-01 FLAME DETECT. IN FUEL CELL PACKAGE AREA	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 105708 0001X (PLUG) INERIS 14 ATEX 0029X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		

Tag Number	Tag Description	Physical Class Name	Location	System/SubSystem Code	Purchase Order Number	Vendor Company Name	Manufacturer Company Name	Model Number	Equipment Manufacturer Serial Number	Model Part No	Hazardous Area Equip Relevant	Hazardous Area Certificate Standard	Hazardous Area Certifying Authority	Hazardous Area Certificate Number	Atex Classification	Explosion Protection Examination Certificate Document Number	Layout Drawing	Datasheet	Assembly/Dimensional Drawing	General Arrangement	Operating & Maintenance Manual	Wiring Diagram	Spare Parts List	Lubricant Document Reference	Criticality	Remarks
950-FDZ-01102	FZ-01 FLAME DETECT. IN FUEL CELL PACKAGE AREA	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-01103	FZ-01 FLAME DETECT. IN FUEL CELL PACKAGE AREA	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-01104	FZ-01 FLAME DETECT. IN FUEL CELL PACKAGE AREA	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-02101	FZ-02 FLAME DETECT. IN HYDROGEN STORAGE VESSELS AREA	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-02102	FZ-02 FLAME DETECT. IN HYDROGEN STORAGE VESSELS AREA	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-02103	FZ-02 FLAME DETECT. IN HYDROGEN STORAGE VESSELS AREA	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-02104	FZ-02 FLAME DETECT. IN HYDROGEN STORAGE VESSELS AREA	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-03101	FZ-03 FLAME DETECT. IN ELECTROLYZER PACKAGE AREA	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-03102	FZ-03 FLAME DETECT. IN ELECTROLYZER PACKAGE AREA	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-03103	FZ-03 FLAME DETECT. IN ELECTROLYZER PACKAGE AREA	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-03104	FZ-03 FLAME DETECT. IN ELECTROLYZER PACKAGE AREA	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-04101	FZ-04 FLAME DETECT. IN B-400/B-300/B-200 AREA	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-04102	FZ-04 FLAME DETECT. IN B-400/B-300/B-200 AREA	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-04103	FZ-04 FLAME DETECT. IN B-400/B-300/B-200 AREA	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-04104	FZ-04 FLAME DETECT. IN B-400/B-300/B-200 AREA	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-05101	FZ-05 FLAME DETECT. IN BESS AREA	FLAME DETECTOR	FZ-05 BESS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-05102	FZ-05 FLAME DETECT. IN BESS AREA	FLAME DETECTOR	FZ-05 BESS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-05103	FZ-05 FLAME DETECT. IN BESS AREA	FLAME DETECTOR	FZ-05 BESS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-05104	FZ-05 FLAME DETECT. IN BESS AREA	FLAME DETECTOR	FZ-05 BESS AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-06101	FZ-06 FLAME DETECT. IN B-100/TRANSFORMER AREA	FLAME DETECTOR	FZ-06 B-100 AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-FDZ-06102	FZ-06 FLAME DETECT. IN B-100/TRANSFORMER AREA	FLAME DETECTOR	FZ-06 B-100 AREA	950	1724000821	Fores Engineering	FGD	FlameSpec FLS-UV-IR-AS11	Note1	FlameSpec FLS-UV-IR-AS11		EN 60079-0:2012/A11:2013	ICQC	ICQC 19 ATEX 0424X (SENSOR) TPS19 ATEX 10570B 0001X (PLUG) INERIS 14 ATEX 0025X (REDUCTION)	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-01101	FZ-01 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-01 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/1	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-01102	FZ-01 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-01 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/2	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-01103	FZ-01 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-01 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/3	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-02101	Z-02 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-02 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/4	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-03101	FZ-03 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/5	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-03102	FZ-03 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/6	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-03103	FZ-03 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/7	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-03104	FZ-03 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/8	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-04101	FZ-04 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/9	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-04102	FZ-04 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/10	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-04201	FZ-04 MANUAL FIRE ALARM (MFA) B-400 IET EQUIP. ROOM	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION - B-400 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/11	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-04202	FZ-04 MANUAL FIRE ALARM (MFA) B-300 AC UPS ROOM	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION - B-300 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/12	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-04203	FZ-04 MANUAL FIRE ALARM (MFA) B-200 LV SWGR ROOM	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION - B-200 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/13	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-05101	FZ-05 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/14	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-05102	FZ-05 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/15	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-05103	FZ-05 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/16	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-05104	FZ-05 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/17	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-06101	FZ-06 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-06 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/18	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-06102	FZ-06 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-06 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/19	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-06201	FZ-06 MANUAL FIRE ALARM (MFA) B-100 HV/MV SWGR ROOM	MANUAL FIRE ALARM	FZ-06 MFA ACTIVATION - B-100 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/20	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MFA-07101	FZ-07 MANUAL FIRE ALARM (MFA)	MANUAL FIRE ALARM	FZ-07 MFA ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/20/21	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ASD-01101	FZ-01 ABANDON SHUTDOWN ACTIVATION (ASD)	ABANDON ACTIVATION	FZ-01 ABANDON SHUTDOWN ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	225420465/30/1	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		

Tag Number	Tag Description	Physical Class Name	Location	System/SubSystem Code	Purchase Order Number	Vendor Company Name	Manufacturer Company Name	Model Number	Equipment Manufacturer Serial Number	Model Part No	Hazardous Area Equip Relevant	Hazardous Area Certificate Standard	Hazardous Area Certifying Authority	Hazardous Area Certificate Number	Atex Classification	Explosion Protection Examination Certificate Document Number	Layout Drawing	Datasheet	Assembly/Dimensional Drawing	General Arrangement	Operating & Maintenance Manual	Wiring Diagram	Spare Parts List	Lubricant Document Reference	Criticality	Remarks
950-ASD-03101	FZ-03 ABANDON SHUTDOWN ACTIVATION (ASD)	ABANDON ACTIVATION	FZ-03 ABANDON SHUTDOWN ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/2	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ASD-04101	FZ-04 ABANDON SHUTDOWN ACTIVATION (ASD)	ABANDON ACTIVATION	FZ-04 ABANDON SHUTDOWN ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/3	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ASD-06101	FZ-06 ABANDON SHUTDOWN ACTIVATION (ASD)	ABANDON ACTIVATION	FZ-06 ABANDON SHUTDOWN ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/4	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ASD-07101	FZ-07 ABANDON SHUTDOWN ACTIVATION (ASD)	ABANDON ACTIVATION	FZ-07 ABANDON SHUTDOWN ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/5	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MOB-01101	FZ-01 MAN OVER BOARD ACTIVATION (MOB)	MAN OVER BOARD ACTIVATION	FZ-01 MAN OVER BOARD ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/6	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MOB-03101	FZ-03 MAN OVER BOARD ACTIVATION (MOB)	MAN OVER BOARD ACTIVATION	FZ-03 MAN OVER BOARD ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/7	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MOB-04101	FZ-04 MAN OVER BOARD ACTIVATION (MOB)	MAN OVER BOARD ACTIVATION	FZ-04 MAN OVER BOARD ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/8	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MOB-06101	FZ-06 MAN OVER BOARD ACTIVATION (MOB)	MAN OVER BOARD ACTIVATION	FZ-06 MAN OVER BOARD ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/9	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-MOB-07101	FZ-07 MAN OVER BOARD ACTIVATION (MOB)	MAN OVER BOARD ACTIVATION	FZ-07 MAN OVER BOARD ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/10	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESD-01101	FZ-01 ESD-1 PUSH BUTTON ACTIVATION (ESD)	EMERGENCY SHUTDOWN ACTIVATION	FZ-01 ESD-1 PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/11	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESD-03101	FZ-03 ESD-1 PUSH BUTTON ACTIVATION (ESD)	EMERGENCY SHUTDOWN ACTIVATION	FZ-03 ESD-1 PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/12	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESD-04101	FZ-04 ESD-1 PUSH BUTTON ACTIVATION (ESD)	EMERGENCY SHUTDOWN ACTIVATION	FZ-04 ESD-1 PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/13	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESD-06101	FZ-06 ESD-1 PUSH BUTTON ACTIVATION (ESD)	EMERGENCY SHUTDOWN ACTIVATION	FZ-06 ESD-1 PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/14	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESD-07101	FZ-07 ESD-1 PUSH BUTTON ACTIVATION (ESD)	EMERGENCY SHUTDOWN ACTIVATION	FZ-07 ESD-1 PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/15	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESDD-01101	FZ-01 DEPRESS. EMERGENCY SHUT DOWN (ESDD)	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-01 ESD-1D PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/16	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESDD-03101	FZ-03 DEPRESS. EMERGENCY SHUT DOWN (ESDD)	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-03 ESD-1D PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/17	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESDD-04101	FZ-04 DEPRESS. EMERGENCY SHUT DOWN (ESDD)	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-04 ESD-1D PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/18	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESDD-06101	FZ-06 DEPRESS. EMERGENCY SHUT DOWN (ESDD)	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-06 ESD-1D PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/19	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-ESDD-07101	FZ-07 DEPRESS. EMERGENCY SHUT DOWN (ESDD)	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-07 ESD-1D PUSH BUTTON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87PBL	22542465/30/20	SM87PBL		EN IEC 60079-0:2018	SGS Fimko Oy	Baseefa 03 ATEX 0075 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-01101	FZ-01 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-01 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/1	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-02101	FZ-02 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-02 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/2	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-03101	FZ-03 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-03 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/3	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-03103	FZ-03 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-03 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/4	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04101	FZ-04 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/5	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04103	FZ-04 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/6	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04201	FZ-04 OPTICAL EXP GAS ALARM B-400 I&T EQUIP. ROOM	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACT. - B-400 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/7	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04203	FZ-04 OPTICAL EXP GAS ALARM B-300 AC UPS ROOM	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACT. - B-300 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/8	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04205	FZ-04 OPTICAL EXP GAS ALARM B-200 LV SWGR ROOM	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACT. - B-200 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/9	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-06101	FZ-06 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-06 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/10	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-06103	FZ-06 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-06 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/11	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-06201	FZ-06 OPTICAL EXP GAS ALARM B-100 HV/MV SWGR ROOM	FLAMMABLE GAS ALARM	FZ-06 GAS BEACON ACT. - B-100 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/12	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-07101	FZ-07 OPTICAL EXP GAS ALARM	FLAMMABLE GAS ALARM	FZ-07 GAS BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/40/13	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-01102	FZ-01 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-01 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/1	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-02102	FZ-02 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-02 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/2	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-03102	FZ-03 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-03 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/3	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-03104	FZ-03 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-03 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/4	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04102	FZ-04 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/5	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04104	FZ-04 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/6	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04202	FZ-04 OPTICAL FIRE ALARM B-400 I&T EQUIP. ROOM	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACT. - B-400 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/7	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04204	FZ-04 OPTICAL FIRE ALARM B-300 AC UPS ROOM	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACT. - B-300 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/8	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-04206	FZ-04 OPTICAL FIRE ALARM B-200 LV SWGR ROOM	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACT. - B-200 INDOOR	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/9	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-06102	FZ-06 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-06 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/10	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-06104	FZ-06 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-06 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM87LEDS	22542465/50/11	SM87LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		

Tag Number	Tag Description	Physical Class Name	Location	System/SubSystem Code	Purchase Order Number	Vendor Company Name	Manufacturer Company Name	Model Number	Equipment Manufacturer Serial Number	Model Part No	Hazardous Area Equip Relevant	Hazardous Area Certificate Standard	Hazardous Area Certifying Authority	Hazardous Area Certificate Number	Atex Classification	Explosion Protection Examination Certificate Document Number	Layout Drawing	Datasheet	Assembly/Dimensional Drawing	General Arrangement	Operating & Maintenance Manual	Wiring Diagram	Spare Parts List	Lubricant Document Reference	Criticality	Remarks
950-XL-06202	FZ-06 OPTICAL FIRE ALARM B-100 HV/MV SWGR ROOM	FIRE FLASH BEACON	FZ-06 FIRE BEACON ACT. - B-100 INDOOR	950	1724000821	Fores Engineering	MEDC	SM67LEDS	225420465/50/12	SM67LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XL-07102	FZ-07 OPTICAL FIRE ALARM	FIRE FLASH BEACON	FZ-07 FIRE BEACON ACTIVATION	950	1724000821	Fores Engineering	MEDC	SM67LEDS	225420465/50/13	SM67LEDS		EN 60079-0:2009	Baseefa	Baseefa 03 ATEX 0222	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-01101	FZ-01 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-01 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/01	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-01102	FZ-01 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-01 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/02	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-02101	FZ-02 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-02 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/03	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-03101	FZ-03 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-03 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/04	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-03102	FZ-03 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-03 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/05	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-04101	FZ-04 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-04 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/06	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-04102	FZ-04 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-04 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/07	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-04201	FZ-04 ACOUSTIC FIRE&GAS ALARM B-400 I&T EQUIP. ROOM	SOUNDER	FZ-04 SOUNDER ACT. - B-400 INDOOR	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/08	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-04202	FZ-04 ACOUSTIC FIRE&GAS ALARM B-300 AC UPS ROOM	SOUNDER	FZ-04 SOUNDER ACT. - B-300 INDOOR	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/09	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-04203	FZ-04 ACOUSTIC FIRE&GAS ALARM B-200 LV SWGR ROOM	SOUNDER	FZ-04 SOUNDER ACT. - B-200 INDOOR	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/10	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-05101	FZ-05 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-05 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/11	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-05102	FZ-05 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-05 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/12	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-05103	FZ-05 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-05 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/13	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-05104	FZ-05 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-05 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/14	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-06101	FZ-06 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-06 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/15	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-06201	FZ-06 ACOUSTIC FIRE&GAS ALARM B-100 HV/MV SWGR ROOM	SOUNDER	FZ-06 SOUNDER ACT. - B-100 INDOOR	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/16	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
950-XZ-07101	FZ-08 ACOUSTIC FIRE&GAS ALARM	SOUNDER	FZ-07 SOUNDER ACTIVATION	950	1724000821	Fores Engineering	MEDC	DB38M	225420465/60/17	DB38M		EN IEC 60079-0:2018	UL International Demko	UL 21 ATEX 2559X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-001A	B-100 Fire Damper AHU1 Inlet Air	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU1 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11391	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-001B	B-100 Fire Damper AHU1 Inlet Air	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU1 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11392	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-002A	B-100 Fire Damper AHU2 Inlet Air	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU2 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11393	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-002B	B-100 Fire Damper AHU2 Inlet Air	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU2 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11394	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-003A	B-100 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11395	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-003B	B-100 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11396	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-004A	B-200 Fire Damper AHU3 Inlet Air	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU3 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11397	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-004B	B-200 Fire Damper AHU3 Inlet Air	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU3 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11398	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-005A	B-200 Fire Damper AHU4 Inlet Air	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU4 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11399	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-005B	B-200 Fire Damper AHU4 Inlet Air	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU4 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11400	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-006A	B-200 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11401	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-006B	B-200 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11402	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-007A	B-300 Fire Damper AHU5 Inlet Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11403	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-007B	B-300 Fire Damper AHU5 Inlet Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11404	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-008A	B-300 Fire Damper AHU5 Return Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11405	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-008B	B-300 Fire Damper AHU5 Return Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11406	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-009A	B-300 Fire Damper AHU6 Inlet Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11407	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-009B	B-300 Fire Damper AHU6 Inlet Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11408	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-010A	B-300 Fire Damper AHU6 Return Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11409	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-010B	B-300 Fire Damper AHU6 Return Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11410	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-011A	B-300 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11411	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-011B	B-300 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11412	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-012A	B-400 Fire Damper AHU7 Inlet Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11413	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-012B	B-400 Fire Damper AHU7 Inlet Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11414	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00009-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		

Tag Number	Tag Description	Physical Class Name	Location	System/SubSystem Code	Purchase Order Number	Vendor Company Name	Manufacturer Company Name	Model Number	Equipment Manufacturer Serial Number	Model Part No	Hazardous Area Equip Relevant	Hazardous Area Certificate Standard	Hazardous Area Certifying Authority	Hazardous Area Certificate Number	Atex Classification	Explosion Protection Examination Certificate Document Number	Layout Drawing	Datasheet	Assembly/Dimensional Drawing	General Arrangement	Operating & Maintenance Manual	Wiring Diagram	Spare Parts List	Lubricant Document Reference	Criticality	Remarks
77-HS-013A	B-400 Fire Damper AHU7 Return Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11415	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-013B	B-400 Fire Damper AHU7 Return Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11416	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-014A	B-400 Fire Damper AHU8 Inlet Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11417	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-014B	B-400 Fire Damper AHU8 Inlet Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Inlet Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11418	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-015A	B-400 Fire Damper AHU8 Return Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11419	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-015B	B-400 Fire Damper AHU8 Return Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Return Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11420	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-016A	B-400 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11421	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
77-HS-016B	B-400 Fire Damper Exhaust Air	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper Exhaust Air	950	1724000821	Fores Engineering	EATON	GHG 432	24-11422	GHG 432		EN IEC 60079-0:2018	DEKRA	BVS 22 ATEX E032 X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	1724000821-IN-DA-00003	1724000821-IN-DA-00003	1724000821-IN-MAN-00010	1724000821-IN-DA-00003	1724000821-COM-LIS-00011	NOT APPLICABLE		
NOT APPLICABLE	NOT APPLICABLE	FLAME SIMULATOR	NOT APPLICABLE	950	1724000821	Fores Engineering	FDG	FlameSpec FLS-FSIM-UV/IR-KIT	1544	FlameSpec FLS-FSIM-UV/IR-KIT		EN 60079-0:2012/A11:2013	ICQC	ICQC 20 ATEX 0447X	II 2 G	1724000821-IN-LIS-00008-01		1724000821-IN-DS-00004	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		

Base Load Power Hub (BLPH)

F&G FIELD EQUIPMENT

ATEX REGISTER

Document Number:1724000821-IN-LIS-00009

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
V. Barratta	05-02-2025

Rev.	Date	Description	Prepared	Reviewed	Approved
03	20/01/2025	Accepted for Construction (AFC)	L. Pizzigati	M. Ossani	S. Montanari
02	25/11/2024	Accepted for Construction (AFC)	L. Pizzigati	M. Ossani	S. Montanari
01	02/10/2024	Accepted for Construction (AFC)	L. Pizzigati	M. Ossani	S. Montanari
00	06/09/2024	Issue for Review (IFR)	L. Pizzigati	M. Ossani	S. Montanari

FORES ENGINEERING

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Revision / Change Log

Rev.	Description
00	ISSUE FOR REVIEW (IFR)
01	ACCEPTED FOR CONSTRUCTION (AFC)
02	ACCEPTED FOR CONSTRUCTION (AFC)
03	ACCEPTED FOR CONSTRUCTION (AFC)

HOLDS LIST

No.	Description
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2.	
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No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
1	02	950-SDZ-04201	SMOKE DETECTOR	FZ-04 B-400 AIR INTAKE	TYCO	MR601TEx	4050816	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
2	02	950-SDZ-04202	SMOKE DETECTOR	FZ-04 B-400 AIR INTAKE	TYCO	MR601TEx	4050799	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
3	02	950-SDZ-04203	SMOKE DETECTOR	FZ-04 B-400 AIR INTAKE	TYCO	MR601TEx	4050827	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
4	02	950-SDZ-04207	SMOKE DETECTOR	FZ-04 B-300 AIR INTAKE	TYCO	MR601TEx	4050834	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
5	02	950-SDZ-04208	SMOKE DETECTOR	FZ-04 B-300 AIR INTAKE	TYCO	MR601TEx	4051785	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
6	02	950-SDZ-04209	SMOKE DETECTOR	FZ-04 B-300 AIR INTAKE	TYCO	MR601TEx	4050815	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
7	02	950-SDZ-04213	SMOKE DETECTOR	FZ-04 B-200 AIR INTAKE	TYCO	MR601TEx	4051769	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
8	02	950-SDZ-04214	SMOKE DETECTOR	FZ-04 B-200 AIR INTAKE	TYCO	MR601TEx	4051786	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
9	02	950-SDZ-04215	SMOKE DETECTOR	FZ-04 B-200 AIR INTAKE	TYCO	MR601TEx	4051705	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
10	02	950-SDZ-06201	SMOKE DETECTOR	FZ-06 B-100 AIR INTAKE	TYCO	MR601TEx	4051704	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
11	02	950-SDZ-06202	SMOKE DETECTOR	FZ-06 B-100 AIR INTAKE	TYCO	MR601TEx	4051745	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
12	02	950-SDZ-06203	SMOKE DETECTOR	FZ-06 B-100 AIR INTAKE	TYCO	MR601TEx	4051716	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
13	02	950-SDZ-04204	SMOKE DETECTOR	FZ-04 B-400 AMBIENT	TYCO	MR601TEx	4051764	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
14	02	950-SDZ-04205	SMOKE DETECTOR	FZ-04 B-400 AMBIENT	TYCO	MR601TEx	4051760	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
15	02	950-SDZ-04206	SMOKE DETECTOR	FZ-04 B-400 AMBIENT	TYCO	MR601TEx	4051754	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
16	02	950-SDZ-04210	SMOKE DETECTOR	FZ-04 B-300 AMBIENT	TYCO	MR601TEx	4051736	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
17	02	950-SDZ-04211	SMOKE DETECTOR	FZ-04 B-300 AMBIENT	TYCO	MR601TEx	4051777	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
18	02	950-SDZ-04212	SMOKE DETECTOR	FZ-04 B-300 AMBIENT	TYCO	MR601TEx	4051708	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
19	02	950-SDZ-04216	SMOKE DETECTOR	FZ-04 B-200 AMBIENT	TYCO	MR601TEx	4051744	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
20	02	950-SDZ-04217	SMOKE DETECTOR	FZ-04 B-200 AMBIENT	TYCO	MR601TEx	4051770	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
21	02	950-SDZ-04218	SMOKE DETECTOR	FZ-04 B-200 AMBIENT	TYCO	MR601TEx	4051724	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
22	02	950-SDZ-06204	SMOKE DETECTOR	FZ-06 B-100 AMBIENT	TYCO	MR601TEx	4051762	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
23	02	950-SDZ-06205	SMOKE DETECTOR	FZ-06 B-100 AMBIENT	TYCO	MR601TEx	4051768	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
24	02	950-SDZ-06206	SMOKE DETECTOR	FZ-06 B-100 AMBIENT	TYCO	MR601TEx	4051782	II 1GD Ex ia IIC T5 Ga	1724000821-IN-DS-00004	BAS 01 ATEX 1134 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
25	02	950-GDZ-02101	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2193	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
26	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
27	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
28	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
29	02	950-GDZ-02102	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2196	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
30	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
31	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
32	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
33	02	950-GDZ-02103	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2197	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
34	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
35	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
36	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
37	02	950-GDZ-02104	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1620	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
38	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
39	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
40	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
41	02	950-GDZ-02105	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2185	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
42	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
43	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
44	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
45	02	950-GDZ-02106	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2201	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
46	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
47	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
48	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
49	02	950-GDZ-02107	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2206	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
50	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
51	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
52	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
53	02	950-GDZ-02108	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2198	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
54	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
55	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
56	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

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57	02	950-GDZ-02109	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2203	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
58	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
59	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
60	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
61	02	950-GDZ-02110	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2204	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
62	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
63	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
64	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
65	02	950-GDZ-02111	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1618	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
66	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
67	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
68	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
69	02	950-GDZ-02112	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2192	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
70	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
71	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
72	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
73	02	950-GDZ-02113	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2207	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
74	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
75	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
76	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
77	02	950-GDZ-02114	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2200	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
78	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
79	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
80	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
81	02	950-GDZ-02115	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1615	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
82	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
83	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
84	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

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85	02	950-GDZ-02116	HYDROGEN POINT DETECTORS	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2208	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
86	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
87	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
88	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
89	02	950-GDZ-04201	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1611	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
90	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
91	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
92	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
93	02	950-GDZ-04202	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1625	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
94	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
95	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
96	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
97	02	950-GDZ-04203	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1631	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
98	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
99	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
100	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
101	02	950-GDZ-04204	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2205	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
102	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
103	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
104	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
105	02	950-GDZ-04205	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2202	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
106	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
107	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
108	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
109	02	950-GDZ-04206	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-400 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1613	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
110	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
111	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
112	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

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113	02	950-GDZ-04207	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1635	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
114	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
115	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
116	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
117	02	950-GDZ-04208	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0199	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
118	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
119	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
120	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
121	02	950-GDZ-04209	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1633	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
122	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
123	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
124	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
125	02	950-GDZ-04210	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1619	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
126	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
127	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
128	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
129	02	950-GDZ-04211	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1628	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
130	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
131	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
132	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
133	02	950-GDZ-04212	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-300 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1627	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
134	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
135	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
136	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
137	02	950-GDZ-04213	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0202	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
138	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
139	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
140	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

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141	02	950-GDZ-04214	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1616	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
142	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
143	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
144	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
145	02	950-GDZ-04215	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1621	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
146	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
147	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
148	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
149	02	950-GDZ-04216	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1614	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
150	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
151	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
152	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
153	02	950-GDZ-04217	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1610	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
154	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
155	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
156	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
157	02	950-GDZ-04218	HYDROGEN POINT DETECTORS	H2 GD FZ-04 B-200 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTC-2199	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
158	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
159	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
160	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
161	02	950-GDZ-05101	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1626	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
162	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
163	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
164	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
165	02	950-GDZ-05102	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1623	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
166	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
167	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
168	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

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169	02	950-GDZ-05103	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1622	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
170	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
171	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
172	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
173	02	950-GDZ-05104	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARSD-0457	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
174	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
175	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
176	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
177	02	950-GDZ-05105	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1612	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
178	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
179	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
180	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
181	02	950-GDZ-05106	HYDROGEN POINT DETECTORS	H2 GD FZ-05 BESS AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1617	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
182	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
183	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
184	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
185	02	950-GDZ-06201	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1634	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
186	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
187	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
188	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
189	02	950-GDZ-06202	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1629	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
190	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
191	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
192	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
193	02	950-GDZ-06203	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 HVAC AIR INTAKE	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1639	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
194	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
195	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
196	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

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197	02	950-GDZ-06204	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1637	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
198	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
199	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
200	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
201	02	950-GDZ-06205	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0204	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
202	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
203	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
204	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
205	02	950-GDZ-06206	HYDROGEN POINT DETECTORS	H2 GD FZ-06 B-100 AMBIENT	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARSD-0466	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
206	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
207	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
208	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
209	02	950-GDZ-03104	HYDROGEN POINT DETECTORS	H2 GD FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1624	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
210	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
211	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
212	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
213	02	950-GDZ-03105	HYDROGEN POINT DETECTORS	H2 GD FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-1630	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
214	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
215	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
216	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
217	02	950-GDZ-01103	HYDROGEN POINT DETECTORS	H2 GD FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron® 8200 CAT DQ d S 4-20/HART®	ARTB-0194	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
218	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
219	02							II 2G Ex db IIC T6/T4 Gb	1724000821-IN-DS-00004	DEMKO 09 ATEX 0924202X (SENSOR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
220	02				CMP	Type 737		II 2 G Ex eb IIC Gb	1724000821-IN-DS-00004	CML 18ATEX 1320X (REDUCTION)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
221	02	950-GDZ-01101	ULTRASONIC GAS DETECTOR	H2 GD FZ-01 FUEL CELL PK AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1680	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
222	02	950-GDZ-01102	ULTRASONIC GAS DETECTOR	H2 GD FZ-01 FUEL CELL PK AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1685	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
223	02	950-GDZ-02117	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1682	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
224	02	950-GDZ-02118	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1676	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
225	02	950-GDZ-02119	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1684	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
226	02	950-GDZ-02120	ULTRASONIC GAS DETECTOR	H2 GD FZ-02 H2 STORAGE VESSELS AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1687	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
227	02	950-GDZ-03101	ULTRASONIC GAS DETECTOR	H2 GD FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1688	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
228	02	950-GDZ-03102	ULTRASONIC GAS DETECTOR	H2 GD FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1683	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
229	02	950-GDZ-03103	ULTRASONIC GAS DETECTOR	H2 GD FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron® 8900 UGLD d S 4-20/HART® Relay	ARTA-1681	II 2G Ex db [ia] IIC T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
230	02	950-GDZ-03107	OXYGEN POINT DETECTORS	O2 DET. FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron 8100 EC d S 4-20/Hart	ARTA-4693	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
231	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
232	02	950-GDZ-03108	OXYGEN POINT DETECTORS	O2 DET. FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron 8100 EC d S 4-20/Hart	ARTA-4680	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
233	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
234	02	950-GDZ-03109	OXYGEN POINT DETECTORS	O2 DET. FZ-03 ELECTROLYZER PK AREA	Dräger	Polytron 8100 EC d S 4-20/Hart	ARTA-4689	II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	PTB 11 ATEX 1005X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
235	02							II 2 G Ex db eb [ia] IIC T6/T4 Gb	1724000821-IN-DS-00004	BVS 13 ATEX G 001X (TR)	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
236	02	950-FDZ-01101	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
237	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
238	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
239	02	950-FDZ-01102	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
240	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
241	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
242	02	950-FDZ-01103	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
243	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
244	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
245	02	950-FDZ-01104	FLAME DETECTOR	FZ-01 FUEL CELL PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
246	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
247	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES

No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
248	02	950-FDZ-02101	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
249	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
250	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
251	02	950-FDZ-02102	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
252	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
253	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
254	02	950-FDZ-02103	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
255	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
256	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
257	02	950-FDZ-02104	FLAME DETECTOR	FZ-02 H2 STORAGE VESSELS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
258	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
259	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
260	02	950-FDZ-03101	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
261	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
262	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
263	02	950-FDZ-03102	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
264	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
265	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
266	02	950-FDZ-03103	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
267	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
268	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES

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269	02	950-FDZ-03104	FLAME DETECTOR	FZ-03 ELECTROLYZER PK AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
270	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
271	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
272	02	950-FDZ-04101	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
273	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
274	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
275	02	950-FDZ-04102	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
276	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
277	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
278	02	950-FDZ-04103	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
279	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
280	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
281	02	950-FDZ-04104	FLAME DETECTOR	FZ-04 B-400/B-300/B-200 AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
282	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
283	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
284	02	950-FDZ-05101	FLAME DETECTOR	FZ-05 BESS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
285	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
286	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
287	02	950-FDZ-05102	FLAME DETECTOR	FZ-05 BESS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
288	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
289	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES

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290	02	950-FDZ-05103	FLAME DETECTOR	FZ-05 BESS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
291	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
292	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
293	02	950-FDZ-05104	FLAME DETECTOR	FZ-05 BESS AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
294	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
295	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
296	02	950-FDZ-06101	FLAME DETECTOR	FZ-06 B-100 AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
297	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
298	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
299	02	950-FDZ-06102	FLAME DETECTOR	FZ-06 B-100 AREA	FGD	FlameSpec FLS-UV-IR-AS11	Note1	II 2 G Ex db IIC T5 Gb	1724000821-IN-DS-00004	ICQC 19 ATEX 0424X (SENSOR)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
300	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	TPS19 ATEX 105708 0001X (PLUG)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
301	02							II 2 GD Ex db IIC Gb	1724000821-IN-DS-00004	INERIS 14 ATEX 0029X (REDUCTION)	Zone 2	Note 1: Tags will be provided loose and associated with the serial number during installation.	1724000821	FORES ENGINEERING	NA	NA	NO	YES
302	02	950-MFA-01101	MANUAL FIRE ALARM	FZ-01 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/1	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
303	02	950-MFA-01102	MANUAL FIRE ALARM	FZ-01 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/2	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
304	02	950-MFA-01103	MANUAL FIRE ALARM	FZ-01 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/3	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
305	02	950-MFA-02101	MANUAL FIRE ALARM	FZ-02 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/4	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
306	02	950-MFA-03101	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/5	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
307	02	950-MFA-03102	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/6	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
308	02	950-MFA-03103	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/7	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
309	02	950-MFA-03104	MANUAL FIRE ALARM	FZ-03 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/8	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
310	02	950-MFA-04101	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/9	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
311	02	950-MFA-04102	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/10	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
312	02	950-MFA-04201	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION - B-400 INDOOR	MEDC	SM87PBL	225420465/20/11	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
313	02	950-MFA-04202	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION - B-300 INDOOR	MEDC	SM87PBL	225420465/20/12	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
314	02	950-MFA-04203	MANUAL FIRE ALARM	FZ-04 MFA ACTIVATION - B-200 INDOOR	MEDC	SM87PBL	225420465/20/13	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
315	02	950-MFA-05101	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/14	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
316	02	950-MFA-05102	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/15	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
317	02	950-MFA-05103	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/16	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
318	02	950-MFA-05104	MANUAL FIRE ALARM	FZ-05 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/17	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
319	02	950-MFA-06101	MANUAL FIRE ALARM	FZ-06 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/18	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
320	02	950-MFA-06102	MANUAL FIRE ALARM	FZ-06 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/19	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
321	02	950-MFA-06201	MANUAL FIRE ALARM	FZ-06 MFA ACTIVATION - B-100 INDOOR	MEDC	SM87PBL	225420465/20/20	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
322	02	950-MFA-07101	MANUAL FIRE ALARM	FZ-07 MFA ACTIVATION	MEDC	SM87PBL	225420465/20/21	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
323	02	950-ASD-01101	ABANDON ACTIVATION	FZ-01 ABANDON SHUTDOWN ACTIVATION	MEDC	SM87PBL	225420465/30/1	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
324	02	950-ASD-03101	ABANDON ACTIVATION	FZ-03 ABANDON SHUTDOWN ACTIVATION	MEDC	SM87PBL	225420465/30/2	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
325	02	950-ASD-04101	ABANDON ACTIVATION	FZ-04 ABANDON SHUTDOWN ACTIVATION	MEDC	SM87PBL	225420465/30/3	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
326	02	950-ASD-06101	ABANDON ACTIVATION	FZ-06 ABANDON SHUTDOWN ACTIVATION	MEDC	SM87PBL	225420465/30/4	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
327	02	950-ASD-07101	ABANDON ACTIVATION	FZ-07 ABANDON SHUTDOWN ACTIVATION	MEDC	SM87PBL	225420465/30/5	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
328	02	950-MOB-01101	MAN OVER BOARD ACTIVATION	FZ-01 MAN OVER BOARD ACTIVATION	MEDC	SM87PBL	225420465/30/6	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
329	02	950-MOB-03101	MAN OVER BOARD ACTIVATION	FZ-03 MAN OVER BOARD ACTIVATION	MEDC	SM87PBL	225420465/30/7	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
330	02	950-MOB-04101	MAN OVER BOARD ACTIVATION	FZ-04 MAN OVER BOARD ACTIVATION	MEDC	SM87PBL	225420465/30/8	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
331	02	950-MOB-06101	MAN OVER BOARD ACTIVATION	FZ-06 MAN OVER BOARD ACTIVATION	MEDC	SM87PBL	225420465/30/9	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
332	02	950-MOB-07101	MAN OVER BOARD ACTIVATION	FZ-07 MAN OVER BOARD ACTIVATION	MEDC	SM87PBL	225420465/30/10	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
333	02	950-ESD-01101	EMERGENCY SHUTDOWN ACTIVATION	FZ-01 ESD-1 PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/11	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
334	02	950-ESD-03101	EMERGENCY SHUTDOWN ACTIVATION	FZ-03 ESD-1 PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/12	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
335	02	950-ESD-04101	EMERGENCY SHUTDOWN ACTIVATION	FZ-04 ESD-1 PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/13	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
336	02	950-ESD-06101	EMERGENCY SHUTDOWN ACTIVATION	FZ-06 ESD-1 PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/14	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
337	02	950-ESD-07101	EMERGENCY SHUTDOWN ACTIVATION	FZ-07 ESD-1 PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/15	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
338	02	950-ESDD-01101	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-01 ESD-1D PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/16	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
339	02	950-ESDD-03101	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-03 ESD-1D PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/17	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
340	02	950-ESDD-04101	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-04 ESD-1D PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/18	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
341	02	950-ESDD-06101	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-06 ESD-1D PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/19	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
342	02	950-ESDD-07101	EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION	FZ-07 ESD-1D PUSH BUTTON ACTIVATION	MEDC	SM87PBL	225420465/30/20	II 2GD Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0075 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
343	02	950-XL-01101	FLAMMABLE GAS ALARM	FZ-01 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/1	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE

No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
344	02	950-XL-02101	FLAMMABLE GAS ALARM	FZ-02 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/2	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
345	02	950-XL-03101	FLAMMABLE GAS ALARM	FZ-03 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/3	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
346	02	950-XL-03103	FLAMMABLE GAS ALARM	FZ-03 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/4	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
347	02	950-XL-04101	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/5	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
348	02	950-XL-04103	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/6	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
349	02	950-XL-04201	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACT. - B-400 INDOOR	MEDC	SM87LEDS	225420465/40/7	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
350	02	950-XL-04203	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACT. - B-300 INDOOR	MEDC	SM87LEDS	225420465/40/8	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
351	02	950-XL-04205	FLAMMABLE GAS ALARM	FZ-04 GAS BEACON ACT. - B-200 INDOOR	MEDC	SM87LEDS	225420465/40/9	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
352	02	950-XL-06101	FLAMMABLE GAS ALARM	FZ-06 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/10	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
353	02	950-XL-06103	FLAMMABLE GAS ALARM	FZ-06 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/11	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
354	02	950-XL-06201	FLAMMABLE GAS ALARM	FZ-06 GAS BEACON ACT. - B-100 INDOOR	MEDC	SM87LEDS	225420465/40/12	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
355	02	950-XL-07101	FLAMMABLE GAS ALARM	FZ-07 GAS BEACON ACTIVATION	MEDC	SM87LEDS	225420465/40/13	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
356	02	950-XL-01102	FIRE FLASH BEACON	FZ-01 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/1	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
357	02	950-XL-02102	FIRE FLASH BEACON	FZ-02 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/2	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
358	02	950-XL-03102	FIRE FLASH BEACON	FZ-03 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/3	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
359	02	950-XL-03104	FIRE FLASH BEACON	FZ-03 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/4	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
360	02	950-XL-04102	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/5	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
361	02	950-XL-04104	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/6	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
362	02	950-XL-04202	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACT. - B-400 INDOOR	MEDC	SM87LEDS	225420465/50/7	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
363	02	950-XL-04204	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACT. - B-300 INDOOR	MEDC	SM87LEDS	225420465/50/8	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
364	02	950-XL-04206	FIRE FLASH BEACON	FZ-04 FIRE BEACON ACT. - B-200 INDOOR	MEDC	SM87LEDS	225420465/50/9	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
365	02	950-XL-06102	FIRE FLASH BEACON	FZ-06 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/10	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
366	02	950-XL-06104	FIRE FLASH BEACON	FZ-06 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/11	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
367	02	950-XL-06202	FIRE FLASH BEACON	FZ-06 FIRE BEACON ACT. - B-100 INDOOR	MEDC	SM87LEDS	225420465/50/12	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
368	02	950-XL-07102	FIRE FLASH BEACON	FZ-07 FIRE BEACON ACTIVATION	MEDC	SM87LEDS	225420465/50/13	Ex II 2GD, Ex d IIC T6 Gb, Ex tb IIIC T55ºC/ T70ºC Db	1724000821-IN-DS-00004	Baseefa 03 ATEX 0222	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	NONE
369	02	950-XZ-01101	SOUNDER	FZ-01 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/01	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
370	02	950-XZ-01102	SOUNDER	FZ-01 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/02	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
371	02	950-XZ-02101	SOUNDER	FZ-02 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/03	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
372	02	950-XZ-03101	SOUNDER	FZ-03 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/04	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
373	02	950-XZ-03102	SOUNDER	FZ-03 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/05	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
374	02	950-XZ-04101	SOUNDER	FZ-04 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/06	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
375	02	950-XZ-04102	SOUNDER	FZ-04 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/07	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
376	02	950-XZ-04201	SOUNDER	FZ-04 SOUNDER ACT. - B-400 INDOOR	MEDC	DB3BM	225420465/60/08	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
377	02	950-XZ-04202	SOUNDER	FZ-04 SOUNDER ACT. - B-300 INDOOR	MEDC	DB3BM	225420465/60/09	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
378	02	950-XZ-04203	SOUNDER	FZ-04 SOUNDER ACT. - B-200 INDOOR	MEDC	DB3BM	225420465/60/10	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
379	02	950-XZ-05101	SOUNDER	FZ-05 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/11	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
380	02	950-XZ-05102	SOUNDER	FZ-05 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/12	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
381	02	950-XZ-05103	SOUNDER	FZ-05 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/13	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
382	02	950-XZ-05104	SOUNDER	FZ-05 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/14	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
383	02	950-XZ-06101	SOUNDER	FZ-06 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/15	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
384	02	950-XZ-06201	SOUNDER	FZ-06 SOUNDER ACT. - B-100 INDOOR	MEDC	DB3BM	225420465/60/16	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
385	02	950-XZ-07101	SOUNDER	FZ-07 SOUNDER ACTIVATION	MEDC	DB3BM	225420465/60/17	Ex II 2GD, Ex db IIC T3/T4/T5/T6 Gb, Ex tb IIIC T200°C/T135°C/T100°C/T85°C Db	1724000821-IN-DS-00004	UL 21 ATEX 2559X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
386	02	77-HS-001A	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU1 Inlet Air	EATON	GHG 432	24-11391	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
387	02	77-HS-001B	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU1 Inlet Air	EATON	GHG 432	24-11392	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
388	02	77-HS-002A	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU2 Inlet Air	EATON	GHG 432	24-11393	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
389	02	77-HS-002B	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper AHU2 Inlet Air	EATON	GHG 432	24-11394	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
390	02	77-HS-003A	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper Exhaust Air	EATON	GHG 432	24-11395	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
391	02	77-HS-003B	PUSH BUTTON DPDT CONTACT	B-100 Fire Damper Exhaust Air	EATON	GHG 432	24-11396	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
392	02	77-HS-004A	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU3 Inlet Air	EATON	GHG 432	24-11397	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
393	02	77-HS-004B	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU3 Inlet Air	EATON	GHG 432	24-11398	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
394	02	77-HS-005A	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU4 Inlet Air	EATON	GHG 432	24-11399	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
395	02	77-HS-005B	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper AHU4 Inlet Air	EATON	GHG 432	24-11400	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
396	02	77-HS-006A	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper Exhaust Air	EATON	GHG 432	24-11401	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
397	02	77-HS-006B	PUSH BUTTON DPDT CONTACT	B-200 Fire Damper Exhaust Air	EATON	GHG 432	24-11402	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
398	02	77-HS-007A	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Inlet Air	EATON	GHG 432	24-11403	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
399	02	77-HS-007B	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Inlet Air	EATON	GHG 432	24-11404	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
400	02	77-HS-008A	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Return Air	EATON	GHG 432	24-11405	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
401	02	77-HS-008B	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU5 Return Air	EATON	GHG 432	24-11406	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
402	02	77-HS-009A	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Inlet Air	EATON	GHG 432	24-11407	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
403	02	77-HS-009B	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Inlet Air	EATON	GHG 432	24-11408	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
404	02	77-HS-010A	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Return Air	EATON	GHG 432	24-11409	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
405	02	77-HS-010B	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper AHU6 Return Air	EATON	GHG 432	24-11410	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
406	02	77-HS-011A	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper Exhaust Air	EATON	GHG 432	24-11411	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
407	02	77-HS-011B	PUSH BUTTON DPDT CONTACT	B-300 Fire Damper Exhaust Air	EATON	GHG 432	24-11412	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
408	02	77-HS-012A	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Inlet Air	EATON	GHG 432	24-11413	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
409	02	77-HS-012B	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Inlet Air	EATON	GHG 432	24-11414	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
410	02	77-HS-013A	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Return Air	EATON	GHG 432	24-11415	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
411	02	77-HS-013B	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU7 Return Air	EATON	GHG 432	24-11416	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
412	02	77-HS-014A	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Inlet Air	EATON	GHG 432	24-11417	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
413	02	77-HS-014B	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Inlet Air	EATON	GHG 432	24-11418	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
414	02	77-HS-015A	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Return Air	EATON	GHG 432	24-11419	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
415	02	77-HS-015B	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper AHU8 Return Air	EATON	GHG 432	24-11420	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
416	02	77-HS-016A	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper Exhaust Air	EATON	GHG 432	24-11421	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
417	02	77-HS-016B	PUSH BUTTON DPDT CONTACT	B-400 Fire Damper Exhaust Air	EATON	GHG 432	24-11422	II 2 G Ex ed ib m IIC T6	1724000821-IN-DS-00004	BVS 22 ATEX E032 X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES
418	02	N.A	FLAME SIMULATOR	-	FDG	FlameSpec FLS-FSIM-UV/IR-KIT	1544	II 2GD Ex db ib op is IIC T6 Gb	1724000821-IN-DS-00004	ICQC 20 ATEX 0447X	Zone 2		1724000821	FORES ENGINEERING	NA	NA	NO	YES

CERTIFICATE COLLECTION

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1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **BAS01ATEX1134X – Issue 10**

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **M600Ex Series Fire Detectors**

5 Manufacturer: **Thorn Security Limited, T/A Tyco Safety Products**

6 Address: **Security House, The Summit, Hanworth Road, Sunbury-on-Thames, Middlesex, TW16 5DB United Kingdom**

7 This re-issued certificate extends EC Type Examination Certificate No. **BAS01ATEX1134X** to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

8.1 The original certificate was issued by The Electrical Equipment Certification Service (UK Notified Body 0600). It, and any supplements previously issued by SGS Baseefa Ltd (UK Notified Body 1180) have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN 60079-11:2012**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ⓔx II 1GD Ex ia IIC T5 Ga Ex ia IIIB T_{200}100°C Da

SGS Fimko Oy Customer Reference No. **1747** Project File No. **23/0103**

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Tuomas Hänninen
SGS Fimko Oy

13 # Schedule

14 ## Certificate Number BAS01ATEX1134X – Issue 10

15 Description of Product

The M600Ex Series Fire Detectors comprises four models, each with a plastic enclosure containing a partially encapsulated main printed circuit board on which is mounted a sensor which varies according to the model type.

All models of the apparatus mount on either an MUB Ex or 5BEx universal base unit which provides the power and signalling external connections via screw terminals. The following models make up the M600Ex series of detectors: -

i) MR601TEx High Performance Optical Smoke Detector
ii) MD601Ex Heat Detector
iii) MD611Ex Heat Detector (single thermistor)
iv) MDU601Ex Heat and Carbon Monoxide Detector

All models of the M600Ex Series Fire Detectors have the following input parameters: -

U_i = 28V C_i = 0
I_i = 93mA L_i = 0
P_i = 0.65W

The above parameters must be derived from a linear supply (Resistive Source).

16 Report Number

See Certificate History

17 Specific Conditions of Use

1. The apparatus has a plastic enclosure which constitutes a potential electrostatic hazard. The enclosure must be cleaned only with a damp cloth and do not mount in a high velocity dust laden atmosphere.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product:

Clause	Subject	Compliance
1.2.7	LVD type requirements	Manufacturer responsibility
1.2.8	Overloading of equipment (protection relays, etc.)	User/Installer responsibility
1.4.1	External effects	User/Installer responsibility
1.4.2	Aggressive substances, etc.	User/Installer responsibility

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
Models MD601Ex & MD611Ex				
CL516-052-041.Y	1 of 1	5	21-02-24	MD611Ex Heat Detector
CL516-052-051.Y	1 of 1	5	21-02-24	MD601Ex Heat Detector

Number	Sheet	Issue	Date	Description
Model MR601TEx				
CL 516-054-011.Y	1 of 2	6	21-02-24	Component List for MR601TEx High Performance Optical Detector
CL 516-054-011.Y	2 of 2	6	21-02-24	Component List for MR601TEx High Performance Optical Detector
Model MDU601Ex				
CL 516-061-001.Y	1 of 2	5	21-02-24	Component List for MDU601Ex CO + Heat Detector
CL 516-061-001.Y	2 of 2	5	21-02-24	Component List for MDU601Ex CO + Heat Detector

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
120.036.784	1 of 2	5	24-01-22	Cover Screened MX600Ex Series
EECS 120-036-784	1 of 1	4	08-06-15	Cover Screened MX600Ex Series
120-036-784	1 of 1	4	08-06-15	Cover Screened MX600Ex Series
EECS 120-028-212	1 of 1	3	23-04-15	Base Screened MUB Ex Series (Certified)
517-050-023	1 of 1	2	30-04-15	5BEx 5” Universal Base Ex/Exn Series
120-028-215	1 of 1	2	30-04-15	5” Base Screened Ex/Exn Series (Certified)
Model MR601TEx				
EECS 125.585.803	1 of 1	2	24-09-01	MR601T Ex Circuit Diagram (Certified)
EECS 125.585.803	2 of 2	3	24-09-01	MR601T Ex Sensor PCB Assembly (Certified)
125-165-391	1 of 7	2	25-07-01	Drilling detail for MR601T Ex PCB
125-165-391	2 of 7	2	20-8-01	Track Layer (Top Side) for MR601T Ex Sensor PCB
125-165-391	3 of 7	2	20-8-01	Inner Layer (Top Side) for MR601T Ex Sensor PCB
125-165-391	4 of 7	2	20-8-01	Track Layer (Bot. Side) for MR601T Ex Sensor PCB
516-054-011.Y	1 of 2	2	23-8-01	MR601TEx High Performance Optical Detector
516.054.011.Y	2 of 2	6	22-08-07	MR601TEx High Performance Optical Detector
Models MD601Ex & MD611Ex				
EECS125.585.804/807	1 of 1	2	27-07-01	MD601 Ex / MD611 Ex Circuit Diagram (Certified)
EECS125.585.804	2 of 2	2	21-08-01	MD601 Ex Sensor PCB Assembly (Certified)
EECS125.585.807	2 of 2	2	21-08-01	MD611 Ex Sensor PCB Assembly (Certified)
125-165-392	1 of 7	3	21-7-03	Drilling Detail for MD601 Ex PCB
125-165-392	2 of 7	2	20-8-01	Track Layer (Top Side) for MD601 Ex Sensor PCB
125-165-392	3 of 7	2	20-8-01	Inner Layer (Top Side) for MD601 Ex Sensor PCB
125-165-392	4 of 7	2	20-8-01	Track Layout (Bot. Side) for MD601 Ex Sensor PCB
516-052-051/041	1 of 2	2	13-7-01	MD601Ex & MD611Ex Heat Detector
516.052.051.Y	2 of 2	6	22-08-07	MD601Ex Heat Detector
516.052.041.Y	2 of 2	6	22-08-07	MD611Ex Heat Detector
Model MDU601Ex				
EECS125.585.806	1 of 1	3	04-10-07	MDU601 Ex Circuit Diagram (Certified)
EECS125.585.806	2 of 2	3	04-10-07	MDU601 Ex Sensor PCB Assembly (Certified)
125-165-390	1 of 7	3	21-7-03	Drilling Detail for MDU601 Ex PCB
125-165-390	2 of 7	2	20-8-01	Track Layer (Top Side) for MDU601 Ex Sensor PCB

Number	Sheet	Issue	Date	Description
125-165-390	3 of 7	2	20-8-01	Inner Layer (Top Side) for MDU601 Ex Sensor PCB
125-165-390	4 of 7	2	20-8-01	Track Layer (Bot. Side) for MDU601 Ex Sensor PCB
516-061-001.Y	1 of 2	4	1-07-06	MDU601Ex CO + Heat Detectors
516-061-001.Y	2 of 2	4	22-08-07	MDU601Ex CO + Heat Detector
MUB Ex Base				
EECS 517-050-610	1 of 1	1	7-2-02	MUB Ex Base Assembly (Certified)
(CL) EECS 517-050-610	1 of 1	1	27-2-02	Component List for MUB Ex Base Assembly (Certified)
5BEx 5" Universal Base				
CL 517-050-023	2 of 2	1	17-01-06	Component List for 5BEx 5" Universal Base Ex / Exn Series (Certified)
All M600Ex Series Fire Detector Models				
EECS 120-347-021	1 of 1	1	1-3-02	MX Blank Label

The above drawings are associated with BAS21UKEX0611X and IECEx BAS 07.0056X.

20 Certificate History

Certificate No.	Date	Comments
BAS01ATEX1134X	10 October 2001	The release of the prime certificate. The associated test and assessment is documented in Test Report no. 00(C)0997.
BAS01ATEX1134X/1	5 March 2002	This issue of the certificate is to permit the deletion of information from the base unit label and minor drawing information changes.
BAS01ATEX1134X/2	19 December 2002	This issue of the certificate is to permit a change of material used for the product identity label.
BAS01ATEX1134X/3	7 February 2006	This issue of the certificate is to permit the use of an alternative Base for the Detectors type MR601TEx, MF601Ex, MD601Ex, MD611Ex, MDU601Ex & MU601Ex. This change does not affect intrinsic safety.
BAS01ATEX1134X/4	25 April 2006	This issue of the certificate is to permit minor labelling changes that do not affect the original Intrinsic Safety assessment.
BAS01ATEX1134X/5	4 July 2006	This issue of the certificate is to permit minor labelling changes that do not affect the original Intrinsic Safety assessment.
BAS01ATEX1134X/6	29 August 2008	To confirm that the MR601TEx, MD601Ex, MD611Ex and MDU601Ex Fire Detectors have been reviewed against the requirements of EN 60079-0: 2006 and EN 60079-11: 2007 in respect of any differences from EN 50014: 1997 + Amds 1 & 2 and EN 50020: 2002 and none of the differences affect this equipment. To permit the addition of dust certification 'iaD' to the MR601TEx, MD601Ex, MD611Ex and MDU601Ex Fire Detectors in accordance with the requirements of EN 61241-0: 2006 and EN 61241-11: 2006. The apparatus is now additionally marked: - Ex iaD 20 T100°C To permit other minor drawing changes not affecting the original assessment. The associated test and assessment is documented in Test Report No: GB/BAS/ExTR07.0103/00 and GB/BAS/ExTR07.0145/00

Certificate No.	Date	Comments
BAS01ATEX1134X Issue 7	2 July 2015	This issue of the certificate incorporates the previously issued primary & supplementary certificates into one certificate and confirms the current designs have been reviewed against the requirements of EN 60079-0:2012+A11:2013 and EN 60079-11: 2012 in respect of any differences from EN 60079-0:2006 and EN 60079-11:2007and none of the differences affect this equipment. The associated test and assessment is documented in Test Report No: GB/BAS/ExTR15.0191/00. Project File is 14/0619.
BAS01ATEX1134X Issue 8	3 November 2016	At the manufacturers request the IPO of this certificate is now: Tyco Fire & Security GmbH Victor Von Bruns-Strasse 21 8212 Neuhausen am Rheinfall Schaffhausen Switzerland The Design Authority remains with: Thorn Security Limited Security House The Summit Hanworth Road Sunbury-on-Thames Middlesex TW16 5DB Other than the name and address on the marking labels (now the IPO), there are no other changes to this certificate or to the standards to which the equipment has been assessed. The associated test and assessment is documented in Test Report No: GB/BAS/ExTR16.0244/00. Project File is 16/0634
BAS01ATEX1134X Issue 9	6 June 2022	To confirm that the M600Ex Series Fire Detectors meet the requirements of EN IEC 60079-0:2018. Report No: GB/BAS/ExTR22.0097/00. Project File is 21/0316.
BAS01ATEX1134X Issue 10	20 March 2024	To permit minor product changes that do not affect the previous assessment. The associated test and assessment is documented in Test Report No: GB/SGS/ExTR23.0118/00. Project File is 23/0103.
For drawings applicable to each issue, see original of that issue.		

HYDROGEN POINT DETECTORS

(GAS TRASMITTER -
GAS DETECTOR -
SENSOR -
REDUCER)

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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) # EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 11 ATEX 1005 X **Issue: 3**

(4) Product: Gas detection transmitters ETR/ITR/XTR 0***, Remote Box RCU 0***

(5) Manufacturer: Dräger Safety AG & Co. KGaA

(6) Address: Revalstraße 1, 23560 Lübeck, Germany

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 21-11017.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN IEC60079-0:2018; EN 60079-1:2014+AC:2018;
EN IEC 60079-7:2015+A1:2018; EN 60079-11:2012; EN 60079-31:2014

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 2 G Ex db IIC T6/T4 Gb resp.
II 2 G Ex db eb IIC T6/T4 Gb resp.
II 2 D Ex tb IIIC T80°C/T130°C Db resp.
II 2G Ex db ia IIC T6/T4 Gb resp.
II 2G Ex db eb ia IIC T6/T4 Gb resp.
II 2 G Ex db [ia] IIC T6/T4 Gb resp.
II 2 G Ex db ia [ia] IIC T6/T4 Gb resp.

ZSEx001e c

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) # EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

II 2 G Ex db eb [ia] IIC T6/T4 Gb resp.
II 2 G Ex db eb ia [ia] IIC T6/T4 Gb resp.
II 2 D Ex tb [ia] IIIC T135°C Db

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. D. Markus
Direktor und Professor

Braunschweig, April 20, 2021

ZSEx001e c

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In case of dispute, the German text shall prevail.

(13) # SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 11 ATEX 1005 X, Issue: 03**

(15) Description of Product

The Gas detection transmitters ETR/ITR/XTR 0*** consist of three different types of sensors and interfaces. The Gas detection transmitter type ETR 0*** uses the electrochemical sensing principle, the Gas detection transmitter type ITR 0*** uses the infrared sensing principle and the Gas detection transmitter type XTR 0*** uses the catalytic sensing principle or infrared sensing principle with a catalytic sensor interface.

The Remote Box type RCU 0*** shall only be used with separate certified sensors. The sensor frontend (EC sensing head) of the ETR 0*** series comprises a galvanically separating barrier circuit (inside the flameproof enclosure) and intrinsically safe electronics located outside the flameproof enclosure as well as an electro-chemical resp. ultrasonic sensor - all of them being covered by this certificate. The sensors of the ITR 0*** and XTR 0*** series are covered by separate certifications, which are accepted under this certificate.
The internal electronics optionally covers the intrinsically safe fieldbus under consideration of the maximum FISCO input ratings applicable for the operation as both FISCO Field device or alternatively non- intrinsically safe fieldbus Modbus RTU.

The connection of the equipment is made on the one hand via direct cable entries into the flameproof enclosure (E,I,X)TR 0(2…5)*(0...F) or on the other hand via a terminal box of the increased safety type of protection (E,I,X)TR 0(2…5)*(I...X). For remote applications, the equipment can optionally be connected to the flameproof terminal box EAC 01**.

Nomenclature:

$$\frac{*}{1}\,\mathbf{TR}\,0\,\frac{*}{2}\,\frac{*}{3}\,\frac{*}{4}$$

1: Sensing principle
- E = electrochemical
- I = infrared
- X = catalytic

2: Series and enclosure material
- 2 = 02/03 aluminium enclosure
- 3 = 02/03 series, stainless steel enclosure
- 4 = 04/05 series, aluminium enclosure
- 5 = 04/05 series, stainless steel enclosure

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In case of dispute, the German text shall prevail.

3: Sensor

ITR 0 * * *_

3: Sensor

0 = IDS 0001
1 = IDS 0101
2 = IDS 0102
5 = IDS 0105

ETR 0 * * *_

3: Sensor

0 = DrägerSensor or XS with Adapter
2 = Ultrasonic sensor

XTR 0 * * *_

3: Sensor

0 = IDS 0002
1 = XDS 020*
2 = Ex-Sensor LC NPT

4: Interface

0 = "d", 4-20 mA
1 = "d", 4-20 mA with Relay
2 = “d”, Modbus RTU
A = "d"+"ia", Foundation Fieldbus
B = "d"+"ia", Foundation Fieldbus SIF
E = "d"+"ia", Profibus
F = "d"+"ia", Profisafe
I = "d"+"e", 4-20 mA
J = "d"+"e", 4-20 mA with Relay
K = "d"+"e", Modbus RTU
S = "d"+"e"+"ia", Foundation Fieldbus
T = "d"+"e"+"ia", Foundation Fieldbus SIF
W = "d"+"e"+"ia", Profibus
X = "d"+"e"+"ia", Profisafe

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Nomenclature for Junction Box, type EAC 01** (remote sensor)

EAC 01 $\frac{*}{1}\ \frac{*}{2}$

1: Enclosure material
- 0 = Aluminium enclosure
- 1 = Stainless steel enclosure

2: Not safety relevant

Nomenclature for Remote Box, type RCU 0***

RCU 0 $\frac{* \ * \ *}{1\ 2\ 3}$

1: Enclosure Material
- 2 = Aluminum
- 3 = Stainless Steel

2: Not safety relevant

3: Interface
- 0 = "d", 4-20 mA
- 1 = "d", 4-20 mA with Relay
- 2 = “d”, Modbus RTU
- A = "d"+"ia", Foundation Fieldbus
- B = "d"+"ia", Foundation Fieldbus SIF
- E = "d"+"ia", Profibus
- F = "d"+"ia", Profisafe
- I = "d"+"e", 4-20 mA
- J = "d"+"e", 4-20 mA with relay
- K = "d"+"e", Modbus RTU
- S = "d"+"e"+"ia", Foundation Fieldbus
- T = "d"+"e"+"ia", Foundation Fieldbus SIF
- W = "d"+"e"+"ia", Profibus
- X = "d"+"e"+"ia", Profisafe

The relation between ambient temperature and the assigned temperature class is as follows:

Table 1

Type	Ambient temperature range	Temperature class (Gas)	Max. surface temperature (Dust)
ITR 0*0* XTR 0*0*	-40 °C to +65 °C	T4	T130°C
All other ITR 0***-, XTR 0***-versions and RCU 0***	-40 °C to +80 °C	T4	T130°C

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SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 11 ATEX 1005 X, Issue: 03

Table 1 (continued)

Type	Ambient temperature range	Temperature class (Gas)	Max. surface temperature (Dust)
All versions	-40 °C to +40 °C	T6	T80°C
ETR 02/032*, ETR 04/052*	-40 °C to +70 °C	T4	T135°C
ETR 02/030*, ETR 04/050*	-40 °C to +70 °C	T4	T135°C
ETR 02/030*, ETR 04/050*	-40 °C to +40 °C	T6	T135°C

Electrical ratings:

Maximum supply wattage: P_{max}: 5 W

Supply:

ETR 02/03** series	10…30 VDC, 0.08…0.15 A
ITR 02/03** series	10…30 VDC, 0.1…0.75 A
XTR 02/03** series	10…30 VDC, 0.1…0.2 A
ETR 04/05** series	10…30 VDC, 0.1…0.35 A
ITR 04/05** series	10…30 VDC, 0.3…1.0 A
RCU 02/03** series	10…30 VDC, 0.3…1.0 A
XTR 04/05** series	10…30 VDC, 0.15…0.45 A
Relay	5A, 30 VDC or 230 VAC

Fieldbus circuit:
Field device as Fieldbus system in type of protection Intrinsic Safety Ex ia IIC; FISCO in accordance with IEC 60079-11, only for the interface types A; B; E; F; S; T; W and X

Electrical data,
Maximum values:

Type	Voltage, Ui [VDC]	Current, Ii [mA]	Power, Pi [mW]
ETR 04** ETR 05** ITR 04** ITR 05** RCU 02** RCU 03** XTR 04** XTR 05**	17.5	380	5320

For the Gas detection transmitters series ETR ****
Sensor circuit: in type of protection Intrinsic safety Ex ia IIC / IIIC;
only for connecting DrägerSensor or XS with adapter or ultrasonic sensor

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 11 ATEX 1005 X, Issue: 03

Changes with respect to earlier issues

Addition of new aluminum and stainless steel specifications with comparable material properties and identical tensile strength compared to the previously tested materials.

The connection openings provided may optionally be closed or left out in the cast, provided that the closing wall has the originally tested minimum wall thickness of 5 mm in aluminum or 3.5 mm in stainless steel.

(16) Test Report PTB Ex 21-11017

(17) Specific conditions of use

Repairs on the flameproof joints may only be made in accordance with the manufacturer's structural specifications. Repairs on the basis of the values in tables 1 and 2 of EN 60079-1 are not permitted.
The device variants incorporating a FISCO fieldbus interface as well as the Gas detection transmitter Type ETR 0*** must operate in circuits that are limited to overvoltage category I/II/III in accordance with IEC 60664-1 for FISCO field device operation.

Additional notes for installation and operation

The reference between ambient temperature in dependence of the temperature class and the surface temperature has to be taken from table 1 of this certificate or the operating instructions.

Components that are attached or installed (terminal compartments. bushings. cable glands. connectors) but are not included in the type approval documents shall be of a technical standard that complies with the specifications on the cover sheet. They must be suited for the operating conditions and come with a separate examination certificate. The special conditions specified for the components shall be complied with and the components shall be included in the type test, if necessary. This equally applies to the components that have already been mentioned in the technical description.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. D. Markus
Direktor und Professor

Braunschweig, April 20, 2021

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

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Translation

1 # EU-Type Examination Certificate Supplement 08

2 **Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU**

2 **Device with a measuring function for explosion protection Directive 2014/34/EU**

3 EU-Type Examination Certificate Number: **BVS 13 ATEX G 001 X**

4 Product: **Transmitters types ITR 041*, ITR 051*, ITR 042*, ITR 052*, XTR 040*, XTR 050*, XTR 041*, XTR 051*, XTR 042*, XTR 052*, ETR 040*, ETR 050***

5 Manufacturer: **Dräger Safety AG & Co. KGaA**

6 Address: **Revalstraße 1, 23560 Lübeck, Germany**

7 This supplementary certificate extends EU-Type Examination Certificate No. BVS 13 ATEX G 001 X to apply to products designed and constructed in accordance with the specification set out in the Annex of the said certificate but having any variations specified in the Annex attached to this certificate and the documents therein referred to.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential test report PFG-no. 41300313P NIX.

9 Compliance with the Essential Health and Safety Requirements with respect to the measuring function for explosion protection has been assured by compliance with:

EN 60079-29-1:2007
EN 60079-29-1:2016
EN 50104:2010
EN 50271:2010
EN 50271:2018

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

see PTB 11 ATEX 1005 X Ausgabe 01

DEKRA Testing and Certification GmbH
Bochum, 2020-02-04

Signed: Kilisch
Managing Director

This certificate may only be reproduced in its entirety and without any change.

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
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13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 13 ATEX G 001 X
Supplement 08

15 **Product description**

15.1 **Subject and type**

Transmitter types ITR 041*, ITR 051*, ITR 042*, ITR 052*, XTR 040*, XTR 050*, XTR 041*, XTR 051*, XTR 042*, XTR 052*, ETR 040*, ETR 050*

Coding of type: (1)TR 0(2)(3)(4)

(1)	E, I or X	Sensor interface: infrared (I) or catalytic (X)
(2)	4 or 5	Material of housing: aluminium (4) or stainless steel (5)
(3)		internal sensor:
	1 or 2	for ITR: IDS 0101 (1) or IDS 0102 (2)
	0,1 or 2	for XTR: IDS 0002 (0) or XDS 0200 (1) or Ex-Sensor LC NPT (2)
		external sensor with junction box EAC 01**:
	1 or 2	for ITR: IDS 0101 (1) or IDS 0102 (2)
	0,1 or 2	for XTR: IDS 0002 (0) or XDS 0200 (1) or Ex-Sensor LC NPT (2)
		external sensor with other junction boxes:
	1 or 2	for ITR: IDS 0101 (1) or IDS 0102 (2) or IDS 0111 (1) or IDS 0112 (2)
	0,1 or 2	for XTR: IDS 0002 (0) or IDS 0012 (0) or Polytron SE Ex PR M* DQ (1) or Polytron SE Ex PR NPT1 DQ (1) or Polytron SE Ex HT M DQ (1) or Polytron SE Ex LC M1/2 DD (2)
	0	DrägerSensor (internal sensor only) for ETR 0*0*
(4)	0, 1, I, J	interface: "d", 4-20 mA (0) or "d", 4-20 mA with relays (1) or "d"+"e", 4-20 mA (I) or "d"+"e", 4-20 mA with relays (J)

15.2 **Description**

Reason for the supplement:
Modification of the software of the transmitter and re-testing of types ITR 041*, ITR 051*, ITR 042* and ITR 052* according to EN 60079-29-1:2016 and EN 50271:2018.
The test according to EN 50271:2018 concerns only transmitters types XTR 0*1*, XTR 0*2*, ETR 0*0*, ITR 041*, ITR 051*, ITR 042* and ITR 052*. The test according to EN 60079-29-1:2016 concerns only transmitters types XTR 0*1*, XTR 0*2*, ITR 041*, ITR 051*, ITR 042* and ITR 052*.

Description of Product

The transmitters ITR 0*1* (Polytron 8700 with sensor Dräger PIR 7000 type 334), ITR 0*2* (Polytron 8700 with sensor Dräger PIR 7000 type 340), XTR 0*0* (Polytron 8310 with Dräger Sensor IR) and XTR 0*1* (Polytron 8200 with DrägerSensor PR M DQ, HT M DQ or PR NPT DQ) are fixed equipment for the measurement of flammable gases and vapours mixed with air at volume fractions up to the lower explosive limit. The transmitters XTR 0*2* (Polytron 8200 with Ex-sensor LC M or LC NPT) are fixed equipment for the measurement of flammable gases and vapours mixed with air at volume fractions up to 10 % of the lower explosive limit. The sensor may be directly connected to the transmitter housing or operated as remote sensor.
The transmitters type ETR 0*0* (Polytron 8100 with DrägerSensor O_2 or DrägerSensor O_2 LS) are fixed equipment for the measurement of oxygen. The sensor is directly fitted to the transmitter housing. Operation with a remote sensor is not subject of this supplement to the EU-type examination certificate.
A 4-20 mA interface serves for transmission of the measured value to a control unit.
The transmitters can be equipped with a relay module that provides two alarm relays and one fault relay.

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15.3 **Parameters**

see PTB 11 ATEX 1005 X Ausgabe 01

15.4 **Measuring function for explosion protection**

This EU-type examination certificate covers:

- transmitters types ITR 041*, ITR 051*, ITR 042*, ITR 052*, XTR 040*, XTR 050*, XTR 041*, XTR 051*, XTR 042*, XTR 052* with software version 3.1.0 and transmitters types ETR 040* and ETR 050* with software version 3.1.0 (main) and 5 (SIOS)
- for transmitters types ITR 0*1* and ITR 0*2* (infrared sensor) the measuring function for those gases and vapours which are listed in the instruction manual with reference to the EU-type examination certificate BVS 08 ATEX G 001 X
- for transmitters type XTR 0*0* (infrared sensor) when operated in gas category methane the measuring function for methane in the measuring range 0 - 100 % LEL, when operated in gas category propane the measuring function for propane, i-butane, n-butane, n-pentane, n-hexane, n-octane, n-nonane and i-propanol in the measuring range 0 - 100 % LEL and ethanol and ethyl acetate in the measuring range 0 - 70 % LEL, and when operated in gas category ethylene the measuring function for ethylene, propylene, toluene, acetone and ethyl acetate in the measuring range 0 - 100 % LEL and methanol in the measuring range 0 - 70 % LEL
- for transmitters type XTR 0*1* (catalytic combustion sensor) the measuring function for methane, propane, acetone, acetylene, ammonia, special boiling point spirit 65/95, benzene, 1,3-butadiene, n-butane, 2-butanone, n-butyl acetate, diethyl ether, dimethyl ether, acetic acid, ethanol, ethylene, ethyl acetate, ethylene oxide, n-hexane, methanol, methyl methacrylate, n-octane, n-pentane, 2-propanol, propylene, propylene oxide, n-nonane, toluene, o-xylene and hydrogen in the measuring range 0 - 100 % LEL
- for transmitters type XTR 0*2* (catalytic combustion sensor) the measuring function for methane, propane, ethylene, acetylene, propylene, i-butylene, benzene, n-nonane and hydrogen in the measuring range 0 - 10 % LEL
- for transmitters type ETR 0*0* (electrochemical sensor) the measuring function for oxygen (measurement of inertisation) in the measuring range 0 - 5...25 % O_2
- use of the following outputs for safety relevant purposes:
  - display
  - 4-20 mA output for measured values
  - relays
- use of the following accessories for transmitters types ITR 0*1* and ITR 0*2*:
  - Spacer (part no. 6812617)
  - use of the following accessories for sensor PIR 7000:
    - Mounting set PIR 7000 (part no. 68 11 648)
    - Splash guard PIR 7000 (part no. 68 11 911)
    - Insect guard PIR 7000 (part no. 68 11 609)
    - Hydrophobic filter PIR 7000 (part no. 68 11 890)
    - Calibration adapter PIR 7000 (part no. 68 11 610)
    - Status indicator PIR 7000 (part no. 68 11 625)
    - Flowcell PIR 7000 (part no. 68 11 490)
    - Bump test adapter PIR 7000 (part no. 68 11 630)
    - Process adapter PIR 7000 (part no. 68 11 915)
    - Prozess cuvette PIR 7000 (part no. 68 11 415)
    - Prozess cuvette PIR 7000 SGR (part no. 68 13 219)
    - Junction box Ex e (part no. 68 11 898)
    - Junction boxes Ex d (part no. 45 20 561)
    - Magnetic wand (part no. 45 44 101)

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- use of the following accessories for transmitters type XTR 0*0*:
  - use of the following accessories for DrägerSensor IR:
    - Splash guard (part-no. 68 10 796)
    - Calibration adapter (part-no. 68 10 859)
    - Weather guard (part-no. 68 11 135)
    - Gassing-/process adapter (part-no. 68 11 330)
    - Magnetic wand (part-no. 45 44 101)
    - Junction box "Ex d" (part-no. 68 11 161)
    - Junction box "Ex e" (part-no. 68 11 299)
    - Junction box "Ex e" (part-no. 68 11 159)
- use of the following accessories for transmitters type XTR 0*1*:
  - Calibration adapter PE, Europe (part no. 68 06 978)
  - Process adapter (part no. 68 12 470)
  - Remote calibration adapter DQ (part no. 68 12 480)
- use of the following accessory for transmitters type XTR 0*2*:
  - Calibration adapter PE, Europe (part no. 68 06 978)
- use of the following accessories for transmitters type ETR 0*0*:
  - Calibration adapter PE, Europe (part no. 68 06 978)
  - Sensor test dongle (part no. 83 17 619)
  - Diagnostic dongle (part no. 83 17 860)

The EU-type examination includes the following deviations from the operating conditions required by EN 60079-29-1:

- Extended range of temperature at operation: -40 °C to +70 °C (with relay module)
  -40 °C to +77 °C (ITR 0*1* und ITR 0*2*; without relay module)
  -40 °C to +65 °C (XTR 0*0*)
  -40 °C to +80 °C (XTR 0*1* and XTR 0*2*; without relay module)
  -40 °C to +85 °C (Polytron SE Ex LC M1/2 DD)
- Extended range of ambient pressure: 70 kPa to 130 kPa
- Extended range of humidity of the measured gas: 0 % RH to 95 % RH (ITR 0*1*, ITR 0*2*, and XTR 0*0*)
  5 % RH to 95 % RH (XTR 0*1* and XTR 0*2*)

The EU-type examination includes the following deviations from the operating conditions required by EN 50104:

- Extended range of temperature at operation: -40 °C to +65 °C (DrägerSensor O_2 LS)
- Deviating range of temperature at operation: 0 °C to +55 °C (DrägerSensor O_2)
- Extended range of ambient pressure: 70 kPa to 130 kPa
- Extended range of humidity of the measured gas: 5 % RH to 95 % RH (DrägerSensor O_2 LS)
  10 % RH to 95 % RH (DrägerSensor O_2)

16 Test report

PFG-no. 41300313P NIX of 2020-02-04
EU-type examination certificate PTB 11 ATEX 1005 X Ausgabe 01 of 2017-05-10

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17 Special Conditions for Use

- see EU-type examination certificate PTB 11 ATEX 1005 X Ausgabe 01
- If operated with a relay module:
  - The main alarm shall be configured "latching" and "non-acknowledgeable" or "pre-acknowledgeable".
  - The pre-alarm shall only be configured "acknowledgeable" if it is used for operation of an acoustic alarm device.
- For transmitters types ITR 0*1* and ITR 0*2*:
  - see EU-type examination certificate BVS 08 ATEX G 001 X
- For transmitters type XTR 0*0*:
  - see 9th supplement to the EU-type examination certificate BVS 05 ATEX E 143 X
- For transmitters type XTR 0*1*:
  - When exposed to a directed flow of air mixed with gas, the measured values can be increased by up to 32 %.
  - When operated with the remote calibration adapter DQ the measured values can be increased by up to 70 %.
- For transmitters type XTR 0*2*:
  - Operate the transmitter when connected to a control unit that has a latching over-range indication. Do not use internal alarm relays of the transmitter.
  - When exposed to a directed flow of air mixed with gas, the measured values can be increased by up to 32 %.
  - Adjust the transmitter with the sensor in its operational orientation.
  - False alarms can occur during warming up of the sensor.
- For transmitters type ETR 0*0*:
  - The response time t_{20} can exceed the limit of EN 50104 for small concentration changes.

18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements with respect to the measuring function for explosion protection are covered by the standards listed under item 9.

19 Drawings and Documents

Drawings and documents are listed in the confidential test report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, dated 2020-02-04

Managing Director

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[1] # EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] EU-Type Examination Certificate Number: **DEMKO 09 ATEX 0924202X Rev. 2**

[4] Product: **Gas Sensor XDS 02xx**

[5] Manufacturer: **Dräger Safety AG & Co. KGaA**

[6] Address: **Revalstrasse 1, 23560 Lübeck, Germany**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the Council Directive 2014/34/EU of 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. **US/UL/ExTR09.0006/03**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN 60079-1:2014** **EN 60079-31:2014**

[10] If the sign "**X**" is placed after the certificate number, it indicates that the product is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by the certificate.

[12] The marking of the product shall include the following:

II 2 G Ex db IIC T6...T3 Gb

II 2 D Ex tb IIIC T130°C…T195°C Db

Certification Manager
Jan-Erik Storgaard



This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2009-10-23
Re-issued: 2020-12-14

Notified Body UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

[13] [14]

Schedule
EU-TYPE EXAMINATION CERTIFICATE No.
DEMKO 09 ATEX 0924202X Rev. 2

[15] Description of Product

The Ex-Sensor XDS 020x (tapered NPT thread) may be mounted to enclosures, type of protection Flameproof Enclosure "d", employing female flameproof ¾" NPT threads.

Nomenclature for XDS 02 x x
I II III

I - Denotes basic gas sensor designation
XDS 02

II - Denotes threaded hub size located on the cover of the sensor
0 – 3/4" - 14 NPT male threads
1 – M25 x 1.5 male threads

III - Denotes limits on ambient temperature range
0 – -50 °C to +85 °C
1 – -50 °C to +155 °C

Performance testing

The measuring function of the product for explosion protection, according to Annex II clause 1.5.5, 1.5.6 and 1.5.7 of the Directive 2014/34/EU is not covered in this certificate.

Temperature range

The relation between ambient temperature and the assigned temperature class is as follows:

Ambient temperature range	Temperature class (G)	Maximum surface temperature (D)
-50 °C to +155 °C	T3	T195
-50 °C to +85 °C	T4	T130
-50 °C to +55 °C	T5	T130
-50 °C to +40 °C	T6	T130

Electrical data

Power supply:
30 V, max. 2 W

Routine tests

Routine tests according to EN 60079-1:2014, cl. 16 are required. As a suitable alternative for Overpressure testing the survey of welding parameters, such as yield, weld energy has been described by the Manufacturer and must be guaranteed during production process.

[16] Descriptive Documents

The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this EU-Type Examination Certificate.

[17] Specific conditions of use:

- The XDS02** component sensor was evaluated for a temperature classification related to various ambient temperatures as shown in the table under Temperature Range.
- Dust tightness suitability of threaded entry is to be verified in combination with the ultimate enclosure in the end-use application. This applies to "Flameproof Enclosure," "Increased Safety" and "Protection by Enclosure" applications equally.
- Ingress Protection ratings to IP6X in accordance with EN 60529:1992/A2 2013, if applicable, are to be verified in combination with the ultimate enclosure in the end-use application.
- Metric thread does not comply with EN 60079-1 and may only be used with Ex certified enclosures of Equipment Level Protection Gb or Gc or when subject to special investigation in end use.
- No repair is possible on the welded construction of the flameproof enclosure.

[18] Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

Additional information

The Ex-Sensor XDS 02xx has in addition passed the tests for Ingress Protection to IP 6X in accordance with EN60529:1991+A1:2000+A2:2013.

The trademark Dräger will be used as the company identifier on the marking label.

EU Type Examination Certificate CML 18ATEX1320X Issue 3

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **Type 737 & 797 Ranges of Adaptors & Reducers and 747, 757 & 767 Ranges of Stopping Plugs**

3 Manufacturer **CMP Products Ltd**

4 Address **Unit 36 Nelson Way**
Nelson Park East,
Cramlington
NE23 1WH
UK

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 CML B.V., Chamber of Commerce No 67386717, Koopvaardijweg 32, 4906CV Oosterhout, The Netherlands, Notified Body Number 2776, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.

8 This EU Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Article 13 apply to the manufacture of the equipment or component and are separately certified.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN IEC 60079-0:2018	EN IEC 60079-7:2015+A1:2018
EN 60079-1:2014	EN 60079-31:2014

10 The equipment shall be marked with the following:

I M2 Ex db I Mb and/or Ex eb I Mb	II 2 G Ex eb IIC Gb
II 2 G Ex db IIC Gb and/or Ex eb IIC Gb	II 1 D Ex ta IIIC Da
II 1 D Ex ta IIIC Da	

(NOTE: Equipment marked with mining code are not available in aluminium)

11 Description

The Type 737 & 797 Ranges of Adaptors & Reducers and 747, 757 & 767 Ranges of Stopping Plugs are designed for explosive atmospheres, supplied in metallic and non-metallic (excluding 797 range) material options.
The Adaptor and Reducer product ranges convert an existing cable entry thread to another type and/or size. They comprise a hexagonal or cylindrical body – with flats – threaded from both ends providing the change required. These can be manufactured with equal threads or a combination of various sizes and types, unless otherwise stated.

- 737 Adaptor – Comprises a male (M) entry thread, adapting to a female (F) thread of the same size or larger, and limited to a change of two 'standard' thread sizes, e.g. M16 x M25.
- 737 Reducer – Comprises a male (M) entry thread, reducing to a female (F) thread, smaller and not limited by a specific number of thread sizes,
  e.g. M130 (M) x M10 (F) being acceptable.
- 797 Adaptor/Reducer – Comprises M/M or F/F threads only and limited to a change of two 'standard' thread sizes; with the exception of F/F thread options, where a change of three 'standard' thread sizes is allowed for M20 (F) x M10 (F) only.

Stopping Plug product ranges provide a means of blanking unused cable entries, giving Ex protection.

- 747 Stopping Plug – Comprises a cylindrical body with an external male thread and hexagonal, or square drive, recess or protrusion.
  - Non-tamperproof – allen key hexagonal, or square drive, recess only accessible outside the enclosure
  - Tamperproof – allen key hexagonal, or square drive, recess only accessible inside the enclosure
- 757 Stopping Plug – Comprises a hexagonal head and cylindrical body with an external male thread.
- 767 Stopping Plug – Comprises a cylindrical body with an external male thread and domed head with allen key hexagonal, or square drive, recess.

Materials of manufacture

Metallic:

- Brass; aluminium; stainless steel; mild steel.

Non-Metallic:

- Glass reinforced flame-retardant nylon (Excluded from Group I applications).

All brass manufactured component parts can be optionally nickel-plated. All mild steel manufactured components can be optionally zinc plated.

Design Options

- The male entry component can be fitted with an O-ring seal, which locates on the mating face with its associated enclosure. This option having the product type prefixed with the letter 'R'. Applicable to 737, 757, 767, and 797 (M/M only) product ranges.
- Alternative entry component thread forms; Metric, ET (conduit), PG, BSPP, BSPT, ISO, NPT, and NPSM. Refer to R12922A for thread specifications.
- Intermediate thread sizes permitted, e.g. M28.

Thread and Size Designations:

Table 1 details the size reference and thread designation of the thread options covered. Table 2 details the products and their approved thread size ranges:

Table 1

737 / 747 / 757 / 767 / 797 Size Reference and Recognised Equivalent Threads							
Size Ref.	**Metric**	**NPT**	**NPSM**	**BSPP**	**BSPT**	**PG DIN**	**E.T.**
10	M10	1/8	1/8	1/8	1/8	-	3/8
12	M12	1/4	1/4	1/4	1/4	PG7	1/2
16	M16	3/8	3/8	3/8	3/8	PG9	5/8
20	M20	1/2	1/2	1/2	1/2	PG11 PG13.5	3/4
25	M25	3/4	3/4	3/4	3/4	PG16 PG21	1
32	M32	1	1	1	1	-	1-1/4
40	M40	1-1/4	1-1/4	1-1/4	1-1/4	PG29	1-1/2
50	M50	1-1/2	1-1/2	1-1/2	1-1/2	PG36	2
63	M63	2	2	2	2	PG42	2-1/2
75	M75	2-1/2	2-1/2	2-1/2	2-1/2	PG48	3
90	M90	3	3	3	3	-	3-1/2
100	M100	3-1/2	3-1/2	3-1/2	3-1/2	-	4
115	M115	4	4	4	4	-	-
130	M130	5	5	5	5	-	-

NOTE: Metric entry threads of all model ranges may be manufactured with a thread pitch between 0.7 mm and 2.0 mm, with 1.5 mm as standard, with the exception of Size 10 which is only permitted with a 1.0 mm thread pitch.

Table 2

Product Range	Metallic*	
	Male Thread (Size Ref.)	Female Thread (Size Ref.)
737 Adaptor	12 to 130	12 to 130
737 Reducer	16 to 130	10 to 115
797	12 to 130	10 to 130
747 / 757 / 767	12 to 130	-
* Stainless Steel only, when any thread size 10 or 12 is required		
Product Range	**Non-metallic***	
	Male Thread (Size Ref.)	**Female Thread (Size Ref.)**
737 Adaptor	20 to 75	20 to 90
737 Reducer	20 to 90	16 to 75
747 / 757 / 767	20 to 100	-
* Excluded from Group I applications		

Variation 1

This variation introduces the following modifications:

i. The introduction of a universal certificate schedule drawing detailing critical parts.
ii. The introduction of additional sizes.
iii. The introduction of an additional Specific Condition of Use.
iv. The amendment of drawing text and formatting, including consolidation, for consistency that has no effect on the technical content.
v. The update to the latest standard editions.

Variation 2

This variation introduces the following modification:

i. Correction to typographical errors on this certificate, relating to the ATEX certificate number.

Variation 3

This variation introduces the following modifications:

i. Introduction of a square socket (recessed) and a square plug (protrusion) on the 747 Stopping plugs and 767 Stopping plugs.
ii. Modification to the specific conditions of use

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	18 Feb 2019	R12060D/00	Issue of the prime certificate
1	04 May 2021	R12735B/00 R12922A	Introduction of variation 1
2	26 Jan 2022	N/A	Introduction of variation 2 Correction of typographical errors only, no supporting report was required.
3	09 Feb 2024	R16280A/00	Introduction of Variation 3

Note: Drawings that describe the equipment or component are listed in the Annex.

13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

i. Where the product incorporates certified parts or safety critical components, the manufacturer of the product defined on this certificate shall continually monitor these parts/components for any modifications introduced by the manufacturer(s) of these constituent parts. If the manufacturer of any constituent part introduces any changes which affect the compliance of the certified product that is the subject of this certificate, the manufacturer is required to have this certificate updated.

ii. Non-metallic and aluminium adaptors, reducers and stopping plugs shall not bear any Group I marking.

14 Specific Conditions of Use (Special Conditions)

The following conditions relate to safe installation and/or use of the equipment.

i. The interfaces between a male thread of an adaptor/reducer and an associated enclosure, between a female thread of an adaptor/reducer and a cable entry device, and between a stopping plug and an associated enclosure cannot be defined. Therefore, it is the installer's responsibility to ensure that the appropriate ingress protection level is maintained at these interfaces.

ii. Non-metallic adaptors, reducers and stopping plugs shall not be used in enclosures where the temperature, at the point of mounting, is outside the range of -20°C to +60°C.

iii. The installer shall refer to the manufacturer's instructions for the action necessary regarding the electrostatic risk associated with non-metallic adaptors, reducers and stopping plugs.

iv. Any cable gland used with the non-metallic adaptors and reducers shall be non-metallic.

v. The adaptors, reducers and stopping plugs sizes 10 & 12 have been tested to a mechanical impact of 7 J and therefore, when used in Group I applications, shall only be installed where the risk of mechanical impact is low.

Certificate Annex

Certificate Number	**CML 18ATEX1320X**
Equipment	**Type 737 & 797 Ranges of Adaptors & Reducers and 747, 757 & 767 Ranges of Stopping Plugs**
Manufacturer	**CMP Products Ltd**

The following documents describe the equipment or component defined in this certificate:

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
GA077	1 of 1	06	11 Feb 2019	ATEX Adaptors, Reducers and Stopping Plugs
GA133	1 of 1	05	11 Feb 2019	ATEX Non-metallic Adaptors, Reducers and Stopping Plugs
GA134	1 of 1	03	11 Feb 2019	Type 797 Male/Male & Female/Female Adaptors
GA307	1 of 1	03	11 Feb 2019	Type 737 & Type 797 Adaptors (Optional Sizes)
SCH0070	1 of 1	07	11 Feb 2019	Adaptor/Reducer Cross-Reference Chart

Issue 1

Drawing No	Sheets	Rev	Approved date	Title
GA2372	1 to 2	00	04 May 2021	Adaptors, Reducers and Stopping Plugs
SCH0070	1 of 1	08	04 May 2021	Adaptor/Reducer Cross-Reference Chart

Issue 2

No drawings were introduced or revised under this issue.

Issue 3

Drawing No	Sheets	Rev	Approved date	Title
GA2372	1 to 2	02	09 Feb 2024	ADAPTORS, REDUCERS, AND STOPPING PLUGS

ULTRASONIC GAS DETECTOR

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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) # EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 11 ATEX 1005 X **Issue: 3**

(4) Product: Gas detection transmitters ETR/ITR/XTR 0***, Remote Box RCU 0***

(5) Manufacturer: Dräger Safety AG & Co. KGaA

(6) Address: Revalstraße 1, 23560 Lübeck, Germany

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 21-11017.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN IEC60079-0:2018; EN 60079-1:2014+AC:2018;
EN IEC 60079-7:2015+A1:2018; EN 60079-11:2012; EN 60079-31:2014

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 2 G Ex db IIC T6/T4 Gb resp.
II 2 G Ex db eb IIC T6/T4 Gb resp.
II 2 D Ex tb IIIC T80°C/T130°C Db resp.
II 2G Ex db ia IIC T6/T4 Gb resp.
II 2G Ex db eb ia IIC T6/T4 Gb resp.
II 2 G Ex db [ia] IIC T6/T4 Gb resp.
II 2 G Ex db ia [ia] IIC T6/T4 Gb resp.

ZSEx001e c

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) # EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

II 2 G Ex db eb [ia] IIC T6/T4 Gb resp.
II 2 G Ex db eb ia [ia] IIC T6/T4 Gb resp.
II 2 D Ex tb [ia] IIIC T135°C Db

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. D. Markus
Direktor und Professor

Braunschweig, April 20, 2021

ZSEx001e c

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In case of dispute, the German text shall prevail.

(13) # SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 11 ATEX 1005 X, Issue: 03**

(15) Description of Product

The Gas detection transmitters ETR/ITR/XTR 0*** consist of three different types of sensors and interfaces. The Gas detection transmitter type ETR 0*** uses the electrochemical sensing principle, the Gas detection transmitter type ITR 0*** uses the infrared sensing principle and the Gas detection transmitter type XTR 0*** uses the catalytic sensing principle or infrared sensing principle with a catalytic sensor interface.

The Remote Box type RCU 0*** shall only be used with separate certified sensors. The sensor frontend (EC sensing head) of the ETR 0*** series comprises a galvanically separating barrier circuit (inside the flameproof enclosure) and intrinsically safe electronics located outside the flameproof enclosure as well as an electro-chemical resp. ultrasonic sensor - all of them being covered by this certificate. The sensors of the ITR 0*** and XTR 0*** series are covered by separate certifications, which are accepted under this certificate.
The internal electronics optionally covers the intrinsically safe fieldbus under consideration of the maximum FISCO input ratings applicable for the operation as both FISCO Field device or alternatively non- intrinsically safe fieldbus Modbus RTU.

The connection of the equipment is made on the one hand via direct cable entries into the flameproof enclosure (E,I,X)TR 0(2…5)*(0...F) or on the other hand via a terminal box of the increased safety type of protection (E,I,X)TR 0(2…5)*(I...X). For remote applications, the equipment can optionally be connected to the flameproof terminal box EAC 01**.

Nomenclature:

$$\frac{*}{1}\,\mathbf{TR}\ 0\ \frac{*}{2}\ \frac{*}{3}\ \frac{*}{4}$$

1: Sensing principle
- E = electrochemical
- I = infrared
- X = catalytic

2: Series and enclosure material
- 2 = 02/03 aluminium enclosure
- 3 = 02/03 series, stainless steel enclosure
- 4 = 04/05 series, aluminium enclosure
- 5 = 04/05 series, stainless steel enclosure

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

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3: Sensor

ITR 0 * _ *

3: Sensor

0 = IDS 0001
1 = IDS 0101
2 = IDS 0102
5 = IDS 0105

ETR 0 * _ *

3: Sensor

0 = DrägerSensor or XS with Adapter
2 = Ultrasonic sensor

XTR 0 * _ *

3: Sensor

0 = IDS 0002
1 = XDS 020*
2 = Ex-Sensor LC NPT

4: Interface

0 = "d", 4-20 mA
1 = "d", 4-20 mA with Relay
2 = “d”, Modbus RTU
A = "d"+"ia", Foundation Fieldbus
B = "d"+"ia", Foundation Fieldbus SIF
E = "d"+"ia", Profibus
F = "d"+"ia", Profisafe
I = "d"+"e", 4-20 mA
J = "d"+"e", 4-20 mA with Relay
K = "d"+"e", Modbus RTU
S = "d"+"e"+"ia", Foundation Fieldbus
T = "d"+"e"+"ia", Foundation Fieldbus SIF
W = "d"+"e"+"ia", Profibus
X = "d"+"e"+"ia", Profisafe

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In case of dispute, the German text shall prevail.

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Nomenclature for Junction Box, type EAC 01** (remote sensor)

EAC 01 $\frac{*}{1}\ \frac{*}{2}$

1: Enclosure material
- 0 = Aluminium enclosure
- 1 = Stainless steel enclosure

2: Not safety relevant

Nomenclature for Remote Box, type RCU 0***

RCU 0 $\frac{* \ * \ *}{1\ 2\ 3}$

1: Enclosure Material
- 2 = Aluminum
- 3 = Stainless Steel

2: Not safety relevant

3: Interface
- 0 = "d", 4-20 mA
- 1 = "d", 4-20 mA with Relay
- 2 = “d”, Modbus RTU
- A = "d"+"ia", Foundation Fieldbus
- B = "d"+"ia", Foundation Fieldbus SIF
- E = "d"+"ia", Profibus
- F = "d"+"ia", Profisafe
- I = "d"+"e", 4-20 mA
- J = "d"+"e", 4-20 mA with relay
- K = "d"+"e", Modbus RTU
- S = "d"+"e"+"ia", Foundation Fieldbus
- T = "d"+"e"+"ia", Foundation Fieldbus SIF
- W = "d"+"e"+"ia", Profibus
- X = "d"+"e"+"ia", Profisafe

The relation between ambient temperature and the assigned temperature class is as follows:

Table 1

Type	Ambient temperature range	Temperature class (Gas)	Max. surface temperature (Dust)
ITR 0*0* XTR 0*0*	-40 °C to +65 °C	T4	T130°C
All other ITR 0***-, XTR 0***-versions and RCU 0***	-40 °C to +80 °C	T4	T130°C

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SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 11 ATEX 1005 X, Issue: 03

Table 1 (continued)

Type	Ambient temperature range	Temperature class (Gas)	Max. surface temperature (Dust)
All versions	-40 °C to +40 °C	T6	T80°C
ETR 02/032*, ETR 04/052*	-40 °C to +70 °C	T4	T135°C
ETR 02/030*, ETR 04/050*	-40 °C to +70 °C	T4	T135°C
ETR 02/030*, ETR 04/050*	-40 °C to +40 °C	T6	T135°C

Electrical ratings:

Maximum supply wattage: P_{max}: 5 W

Supply:

ETR 02/03** series	10…30 VDC, 0.08…0.15 A
ITR 02/03** series	10…30 VDC, 0.1…0.75 A
XTR 02/03** series	10…30 VDC, 0.1…0.2 A
ETR 04/05** series	10…30 VDC, 0.1…0.35 A
ITR 04/05** series	10…30 VDC, 0.3…1.0 A
RCU 02/03** series	10…30 VDC, 0.3…1.0 A
XTR 04/05** series	10…30 VDC, 0.15…0.45 A
Relay	5A, 30 VDC or 230 VAC

Fieldbus circuit:
Field device as Fieldbus system in type of protection Intrinsic Safety Ex ia IIC; FISCO in accordance with IEC 60079-11, only for the interface types A; B; E; F; S; T; W and X

Electrical data,
Maximum values:

Type	Voltage, Ui [VDC]	Current, Ii [mA]	Power, Pi [mW]
ETR 04** ETR 05** ITR 04** ITR 05** RCU 02** RCU 03** XTR 04** XTR 05**	17.5	380	5320

For the Gas detection transmitters series ETR ****
Sensor circuit: in type of protection Intrinsic safety Ex ia IIC / IIIC;
only for connecting DrägerSensor or XS with adapter or ultrasonic sensor

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 11 ATEX 1005 X, Issue: 03

Changes with respect to earlier issues

Addition of new aluminum and stainless steel specifications with comparable material properties and identical tensile strength compared to the previously tested materials.

The connection openings provided may optionally be closed or left out in the cast, provided that the closing wall has the originally tested minimum wall thickness of 5 mm in aluminum or 3.5 mm in stainless steel.

(16) Test Report PTB Ex 21-11017

(17) Specific conditions of use

Repairs on the flameproof joints may only be made in accordance with the manufacturer's structural specifications. Repairs on the basis of the values in tables 1 and 2 of EN 60079-1 are not permitted.
The device variants incorporating a FISCO fieldbus interface as well as the Gas detection transmitter Type ETR 0*** must operate in circuits that are limited to overvoltage category I/II/III in accordance with IEC 60664-1 for FISCO field device operation.

Additional notes for installation and operation

The reference between ambient temperature in dependence of the temperature class and the surface temperature has to be taken from table 1 of this certificate or the operating instructions.

Components that are attached or installed (terminal compartments. bushings. cable glands. connectors) but are not included in the type approval documents shall be of a technical standard that complies with the specifications on the cover sheet. They must be suited for the operating conditions and come with a separate examination certificate. The special conditions specified for the components shall be complied with and the components shall be included in the type test, if necessary. This equally applies to the components that have already been mentioned in the technical description.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. D. Markus
Direktor und Professor

Braunschweig, April 20, 2021

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
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OXYGEN POINT DETECTORS

(GAS TRASMITTER - GAS DETECTOR)

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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) # EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 11 ATEX 1005 X **Issue: 3**

(4) Product: Gas detection transmitters ETR/ITR/XTR 0***, Remote Box RCU 0***

(5) Manufacturer: Dräger Safety AG & Co. KGaA

(6) Address: Revalstraße 1, 23560 Lübeck, Germany

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 21-11017.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN IEC60079-0:2018; EN 60079-1:2014+AC:2018;
EN IEC 60079-7:2015+A1:2018; EN 60079-11:2012; EN 60079-31:2014

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 2 G Ex db IIC T6/T4 Gb resp.
II 2 G Ex db eb IIC T6/T4 Gb resp.
II 2 D Ex tb IIIC T80°C/T130°C Db resp.
II 2G Ex db ia IIC T6/T4 Gb resp.
II 2G Ex db eb ia IIC T6/T4 Gb resp.
II 2 G Ex db [ia] IIC T6/T4 Gb resp.
II 2 G Ex db ia [ia] IIC T6/T4 Gb resp.

ZSEx001e c

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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) # EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

II 2 G Ex db eb [ia] IIC T6/T4 Gb resp.
II 2 G Ex db eb ia [ia] IIC T6/T4 Gb resp.
II 2 D Ex tb [ia] IIIC T135°C Db

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. D. Markus
Direktor und Professor

Braunschweig, April 20, 2021

ZSEx001e c

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In case of dispute, the German text shall prevail.

(13) # SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 11 ATEX 1005 X, Issue: 03**

(15) Description of Product

The Gas detection transmitters ETR/ITR/XTR 0*** consist of three different types of sensors and interfaces. The Gas detection transmitter type ETR 0*** uses the electrochemical sensing principle, the Gas detection transmitter type ITR 0*** uses the infrared sensing principle and the Gas detection transmitter type XTR 0*** uses the catalytic sensing principle or infrared sensing principle with a catalytic sensor interface.

The Remote Box type RCU 0*** shall only be used with separate certified sensors. The sensor frontend (EC sensing head) of the ETR 0*** series comprises a galvanically separating barrier circuit (inside the flameproof enclosure) and intrinsically safe electronics located outside the flameproof enclosure as well as an electro-chemical resp. ultrasonic sensor - all of them being covered by this certificate. The sensors of the ITR 0*** and XTR 0*** series are covered by separate certifications, which are accepted under this certificate.
The internal electronics optionally covers the intrinsically safe fieldbus under consideration of the maximum FISCO input ratings applicable for the operation as both FISCO Field device or alternatively non- intrinsically safe fieldbus Modbus RTU.

The connection of the equipment is made on the one hand via direct cable entries into the flameproof enclosure (E,I,X)TR 0(2…5)*(0...F) or on the other hand via a terminal box of the increased safety type of protection (E,I,X)TR 0(2…5)*(I...X). For remote applications, the equipment can optionally be connected to the flameproof terminal box EAC 01**.

Nomenclature:

$$\frac{*}{1}\,\mathbf{TR}\,0\,\frac{*}{2}\,\frac{*}{3}\,\frac{*}{4}$$

1: Sensing principle
- E = electrochemical
- I = infrared
- X = catalytic

2: Series and enclosure material
- 2 = 02/03 aluminium enclosure
- 3 = 02/03 series, stainless steel enclosure
- 4 = 04/05 series, aluminium enclosure
- 5 = 04/05 series, stainless steel enclosure

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In case of dispute, the German text shall prevail.

3: Sensor

ITR 0 * * *_

3: Sensor

0 = IDS 0001
1 = IDS 0101
2 = IDS 0102
5 = IDS 0105

ETR 0 * * *_

3: Sensor

0 = DrägerSensor or XS with Adapter
2 = Ultrasonic sensor

XTR 0 * * *_

3: Sensor

0 = IDS 0002
1 = XDS 020*
2 = Ex-Sensor LC NPT

4: Interface

0 = "d", 4-20 mA
1 = "d", 4-20 mA with Relay
2 = “d”, Modbus RTU
A = "d"+"ia", Foundation Fieldbus
B = "d"+"ia", Foundation Fieldbus SIF
E = "d"+"ia", Profibus
F = "d"+"ia", Profisafe
I = "d"+"e", 4-20 mA
J = "d"+"e", 4-20 mA with Relay
K = "d"+"e", Modbus RTU
S = "d"+"e"+"ia", Foundation Fieldbus
T = "d"+"e"+"ia", Foundation Fieldbus SIF
W = "d"+"e"+"ia", Profibus
X = "d"+"e"+"ia", Profisafe

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In case of dispute, the German text shall prevail.

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Nomenclature for Junction Box, type EAC 01** (remote sensor)

EAC 01 $\frac{*}{1}\ \frac{*}{2}$

1: Enclosure material
- 0 = Aluminium enclosure
- 1 = Stainless steel enclosure

2: Not safety relevant

Nomenclature for Remote Box, type RCU 0***

RCU 0 $\frac{* \ * \ *}{1\ 2\ 3}$

1: Enclosure Material
- 2 = Aluminum
- 3 = Stainless Steel

2: Not safety relevant

3: Interface
- 0 = "d", 4-20 mA
- 1 = "d", 4-20 mA with Relay
- 2 = “d”, Modbus RTU
- A = "d"+"ia", Foundation Fieldbus
- B = "d"+"ia", Foundation Fieldbus SIF
- E = "d"+"ia", Profibus
- F = "d"+"ia", Profisafe
- I = "d"+"e", 4-20 mA
- J = "d"+"e", 4-20 mA with relay
- K = "d"+"e", Modbus RTU
- S = "d"+"e"+"ia", Foundation Fieldbus
- T = "d"+"e"+"ia", Foundation Fieldbus SIF
- W = "d"+"e"+"ia", Profibus
- X = "d"+"e"+"ia", Profisafe

The relation between ambient temperature and the assigned temperature class is as follows:

Table 1

Type	Ambient temperature range	Temperature class (Gas)	Max. surface temperature (Dust)
ITR 0*0* XTR 0*0*	-40 °C to +65 °C	T4	T130°C
All other ITR 0***-, XTR 0***-versions and RCU 0***	-40 °C to +80 °C	T4	T130°C

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SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 11 ATEX 1005 X, Issue: 03

Table 1 (continued)

Type	Ambient temperature range	Temperature class (Gas)	Max. surface temperature (Dust)
All versions	-40 °C to +40 °C	T6	T80°C
ETR 02/032*, ETR 04/052*	-40 °C to +70 °C	T4	T135°C
ETR 02/030*, ETR 04/050*	-40 °C to +70 °C	T4	T135°C
ETR 02/030*, ETR 04/050*	-40 °C to +40 °C	T6	T135°C

Electrical ratings:

Maximum supply wattage: P_{max}: 5 W

Supply:

ETR 02/03** series	10…30 VDC, 0.08…0.15 A
ITR 02/03** series	10…30 VDC, 0.1…0.75 A
XTR 02/03** series	10…30 VDC, 0.1…0.2 A
ETR 04/05** series	10…30 VDC, 0.1…0.35 A
ITR 04/05** series	10…30 VDC, 0.3…1.0 A
RCU 02/03** series	10…30 VDC, 0.3…1.0 A
XTR 04/05** series	10…30 VDC, 0.15…0.45 A
Relay	5A, 30 VDC or 230 VAC

Fieldbus circuit:
Field device as Fieldbus system in type of protection Intrinsic Safety Ex ia IIC; FISCO in accordance with IEC 60079-11, only for the interface types A; B; E; F; S; T; W and X

Electrical data,
Maximum values:

Type	Voltage, Ui [VDC]	Current, Ii [mA]	Power, Pi [mW]
ETR 04** ETR 05** ITR 04** ITR 05** RCU 02** RCU 03** XTR 04** XTR 05**	17.5	380	5320

For the Gas detection transmitters series ETR ****
Sensor circuit: in type of protection Intrinsic safety Ex ia IIC / IIIC;
only for connecting DrägerSensor or XS with adapter or ultrasonic sensor

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 11 ATEX 1005 X, Issue: 03

Changes with respect to earlier issues

Addition of new aluminum and stainless steel specifications with comparable material properties and identical tensile strength compared to the previously tested materials.

The connection openings provided may optionally be closed or left out in the cast, provided that the closing wall has the originally tested minimum wall thickness of 5 mm in aluminum or 3.5 mm in stainless steel.

(16) Test Report PTB Ex 21-11017

(17) Specific conditions of use

Repairs on the flameproof joints may only be made in accordance with the manufacturer's structural specifications. Repairs on the basis of the values in tables 1 and 2 of EN 60079-1 are not permitted.
The device variants incorporating a FISCO fieldbus interface as well as the Gas detection transmitter Type ETR 0*** must operate in circuits that are limited to overvoltage category I/II/III in accordance with IEC 60664-1 for FISCO field device operation.

Additional notes for installation and operation

The reference between ambient temperature in dependence of the temperature class and the surface temperature has to be taken from table 1 of this certificate or the operating instructions.

Components that are attached or installed (terminal compartments. bushings. cable glands. connectors) but are not included in the type approval documents shall be of a technical standard that complies with the specifications on the cover sheet. They must be suited for the operating conditions and come with a separate examination certificate. The special conditions specified for the components shall be complied with and the components shall be included in the type test, if necessary. This equally applies to the components that have already been mentioned in the technical description.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. D. Markus
Direktor und Professor

Braunschweig, April 20, 2021

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

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Translation

1 # EU-Type Examination Certificate Supplement 08

2 **Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU**

2 **Device with a measuring function for explosion protection Directive 2014/34/EU**

3 EU-Type Examination Certificate Number: **BVS 13 ATEX G 001 X**

4 Product: **Transmitters types ITR 041*, ITR 051*, ITR 042*, ITR 052*, XTR 040*, XTR 050*, XTR 041*, XTR 051*, XTR 042*, XTR 052*, ETR 040*, ETR 050***

5 Manufacturer: **Dräger Safety AG & Co. KGaA**

6 Address: **Revalstraße 1, 23560 Lübeck, Germany**

7 This supplementary certificate extends EU-Type Examination Certificate No. BVS 13 ATEX G 001 X to apply to products designed and constructed in accordance with the specification set out in the Annex of the said certificate but having any variations specified in the Annex attached to this certificate and the documents therein referred to.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential test report PFG-no. 41300313P NIX.

9 Compliance with the Essential Health and Safety Requirements with respect to the measuring function for explosion protection has been assured by compliance with:

EN 60079-29-1:2007
EN 60079-29-1:2016
EN 50104:2010
EN 50271:2010
EN 50271:2018

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

see PTB 11 ATEX 1005 X Ausgabe 01

DEKRA Testing and Certification GmbH
Bochum, 2020-02-04

Signed: Kilisch
Managing Director

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DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 13 ATEX G 001 X
Supplement 08

15 **Product description**

15.1 **Subject and type**

Transmitter types ITR 041*, ITR 051*, ITR 042*, ITR 052*, XTR 040*, XTR 050*, XTR 041*, XTR 051*, XTR 042*, XTR 052*, ETR 040*, ETR 050*

Coding of type: (1)TR 0(2)(3)(4)

(1)	E, I or X	Sensor interface: infrared (I) or catalytic (X)
(2)	4 or 5	Material of housing: aluminium (4) or stainless steel (5)
(3)		internal sensor:
	1 or 2	for ITR: IDS 0101 (1) or IDS 0102 (2)
	0,1 or 2	for XTR: IDS 0002 (0) or XDS 0200 (1) or Ex-Sensor LC NPT (2)
		external sensor with junction box EAC 01**:
	1 or 2	for ITR: IDS 0101 (1) or IDS 0102 (2)
	0,1 or 2	for XTR: IDS 0002 (0) or XDS 0200 (1) or Ex-Sensor LC NPT (2)
		external sensor with other junction boxes:
	1 or 2	for ITR: IDS 0101 (1) or IDS 0102 (2) or IDS 0111 (1) or IDS 0112 (2)
	0,1 or 2	for XTR: IDS 0002 (0) or IDS 0012 (0) or Polytron SE Ex PR M* DQ (1) or Polytron SE Ex PR NPT1 DQ (1) or Polytron SE Ex HT M DQ (1) or Polytron SE Ex LC M1/2 DD (2)
	0	DrägerSensor (internal sensor only) for ETR 0*0*
(4)	0, 1, I, J	interface: "d", 4-20 mA (0) or "d", 4-20 mA with relays (1) or "d"+"e", 4-20 mA (I) or "d"+"e", 4-20 mA with relays (J)

15.2 **Description**

Reason for the supplement:
Modification of the software of the transmitter and re-testing of types ITR 041*, ITR 051*, ITR 042* and ITR 052* according to EN 60079-29-1:2016 and EN 50271:2018.
The test according to EN 50271:2018 concerns only transmitters types XTR 0*1*, XTR 0*2*, ETR 0*0*, ITR 041*, ITR 051*, ITR 042* and ITR 052*. The test according to EN 60079-29-1:2016 concerns only transmitters types XTR 0*1*, XTR 0*2*, ITR 041*, ITR 051*, ITR 042* and ITR 052*.

Description of Product

The transmitters ITR 0*1* (Polytron 8700 with sensor Dräger PIR 7000 type 334), ITR 0*2* (Polytron 8700 with sensor Dräger PIR 7000 type 340), XTR 0*0* (Polytron 8310 with Dräger Sensor IR) and XTR 0*1* (Polytron 8200 with DrägerSensor PR M DQ, HT M DQ or PR NPT DQ) are fixed equipment for the measurement of flammable gases and vapours mixed with air at volume fractions up to the lower explosive limit. The transmitters XTR 0*2* (Polytron 8200 with Ex-sensor LC M or LC NPT) are fixed equipment for the measurement of flammable gases and vapours mixed with air at volume fractions up to 10 % of the lower explosive limit. The sensor may be directly connected to the transmitter housing or operated as remote sensor.
The transmitters type ETR 0*0* (Polytron 8100 with DrägerSensor O_2 or DrägerSensor O_2 LS) are fixed equipment for the measurement of oxygen. The sensor is directly fitted to the transmitter housing. Operation with a remote sensor is not subject of this supplement to the EU-type examination certificate.
A 4-20 mA interface serves for transmission of the measured value to a control unit.
The transmitters can be equipped with a relay module that provides two alarm relays and one fault relay.

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15.3 **Parameters**

see PTB 11 ATEX 1005 X Ausgabe 01

15.4 **Measuring function for explosion protection**

This EU-type examination certificate covers:

- transmitters types ITR 041*, ITR 051*, ITR 042*, ITR 052*, XTR 040*, XTR 050*, XTR 041*, XTR 051*, XTR 042*, XTR 052* with software version 3.1.0 and transmitters types ETR 040* and ETR 050* with software version 3.1.0 (main) and 5 (SIOS)
- for transmitters types ITR 0*1* and ITR 0*2* (infrared sensor) the measuring function for those gases and vapours which are listed in the instruction manual with reference to the EU-type examination certificate BVS 08 ATEX G 001 X
- for transmitters type XTR 0*0* (infrared sensor) when operated in gas category methane the measuring function for methane in the measuring range 0 - 100 % LEL, when operated in gas category propane the measuring function for propane, i-butane, n-butane, n-pentane, n-hexane, n-octane, n-nonane and i-propanol in the measuring range 0 - 100 % LEL and ethanol and ethyl acetate in the measuring range 0 - 70 % LEL, and when operated in gas category ethylene the measuring function for ethylene, propylene, toluene, acetone and ethyl acetate in the measuring range 0 - 100 % LEL and methanol in the measuring range 0 - 70 % LEL
- for transmitters type XTR 0*1* (catalytic combustion sensor) the measuring function for methane, propane, acetone, acetylene, ammonia, special boiling point spirit 65/95, benzene, 1,3-butadiene, n-butane, 2-butanone, n-butyl acetate, diethyl ether, dimethyl ether, acetic acid, ethanol, ethylene, ethyl acetate, ethylene oxide, n-hexane, methanol, methyl methacrylate, n-octane, n-pentane, 2-propanol, propylene, propylene oxide, n-nonane, toluene, o-xylene and hydrogen in the measuring range 0 - 100 % LEL
- for transmitters type XTR 0*2* (catalytic combustion sensor) the measuring function for methane, propane, ethylene, acetylene, propylene, i-butylene, benzene, n-nonane and hydrogen in the measuring range 0 - 10 % LEL
- for transmitters type ETR 0*0* (electrochemical sensor) the measuring function for oxygen (measurement of inertisation) in the measuring range 0 - 5...25 % O_2
- use of the following outputs for safety relevant purposes:
  - display
  - 4-20 mA output for measured values
  - relays
- use of the following accessories for transmitters types ITR 0*1* and ITR 0*2*:
  - Spacer (part no. 6812617)
  - use of the following accessories for sensor PIR 7000:
    - Mounting set PIR 7000 (part no. 68 11 648)
    - Splash guard PIR 7000 (part no. 68 11 911)
    - Insect guard PIR 7000 (part no. 68 11 609)
    - Hydrophobic filter PIR 7000 (part no. 68 11 890)
    - Calibration adapter PIR 7000 (part no. 68 11 610)
    - Status indicator PIR 7000 (part no. 68 11 625)
    - Flowcell PIR 7000 (part no. 68 11 490)
    - Bump test adapter PIR 7000 (part no. 68 11 630)
    - Process adapter PIR 7000 (part no. 68 11 915)
    - Prozess cuvette PIR 7000 (part no. 68 11 415)
    - Prozess cuvette PIR 7000 SGR (part no. 68 13 219)
    - Junction box Ex e (part no. 68 11 898)
    - Junction boxes Ex d (part no. 45 20 561)
    - Magnetic wand (part no. 45 44 101)

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- use of the following accessories for transmitters type XTR 0*0*:
  - use of the following accessories for DrägerSensor IR:
    - Splash guard (part-no. 68 10 796)
    - Calibration adapter (part-no. 68 10 859)
    - Weather guard (part-no. 68 11 135)
    - Gassing-/process adapter (part-no. 68 11 330)
    - Magnetic wand (part-no. 45 44 101)
    - Junction box "Ex d" (part-no. 68 11 161)
    - Junction box "Ex e" (part-no. 68 11 299)
    - Junction box "Ex e" (part-no. 68 11 159)
- use of the following accessories for transmitters type XTR 0*1*:
  - Calibration adapter PE, Europe (part no. 68 06 978)
  - Process adapter (part no. 68 12 470)
  - Remote calibration adapter DQ (part no. 68 12 480)
- use of the following accessory for transmitters type XTR 0*2*:
  - Calibration adapter PE, Europe (part no. 68 06 978)
- use of the following accessories for transmitters type ETR 0*0*:
  - Calibration adapter PE, Europe (part no. 68 06 978)
  - Sensor test dongle (part no. 83 17 619)
  - Diagnostic dongle (part no. 83 17 860)

The EU-type examination includes the following deviations from the operating conditions required by EN 60079-29-1:

- Extended range of temperature at operation: -40 °C to +70 °C (with relay module)
  -40 °C to +77 °C (ITR 0*1* und ITR 0*2*; without relay module)
  -40 °C to +65 °C (XTR 0*0*)
  -40 °C to +80 °C (XTR 0*1* and XTR 0*2*; without relay module)
  -40 °C to +85 °C (Polytron SE Ex LC M1/2 DD)
- Extended range of ambient pressure: 70 kPa to 130 kPa
- Extended range of humidity of the measured gas: 0 % RH to 95 % RH (ITR 0*1*, ITR 0*2*, and XTR 0*0*)
  5 % RH to 95 % RH (XTR 0*1* and XTR 0*2*)

The EU-type examination includes the following deviations from the operating conditions required by EN 50104:

- Extended range of temperature at operation: -40 °C to +65 °C (DrägerSensor O_2 LS)
- Deviating range of temperature at operation: 0 °C to +55 °C (DrägerSensor O_2)
- Extended range of ambient pressure: 70 kPa to 130 kPa
- Extended range of humidity of the measured gas: 5 % RH to 95 % RH (DrägerSensor O_2 LS)
  10 % RH to 95 % RH (DrägerSensor O_2)

16 Test report

PFG-no. 41300313P NIX of 2020-02-04
EU-type examination certificate PTB 11 ATEX 1005 X Ausgabe 01 of 2017-05-10

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17 Special Conditions for Use

- see EU-type examination certificate PTB 11 ATEX 1005 X Ausgabe 01
- If operated with a relay module:
  - The main alarm shall be configured "latching" and "non-acknowledgeable" or "pre-acknowledgeable".
  - The pre-alarm shall only be configured "acknowledgeable" if it is used for operation of an acoustic alarm device.
- For transmitters types ITR 0*1* and ITR 0*2*:
  - see EU-type examination certificate BVS 08 ATEX G 001 X
- For transmitters type XTR 0*0*:
  - see 9th supplement to the EU-type examination certificate BVS 05 ATEX E 143 X
- For transmitters type XTR 0*1*:
  - When exposed to a directed flow of air mixed with gas, the measured values can be increased by up to 32 %.
  - When operated with the remote calibration adapter DQ the measured values can be increased by up to 70 %.
- For transmitters type XTR 0*2*:
  - Operate the transmitter when connected to a control unit that has a latching over-range indication. Do not use internal alarm relays of the transmitter.
  - When exposed to a directed flow of air mixed with gas, the measured values can be increased by up to 32 %.
  - Adjust the transmitter with the sensor in its operational orientation.
  - False alarms can occur during warming up of the sensor.
- For transmitters type ETR 0*0*:
  - The response time t_{20} can exceed the limit of EN 50104 for small concentration changes.

18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements with respect to the measuring function for explosion protection are covered by the standards listed under item 9.

19 Drawings and Documents

Drawings and documents are listed in the confidential test report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, dated 2020-02-04

Managing Director

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FLAME DETECTOR

(SENSOR - PLUG - REDUCTION)

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International Center for Quality Certification - ICQC LLC
63-19, Skolas street, Jurmala, LV-2016, Latvia
Phone: +371 27168371 E-mail: office@icqc.lv Web: www.icqc.lv
SIA „International Center for Quality Certification - ICQC"
Reģ. Nr.LV40103539825
Skolas iela 63-19, Jūrmala, LV-2016, Latvija

Notified Body 2549

EN ISO/IEC 17065
S1-499

(1) EU-TYPE EXAMINATION CERTIFICATE

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres – Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **ICQC 19 ATEX 0424 X** **Issue: 2**

(4) Equipment: **FlameSpec Detector types: FLS-IR3-ASXX, FLS-IR3-H2-ASXX, FLS-UV-IR-ASXX, FLS-UV-IR-F-ASXX**

(5) Applicant: **Fire & Gas Detection Technologies, Inc**
4222 E. La Palma Avenue, Anaheim, CA 92807, USA

(6) Manufacturer: **Fire & Gas Detection Technologies, Inc**
4222 E. La Palma Avenue, Anaheim, CA 92807, USA

(7) This equipment and any acceptable variations, also documents which are specified in the schedule to this certificate.

(8) The certification body ICQC, Notified body No. 2549 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in confidential report No. **424-01/2023/04/ATEX**

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC60079-0:2018, EN 60079-1:2014, EN 60079-7:2015, EN 60079-31:2014

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and the construction of the specified equipment in accordance with Directive 2014/34/EU. Further requirements of this Directive apply to the manufacture and supply of this equipment. These are not covered by the certificate

(12) The marking of the equipment or protective system shall include the following:

II 2 G Ex db IIC T5 Gb or II 2 G Ex db eb IIC T5 Gb and II 2D Ex tb IIIC T95 °C Db
-55°C<Ta<75°C

II 2 G Ex db IIC T4 Gb or II 2 G Ex db eb IIC T4 Gb and II 2D Ex tb IIIC T105 °C Db
-55°C<Ta<85°C

Head of Certification Body: Sergey Kovalev

Date of issue: 07 February 2023
Jurmala, Latvia

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(13) **SCHEDULE**

(14) **to EU-TYPE EXAMINATION CERTIFICATE: ICQC 19 ATEX 0424 X** **Issue: 2**

(15) **Description of Equipment:**

Optical Flame Detectors types: FLS-IR3-ASXX, FLS-IR3-H2-ASXX, FLS-UV-IR-ASXX, FLS-UV-IR-F-ASXX are infrared and UV/IR flame detectors, which provide fast response, high performance and reliable detection of all types of hydrocarbon and hydrogen fires (visible and non-visible).

The last four symbols in the type designation:
A – ATEX certified
S – stainless steel enclosure
X – openings for M25 (1) or 3/4" NPT (2) cable glands
X – symbol for options, not affecting explosion protection.

The flame detector consists of electronic compartment in type of protection flameproof enclosure "d" and terminal compartment in type of protection "d" or increased safety "e"with two openings 3/4" NPT or M25 for cable glands.

The cable entry devices (cable glands) shall be certified with an appropriated type of protection. Unused entries shall be closed with certified blanking elements. Installing and use of cable gland and blanking elements shall be in compliance with EN 60079-14 current edition.

The detector is intended for use as part of a complex system and can be installed indoor or outdoor. The detector has a window heater, which automatically turns on by the ambient temperature below 5^{0}C.

There are following features available in the flame detectors:
- Alarm Relay
- Fault Relay
- 4-20 mA and HART Output
- RS-485
- Data/Event logger
- Built-in-Test (BIT)

Technical characteristics:

Parameter	Value
Supply voltage	18 ... 32 V DC
Current Consumption	• Standby: 210 mA Maximum: 300 mA all systems in operation (including window heater)
Alarm Relay, SPST, Normally open and normally closed	2A at 30 VDC
Fault Relay, SPST, Normally open	
Degree of protection	IP66 / IP68
Ambient temperature range	-55°C to +75°C or -55°C to +85°C

Routine tests:
Routine tests according to cl. 7.1 of EN 60079-7 shall be conducted for Exe terminal compartment with a test voltage of 500 V
Routine tests according to cl. 16 of EN 60079-1 can be omitted because the enclosure was tested at four times reference pressure.

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Variation 1 - This variation introduced the following changes:
Manufacturer address update. Product design unchanged.

Variation 2 - This variation introduced the following changes:
Changing the design of the partition wall and cemented joint of the transit PCB between the terminal and electronic compartment.

(16) **Descriptive Documents:**

User Guide Release Number	F120V0020– FlameSpec-IR3 F150V0020– FlameSpec-IR3-H2 F110V0020 – FlameSpec-UV-IR & FlameSpec-UV-IR-F

The drawings are listed in Evaluation report No. 424-01/2023/04/ATEX

Certificate History:

Issue/Date	Evaluation report	Comment
Issue 0 from 21.01.2019	424/2019/07/ATEX	The release of the prime certificate.
Issue 1 from 11.03.2020	424/2019/07/ATEX	The introduction of Variation 1.
Issue 2 from 07.02.2023	424-01/2023/04/ATEX	The introduction of Variation 2.

(17) **Specific conditions of use:**
17.1 The Exd electronic compartment of flame detector has flamepaths which differ from those in IEC 60079-1. Repairs shall be conducted only by Fire & Gas Detection Technologies Inc.

(18) **Essential Health and Safety Requirements:**
Met by compliance with the standards mentioned in clause (9).

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TÜV SÜD ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Product Service

(1) # EU-Type Examination Certificate

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

TPS 19 ATEX 105708 0001 X Rev. 00

(4) Equipment or Protective System: Stopping plugs - Type: BHL M25, BHL 3/4NPT

(5) Manufacturer: Shenzhen Zhongli Hardware Products Co., Ltd.

(6) Address: Building 1, Hehe Science and technology Park, Daxing Community, Fucheng Street, Longhua District, 518109 Shenzhen, PEOPLE'S REPUBLIC OF CHINA

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) TÜV SÜD Product Service GmbH, Notified Body no. 0123, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports with no. 64.105.19.01091.01

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018	**EN 60079-1:2014**
EN 60079-7:2015+A1:2018	**EN 60079-31:2014**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 2GD Ex db IIC Gb Ex eb IIC Gb
Ex tb IIIC Db

Certification Body, München, 13.01.2020

Ing. Kristof De Gersem, MSc.

Certificates without signature shall not be valid. The Certificates may only be circulated in full including its schedule(s). Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail. The document is administrated under the following number: EX5A 105708 0001 Rev. 00

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TÜV SÜD

(13) **Schedule**

(14) **EU-Type Examination Certificate no.**

TPS 19 ATEX 105708 0001 X Rev. 00

Product Service

Certificate History

Revision:	Description:	Report no.:	Issue Date:
Rev. 00	First issue of certificate.	64.105.19.01091.01	13.01.2020

(15) Description of equipment:

The stopping plugs comprise a cylindrical body with an external male thread along its length. BHL M25 has M thread and BHL 3/4NPT has NPT thread. The body material of them are SUS316L. BHL M25 with an "O" ring seal but BHL 3/4NPT without.

The stopping plugs are designed for use in explosive atmospheres classified as Gas Zone 1 and Zone 2 and as Dust Zone 21 and Zone 22.

The M and NPT thread forms are in explosion protection type "d", "e" and "t".

See the instruction manual for further details.

Model designation:

BHL M25, BHL 3/4NPT

Model difference:

Type	Metric	NPT
BHL M25	M25	-
BHL 3/4NPT	-	¾ NPT

Technical data:

Service temperature (Ts)	-60°C≤Ts≤180°C
Degree of protection by enclosure	IP64*, IP66**, IP68**

* IP64 is tested according to EN/IEC 60079-0.
** IPX6 and IPX8 are tested according to EN/IEC 60529; IPX8: 1m, 24h.

Warning label:

N/A

Installation instruction:

See installation instructions provided by the manufacturer and part of this certification.

Certificates without signature shall not be valid. The Certificates may only be circulated in full including its schedule(s). Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail. The document is administrated under the following number: EX5A 105708 0001 Rev. 00

Doc. Name: Temp-ExNBG-TPS-EU-Type-Cert-Rev. 04

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A4 / 07.17

TÜV®

(13) **Schedule**

(14) **EU-Type Examination Certificate no.**

TPS 19 ATEX 105708 0001 X Rev. 00

Product Service

See also (17) Special conditions for safe use.

(16) Test report(s): 64.105.19.01091.01

Routine tests:

N/A

Document List:

File no.:	Description:	Pages:	Rev:	Date:
20191006M-01	BHL M25 drawing	1	A/0	2019-11-25
20191006F-01	BHL 3/4NPT drawing	1	A/0	2019-11-25
BC0601A	BHL M25 Instruction manual	1	00	2019-11-25
BC0601B	BHL 3/4NPT Instruction manual	1	00	2019-11-25

A copy of the full documentation is kept confidentially at TÜV SÜD.

(17) Special conditions for safe use:

1. The equipment shall be installed according to the instruction manual provided by manufacturer.
2. Service temperature: -60°C to 180°C.
3. To maintain the IP64 requirement according to EN/IEC 60079-0, BHL M25 and BHL 3/4NPT shall be made wrench tight. BHL M25 requires at least 5 threads engaged and shall be installed perpendicular to the mounting face and with a groove for sealing ring, ensuring that the sealing ring is evenly compressed against the mounting face. BHL 3/4NPT shall be made up wrench-tight and at least 3 ½ threads engaged.
4. To maintain the flameproof properties, BHL M25 shall be made wrench tight and requires at least 5 threads engaged. BHL 3/4NPT shall be made wrench tight and the threads length engaged shall be not less as the "L2" dimension according ANSI/ASME B1.20.1. When this cannot be realised at the final installation, the stopping plugs cannot be used for "Ex db" applications.

(18) Essential health and safety requirements:

Assured by compliance with standards set out in (9).

Certificates without signature shall not be valid. The Certificates may only be circulated in full including its schedule(s). Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail. The document is administrated under the following number: EX5A 105708 0001 Rev. 00

Doc. Name: Temp-ExNBG-TPS-EU-Type-Cert-Rev. 04

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TÜV SÜD

DICHIARAZIONE DI CONFORMITA' UE

ATEX_DCE-2024-00453

N°	**453**
Data	**18/07/2024**
Pagina	**1 / 1**

Il costruttore

RIBCO s.r.l.
Via dei Mille,12 - 20061 - Carugate (MI) - ITALY

Dichiara sotto la propria responsabilità che i prodotti

Codice Articolo	*Descrizione*	*Quantità*
RE2520S	RIDUZIONE IN ACCIAIO INOX AISI 316L DA MASCHIO M25x1.5 A FEMMINA M20x1.5 - ORING IN EPDM (-40°C ÷ +100°C) INCLUSA - IECEx INE 14.0038X INERIS 14 ATEX 0029X CE 0722 Ex I M2 Ex II 2GD Ex d I Mb Ex d IIC Gb Ex e IIC Gb Ex tb IIIC	23,00
REB1N20MS	RIDUZIONE IN ACCIAIO INOX AISI 316L DA FEMMINA 1/2" NPT A MASCHIO M20x1.5 - ORING IN EPDM (-40°C ÷ +100°C) INCLUSA - IECEx INE 14.0038X INERIS 14 ATEX 0029X CE 0722 Ex I M2 Ex II 2GD Ex d I Mb Ex d IIC Gb Ex e IIC Gb Ex tb IIIC	10,00

Consegnati alla società

BIESSE SISTEMI Srl
VIA FRATELLI LUMIERE, 39
48124 FORNACE ZARATTINI RAVENNA (RA) (IT)

con il seguente documento

DOCUMENTO DI TRASPORTO N° 538 del 18/07/2024

sono conformi alla direttiva comunitaria **ATEX 2014/34/EU**

La conformità è dimostrata dalla osservanza delle seguenti norme europee:

EN 60079-0 : 2012 / A11 : 2013
EN 60079-1 : 2007
EN 60079-7 : 2007
EN 60079-31 : 2009

La conformità non è influenzata dalle modifiche introdotte dalle seguenti norme armonizzate:

EN IEC 60079-0 : 2018
EN 60079-1 : 2014
EN IEC 60079-7 : 2015 / A1 : 2018
EN 60079-31 : 2014

Certificato di esame CE di tipo ATEX

INERIS 14ATEX0029X notified body n°0080

Organismo Notificato incaricato della sorveglianza

CESI MILANO – n° 0722

CARUGATE (MI), 18/07/2024

Ing. Roberto Borroni
RIBCO s.r.l.

1724000821-QC-DB-0006-02

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres Directive 94/9/EC**

(1) # EC-TYPE EXAMINATION CERTIFICATE

(3) Number of the EC type examination certificate: **INERIS 14ATEX0029X**

(4) Equipment or protective system:

FITTING UNITS TYPE RE**** or RE******* or PL**** or NP*** or EM*** or ELF***

(5) Manufacturer: **RIBCO**

(6) Address: Via dei Mille, 12
20061 Carugate (MI)-ITALY

(7) This equipment or protective system and any other acceptable alternative of this one are described in the annex of this certificate and the descriptive documents quoted in this annex.

(8) INERIS, notified body and identified under number 0080, in accordance with article 9 of Council Directive 94/9/EC of the 23rd March 1994, and accredited by COFRAC under number 5-0045 for certification of products and services (scope of accreditation available on the website www.cofrac.fr) certifies that this equipment or protective system fulfils the Essential of Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, described in annex II of the Directive.

The examinations and the tests are consigned in report No 028198/14.

(9) The respect of the Essential Health and Safety Requirements is ensured by:

- conformity with:

EN 60079-0	:	2012/A11	:2013
EN 60079-1	:	2007	
EN 60079-7	:	2007	
EN 60079-31	:	2009	

- specific solutions adopted by the manufacturer to meet the Essential Health and Safety Requirements described in the descriptive documents.

Parc Technologique Alata BP 2 F-60550 Verneuil-en-Halatte
tél + 33(0)3 44 55 66 77 **fax** + 33(0)3 44 55 66 99 **internet** www.ineris.fr

Institut national de l'environnement industriel et des risques
Etablissement public à caractère industriel et commercial - RCS Senlis B 381 984 921 - Siret 381 984 921 [illegible]

(10) Sign X, when it is placed following the Number of the EC type examination certificate, indicates that this equipment and protective system is subjected to the special conditions for safe use, mentioned in the annex of this certificate.

(11) This EC type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system, these are not covered by this certificate.

(12) The marking of the equipment or the protective system will have to contain:

Ex I M2 Ex II 2 GD

Verneuil-en-Halatte, 2014.06.26

ATMOSPHERES EXPLOSIVES ORGANISME NOTIFIE INERIS NOTIFIED BODY EXPLOSIVE ATMOSPHERES

The Chief Executive Officer of INERIS
By delegation
T. HOUEIX
Ex Certification Officer

(13) # ANNEX

(14) EC TYPE EXAMINATION CERTIFICATE N°INERIS 14ATEX0029X

(15) DESCRIPTION OF THE EQUIPMENT OR THE PROTECTIVE SYSTEM

This series of fitting units is composed by adapters, plugs, nipples and 90° bends can be made in EN AW-6060, CW614N (OT58), AISI 316L or ASTM A105.

It gets the degree of protection IP66 according to the EN 60529 standard.

PARAMETERS RELATING TO THE SAFETY

Size of threaded joints:

Taper threading	:	NPT	:	3/8" NPT up to 3" NPT.
Cylindrical threading	:	ISO-262 and ISO965-1/2/3	:	M16 x 1.5 mm up to M90 x 1.5 mm.

Operating temperature:

-40°C to +100°C with EPDM O-ring;

-60°C to +180°C with silicone O-ring.

MARKING

Marking has to be readable and indelible; it has to include the following indications:

a) **Marking for units without aluminum**

RIBCO
20061 Carugate (MI)-ITALY
RE****** or RE******* or PL**** or NP*** or EM*** or ELF***
INERIS 14ATEX0029X
(Year of construction)
Ⓔx I M2 Ⓔx II 2 GD
Ex d I Mb
Ex d IIC Gb
Ex e IIC Gb
Ex tb IIIC Db IP66

On the small equipments, the marking can be reduced:

RIBCO-I
RE****** or RE******* or PL**** or NP*** or EM*** or ELF***
(Year of construction)
INERIS 14ATEX0029X
Ex I M2 Ex II 2 GD
Ex d/e/tb
IP66

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.

b) Marking for units in aluminum

RIBCO
20061 Carugate (MI)-ITALY
RE****** or RE******* or PL**** or NP*** or EM*** or ELF***
INERIS 14ATEX0029X
(Year of construction)
Ex II 2 GD
Ex d IIC Gb
Ex e IIC Gb
Ex tb IIIC Db IP66

On the small equipments, the marking can be reduced:

RIBCO-I
RE****** or RE******* or PL**** or NP*** or EM*** or ELF***
(Year of construction)
INERIS 14ATEX0029X
Ex II 2 GD
Ex d/e/tb
IP66

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.

ROUTINE EXAMINATIONS AND TESTS

None.

(16) DESCRIPTIVE DOCUMENTS

The descriptive document quoted hereafter constitutes the technical documentation of the equipment, subject of this certificate.

- Certification File DC-FIT-00 Rev.0 (12 items) signed on 2014.03.10

(17) SPECIAL CONDITIONS FOR SAFE USE

Operating temperature of the fitting units:

-40°C to +100°C with EPDM O-ring;

-60°C to +180°C with silicone O-ring.

(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS

The respect of the Essential Health and Safety Requirements is ensured by:

- Conformity to the standards quoted in clause (9).
- All provisions adopted by the manufacturer and defined in the descriptive documents.

MANUAL FIRE ALARM

ABANDON ACTIVATION

MAN OVER BOARD ACTIVATION

EMERGENCY SHUTDOWN ACTIVATION

EMERGENCY SHUTDOWN DEPRESSURIZATION ACTIVATION

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **Baseefa03ATEX0075X – Issue 21**

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **SM87 Alarm Stations**

5 Manufacturer: **Eaton MEDC Limited**

6 Address: **Unit B, Sutton Parkway, Oddicroft Lane, Sutton-in-Ashfield, NG17 5FB United Kingdom**

7 This re-issued certificate extends EC Type Examination Certificate No. **Baseefa03ATEX0075** to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See certificate history.**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-1:2014 EN 60079-31:2014

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ⓔx II 2 GD Ex db IIC T* Gb Tamb -55°C to +°C Ex tb IIIC T***°C Db IP66/67 Tamb -55°C to +**°C**

SGS Fimko Oy Customer Reference No. **0676** Project File No. **22/0235**

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Mikko Välimäki
SGS Fimko Oy

13 **Schedule**

14 **Certificate Number Baseefa03ATEX0075X – Issue 21**

15 Description of Product

The Range of SM87 Alarm Stations comprises a cylindrical enclosure a square base with an irregular shaped cover secured by 4 off screws of grade A4-70 or A4-80 stainless steel. The base and cover may be manufactured from either aluminium or stainless steel.

The cover is fitted with an actuator mechanism which may be operated by either a push button or break glass function dependant on the external actuator assembly.

The units may be supplied by the manufacturer in an assembly of up to five interconnected enclosures using cable bushings to EPS13ATEX1619U.

The range of Type SM87 Alarm Stations comprises:-

Type BGLD – A Breakglass unit with latching mechanism The interior of the enclosure comprises up to two micro-switches, mounted on the inside of the cover, and up to twelve rail mounted terminals fitted to the enclosure base, and rated up to 24V, 2A.

Type LBGLD - A Breakglass unit with protective lift flap and latching mechanism. The interior and rating as per the Type BGLD.

Type PBLD – A Push Button unit with latching mechanism. The interior and rating as per the Type BGLD.

Type PBMD – A Push button unit with momentary mechanism. The interior and rating as per the Type BGLD.

Type SM87 EOL Unit A – The interior comprises up to two micro-switches, mounted on the inside of the cover, and up to twelve rail mounted terminals fitted to the enclosure base with the addition of an end of line module rated 24V 0.5A.

Type SM87 Addressable Unit B –The interior comprises up to two micro-switches, mounted on the inside of the cover and a Servoteknikk addressable callpoint PCB, rated up to 24V 0.5A.

Type SM87 Addressable Unit G –The interior comprises up to two micro-switches, mounted on the inside of the cover and a Tyco addressable callpoint PCB, rated up to 24V 0.5A.

Type SM87 Addressable Unit F – The interior comprises up to two micro-switches, mounted on the inside of the cover and an Autronica addressable callpoint PCB, rated up to 24V 0.5A.

Type SM87 XP950 Module Unit – The interior comprises up to two micro-switches, mounted on the inside of the cover and an Apollo PCB, rated up to 24V 1.0A.

Type SM87 Addressable Unit H - The interior comprises a Hochiki addressable callpoint PCB and up to 7 terminals rated at up to 24V 0.2A.

Type SM87 Addressable Unit J - The interior comprises a Ziton addressable module, up to 5 terminals and 2 x 2.5W resistors rated at up to 24V 0.1A, 7W.

Type SM87PBD MCR-CUBE EOL Unit – an SM87 Alarm Station with switches mounted on the underside of the cover and an end of line (EOL) module and terminals mounted in the base, rated up to 24V, 0.5A.

Type SM87 Omron Relay Unit A – Type SM87 Alarm Station comprising an alternative interior which includes a relay callpoint, Omron Type SPDT G2R and up to 6 Weidmuller AKZ 1.5 terminals, rated up to 24V, 2A.

Type SM87 Addressable Unit C - SM87 Alarm Station with switches mounted on the underside of the cover and an alternative addressable printed circuit board (PCB) mounted in the base, rated up to 28V, 0.5A

Type SM87 Addressable Module G – with switches mounted on the underside of the cover and an alternative addressable Tyco module mounted in the base, rated up to 24V, 0.02A.

Type SM87 Addressable Module I – with switches mounted on the underside of the cover and an alternative addressable Apollo module mounted in the base, rated up to 24V, 0.02A.

Type SM87 Addressable Module K – with switches mounted on the underside of the cover and an alternative addressable Tyco module mounted on the base, rated up to 24V, 0.1A.

The alarm stations are coded:-

Ex db IIC T6 Gb Tamb -55°C to +55°C

Ex tb IIIC T85°C Db IP66/67 Ta -55°C to +55°C

Or

Ex db IIC T5 Gb Tamb -55°C to +70°C

Ex tb IIIC T100°C Db IP66/67 Ta -55°C to +70°C

Cable entry holes are provided as specified on the certified drawings for the accommodation of flameproof cable entry devices, with or without the interposition of a flameproof thread adapter. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

The cable entry devices, thread adapters and stopping plugs shall be suitable for the equipment, the cable and the conditions of use and shall be certified as Equipment (not a Component) under an EC Type Examination Certificate to Directive 2014/34/EU.

When used in an explosive dust atmosphere the cable entry devices shall maintain the ingress protection of the enclosure.

16 Report Number

See certificate history.

17 Specific Conditions of Use

1. Potential electrostatic charging hazard – see instructions.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
1.2.7	LVD type requirements
1.2.8	Overloading of equipment (protection relays, etc.)
1.4.1	External effects
1.4.2	Aggressive substances, etc.

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
562-774	1 - 2	F	08-08-23	ATEX Certification Detail SM87BGLD, SM87PBLD, SM87LBGLD & PBMD
562-778	1	B	08-08-23	SM87BG ATEX Certification Label
562-779	1	B	08-08-23	SM87PB ATEX Certification Label

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
562-775	1 & 2	E	12/12/19	SM87PBD SM87BGD ATEX OPTIONAL MODULE DETAILS
562-851		A	25.11.10	General Arrangement, SM87PBD MCR-CUBE EOL UNIT

20 Certificate History

Certificate No.	Date	Comments
Baseefa03ATEX0075	09 May 2006	The release of the prime certificate. The associated test and assessment against the requirements of EN 50014:1997 + Amendments 1 & 2, EN 50018:2000 + Amendment 1, EN 50281-1-1:1998 is documented in Test Report No. 02(C)0226.
Baseefa03ATEX0075/1	27 January 2004	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an addressable printed circuit board (PCB) mounted in the base. In this form the unit is designated a **SM87 ADDRESSABLE UNIT B** and is rated up to 24V, 0.5A with a revised Temperature Classification of T85°C (Tamb = -55°C to +55°C) or T100°C (Tamb = -55°C to +70°C). No report.
Baseefa03ATEX0075/2	27 January 2004	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an alternative addressable printed circuit board (PCB) mounted in the base. In this form the unit is designated a **SM87 ADDRESSABLE UNIT F** and is rated up to 24V, 0.5A with a revised Temperature Classification of T85°C (Tamb = -55°C to +55°C) or T100°C (Tamb = -55°C to +70°C). No report.
Baseefa03ATEX0075/3	29 January 2004	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an alternative addressable printed circuit board (PCB) mounted in the base. In this form the unit is designated a **SM87 ADDRESSABLE UNIT G** and is rated up to 24V, 0.5A with a revised Temperature Classification of T85°C (Tamb = -55°C to +55°C) or T100°C (Tamb = -55°C to +70°C). No report.

Certificate No.	Date	Comments
Baseefa03ATEX0075/4	25 August 2005	To note change in type reference of the addressable callpoint. No report.
Baseefa03ATEX0075/5	14 October 2005	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an alternative printed circuit board mounted in the base. In this form the unit is designated a **SM87 XP950 MODULE UNIT** and is rated up to 24V, 1A with a revised Temperature Classification of T85°C (Tamb = -55°C to +55°C). No report.
Baseefa03ATEX0075/6	05 December 2005	Alternative rating of 48V, 1A for the SM87 Alarm Stations, together with a change to the optional internal resistors. No report.
Baseefa03ATEX0075/7	14 September 2006	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and up to 12 rail mounted terminals and an end of line (EOL) device mounted in the base. In this form the unit is designated a **SM87PBD EOL UNIT A** and is rated up to 24V, 0.5A with a Temperature Classification of T85°C (Tamb = -55°C to +55°C) or T100°C (Tamb = -55°C to +70°C). No report.
Baseefa03ATEX0075/8	10 October 2007	Optional addition of an indicator LED and window assembly to the cover of the push-button and break-glass units. Baseefa certification report 04(C)0562 refers.
Baseefa03ATEX0075/9	07 July 2008	To permit an optional transient voltage suppressor rated up to 5W. No report.
Baseefa03ATEX0075/10	07 January 2009	Alternative arrangement comprising an SM87 Alarm Station with an addressable callpoint mounted on the underside of the cover and an addressable printed circuit board (PCB) module and terminals mounted in the base. In this form the unit is designated a **SM87 ADDRESSABLE UNIT H** and is rated up to 24V, 0.02A with a Temperature Classification of T85°C (Tamb = -55°C to +55°C) or T100°C (Tamb = -55°C to +70°C). No report.
Baseefa03ATEX0075/11	17 April 2009	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an addressable printed circuit board (PCB) module and terminals mounted in the base. In this form the unit is designated a **SM87 ADDRESSABLE UNIT J** and is rated up to 24V, 0.1A with a Temperature Classification of T85°C (Tamb = -55°C to +55°C) or T100°C (Tamb = -55°C to +70°C). No report.
Baseefa03ATEX0075/12	27 September 2010	To amalgamate the current design and previous variations into one revised set of drawings. No technical changes were carried out. SGS Baseefa certification report GB/BAS/ExTR09.0084/00 refers.

Certificate No.	Date	Comments
Baseefa03ATEX0075/13	23 December 2010	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an end of line (EOL) module and terminals mounted in the base. In this form the unit is designated a **SM87PBD MCR-CUBE EOL UNIT** and is rated up to 24V, 0.5A. No report.
Baseefa03ATEX0075/14	10 May 2012	Variation to the Type SM87 Alarm Station comprising an alternative interior which includes a relay callpoint, Omron Type SPDT G2R and up to 6 Weidmuller AKZ 1.5 terminals. In this form the unit is designated a **Type SM87 Omron Relay Unit A** and is rated up to 24V, 2A. No report.
Baseefa03ATEX0075/15	4 October 2013	To increase the number of resistors rated at up to 470Ω and 0.6W installed in the SM87 from 4 to a maximum of 6 without any increase in power dissipation. SGS Baseefa report GB/BAS/ExTR13.0225/00 refers.
Baseefa03ATEX0075/16	15 October 2013	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an alternative addressable printed circuit board (PCB) mounted in the base. In this form the unit is designated a **SM87 Addressable Unit C** and is rated up to 28V, 0.5A with a Temperature Classification of T85°C (Tamb -55°C to +55°C) or T100°C (Tamb -55°C to +70°C). SGS Baseefa certification report GB/BAS/ExTR13.0232/00 refers.
Baseefa03ATEX0075/17	20 January 2014	Increase in the maximum number of rail mounted terminals to thirteen. SGS Baseefa certification report GB/BAS/ExTR14.0022/00 refers.
Baseefa03ATEX0075/18	22 January 2015	Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an alternative addressable Tyco module mounted in the base. In this form the unit is designated a **SM87 Addressable Module G** and is rated up to 24V, 0.02A with a Temperature Classification of T85°C (Tamb -55°C to +55°C) or T100°C (Tamb -55°C to +70°C). Alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an alternative addressable Apollo module mounted in the base. In this form the unit is designated a **SM87 Addressable Module I** and is rated up to 24V, 0.02A with a Temperature Classification of T85°C (Tamb -55°C to +55°C) or T100°C (Tamb -55°C to +70°C). No report.
Baseefa03ATEX0075/19	23 June 2015	Addition of alternative terminal Type Weidmuller AKZ1.5 to the existing list of terminals; Weidmuller: AKZ4 — Max Number 12 Weidmuller: AKZ1.5 — Max Number 13 Weidmuller: AKZ2.5 — Max Number 13 Phoenix: MBK up to 2.5mm — Max Number 13 SGS Baseefa certification report GB/BAS/ExTR15.0189/00 refers.

Certificate No.	Date	Comments
Baseefa03ATEX0075/20	31 January 2020	To introduce an alternative arrangement comprising an SM87 Alarm Station with switches mounted on the underside of the cover and an alternative addressable Tyco module mounted on the base. In this form the unit is designated a **SM87 Addressable Module K** and is rated up to 24V, 0.1A with a temperature classification of T85°C (Tamb -55°C to +55°C) or T100°C (Tamb -55°C to +70°C). SGS Baseefa certification report 20(C)0064 refers.
Baseefa03ATEX0075X Issue 21	14 November 2023	To assess the SM87 Alarm Stations against EN IEC 60079-0:2018, EN 60079-1:2014 and EN 60079-31:2014. SGS Baseefa certification report GB/BAS/ExTR22.0113/00 refers.
For drawings applicable to each issue, see original of that issue.		

FLAMMABLE GAS ALARM

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Powering Business Worldwide

EU-Declaration of conformity

MEDC22DOC104X

We

Eaton MEDC Limited
Unit B, Sutton Parkway, Oddicroft Lane,
Sutton-In-Ashfield, NG17 5FB

hereby declare in our sole responsibility, that the product

Beacon

Ex II 2 GD	XB4 Xenon Beacon	Baseefa02ATEX0224X	Ex II 2 G	FL12 Filament Beacon	BAS99ATEX2196X
Ex II 2 GD	FB4 Filament Beacon	Baseefa02ATEX0224X	Ex II 2 G	FB12 Filament Beacon	BAS99ATEX2196X
Ex II 2 GD	FB4E Filament Beacon	Baseefa02ATEX0224X	Ex II 2 G	TH12 Rotating Beacon	BAS99ATEX2196X
Ex II 1 G	XB8 Xenon Beacon	BAS02ATEX1258X	Ex II 2 GD	XB15 Xenon Beacon	Baseefa04ATEX0009X
Ex II 2 G	XB9 Xenon Beacon	BAS00ATEX2031X	Ex II 2 GD	FB15 Filament Beacon	Baseefa04ATEX0009X
Ex II 2 G	XB10 Xenon Beacon	BAS00ATEX2204X	Ex II 2 GD	LD15 Led Beacon	Baseefa04ATEX0009X
Ex II 2 G	XB10E Xenon Beacon	BAS00ATEX2226X	Ex II 2 GD	SM87XBT Xenon Beacon	Baseefa03ATEX0222X
Ex II 2 GD	XB11 Xenon Beacon	BAS99ATEX2195X	Ex II 2 GD	SM87LU1 Fluorescent Beacon	Baseefa03ATEX0222X
Ex II 2 GD	FL11 Filament Beacon	BAS99ATEX2195X	Ex II 2 GD	SM87LU3 Filament Beacon	Baseefa03ATEX0222X
Ex II 2 GD	FB11 Filament Beacon	BAS99ATEX2195X	Ex II 2 GD	SM87HXB Xenon Beacon	Baseefa03ATEX0222X
Ex II 2 G	XB12 Xenon Beacon	BAS99ATEX2196X	Ex II 2 GD	SM87LED Beacon	Baseefa03ATEX0222X

complies with the following EU directives, their corresponding harmonised standards, and other normative documents.

Terms of the directive		*Title and / or No. and date of issue of the standard*
2014/30/EU:	*EMC Directive - relating to Electromagnetic Compatibility*	EN 61000-6-2:2005 EN 61000-6-4:2007+A1:2011
2014/34/EU:	*ATEX Directive - relating to equipment and protective systems intended for use in potentially explosive atmospheres.*	EN IEC 60079-0:2018† EN 60079-1:2014† EN IEC 60079-7: 2015 +A1: 2018 EN 60079-11: 2012† EN 60079-28: 2015 EN 60079-31: 2014†

† Where products were initially assessed for compliance with the Essential Health and Safety Requirements of the Directive using earlier harmonized standards, a subsequent review has determined that compliance is unaffected by the current harmonized standard(s) listed above.

2015/863/EU:	*RoHS Directive - relating to hazardous substances in electrical and electronic equipment*	EN IEC 63000:2018

Name
Designation
Place and date

Stewart Parfitt
Engineering Director
Luton, 18th November 2024

For the safe use of this equipment, the information given in the accompanying operating instructions must be followed.

Notified Bodies responsible for issuing Cat 1 or 2 ATEX Certificates:
0598 SGS Fimko Oy, Takomotie 8, FI-00380 Helsinki, Finland
Notified Body responsible for ATEX QA regime:
0598 SGS Fimko Oy, Takomotie 8, FI-00380 Helsinki, Finland

Registered in England No. 1202172
VAT Number GB127566651

1 # SUPPLEMENTRY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/6**
4	Equipment or Protective System:	**SM87 Beacons**
5	Manufacturer:	**Cooper MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa03ATEX0222** to apply to equipment or a protective system designed and constructed in accordance with the specification set out in the Schedule of this certificate which incorporates and supersedes all previous issues of the said certificate.

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **GB/BAS/ExTR/09/0082/00**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN60079-0: 2009 **EN60079-1: 2007** **IEC60079-31: 2008**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This Supplementary EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

⟨Ex⟩ II 2 GD Ex d IIC T* (Ta -55°C to + **°C) Gb Ex tb IIIC T°C (Ta -55°C to + **°C) Db IP66/IP67**

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **07/1065**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

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Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

13 **Schedule**

14 **Certificate Number Baseefa03ATEX222/6**

15 Description of Equipment or Protective System

The Type SM87 Beacons comprise a cylindrical enclosure on a square base and a cover provided with a glass dome to component enclosure Baseefa09ATEX0018U. The base and cover may be manufactured from either aluminium or stainless steel and the cover is secured by screws of grade A4-80 stainless steel. The base is provided with up to four threaded cable entries. The units may be joined together by the manufacturer's supplied coupling up to a maximum of 5 units.

The enclosure contains various internal arrangements to form the following:-

A filament lamp and terminals to form a **Type SM87 LU3** rated up to 240Vac, 10W, 25W or 40W.

A fluorescent lamp, a PCB and terminals to form a **Type SM87 LU1** rated up to 254Vac or 48Vdc, 5W or 10W.

A Xenon Lamp, a PCB and terminals to form a **Type SM87 HXB** rated up to 254Vac or 48Vdc, 11W.

A Xenon electronics unit PCB and terminals to form a **Type SM87 XBT/A** rated up to 254Vac or 48Vdc 11W. This unit is to drive the XTB/B unit described below.

A Xenon Lamp PCB and terminals to form a **Type SM87 XBT/B** powered from the unit above.

Four PCBs containing clusters of LEDs, a driver PCB and terminals to form a **Type SM87 LED** rated up to 48Vdc 4W (white) or 5.6W (blue).

The temperature classification and ambient temperature range for the beacons fitted with the specified lamps are indicated below.

Beacon	Watts	Marked Temperature	Ambient temperature range	Cable Temperature Rise (K)
SM87 LU3	10	T100°C	-55°C to + 70°C	30
		T85°C	-55°C to + 55°C	
		T70°C	-55°C to + 40°C	
	25	T130°C	-55°C to + 55°C	65
		T115°C	-55°C to + 40°C	
	40	T155°C	-55°C to + 55°C	110
		T140°C	-55°C to + 40°C	
SM87 LU1	5	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
	10	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
SM87 HXB	11	T95°C	-55°C to + 70°C	60
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 XBT/A	11	T70°C	-55°C to + 55°C	40
		T55°C	-55°C to + 40°C	

Beacon	Watts	Marked Temperature	Ambient temperature range	Cable Temperature Rise (K)
SM87 XBT/B	-	T110°C	-55°C to + 85°C	20
		T95°C	-55°C to + 70°C	
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 LED White	4	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	
SM87 LED Blue	5.6	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	

16 Report Number

Baseefa Certification Report GB/BAS/ExTR09.0082/00

17 Special Conditions for Safe Use

None.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

The drawings indicated below amalgamate the current design and previous variations, and supersede all previous issues.

Number	Sheet	Issue	Date	Description
562-749	1	A	11.08.10	XHB, XBT, LU1, LU3, LED Assemblies
562-749	2	A	11.08.10	XHB, XBT, LU1, LU3, LED Assemblies
562-749	3	A	11.08.10	XHB, XBT, LU1, LU3, LED Assemblies

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/7**
4	Equipment or Protective System:	**SM87 Beacons**
5	Manufacturer:	**Cooper MEDC Limited**
6	Address:	**Unit B, Sutton Parkway, Oddicroft Lane, Sutton-in-Ashfield, NG17 5FB**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa03ATEX0222** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

Baseefa Customer Reference No. **0676**

Project File No. **15/0438**

This document is issued by the Company subject to its General Conditions for Certification Services accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and the Supplementary Terms and Conditions accessible at http://www.baseefa.com/terms-and-conditions.asp. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, schedule included, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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pp MPowney MPOWNEY
R S SINCLAIR
GENERAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa03ATEX0222/7**

15 **Description of the variation to the Equipment or Protective System**

Variation 7.1

To permit an alternative type MBK 2.5 terminal, and minor drawings amendments.

Variation 7.2

To permit an increase in power of the blue and white LED versions to 7.2W.

The complete listing is indicated below.

Beacon	Watts	Marked Temperature	Ambient temperature range	Cable Temperature Rise (K)
SM87 LU3	10	T100°C	-55°C to + 70°C	30
		T85°C	-55°C to + 55°C	
		T70°C	-55°C to + 40°C	
	25	T130°C	-55°C to + 55°C	65
		T115°C	-55°C to + 40°C	
	40	T155°C	-55°C to + 55°C	110
		T140°C	-55°C to + 40°C	
SM87 LU1	5	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
	10	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
SM87 HXB	11	T95°C	-55°C to + 70°C	60
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 XBT/A	11	T70°C	-55°C to + 55°C	40
		T55°C	-55°C to + 40°C	
SM87 XBT/B	-	T110°C	-55°C to + 85°C	20
		T95°C	-55°C to + 70°C	
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 LED Red/green/amber	4	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	
SM87 LED White/Blue	7.2	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	

16 **Report Number**

GB/BAS/ExTR15.0176/00.

17 **Specific Conditions of Use**

None.

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
562-749	1-3 inc.	B	03.06.15	General Assembly SM87 – ATEX Certification

1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	EC - Type Examination Certificate Number:	**Baseefa03ATEX0222**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC LIMITED**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa (2001) Ltd. Notified body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **03(C)0265**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amendments 1 & 2 **EN 50018: 2000 + Amendment 1** **EN 50281-1-1: 1998**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

Ⓔx II 2 GD EEx d IIC T* (see schedule)

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa (2001) Ltd. Customer Reference No. **0676**

Project File No. **03/0265**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

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13 **Schedule**

14 **Certificate Number Baseefa03ATEX0222**

15 Description of Equipment or Protective System

The Type SM87 Beacons each comprise a cylindrical enclosure on a square base with a domed glass cover secured by 4 off M6 x 12mm long socket head cap screws of grade A4-80 stainless steel. The base and cover ring may be manufactured from either aluminium or stainless steel.

The interior of the units may contain one of the following lamp types and the associated control gear, each with different designations and thermal characteristics as shown below :-

TYPE SM87 ---	Lamp Type	Voltage (V)	Watts (W)	Temperature Classification T* (T_{amb}= -55°C to + °C)			
				+40°C	+55°C	+70°C	+85°C
LU3	Filament	240 ac	48	T135°C	T200°C	N/A	
LU1	Fluorescent	254 ac	10	T100°C	T135°C	N/A	
		240 ac		T85°C	T100°C		
		110/120 ac	5				
		12, 24, 48 dc			T85°C		
HXB	Xenon	110, 240, 254 ac	11	T85°C	T135°C	T135°C	N/A
		12, 24, 30, 48 dc					
XBT/A	Xenon (Electronics unit)	110, 240, 254 ac	11*	T85°C	T135°C	N/A	
		12, 24, 30, 48 dc					
XBT/B	Xenon (Lamp unit)	N/A		N/A			T135°C
LED	LED	24, 48 dc	4	T85°C	T135°C	N/A	
	LED (Blue)		5.6				

* Note XBT units A & B are intended to be used together in pairs and are rated accordingly

The enclosure is provided with internal and external earth connection facilities.

Up to 4 cable entry holes threaded M20 to M25 (or NPT & Pg equivalents) are provided for the accommodation of suitable BASEEFA certified flameproof IIC cable entry devices, with or without the interposition of a suitable BASEEFA certified flameproof IIC thread adapter. Unused entries are to be fitted with suitable BASEEFA certified flameproof IIC stopping plugs.

Suitable flameproof IIC cable entry devices, thread adapters and stopping plugs certified as Equipment (not a Component) under an EC Type Examination Certificate to Directive 94/9/EC may also be used in the manner specified above.

If the unit is intended for use in a dust atmosphere these devices must be sealed in accordance with the relevant codes of practice to ensure a dust tight seal.

In addition, these units may be supplied by the manufacturer in an assembly of up to five interconnected enclosures.

16 Report Number

Baseefa Certification Report No. 03(C)0265

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

Number	Issue	Date	Description
562-131 Sheets 1 to 3	A	26-03-03	General Arrangement, SM87 Beacons
562-130	A	28-02-03	Enclosure, Earth & Seal Detail
562-128	A	25-03-03	Cover, Machining Detail, Stainless Steel
562-129	A	25-03-03	Enclosure & Cover Detail, Aluminium
562-127	A	25-03-03	Enclosure, Machining Detail, Stainless Steel
562-132	A	26-03-03	Circuit Diagram, SM87 HXB 240V, High Power
562-133	A	26-03-03	Circuit Diagram, SM87 HXB 240V
562-134	A	23-03-03	Circuit Diagram, SM87 HXB 110/120V
562-135	A	27-03-03	Circuit Diagram, SM87 HXB 254V
562-136	A	27-03-03	Circuit Diagram, SM87 HXB 24V
562-137	A	26-03-03	Circuit Diagram, SM87 HXB 48V
562-138	A	26-03-03	Circuit Diagram, Relay/Telephone Interface
562-139	A	26-03-03	Circuit Diagram, SM87 Fluorescent 12, 24 & 48V
562-140	A	26-03-03	Circuit Diagram, SM87 LED 24V
562-141	A	26-03-03	Circuit Diagram, SM87 LED 48V
562-142	A	26-03-03	Circuit Diagram, SM87 LED (Blue) 24 & 48V
562-143	A	26-03-03	Circuit Diagram, SM87 HXB 12V
562-144	A	26-03-03	Circuit Diagram, SM87 HXB 30V

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/1**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa03ATEX0222 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **05/0662**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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Registered in England No. 4305578 at the above address

pp R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number Baseefa03ATEX0222/1

15 **Description of the variation to the Equipment or Protective System**

Variation 1.1

Increased dimensional tolerance for the wellglass cover.

16 **Report Number**

None

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Issue	Date	Description
562-131 Sheets 1 to 3	B	06-10-05	General Arrangement, SM87 Beacons

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/2**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa03ATEX0222 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **07/0040**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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pp R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number Baseefa03ATEX0222/2

15 Description of the variation to the Equipment or Protective System

Variation 2.1

Increase in the maximum dissipated wattage of the LUI fluorescent fitting rated at 110V to 120V from 5W to 10W

16 Report Number

None

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Issue	Date	Description
562-131 Sheets 1 to 3	C	11-01-07	General Arrangement, SM87 Beacons
562-573	A	11-01-07	AC Fluorescent Ballast Circuit Diagram

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/3**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa03ATEX0222 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **07/0351**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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M Downey

pp R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number Baseefa03ATEX0222/3

15 **Description of the variation to the Equipment or Protective System**

Variation 3.1

Increase in the depth of label fixing holes.

16 **Report Number**

None

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Issue	Date	Description
562-129	B	24-04-07	Enclosure/Cover Details

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**See Schedule**
4	Equipment or protective system:	**See Schedule**
5	Manufacturer:	**MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends the EC - Type Examination Certificates listed in the Schedule to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedules of the said Certificates but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

A copy of this Supplementary Certificate shall be attached to each of the original Certificates.

This certificate may only be reproduced in its entirety, without any change, Schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **08/0067**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR

DIRECTOR
On behalf of
Baseefa (2001) Ltd.

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Baseefa is a trading name of Baseefa (2001) Ltd
Registered in England No. 4305578 at the above address

Schedule

Description of the variation to the Equipment or Protective System

Alternative certification label wording for the units listed below and as on the scheduled drawings.

Certificate No.	Supplement No.	Equipment Type
BAS00ATEX2031	3	Type XB9 Xenon Beacon
BAS00ATEX2097X	10	Type DB3 Sounder and DB4 Speaker Units
BAS00ATEX2204X	2	Type XB10 Beacon
Baseefa02ATEX0224X	6	Type XB4 Xenon Beacon
BAS02ATEX2086X	6	Type DB10 Loudspeaker Units
Baseefa03ATEX0222	4	Type SM87 HXB & SM87 LED Beacons
Baseefa04ATEX0166X	3	Type DB16 IIB Speaker Unit

Report No.

None

Special Conditions for Safe Use

None additional to those listed previously

Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

Drawings and Documents

Number	Sheet	Issue	Date	Description
227-173	-	A	28-01-08	Type XB9 Xenon Beacon
219-833	-	A	28-01-08	Type DB3 Sounder Units
199-519	-	A	28-01-08	Type DB4 Speaker Units
228-210	-	A	28-01-08	Type XB10 Beacon
188-625	-	A	28-01-08	Type XB4 Xenon Beacon
253-154	-	A	07-01-08	Type DB10 Loudspeaker Units
562-661	-	A	28-01-08	Type SM87 HXB Xenon Beacon
562-662	-	A	28-01-08	Type SM87 LED Beacon
286-145	-	A	07/01/08	Type DB16 IIB Speaker Unit

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/5**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**Cooper MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa03ATEX0222** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **10/0595**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

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e-mail info@baseefa.com web site www.baseefa.com
Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

13 **Schedule**

14 **Certificate Number Baseefa03ATEX0222/5**

15 **Description of the variation to the Equipment or Protective System**

Variation 5.1

To permit clear LEDs in the SM87 LED Beacon.

16 **Report Number**

None.

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
562-141	1	B	20.07.10	Circuit Diagram, SM87 LED Blue/Clear 24V & 48V

FIRE FLASH BEACON

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Powering Business Worldwide

EU-Declaration of conformity

MEDC22DOC104X

We

Eaton MEDC Limited
Unit B, Sutton Parkway, Oddicroft Lane,
Sutton-In-Ashfield, NG17 5FB

hereby declare in our sole responsibility, that the product

Beacon

Ex II 2 GD	XB4 Xenon Beacon	Baseefa02ATEX0224X	Ex II 2 G	FL12 Filament Beacon	BAS99ATEX2196X
Ex II 2 GD	FB4 Filament Beacon	Baseefa02ATEX0224X	Ex II 2 G	FB12 Filament Beacon	BAS99ATEX2196X
Ex II 2 GD	FB4E Filament Beacon	Baseefa02ATEX0224X	Ex II 2 G	TH12 Rotating Beacon	BAS99ATEX2196X
Ex II 1 G	XB8 Xenon Beacon	BAS02ATEX1258X	Ex II 2 GD	XB15 Xenon Beacon	Baseefa04ATEX0009X
Ex II 2 G	XB9 Xenon Beacon	BAS00ATEX2031X	Ex II 2 GD	FB15 Filament Beacon	Baseefa04ATEX0009X
Ex II 2 G	XB10 Xenon Beacon	BAS00ATEX2204X	Ex II 2 GD	LD15 Led Beacon	Baseefa04ATEX0009X
Ex II 2 G	XB10E Xenon Beacon	BAS00ATEX2226X	Ex II 2 GD	SM87XBT Xenon Beacon	Baseefa03ATEX0222X
Ex II 2 GD	XB11 Xenon Beacon	BAS99ATEX2195X	Ex II 2 GD	SM87LU1 Fluorescent Beacon	Baseefa03ATEX0222X
Ex II 2 GD	FL11 Filament Beacon	BAS99ATEX2195X	Ex II 2 GD	SM87LU3 Filament Beacon	Baseefa03ATEX0222X
Ex II 2 GD	FB11 Filament Beacon	BAS99ATEX2195X	Ex II 2 GD	SM87HXB Xenon Beacon	Baseefa03ATEX0222X
Ex II 2 G	XB12 Xenon Beacon	BAS99ATEX2196X	Ex II 2 GD	SM87LED Beacon	Baseefa03ATEX0222X

complies with the following EU directives, their corresponding harmonised standards, and other normative documents.

Terms of the directive		*Title and / or No. and date of issue of the standard*
2014/30/EU:	*EMC Directive - relating to Electromagnetic Compatibility*	EN 61000-6-2:2005 EN 61000-6-4:2007+A1:2011
2014/34/EU:	*ATEX Directive - relating to equipment and protective systems intended for use in potentially explosive atmospheres.*	EN IEC 60079-0:2018† EN 60079-1:2014† EN IEC 60079-7: 2015 +A1: 2018 EN 60079-11: 2012† EN 60079-28: 2015 EN 60079-31: 2014†

† Where products were initially assessed for compliance with the Essential Health and Safety Requirements of the Directive using earlier harmonized standards, a subsequent review has determined that compliance is unaffected by the current harmonized standard(s) listed above.

2015/863/EU:	*RoHS Directive - relating to hazardous substances in electrical and electronic equipment*	EN IEC 63000:2018

Name
Designation
Place and date

Stewart Parfitt
Engineering Director
Luton, 18th November 2024

For the safe use of this equipment, the information given in the accompanying operating instructions must be followed.

Notified Bodies responsible for issuing Cat 1 or 2 ATEX Certificates:
0598 SGS Fimko Oy, Takomotie 8, FI-00380 Helsinki, Finland
Notified Body responsible for ATEX QA regime:
0598 SGS Fimko Oy, Takomotie 8, FI-00380 Helsinki, Finland

Registered in England No. 1202172
VAT Number GB127566651

1 # SUPPLEMENTRY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/6**
4	Equipment or Protective System:	**SM87 Beacons**
5	Manufacturer:	**Cooper MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa03ATEX0222** to apply to equipment or a protective system designed and constructed in accordance with the specification set out in the Schedule of this certificate which incorporates and supersedes all previous issues of the said certificate.

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **GB/BAS/ExTR/09/0082/00**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN60079-0: 2009 **EN60079-1: 2007** **IEC60079-31: 2008**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This Supplementary EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

(Ex) II 2 GD Ex d IIC T* (Ta -55°C to + **°C) Gb Ex tb IIIC T°C (Ta -55°C to + **°C) Db IP66/IP67**

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **07/1065**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

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Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

13 **Schedule**

14 **Certificate Number Baseefa03ATEX222/6**

15 Description of Equipment or Protective System

The Type SM87 Beacons comprise a cylindrical enclosure on a square base and a cover provided with a glass dome to component enclosure Baseefa09ATEX0018U. The base and cover may be manufactured from either aluminium or stainless steel and the cover is secured by screws of grade A4-80 stainless steel. The base is provided with up to four threaded cable entries. The units may be joined together by the manufacturer's supplied coupling up to a maximum of 5 units.

The enclosure contains various internal arrangements to form the following:-

A filament lamp and terminals to form a **Type SM87 LU3** rated up to 240Vac, 10W, 25W or 40W.

A fluorescent lamp, a PCB and terminals to form a **Type SM87 LU1** rated up to 254Vac or 48Vdc, 5W or 10W.

A Xenon Lamp, a PCB and terminals to form a **Type SM87 HXB** rated up to 254Vac or 48Vdc, 11W.

A Xenon electronics unit PCB and terminals to form a **Type SM87 XBT/A** rated up to 254Vac or 48Vdc 11W. This unit is to drive the XTB/B unit described below.

A Xenon Lamp PCB and terminals to form a **Type SM87 XBT/B** powered from the unit above.

Four PCBs containing clusters of LEDs, a driver PCB and terminals to form a **Type SM87 LED** rated up to 48Vdc 4W (white) or 5.6W (blue).

The temperature classification and ambient temperature range for the beacons fitted with the specified lamps are indicated below.

Beacon	Watts	Marked Temperature	Ambient temperature range	Cable Temperature Rise (K)
SM87 LU3	10	T100°C	-55°C to + 70°C	30
		T85°C	-55°C to + 55°C	
		T70°C	-55°C to + 40°C	
	25	T130°C	-55°C to + 55°C	65
		T115°C	-55°C to + 40°C	
	40	T155°C	-55°C to + 55°C	110
		T140°C	-55°C to + 40°C	
SM87 LU1	5	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
	10	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
SM87 HXB	11	T95°C	-55°C to + 70°C	60
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 XBT/A	11	T70°C	-55°C to + 55°C	40
		T55°C	-55°C to + 40°C	

Beacon	Watts	Marked Temperature	Ambient temperature range	Cable Temperature Rise (K)
SM87 XBT/B	-	T110°C	-55°C to + 85°C	20
		T95°C	-55°C to + 70°C	
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 LED White	4	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	
SM87 LED Blue	5.6	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	

16 Report Number

Baseefa Certification Report GB/BAS/ExTR09.0082/00

17 Special Conditions for Safe Use

None.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

The drawings indicated below amalgamate the current design and previous variations, and supersede all previous issues.

Number	Sheet	Issue	Date	Description
562-749	1	A	11.08.10	XHB, XBT, LU1, LU3, LED Assemblies
562-749	2	A	11.08.10	XHB, XBT, LU1, LU3, LED Assemblies
562-749	3	A	11.08.10	XHB, XBT, LU1, LU3, LED Assemblies

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/7**
4	Equipment or Protective System:	**SM87 Beacons**
5	Manufacturer:	**Cooper MEDC Limited**
6	Address:	**Unit B, Sutton Parkway, Oddicroft Lane, Sutton-in-Ashfield, NG17 5FB**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa03ATEX0222** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

Baseefa Customer Reference No. **0676**

Project File No. **15/0438**

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pp MPowney MPOWNEY
R S SINCLAIR
GENERAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa03ATEX0222/7**

15 **Description of the variation to the Equipment or Protective System**

Variation 7.1

To permit an alternative type MBK 2.5 terminal, and minor drawings amendments.

Variation 7.2

To permit an increase in power of the blue and white LED versions to 7.2W.

The complete listing is indicated below.

Beacon	Watts	Marked Temperature	Ambient temperature range	Cable Temperature Rise (K)
SM87 LU3	10	T100°C	-55°C to + 70°C	30
		T85°C	-55°C to + 55°C	
		T70°C	-55°C to + 40°C	
	25	T130°C	-55°C to + 55°C	65
		T115°C	-55°C to + 40°C	
	40	T155°C	-55°C to + 55°C	110
		T140°C	-55°C to + 40°C	
SM87 LU1	5	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
	10	T85°C	-55°C to + 55°C	50
		T70°C	-55°C to + 40°C	
SM87 HXB	11	T95°C	-55°C to + 70°C	60
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 XBT/A	11	T70°C	-55°C to + 55°C	40
		T55°C	-55°C to + 40°C	
SM87 XBT/B	-	T110°C	-55°C to + 85°C	20
		T95°C	-55°C to + 70°C	
		T80°C	-55°C to + 55°C	
		T65°C	-55°C to + 40°C	
SM87 LED Red/green/amber	4	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	
SM87 LED White/Blue	7.2	T70°C	-55°C to + 55°C	20
		T55°C	-55°C to + 40°C	

16 **Report Number**

GB/BAS/ExTR15.0176/00.

17 **Specific Conditions of Use**

None.

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
562-749	1-3 inc.	B	03.06.15	General Assembly SM87 – ATEX Certification

1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	EC - Type Examination Certificate Number:	**Baseefa03ATEX0222**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC LIMITED**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa (2001) Ltd. Notified body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **03(C)0265**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amendments 1 & 2 **EN 50018: 2000 + Amendment 1** **EN 50281-1-1: 1998**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

Ⓔx II 2 GD EEx d IIC T* (see schedule)

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa (2001) Ltd. Customer Reference No. **0676**

Project File No. **03/0265**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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DIRECTOR
On behalf of
Baseefa (2001) Ltd.

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Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

13 **Schedule**

14 **Certificate Number Baseefa03ATEX0222**

15 Description of Equipment or Protective System

The Type SM87 Beacons each comprise a cylindrical enclosure on a square base with a domed glass cover secured by 4 off M6 x 12mm long socket head cap screws of grade A4-80 stainless steel. The base and cover ring may be manufactured from either aluminium or stainless steel.

The interior of the units may contain one of the following lamp types and the associated control gear, each with different designations and thermal characteristics as shown below :-

TYPE SM87 ---	Lamp Type	Voltage (V)	Watts (W)	Temperature Classification T* (T_{amb}= -55°C to + °C)			
				+40°C	+55°C	+70°C	+85°C
LU3	Filament	240 ac	48	T135°C	T200°C	N/A	
LU1	Fluorescent	254 ac	10	T100°C	T135°C	N/A	
		240 ac		T85°C	T100°C		
		110/120 ac	5				
		12, 24, 48 dc			T85°C		
HXB	Xenon	110, 240, 254 ac	11	T85°C	T135°C	T135°C	N/A
		12, 24, 30, 48 dc					
XBT/A	Xenon (Electronics unit)	110, 240, 254 ac	11*	T85°C	T135°C	N/A	
		12, 24, 30, 48 dc					
XBT/B	Xenon (Lamp unit)	N/A		N/A			T135°C
LED	LED	24, 48 dc	4	T85°C	T135°C	N/A	
	LED (Blue)		5.6				

* Note XBT units A & B are intended to be used together in pairs and are rated accordingly

The enclosure is provided with internal and external earth connection facilities.

Up to 4 cable entry holes threaded M20 to M25 (or NPT & Pg equivalents) are provided for the accommodation of suitable BASEEFA certified flameproof IIC cable entry devices, with or without the interposition of a suitable BASEEFA certified flameproof IIC thread adapter. Unused entries are to be fitted with suitable BASEEFA certified flameproof IIC stopping plugs.

Suitable flameproof IIC cable entry devices, thread adapters and stopping plugs certified as Equipment (not a Component) under an EC Type Examination Certificate to Directive 94/9/EC may also be used in the manner specified above.

If the unit is intended for use in a dust atmosphere these devices must be sealed in accordance with the relevant codes of practice to ensure a dust tight seal.

In addition, these units may be supplied by the manufacturer in an assembly of up to five interconnected enclosures.

16 Report Number

Baseefa Certification Report No. 03(C)0265

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

Number	Issue	Date	Description
562-131 Sheets 1 to 3	A	26-03-03	General Arrangement, SM87 Beacons
562-130	A	28-02-03	Enclosure, Earth & Seal Detail
562-128	A	25-03-03	Cover, Machining Detail, Stainless Steel
562-129	A	25-03-03	Enclosure & Cover Detail, Aluminium
562-127	A	25-03-03	Enclosure, Machining Detail, Stainless Steel
562-132	A	26-03-03	Circuit Diagram, SM87 HXB 240V, High Power
562-133	A	26-03-03	Circuit Diagram, SM87 HXB 240V
562-134	A	23-03-03	Circuit Diagram, SM87 HXB 110/120V
562-135	A	27-03-03	Circuit Diagram, SM87 HXB 254V
562-136	A	27-03-03	Circuit Diagram, SM87 HXB 24V
562-137	A	26-03-03	Circuit Diagram, SM87 HXB 48V
562-138	A	26-03-03	Circuit Diagram, Relay/Telephone Interface
562-139	A	26-03-03	Circuit Diagram, SM87 Fluorescent 12, 24 & 48V
562-140	A	26-03-03	Circuit Diagram, SM87 LED 24V
562-141	A	26-03-03	Circuit Diagram, SM87 LED 48V
562-142	A	26-03-03	Circuit Diagram, SM87 LED (Blue) 24 & 48V
562-143	A	26-03-03	Circuit Diagram, SM87 HXB 12V
562-144	A	26-03-03	Circuit Diagram, SM87 HXB 30V

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/1**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa03ATEX0222 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **05/0662**

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Registered in England No. 4305578 at the above address

pp R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number Baseefa03ATEX0222/1

15 **Description of the variation to the Equipment or Protective System**

Variation 1.1

Increased dimensional tolerance for the wellglass cover.

16 **Report Number**

None

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Issue	Date	Description
562-131 Sheets 1 to 3	B	06-10-05	General Arrangement, SM87 Beacons

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/2**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa03ATEX0222 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **07/0040**

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Baseefa is a trading name of Baseefa (2001) Ltd
Registered in England No. 4305578 at the above address

pp R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number Baseefa03ATEX0222/2

15 Description of the variation to the Equipment or Protective System

Variation 2.1

Increase in the maximum dissipated wattage of the LUI fluorescent fitting rated at 110V to 120V from 5W to 10W

16 Report Number

None

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Issue	Date	Description
562-131 Sheets 1 to 3	C	11-01-07	General Arrangement, SM87 Beacons
562-573	A	11-01-07	AC Fluorescent Ballast Circuit Diagram

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/3**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**MEDC**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa03ATEX0222 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **07/0351**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

Baseefa
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ
Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail info@baseefa.com web site www.baseefa.com
Baseefa is a trading name of Baseefa (2001) Ltd
Registered in England No. 4305578 at the above address

M Downey

pp R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number Baseefa03ATEX0222/3

15 **Description of the variation to the Equipment or Protective System**

Variation 3.1

Increase in the depth of label fixing holes.

16 **Report Number**

None

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Issue	Date	Description
562-129	B	24-04-07	Enclosure/Cover Details

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**See Schedule**
4	Equipment or protective system:	**See Schedule**
5	Manufacturer:	**MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends the EC - Type Examination Certificates listed in the Schedule to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedules of the said Certificates but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

A copy of this Supplementary Certificate shall be attached to each of the original Certificates.

This certificate may only be reproduced in its entirety, without any change, Schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **08/0067**

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R S SINCLAIR

DIRECTOR
On behalf of
Baseefa (2001) Ltd.

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Baseefa is a trading name of Baseefa (2001) Ltd
Registered in England No. 4305578 at the above address

Schedule

Description of the variation to the Equipment or Protective System

Alternative certification label wording for the units listed below and as on the scheduled drawings.

Certificate No.	Supplement No.	Equipment Type
BAS00ATEX2031	3	Type XB9 Xenon Beacon
BAS00ATEX2097X	10	Type DB3 Sounder and DB4 Speaker Units
BAS00ATEX2204X	2	Type XB10 Beacon
Baseefa02ATEX0224X	6	Type XB4 Xenon Beacon
BAS02ATEX2086X	6	Type DB10 Loudspeaker Units
Baseefa03ATEX0222	4	Type SM87 HXB & SM87 LED Beacons
Baseefa04ATEX0166X	3	Type DB16 IIB Speaker Unit

Report No.

None

Special Conditions for Safe Use

None additional to those listed previously

Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

Drawings and Documents

Number	Sheet	Issue	Date	Description
227-173	-	A	28-01-08	Type XB9 Xenon Beacon
219-833	-	A	28-01-08	Type DB3 Sounder Units
199-519	-	A	28-01-08	Type DB4 Speaker Units
228-210	-	A	28-01-08	Type XB10 Beacon
188-625	-	A	28-01-08	Type XB4 Xenon Beacon
253-154	-	A	07-01-08	Type DB10 Loudspeaker Units
562-661	-	A	28-01-08	Type SM87 HXB Xenon Beacon
562-662	-	A	28-01-08	Type SM87 LED Beacon
286-145	-	A	07/01/08	Type DB16 IIB Speaker Unit

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa03ATEX0222/5**
4	Equipment or Protective System:	**SM87 BEACONS**
5	Manufacturer:	**Cooper MEDC Limited**
6	Address:	**Colliery Road, Pinxton, Nottingham, NG16 6JF**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa03ATEX0222** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0676**

Project File No. **10/0595**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

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Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

13 **Schedule**

14 **Certificate Number Baseefa03ATEX0222/5**

15 **Description of the variation to the Equipment or Protective System**

Variation 5.1

To permit clear LEDs in the SM87 LED Beacon.

16 **Report Number**

None.

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
562-141	1	B	20.07.10	Circuit Diagram, SM87 LED Blue/Clear 24V & 48V

SOUNDER

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[1] # EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] EU-Type Examination Certificate Number: **UL 21 ATEX 2559X Rev. 0**

[4] Product: **DB4BM range of Loudspeakers and DB3BM range of Sounders**

[5] Manufacturer: **Eaton MEDC Ltd.**

[6] Address: **Unit B, Sutton Parkway, Oddicroft Lane, Sutton-in-Ashfield NG17 5FB UK**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the Council Directive 2014/34/EU of 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. **DK/ULD/ExTR21.0017/00.**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN 60079-1: 2014** **EN 60079-31:2014**

[10] If the sign "**X**" is placed after the certificate number, it indicates that the product is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by the certificate.

[12] The marking of the product shall include the following:

II 2 G Ex db IIC T* Gb

II 2 D Ex tb IIIC T*°C Db

(Tamb -60°C to +*°C)

*See Schedule for T class & ambient combination

Certification Manager
Jan-Erik Storgaard

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2021-08-11

Notified Body UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

This certificate may only be reproduced in its entirety and without any change, schedule included.

[13] [14]

Schedule
EU-TYPE EXAMINATION CERTIFICATE No.
UL 21 ATEX 2559X Rev. 0

[15] Description of Product

DB4BM Loudspeakers
The DB4BM Loudspeakers are comprised of a cylindrical metallic body and two metallic covers, two compartments are electrically connected by a bushing. The front cover is threaded and closes a flameproof chamber for housing the speaker driver assembly. In the front cover is a sintered wire mesh element that facilitates sound transmission. An elastomeric O-ring seal located within the cover provides against water ingress to the manufacturer's self-declared IPX6 protection when fitted with a long horn flare or self-declared IPX5 protection when fitted with a short horn flare.

The flanged rear cover closes a chamber that houses a transformer assembly and control PCB. An elastomeric O-ring seal located within the enclosure body provides against water ingress to the manufacturer's self-declared IPX6 and IPX7 protection. The cover is fixed with six M5 x 0.8 x 20mm long socket head screws of minimum property class A2-70, the screws can be both reduced shank and fully threaded to the screw head. Up to two M20 or M25 cable entries (alternative option 1/2" NPT or ¾" NPT) are provided in the side of the enclosure to accommodate suitably certified cable entries devices.
A non-metallic horn assembly comprising long, or short horn flare is fitted externally to the front cover, and along the sides, of the enclosure, together with a metallic mounting bracket.

DB3BM Sounders
The DM3BM Sounders are identical in construction to the DB4BM Loudspeakers with the exception that the flameproof chamber contains different components, including sound generating PCB's.

Performance testing
Not applicable.

Temperature range and Electrical Data

Loudspeakers

Type Designation	Rated Voltage Max.	Rated Power	Ambient Range / Temperature Class							
			-60°C to +40°C		-60°C to +55°C		-60°C to +70°C		-60°C to +85°C	
			Gas	Dust	Gas	Dust	Gas	Dust	Gas	Dust
DB4BM	25V ac	8W	T6	T85°C	T5	T100°C	-	-	T4	T135°C
DB4BM	25V ac	15W	T5	T100°C	-	-	-	-	T4	T135°C
DB4BM	25V ac	25W	T5	T100°C	-	-	T4	T135°C	T3	T200°C
DB4BM	70V ac	8W	T6	T85°C	T5	T100°C	-	-	T4	T135°C
DB4BM	70V ac	15W	T5	T100°C	-	-	-	-	T4	T135°C
DB4BM	70V ac	25W	T5	T100°C	-	-	T4	T135°C	T3	T200°C
DB4BM	100V ac	8W	T6	T85°C	T5	T100°C	-	-	T4	T135°C
DB4BM	100V ac	15W	T5	T100°C	-	-	-	-	T4	T135°C
DB4BM	100V ac	25W	T5	T100°C	-	-	T4	T135°C	T3	T200°C

Sounders

Type Designation	Rated Voltage Range	Rated Power	Ambient Range / Temperature Class							
			-60°C to +40°C		-60°C to +55°C		-60°C to +70°C		-60°C to +85°C	
			Gas	Dust	Gas	Dust	Gas	Dust	Gas	Dust
DB3BM	12-48V dc	15W	T6	T85°C	T5	T100°C	-	-	T4	T135°C
DB3BM	110/120V ac	15W	T6	T85°C	T5	T100°C	-	-	T4	T135°C
DB3BM	220/240V ac	15W	T6	T85°C	T5	T100°C	-	-	T4	T135°C
DB3BM	254V ac	15W	T6	T85°C	T5	T100°C	-	-	T4	T135°C

Routine Tests
Routine tests according to EN 60079-1 cl. 16. are not required, as the enclosures have been successfully tested at four times the reference pressure.

[13] **Schedule**

[14] **EU-TYPE EXAMINATION CERTIFICATE No.**

UL 21 ATEX 2559X Rev. 0

[16] Descriptive Documents

The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this EU-Type Examination Certificate.

[17] Specific conditions of use:

- For replacement purposes M5 x 0.8 x 20 mm long cover bolts shall be used and shall have a property class of A2-70 or stronger. Reduced shank fasteners must be used with covers employing threaded holes. Fully threaded fasteners must be used with covers employing plain clearance holes.
- The flameproof joints are not intended to be repaired.
- Potential Electrostatic Charging Hazard. If the unit requires cleaning, only clean exterior with a damp cloth to avoid electrostatic charge build-up. See instructions for further guidance.
- If a metal certification label is attached to the horn it is known to be capable of retaining a 3.33 pF charge.

Condition of Manufacture

- The current/ power draw for DB3BM Sounder custom tones shall not exceed that of the worst-case French Fire Sound Tone (Tone 15).

[18] Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

Additional information

The trademark EATON will be used as the company identifier on the marking label.

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.

PUSH BUTTON DPDT CONTACT

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Translation

1 # EU-Type Examination Certificate

2 **Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014**

3 EU-Type Examination Certificate Number: **BVS 22 ATEX E 032 X** Issue: **00**

4 Equipment: **Control Unit**
type GHG 41.....
type GHG 43.....

5 Manufacturer: **Cooper Crouse-Hinds GmbH**

6 Address: **Neuer Weg Nord 49, 69412 Eberbach, Germany**

7 This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. BVS PP 22.2063 EU.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018	**General requirements**
EN 60079-1:2014	**Flameproof enclosure "d"**
EN IEC 60079-7:2015 + A1:2018	**Increased Safety "e"**
EN 60079-11:2012	**Intrinsic Safety "i"**
EN 60079-18:2015+A1:2017	**Encapsulation "m"**
EN 60079-31:2014	**Protection by Enclosure "t"**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed under item 17 of this certificate.

11 This EU-Type Examination Certificate relates only to the technical design of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

II 2G Ex eb * IIC/IIB/IIB+H_2 T6/T5 Gb
II 2D Ex tb IIIC T80 °C Db

*) depending on the separately certified components in type of protection type "db", "mb" and/or "ib".

DEKRA Testing and Certification GmbH
Bochum, 2022-06-13

Signed: Jörg-Timm Kilisch

Managing Director

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Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 22 ATEX E 032 X issue 00

15 **Product description**

15.1 **Subject and type**

Control Unit type GHG 41[1].[2].[3].[4]..[5].[6]….[7]

[1] Manufacturer control station programme

[2] Enclosure type

Moulded plastic	1

[3] Type

Ex i- Measuring instruments	4
Costumer special types	5
No Ex	6
NOS	7
Standard type	8
Crouse Hinds Australia	9

[4] Enclosure size

Size (85mm x 85mm x 78mm)	1
Size (85mm x 125mm x 78mm)	2
Size (85mm x 165mm x 78mm)	3

[5][6][7] Alphanumeric character string, without influence on the explosion protection

Type ****[1]*******[2] GHG411

[1] Item number of customer order

[2] Customer order number

*) Customized type code based on the standard type code

Control Unit type GHG 41[1].[2].[3].[4]..[5].[6]….[7]

[1] Manufacturer control station programme

[2] Enclosure type

Moulded plastic flange mounting	2

[3] Type

Ex i- Measuring instruments	4
Costumer special types	5
No Ex	6
NOS	7
Standard type	8
Crouse Hinds Australia	9

[4] enclosure size

Size (85mm x 125mm x 78mm)	2
Size (85mm x 165mm x 78mm)	3

[5][6][7] Alphanumeric character string, without influence on the explosion protection

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Control Unit type GHG 41[1].[2].[3].[4]..[5].[6]….[7]

[1] Manufacturer control station programme

[2] Enclosure type

Light alloy	3

[3] Type

Ex i- Measuring instruments	4
Costumer special types	5
No Ex	6
NOS	7
Standard type	8
Crouse Hinds Australia	9

[4] Enclosure size

Size (122mm x 120mm x 81mm)	4
Size (220mm x 120mm x 81mm)	5

[5][6][7] Alphanumeric character string, without influence on the explosion protection

Control Unit type GHG 41[1].[2].[3].[4]..[5].[6]….[7]

[1] Manufacturer control station programme

[2] Enclosure type

Stainless steel	4

[3] Type

Ex i- Measuring instruments	4
costumer special types	5
No Ex	6
NOS	7
standard type	8
Crouse Hinds Australia	9

[4] Enclosure size

Size (166mm x 140mm x 76mm)	1
Size (286mm x 140mm x 76mm)	2

[5][6][7] Alphanumeric character string, without influence on the explosion protection

Control Unit type GHG 41[1].[2].[3].[4]..[5].[6]….[7]

[1] Manufacturer control station programme

[2] Enclosure type

Combination of plastic enclosure GHG411*	6

[3] Type

Ex i- Measuring instruments	4
costumer special types	5
No Ex	6
NOS	7
Standard type	8
Crouse Hinds Australia	9

[4][5][6][7] Alphanumeric character string, without influence on the explosion protection

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Control Unit type GHG 43[1].[2]….[3].[4]….[5]

[1] Manufacturer control station program

[2] Enclosure size
Size (100mm x 158mm x 90mm) 2
size (100mm x 247mm x 90mm) 4

[3][4][5] Alphanumeric character string, without influence on the explosion protection

Type ****[1]*******[2] GHG43
[1] Item number of customer order
[2] Customer order number

*) Customized type code based on the standard type code

15.2 Description

The control units of the GHG41 * * * ** * **** and GHG43 * * * ** * **** are used for on-site control of electrical systems or fixed installation on electrical systems in potentially explosive areas.
The control units are built in Type of Protection increased safety “eb” und protection by enclosure “tb”.
The control units consist of plastic or metal enclosure and can be equipped with different separately certified components according “List of components” GHG9025018F0001 (terminals) und GHG9025018F0002.

15.3 Parameters

Nominal voltage	max.: 690 V AC
Nominal current	max.: 16 A
Ambient temperature range	-40°C … +55°C (GHG411/GHG412/GHG416)*
	-55°C … +55°C (GHG413/GHG414)*
	-40 °C … + 55 °C (GHG43)*

*) The maximum permitted ambient temperature depends on the Ex components used or the housing accessories used.

Parameters for marking GHG411/GHG412/GHG416

<table>
<tr><th rowspan="2">Rated Current [A]</th><th rowspan="2">Cross section [mm²]</th><th colspan="2">Permitted ignition group</th><th rowspan="2">Dust Protection</th></tr>
<tr><th>$T_{amb} \leq$ +40°C</th><th>+40°C < $T_{amb} \leq$ +55°C</th></tr>
<tr><td>6</td><td rowspan="3">1.5</td><td colspan="2">T6</td><td rowspan="2">T80°C</td></tr>
<tr><td>10</td><td>T6</td><td>T5</td></tr>
<tr><td>16</td><td colspan="3">n/a</td></tr>
<tr><td>6</td><td rowspan="3">2.5</td><td colspan="2" rowspan="2">T6</td><td rowspan="2">T80°C</td></tr>
<tr><td>10</td></tr>
<tr><td>16</td><td colspan="3">n/a</td></tr>
<tr><td>6</td><td rowspan="3">4</td><td colspan="2" rowspan="2">T6</td><td rowspan="3">T80°C</td></tr>
<tr><td>10</td></tr>
<tr><td>16</td><td>T6</td><td>T5</td></tr>
</table>

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Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

Parameters for marking GHG413

Rated Current [A]	Cross section [mm²]	Permitted ignition group		Dust Protection
		$T_{amb} \leq +40°C$	$+40°C < T_{amb} \leq +55°C$	
6	1.5	T6		T80°C
10		T6	T5	
16		n/A		
6	2.5	T6		T80°C
10				
16		T6	T5	
6	4	T6		
10				
16		T6	T5	

Parameters for marking GHG414

Rated Current [A]	Cross section [mm²]	Permitted ignition group		Dust Protection
		$T_{amb} \leq +40°C$	$+40°C < T_{amb} \leq +55°C$	
6	1.5	T6		T80°C
10		T6	T5	
16		n/a		
6	2.5	T6		T80°C
10				
16		n/a		
6	4	T6		T80°C
10				
16		T6	T5	

Parameters for marking GHG43

Rated Current [A]	Cross section [mm²]	Permitted ignition group		Dust Protection
		$T_{amb} \leq +40°C$	$+40°C < T_{amb} \leq +55°C$	
6	1.5	T6		T80°C
10		T6	T5 (T6 to T_{amb}=+54°C)	
16		n/a		
6	2.5	T6		T80°C
10				
16		T6	n/a (only with suitable cable glands + wires)	
6	4	T6		T80°C
10				

16 **Report Number**

BVS PP 22.2063 EU, as of 2022-06-13

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Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

17 **Specific Conditions of Use**

The plastic enclosures GHG411/GHG412 and GHG43 can alternatively be made of different materials.
Material "A" is conductive with a surface resistance of < 10^9 Ω.
Materials "B" and "C" are non-conductive with a surface resistance > 10^9 Ω.
The code letters are given with a preceding "Mat.:" on the type label.
With regard to the possible risk of electrostatic discharge, the relevant information in the operating instructions must be observed.

18 **Essential Health and Safety Requirements**

Met by compliance with the requirements mentioned in item 9.

19 **Remarks and additional information**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2022-06-13
BVS-Pz/MGR A 20210671 / 3423581

Managing Director

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FLAME SIMULATOR

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Notified Body 2549

EN ISO/IEC 17065
S1-499

(1) EU-TYPE EXAMINATION CERTIFICATE

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres – Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **ICQC 19 ATEX 0424 X** **Issue: 2**

(4) Equipment: **FlameSpec Detector types: FLS-IR3-ASXX, FLS-IR3-H2-ASXX, FLS-UV-IR-ASXX, FLS-UV-IR-F-ASXX**

(5) Applicant: **Fire & Gas Detection Technologies, Inc**
4222 E. La Palma Avenue, Anaheim, CA 92807, USA

(6) Manufacturer: **Fire & Gas Detection Technologies, Inc**
4222 E. La Palma Avenue, Anaheim, CA 92807, USA

(7) This equipment and any acceptable variations, also documents which are specified in the schedule to this certificate.

(8) The certification body ICQC, Notified body No. 2549 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in confidential report No. **424-01/2023/04/ATEX**

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC60079-0:2018, EN 60079-1:2014, EN 60079-7:2015, EN 60079-31:2014

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and the construction of the specified equipment in accordance with Directive 2014/34/EU. Further requirements of this Directive apply to the manufacture and supply of this equipment. These are not covered by the certificate

(12) The marking of the equipment or protective system shall include the following:

Ex **II 2 G Ex db IIC T5 Gb or II 2 G Ex db eb IIC T5 Gb and II 2D Ex tb IIIC T95 °C Db -55°C<Ta<75°C**

Ex **II 2 G Ex db IIC T4 Gb or II 2 G Ex db eb IIC T4 Gb and II 2D Ex tb IIIC T105 °C Db -55°C<Ta<85°C**

Head of Certification Body: Sergey Kovalev

International Center for Quality Certification Notified Body 2549 JŪRMALA, LATVIJA

Date of issue: 07 February 2023
Jurmala, Latvia

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(13) **SCHEDULE**

(14) **to EU-TYPE EXAMINATION CERTIFICATE: ICQC 19 ATEX 0424 X** **Issue: 2**

(15) **Description of Equipment:**

Optical Flame Detectors types: FLS-IR3-ASXX, FLS-IR3-H2-ASXX, FLS-UV-IR-ASXX, FLS-UV-IR-F-ASXX are infrared and UV/IR flame detectors, which provide fast response, high performance and reliable detection of all types of hydrocarbon and hydrogen fires (visible and non-visible).

The last four symbols in the type designation:
A – ATEX certified
S – stainless steel enclosure
X – openings for M25 (1) or 3/4" NPT (2) cable glands
X – symbol for options, not affecting explosion protection.

The flame detector consists of electronic compartment in type of protection flameproof enclosure "d" and terminal compartment in type of protection "d" or increased safety "e"with two openings 3/4" NPT or M25 for cable glands.

The cable entry devices (cable glands) shall be certified with an appropriated type of protection. Unused entries shall be closed with certified blanking elements. Installing and use of cable gland and blanking elements shall be in compliance with EN 60079-14 current edition.

The detector is intended for use as part of a complex system and can be installed indoor or outdoor. The detector has a window heater, which automatically turns on by the ambient temperature below 5^{0}C.

There are following features available in the flame detectors:
- Alarm Relay
- Fault Relay
- 4-20 mA and HART Output
- RS-485
- Data/Event logger
- Built-in-Test (BIT)

Technical characteristics:

Parameter	Value
Supply voltage	18 ... 32 V DC
Current Consumption	• Standby: 210 mA Maximum: 300 mA all systems in operation (including window heater)
Alarm Relay, SPST, Normally open and normally closed	2A at 30 VDC
Fault Relay, SPST, Normally open	
Degree of protection	IP66 / IP68
Ambient temperature range	-55°C to +75°C or -55°C to +85°C

Routine tests:
Routine tests according to cl. 7.1 of EN 60079-7 shall be conducted for Exe terminal compartment with a test voltage of 500 V
Routine tests according to cl. 16 of EN 60079-1 can be omitted because the enclosure was tested at four times reference pressure.

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Variation 1 - This variation introduced the following changes:
Manufacturer address update. Product design unchanged.

Variation 2 - This variation introduced the following changes:
Changing the design of the partition wall and cemented joint of the transit PCB between the terminal and electronic compartment.

(16) **Descriptive Documents:**

User Guide Release Number	F120V0020– FlameSpec-IR3 F150V0020– FlameSpec-IR3-H2 F110V0020 – FlameSpec-UV-IR & FlameSpec-UV-IR-F

The drawings are listed in Evaluation report No. 424-01/2023/04/ATEX

Certificate History:

Issue/Date	Evaluation report	Comment
Issue 0 from 21.01.2019	424/2019/07/ATEX	The release of the prime certificate.
Issue 1 from 11.03.2020	424/2019/07/ATEX	The introduction of Variation 1.
Issue 2 from 07.02.2023	424-01/2023/04/ATEX	The introduction of Variation 2.

(17) **Specific conditions of use:**
17.1 The Exd electronic compartment of flame detector has flamepaths which differ from those in IEC 60079-1. Repairs shall be conducted only by Fire & Gas Detection Technologies Inc.

(18) **Essential Health and Safety Requirements:**
Met by compliance with the standards mentioned in clause (9).

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SIL CERTIFICATE COLLECTION

DRAEGER GAS DETECTOR POLYTRON 8**0
FGD FLAME DETECTOR FlameSpec UV/IR
EATON BEACON SM87LED
EATON SOUNDER DB3B
EATON PUSH BUTTON SM87PB

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Product Service

CERTIFICATE

No. Z10 053474 0023 Rev. 02

Holder of Certificate: **Dräger Safety AG & Co. KGaA**
Revalstr. 1
23560 Lübeck
GERMANY

Factory(ies): 053474

Certification Mark:

Product: **Safety Related Programmable Electronic System**
Gas Transmitter

Model(s): **Dräger Polytron 8100/ 8200/ 8700/ 8720/ 8900**

Parameters:

Component Type:	Type B
Safety Architecture:	1oo1
Hardware Fault Tolerance (HFT):	0
Safety Integrity Level/ SIL capability:	SIL 2
Diagnostic Test Interval:	24h
Description of the safe state:	Configured alarm 0 .. 3,6mA
Safe state relays:	Fault indicated by Fault Relay
Safety function relays:	Alarm indicated by switching of Alarm Relay at configured alarm value

The report no. DL76801aC is a mandatory part of this certificate. The product complies with the following listed safety requirements only, if the specifications documented in the currently valid revision of this report are met.

Tested according to:
IEC 61508-1:2010
IEC 61508-2:2010
IEC 61508-3:2010
IEC 61508-4:2010
EN 50402:2017
EN 50271:2018

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition the certification holder must not transfer the certificate to third parties. See also notes overleaf.

Test report no.: DL76801aC

Valid until: 2025-07-29

Date, 2020-07-30 (Matthias Ramold)

Zertifiziervertrag
Grundlage für die Zertifikatserteilung ist die Prüf- und Zertifizierordnung von TÜV SÜD Product Service.
Mit Erhalt des Zertifikates erkennt der Zertifikatsinhaber die jeweils gültige Fassung der Prüf- und Zertifizierordnung an (www.tuev-sued.de/ps_regulations) und wird somit Partner im Zertifiziersystem von TÜV SÜD Product Service.

Prinzipielle Voraussetzung für die Gültigkeit des Zertifikates:
- Gültigkeit der zitierten normativen Prüfgrundlage(n) ist gegeben

und zusätzlich bei Zertifikaten mit Berechtigung zur Verwendung eines Prüfzeichens bzw. bei Zertifikaten für QM-Systeme:
- Voraussetzungen für vorschriftsmäßige Fertigung werden eingehalten.
- Die Fertigungs- bzw. Betriebsstätten werden regelmäßig überwacht.

Certification contract
Certification is based on the TÜV SÜD Product Service Testing and Certification Regulations.
On receipt of the certificate the certificate holder agrees to the current version of the Testing and Certification Regulations (www.tuv-sud.com/ps_regulations) and thus becomes partner in the TÜV SÜD Product Service Certification System.

Requirements for the validity of the certificate in principle:
- Validity of the quoted test standard(s)

In addition, for certificates with the right to use a certification mark and for QM certificates:
- Conditions for an adequate manufacturing are maintained
- Regular surveillance of the facility is performed

认证合约

认证基于 TÜV SÜD 产品服务《测试及认证准则》。获得证书即表明证书持有者接受当前版本的《测试及认证准则》（见 www.tuv-sud.com/ps_regulations）并成为 TÜV SÜD 产品服务认证系统内的合作伙伴。

维持证书有效性的原则要求：
- 认证所依据标准的有效性

此外，对于授权可使用认证标志的证书和质量管理体系证书：
- 保持充分的生产条件
- 生产场地通过定期的监督

認証契約

認証は TÜV SÜD Product Service の試験認証規約に基づく。認証書保持者は認証書を受領することにより最新の試験認証規約(www.tuv-sud.com/ps_regulations)に同意したものとする。その結果、TÜV SÜD Product Service 認証システムのパートナーとなる。

認証書の有効性に関する原則的な要求事項
- 引用している試験規格が有効である

さらに認証マークの使用を許諾された認証書や品質マネジメント認証書は：
- 適切な製造の条件を維持している
- 定期的な工場監査を実施している

Contrato de certificação
A certificação se baseia nos Regulamentos de Testes e Certificação do Grupo TÜV SÜD.
Ao receber o certificado, o Fornecedor, titular do certificado concorda com a versão atual dos Regulamentos de Testes e Certificação do Grupo TÜV SÜD (www.tuv-sud.com/ps_regulations) e assim, torna-se parceiro no Sistema de Certificação de Produtos e Serviços TÜV SÜD.

Requisitos para a validade do certificado (em princípio):
- Validade da(s) norma(s) de ensaio(s) referenciada(s).

Adicionalmente, para os certificados com o direito ao uso da marca de certificação e para certificados de SG:
- Condições de fabricação adequada estão mantidas.
- Auditoria de monitoração realizada regularmente.

Certificate / Certificat
Zertifikat / 合格証

FG 2112012 C001

exida hereby confirms that the:

FlameSpec series of flame detectors

for the system versions please refer to the table on the second page

Fire & Gas Detection Technologies Inc.
Anaheim, CA
USA

Have been assessed per the relevant requirements of:

IEC 61508: 2010 Parts 1-3

and meet requirements providing a level of integrity to:

Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B Element

SIL 2 @ HFT = 0; Route 1_H

PFD_{avg}, PFH and Architecture Constraints must be verified for each application

Safety Functions:

The flame detector will sense optical radiation emitted from flame sources and will set the 4-20mA output current to 20mA±0.3mA or the alarm and auxiliary relays are closed if a fire is detected.

Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

C. Krupke
Evaluating Assessor

J. Hochgraf
Certifying Assessor

The manufacturer may use the mark:

Revision 1.0 November 23, 2022
Surveillance Audit Due
November 30, 2025

ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

Certificate / Certificat / Zertifikat / 合格証

FG 2112012 C001

Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B Element

SIL 2 @ HFT=0; Route 1_H

PFD_{avg}, PFH and Architecture Constraints must be verified for each application

FlameSpec flame detector series of triple IR (IR3) and UV-IR flame detectors

Systematic Capability:

The Product has met manufacturer design process requirements of Safety Integrity Level (SIL) 2. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.
A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element.

IEC 61508 Failure Rates in FIT*

Detector model	System Version **	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
FLS-IR3 current output	F120.01.00.MMM	13	353	593	78
FLS-IR3-H2 current output	F150.01.00.MMM				
FLS-IR3 relay output	F120.01.00.MMM	13	602	528	106
FLS-IR3-H2 relay output	F150.01.00.MMM				
FLS-IR3-HD current output	F101.01.00.MMM	19	407	583	69
FLS-IR3-H2-HD current output	F140.01.00.MMM				
FLS-IR3-HD relay output	F101.01.00.MMM	19	651	527	99
FLS-IR3-H2-HD relay output	F140.01.00.MMM				
FLS-UV-IR current output	F110.01.00.MMM	0	293	611	81
FLS-UV-IR-F current output	F160.01.00.MMM				
FLS-UV-IR relay output	F110.01.00.MMM	0	542	545	108
FLS-UV-IR-F relay output	F160.01.00.MMM				
FLS-UV-IR-HD current output	F130.01.00.MMM	0	353	619	77
FLS-UV-IR-F-HD current output	F170.01.00.MMM				
FLS-UV-IR-HD relay output	F130.01.00.MMM	0	593	563	106
FLS-UV-IR-F-HD relay output	F170.01.00.MMM				

* FIT = 1 failure / 10^9 hours

** The System Version consists of HW and SW Version.

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/PFD_{avg} considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: FG 21/12-012-C R008, V1R0

Safety Manual: Safety Manual FlameSpec, Doc. No. F100V0055 Rev.06

80 N Main St
Sellersville, PA 18960

CERTIFICATE OF COMPLIANCE

Certificate Number	20151119-4786827453
Report Reference	E203310 -20151119-Description
Issue Date	2015-November-19

Issued to: Cooper MEDC
Sutton Parkway, Oddicroft Lane
Sutton-In-Ashfield, NG17 5FB, GB

This is to certify that representative samples of LED steady beacon
SM87LED

Have been investigated by UL in accordance with the Standards indicated on this Certificate.

Standard(s) for Safety: IEC 61508: 2010, "Functional safety of electrical/electronic/programmable electronic safety-related systems", 2nd Edition

Bruce A. Mahrenholz, CPO Director, North American Certification Programs

UL LLC

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CERTIFICATE OF COMPLIANCE

Certificate Number 20151119-4786827453
Report Reference E203310 -20151119-Description
Issue Date 2015-November-19

Additional Information: Complies with the requirements for the following functional safety ratings:

- SIL Capability 2, as defined by IEC 61508:2010
- Safety integrity data:
  HFT = 0
  SFF = 66.6%
  PFH = 1.97e-8/h
  PFD = 8.6e-5
  λ_S = 39.9 FIT
  λ_{DD} = 0 FIT
  λ_{DU} = 19.7 FIT

The product must be installed, operated, and maintained, in accordance with the instructions for use. See the UL Online Certifications Directory at www.ul.com/database for additional information.

Reviewed by:

Thomas Maier
Principal Engineer

Jason R. Smith
Staff Engineer

Bruce A. Mahrenholz, CPO Director, North American Certification Programs
UL LLC

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FUNCTIONAL SAFETY CERTIFICATE

This is to certify that the

DB3B & DB3BM – Sounder
DB4B & DB4BM - Loudspeaker

manufactured by

Eaton MEDC Ltd.
Unit B Sutton Parkway
Oddicroft Lane
Sutton-in-Ashfield
NG17 5FB

have been assessed by Sira Certification Service with reference to the CASS methodologies and found to meet the requirements of

IEC 61508-2:2010
Routes 1_H & 1_S
Systematic Capability (SC2)

as an element/subsystem suitable for use in safety related systems performing safety functions up to and including

SIL 1 capable with HFT=0 (1oo1) *
SIL 2 capable with HFT=1 (1oo2) *

when used in accordance with the scope and conditions of this certificate.

* This certificate does not waive the need for further functional safety verification to establish the achieved Safety Integrity Level (SIL) of the safety related system

Certification Decision: James Lynskey

Initial Certification : 09/09/2022
This certificate re-issued : 26/10/2022
Renewal date : 08/09/2027

This certificate may only be reproduced in its entirety, without any change.

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Hawarden, CH5 3US, United Kingdom
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Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Product description and scope of certification

This range of horns, suitable for fire alarm or general use, is intended for use in potentially explosive gas (G) or gas and dust (GD) atmospheres. The enclosure is manufactured from a UV stable glass reinforced polyester with a rugged thermoplastic flare. Stainless steel mounting bracket, cover screws and fixings are incorporated throughout thus ensuring a corrosion free product.

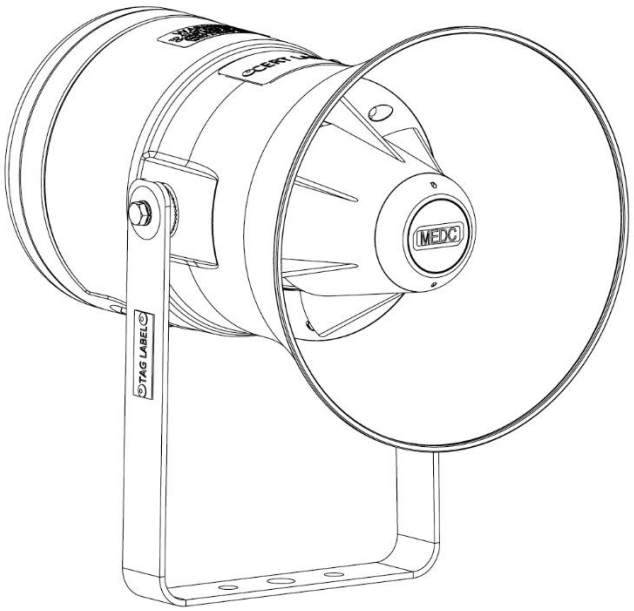


Figure 1: Typical Assembly of the DB3B(M) & DB4B(M)

Element Safety Function

The element safety function of the DB3B(M) is defined as follows:

- *The safety function of the Sounder is to provide a pre-determined audible warning sound when required if the correct voltage is applied to the unit. The DC version of the Sounder is designed to operate on a supply voltage between 12-48v dc.*

The element safety function of the DB4B(M) is defined as follows:

- *The safety function of the Speaker is to provide an audible warning when required.*

Certified Data in support of use in safety functions

The assessment has been carried out with reference to the *Conformity Assessment of Safety-related Systems* (CASS) methodology using the Route 1_H approach.

Based on the document submitted by Eaton MEDC Ltd., the Failure Mode and Effect Analysis (FMEA) of the DB3B(M) Sounder & DB4B(M) Loudspeaker has verified the documents as evidence of conformity to IEC 61508-2:2010 in respect of 'hardware safety integrity'. Component failure rates have been sourced against the failure modes using Item software reliability package.

The results in the tables below summarise the DB3B(M) Sounder & DB4B(M) Loudspeaker FMEA assessment and achieved safety integrity level.

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Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Table 1: FMEA Summary for the DB3B(M) in single mode (1oo1) and redundant mode (1oo2)

Safety Function: *To provide a pre-determined audible warning sound when required if the correct voltage is applied to the unit.*			
Summary of IEC 61508-2 Clauses 7.4.2 and 7.4.4		**DB3B(M) (1oo1)**	**DB3B(M) (1oo2)**
Architectural constraints & Type of product A/B		**HFT = 0 Type B**	**HFT = 1 Type B**
Safe Failure Fraction (SFF)		**65.9%**	**65.9%**
Random hardware failures: [h^{-1}]	λ_{DD} λ_{DU}	6.50E-09 1.16E-07	6.50E-10 1.16E-08
Random hardware failures: [h^{-1}]	λ_{SD} λ_{SU}	0.00E-00 2.18E-07	0.00E-00 2.18E-08
Diagnostic coverage (DC)		5.3%	5.3%
PFD @ PTI = 8760 Hrs. MTTR = 8 Hrs.		5.09E-04	5.09E-05
Probability of Dangerous failure (High Demand - PFH) [h^{-1}]		1.16E-07	1.16E-08
Hardware safety integrity compliance		Route 1_H	Route 1_H
Systematic safety integrity compliance		Route 1_S	Route 1_S
Systematic Capability (SC1, SC2, SC3, SC4)		**SC 2**	**SC 2**
Hardware safety integrity achieved		**SIL 1**	**SIL 2**

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Table 2: FMEA Summary for the DB4B(M) in single mode (1oo1) and redundant mode (1oo2)

Safety Function: *To provide a pre-determined audible warning sound when required if the correct voltage is applied to the unit.*		
Summary of IEC 61508-2 Clauses 7.4.2 and 7.4.4		**DB4B(M) (1oo1)**
Architectural constraints & Type of product A/B		**HFT = 0** **Type A**
Safe Failure Fraction (SFF)		**71.5%**
Random hardware failures: [h^{-1}]	λ_{DD} λ_{DU}	0.00E-00 2.88E-08
Random hardware failures: [h^{-1}]	λ_{SD} λ_{SU}	0.00E-00 7.22E-08
Diagnostic coverage (DC)		0%
PFD @ PTI = 8760 Hrs. MTTR = 8 Hrs.		1.26E-04
Probability of Dangerous failure (High Demand - PFH) [h^{-1}]		2.88E-08
Hardware safety integrity compliance		Route 1_H
Systematic safety integrity compliance		Route 1_S
Systematic Capability (SC1, SC2, SC3, SC4)		**SC 2**
Hardware safety integrity achieved		**SIL 2**

Note 1: The failure data:

1) The PFD_{AVG} figure shown is for illustration only assuming a proof test interval of 8760 hours and MTTR of 8 hours. Refer to IEC 61508-6 for guidance on PFD_{AVG} calculations from the failure data.
2) The verified failure rates used in the safe failure fraction and diagnostic coverage do not include (λ no parts or no effect) failures in the calculation.

The failure data above is supported by the base information given in Table 2 below.

Table 3: Base information for the DB3B(M) & DB4B(M)

1	Product identification:	DB3B(M) & DB4B(M)
2	Functional specification:	*DB3B(M) - To provide a pre-determined audible warning sound when required if the correct voltage is applied to the unit.* *DB4B(M) - To provide a pre-determined audible warning sound when required if the correct voltage is applied to the unit.*
3-5	Random hardware failure rates:	Refer to table 1 and 2 of this certificate.
6	Environment limits:	Operating temperature: -20 to +60 ºC.
7	Lifetime/replacement limits:	25 years
8	Proof Test requirements:	Refer to safety manual: • tm261-medc-db3b-sounder-ul • tm262-medc-db4b-loudspeaker-ul
9	Maintenance requirements:	Refer to safety manual: • tm261-medc-db3b-sounder-ul

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Web: www.csagroupuk.org

		• tm262-medc-db4b-loudspeaker-ul
10	Diagnostic coverage:	Refer to table 1 and 2 of this certificate.
11	Diagnostic test interval:	Refer to safety manual: • tm261-medc-db3b-sounder-ul • tm262-medc-db4b-loudspeaker-ul
12	Repair constraints:	Refer to safety manual: • tm261-medc-db3b-sounder-ul • tm262-medc-db4b-loudspeaker-ul
13	Safe Failure Fraction:	DB3B(M) – 65.9% DB4B(M) – 71.5%
14	Hardware fault tolerance (HFT):	Refer to table 1 and 2 of this certificate.
15	Highest SIL (architecture/type A/B):	Type A, SIL2
16	Systematic failure constraints:	See R80122812A.
17	Evidence of similar conditions in previous use:	Not applicable.
18	Evidence supporting the application under different conditions of use:	Not applicable.
19	Evidence of period of operational use:	Not applicable.
20	Statement of restrictions on functionality:	See R80122812A.
21	Systematic capability (SC1, SC2, SC3)	SC2 - See R80122812A.
22	Systematic fault avoidance measures:	See R80122812A.
23	Systematic fault tolerance measures:	See R80122812A.
24	Validation records:	See R80122812A.

Management of functional safety

The assessment has demonstrated that the product is supported by an appropriate functional safety management system that meets the relevant requirements of IEC 61508-1:2010 clause 6, see latest recertification (R800000491A).

Identification of certified equipment

The certified equipment and it's safe use is defined in the manufacturer's documentation listed in Table 3 below.

Table 4: Certified documents

Document no.	Pages	Rev	Date	Document description
419-196A	1 of 1	1	14 Apr 2014	DB3B Schematic
399-122	1 of 1	B	14 Oct 2014	DB4B Schematic
RD419-CI-008	1 to 4	-	-	DB3B Bill of Materials - PXESA156001, PXESA156002, PXESA156003, and PXESA156004 variants.

Conditions of Certification

The validity of the certified base data is conditional on the manufacturer complying with the following conditions:

1. The manufacturer shall analyse failure data from returned products on an on-going basis. Sira Certification Service shall be informed in the event of any indication that the actual failure rates are worse than the certified failure rates. (A process to rate the validity of field data should be used. To this end, the manufacturer should co-operate with users to operate a formal field-experience feedback programme).
2. Sira shall be notified in advance (with an impact analysis report) before any modifications to the certified equipment or the functional safety information in the user documentation is carried out.

Sira Certification Service
Part of CSA Group UK
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Sira may need to perform a re-assessment if modifications are judged to affect the product's functional safety certified herein.

3. On-going lifecycle activities associated with this product (e.g., modifications, corrective actions, field failure analysis) shall be subject to surveillance by Sira in accordance with 'Regulations Applicable to the Holders of Sira Certificates'.

Conditions of Safe Use

The validity of the certified base data in any specific user application is conditional on the user complying with the following conditions:

1. The user shall comply with the requirements given in the manufacturer's user documentation in regard to all relevant functional safety aspects such as application of use, installation, operation, maintenance, proof tests, maximum ratings, environmental conditions, and repair.
2. Selection of this product for use in safety function and the installation, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
3. All information associated with any field failures of this product should be collected under a dependability management process (e.g., IEC 60300-3-2) and reported to the manufacturer.
4. The safety device is to have an independent power supply, it must not share the same power supply as non-safety devices that may cause a fault to the safety device.
5. A proof test interval of 1 year.

General Conditions and Notes

1. This certificate is based upon a functional safety assessment of the product described in Sira Test & Certification Assessment Report R80122812A and any further reports referenced.
2. If the certified product or system is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The use of this Certificate and the Sira Certification Mark that can be applied to the product or used in publicity material are subject to the 'Regulations Applicable to the Holders of Sira Certificates' and 'Supplementary Regulations Specific to Functional Safety Certification'.
4. This document remains the property of Sira and shall be returned when requested by the issuer.
5. No part of the Functional safety related aspects stated in the instruction manual shall be changed without approval of the certification body.
6. This certificate will remain valid subject to completion of two surveillance audits within the five year certification cycle, and upon receipt of acceptable response to any findings raised during this period. This certificate can be withdrawn if the manufacturer no longer satisfies scheme requirements.

Certificate History

Issue	Date	Report no.	Comment
00	09/09/2022	R80122812A	The release of prime certificate.
01	26/10/2022	R80122812A	Update to assessment to include different microcontroller variants. Table 4 updated.

Sira Certification Service
Part of CSA Group UK
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
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Web: www.csagroupuk.org

1724000821-QC-DB-0006-02
566/659

CERTIFICATE OF COMPLIANCE

Certificate Number	20151118-4786827453-
Report Reference	E203310 -20151118-Description
Issue Date	2015-November-18

Issued to: Cooper MEDC
Sutton Parkway, Oddicroft Lane
Sutton-In-Ashfield, NG17 5FB, GB

This is to certify that representative samples of Manual Call Points
PB and SM87PB

Have been investigated by UL in accordance with the Standards indicated on this Certificate.

Standard(s) for Safety: IEC 61508: 2010, "Functional safety of electrical/electronic/programmable electronic safety-related systems", 2nd Edition

Additional Information: Complies with the requirements for the following functional safety ratings:

- SIL Capability 2, as defined by IEC 61508:2010
- Safety integrity data:

$\lambda_S = 134.4$ FIT
$\lambda_{DD} = 0$ FIT
$\lambda_{DU} = 34.3$ FIT
SFF = 79.7%
HFT = 0

The product must be installed, operated, and maintained, in accordance with the instructions for use. See the UL Online Certifications Directory at www.ul.com/database for additional information.

Bruce A. Mahrenholz, CPO Director, North American Certification Programs

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contactus

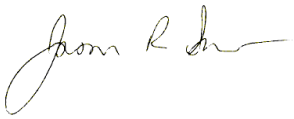
CERTIFICATE OF COMPLIANCE

Certificate Number	20151118-4786827453-
Report Reference	E203310 -20151118-Description
Issue Date	2015-November-18

Reviewed by:



Thomas Maier
Principal Engineer



Jason R. Smith
Staff Engineer

Bruce A. Mahrenholz, CPO Director, North American Certification Programs

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contactus

ATEX CERTIFICATE COLLECTION
Ref to doc. 1724000821-IN-LIS-00009 ATEX REGISTER

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

CERTIFICATE OF CONFORMITY

DRAEGER GAS DETECTOR POLYTRON 8**0
TYCO SMOKE DETECTOR MR601TEX
EATON BEACON SM87LED
EATON SOUNDER DB3B
EATON PUSH BUTTON SM87PB
EATON CONTROL STATION GHG 432
FGD FLAME DETECTOR FlameSpec UV/IR

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

EU-Konformitätserklärung
EU-Declaration of Conformity

Dokument Nr. / *Document No.* SE23109-11

Wir / *we* Dräger Safety AG & Co. KGaA, Revalstraße 1, 23560 Lübeck, Germany

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

Gasmess- Transmitter Typ E/I/XTR 04/5 (Polytron 8**0)**
*Gas Detection Instrument type E/I/XTR 04/5** (Polytron 8**0)*

mit der EU-Baumusterprüfbescheinigung / Expertise
is in conformity with the EU-Type Examination Certificate / Expertise

PTB 11 ATEX 1005 X
BVS 13 ATEX G 001 X
MEDB0000411

ausgestellt von der notifizierten Stelle mit der Kenn-Nr.
issued by the Notified Body with Identification No.

PTB
Bundesallee 100
D-38116 Braunschweig
0102

DEKRA Testing and Certification GmbH
Handwerkstr. 15
D-70565 Stuttgart
0158

DNV GL SE
Brooktorkai 18
D-20457 Hamburg
0098

und mit den folgenden Richtlinien unter Anwendung der aufgeführten Normen übereinstimmt
and is in compliance with the following directives by application of the listed standards

Bestimmungen der Richtlinie *provisions of directive*		**Nummer sowie Ausgabedatum der Norm** *Number and date of issue of standard*
2014/34/EU	**ATEX-Richtlinie** *ATEX Directive*	EN IEC 60079-0:2018, EN 60079-1:2014+AC:2018, EN IEC 60079-7:2015+A1:2018, EN 60079-11:2012, EN 60079-31:2014, EN 60079-29-1:2016 [1), 5)], EN 50104:2019 [1), 4), 5)], EN 50271:2018 [1), 4), 5)]
2014/90/EU [1), 5)]	**Schiffsausrüstungs-Richtlinie** *Marine Equipment Directive*	EN IEC 60079-0:2018, EN 60079-29-1:2016, EN 50104:2019 [4)], IEC 60092-504:2016, IEC 60533:2015
2014/30/EU	**EMV-Richtlinie** *EMC Directive*	EN 50270:2015+AC:2016 [1)] susceptibility: type 2 emission: type 1/ type 2 [3)] EN 61326-1:2013 [2)] susceptibility: industrial environment emission: group 1, class A
2014/35/EU	**Niederspannungs-Richtlinie** *Low Voltage Directive*	EN 61010-1:2010,
2011/65/EU **2015/863/EU**	**RoHS-Richtlinie** *RoHS Directive*	EN IEC 63000:2018

[1)] gilt nicht für Profibus, Foundation Fieldbus, Modbus / not applicable to Profibus, Foundation Fieldbus, Modbus.
[2)] nur für Profibus, Foundation Fieldbus, Modbus / only applicable to Foundation Fieldbus, Modbus.
[3)] für ETR 042*/052* (UGLD) nur type 2 / for ETR 042*/052* (UGLD) type 2 only.
[4)] nur für ETR 040*, ETR 050*, Sauerstoff / only applicable to ETR 040*, ETR 050*, oxygen. Gilt nicht für Remote installierten EC-Sensing Head / not applicable to remote installed EC-Sensing Head.
[5)] gilt nicht für ETR 042*/052* (UGLD) / not applicable to ETR 042*/052* (UGLD).

Überwachung der Qualitätssicherung Produktion durch
Surveillance of Quality Assurance Production by

DEKRA Testing and Certification GmbH
Handwerkstr. 15
D-70565 Stuttgart
0158

DNV GL SE
Brooktorkai 18
D-20457 Hamburg
0098

Zertifikat-Nr.:
Certificate No.:

MEDD00000TF, Rev. No.: xx

Lübeck, 2021-12-09

Ort und Datum (jjjj-mm-tt)
Place and date (yyyy-mm-dd)

Dr. Marcus Romba
Head of Electronic Engineering
Head of Product Qualification
Safety Products
Research & Development

Declaration of Conformity (EU and UK)

0598 1180

Manufacturer: **Tyco Fire & Security GmbH**

Address: **Victor von Bruns-Strasse 21,**
8212 Neuhausen am Rheinfall
Switzerland

Declares in its sole responsibility, that the following product(s):

Conventional IS detectors: **MD601Ex, MDU601Ex, MD611Ex, MR601TEx**

Are in conformity with following EU-directive(s), UK regulation(s) and related Standard(s):

EU Directive:	**2014/30/EU**	**EMC Directive**
Applied standard(s):	EN 61000-6-3:2007 + A1:2011	EMC - Emission
	EN 50130-4:2011	EMC - Immunity
UK Statutory Instruments:	**UKSI 2016:1091**	**Electromagnetic Compatibility Regulations 2016**
Applied standard(s):	BS EN 61000-6-3:2007 + A1:2011	EMC - Emission
	BS EN 50130-4:2011	EMC - Immunity
EU Directive :	**2014/34/EU**	**Explosive atmospheres (ATEX)**
Equipment and protective systems intended for use in potentially explosive atmospheres (ATEX) as amended by Directive 2014/34/EU Certificate No. BAS01ATEX1134X issued by the Notified Body SGS Fimko Oy, Takomotie 8, FI-00380 Helsinki, Finland (EU Notified Body Number: 0598) and certificate number BAS21UKEX0611X issued by Notified Body SGS Baseefa Ltd, Rockhead Business Park, Staden Lane, Buxton, Derbyshire, SK17 9RZ (Notified Body No. 1180) in accordance with Regulation 43 of the Equipment and Protective Systems intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended by UKSI 2019:696). **AND** Quality Assurance Notification No. BASUKQAN1747 and Baseefa ATEX 1747 issued by the Notified Body SGS Baseefa Ltd, (Notified Body No. 1180) and SGS Fimko (Notified body number 0598) respectively.		
Applied standard(s):	EN 60079-0:2018	General requirements
	EN 60079-11:2012	Protection by intrinsic safety "i"
Product Markings:	Ex II 1 GD Ex ia IIC T5 Ga Ex ia IIIB T_{200}100°C Da	

Place & date: Sunbury, 16. February 2023

Name: Faruk Meah

Position: Senior Manager - R&D

Signature:

EU DECLARATION OF CONFORMITY - ATEX

Model **Refer to Table 1 for Product Model Types**

Address

Eaton MEDC Ltd
Unit B,
Sutton Parkway,
Oddicroft Lane,
Sutton-In-Ashfield,
NG17 5FB

Responsibility ***This declaration is issued under the sole responsibility of Eaton MEDC LTD***

Object ***This declaration is for equipment intended for use in potentially explosive atmospheres, For provisions of the Directive fulfilled by the equipment please refer to the individual certificates in Table 1.***

Legislation ***The declaration described above is in conformity with the relevant Union harmonisation legislation, Directive 2014/34/EU***

Table 1

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
14XX and 24XX Pan and Tilt Cameras (XF,XP,XC,XT)	EN 60079-0:2012, EN 60079-1:2014; EN60079-11:2012, EN60079-28:2015, EN60079-31:2014	EN 60079-0:2012/A11:2013	ITS16ATEX101021X	Intertek 0359
BG2E Call Point	EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, EN 60079-18:2009, IEC60364-4-41:2005	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, EN 60079-18:2015, EN60079-31:2009, IEC60364-4-41:2005.	BAS02ATEX2105X	SGS FIMCO Oy 0598
BG3I Call Point	EN 50014:1997 & AMDS 1 & 2, EN 50020:1994, EN 50284:1999,	EN 60079-0:2012/A11:2013, EN 60079-11:2012, EN 60079-26:2015, IEC60364-4-41:2005	BAS00ATEX1067X	SGS FIMCO Oy 0598
BGE Call Point	EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, EN 60079-18:2009, IEC60364-4-41:2005	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, EN 60079-18:2015	BAS02ATEX2105X	SGS FIMCO Oy 0598
BGI Call Point	EN 60079-0:2012, EN 60079-11:2012, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013	Baseefa03ATEX0084X	SGS FIMCO Oy 0598
Crowcon Type Flamguard	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0416	SGS FIMCO Oy 0598
Crowcon Type Txgard	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0416	SGS FIMCO Oy 0598
CU1 Combination Unit	EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-7:2015, EN 60079-1:2014	Baseefa04ATEX0273X	SGS FIMCO Oy 0598
DB1 Sounder	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa02ATEX0207X	SGS FIMCO Oy 0598
DB10 Speaker IIB +H2	EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-7:2015, EN 60079-1:2014	Baseefa11ATEX0101X	SGS FIMCO Oy 0598
DB10 Speaker IIC	EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-7:2015, EN 60079-1:2014	Baseefa11ATEX0102X	SGS FIMCO Oy 0598
DB16 IIB Speaker	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50019:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2007, IEC60364-4-41:2005.	Baseefa04ATEX0166X	SGS FIMCO Oy 0598
DB17 IIB Speaker	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50019:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2007, IEC60364-4-41:2005.	Baseefa05ATEX0055X	SGS FIMCO Oy 0598
DB18 Speaker	EN 50014:1997 & AMDS 1 & 2, EN 50021:1999, EN 60079-15:2003	EN 60079-0:2012/A11:2013, EN 60079-15:2010, IEC60364-4-41:2005.	N/A	SGS FIMCO Oy 0598
DB1H Sounder	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa02ATEX0209	SGS FIMCO Oy 0598
DB20 IIB Speaker	EN 60079-0:2004, EN 60079-1:2004, EN 60079-7:2003	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2007, IEC60364-4-41:2005	Baseefa05ATEX0198X,	SGS FIMCO Oy 0598
DB20 IIC Speaker	EN 60079-0:2004, EN 60079-1:2004, EN 60079-7:2003, IEC61241-0:2004, IEC61241-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014, IEC60364-4-41:2005	Baseefa05ATEX0199X,	SGS FIMCO Oy 0598
DB3 Sounder	EN 50014:1997 & AMDS 1 & 2, EN 50018:1994, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005	BAS00ATEX2097X	SGS FIMCO Oy 0598
DB3/SM87HXB Combination Unit	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50281-1-1:1998 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0054X	SGS FIMCO Oy 0598
DB3B G Sounder	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0229X	SGS FIMCO Oy 0598
DB3B GD Sounder	EN 60079-0:2012, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, EN 60079-31:2014	Baseefa13ATEX0231X	SGS FIMCO Oy 0598
DB3BE G Sounder	EN 60079-0:2012, EN 60079-1:2007, EN60079-7:2007, IEC60364-4-41:2005.	EN60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015	Baseefa13ATEX0232X	SGS FIMCO Oy 0598
DB3BE GD Sounder	EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, EN 60079-31:2014,	Baseefa13ATEX0233X	SGS FIMCO Oy 0598
DB3E Sounder	EN 50014:1997 & AMDS 1 & 2, EN 50018:1994, EN 50019:1994, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2007, IEC60364-4-41:2005	BAS00ATEX2098X	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
DB4 Speaker	EN 50014:1997 & AMDS 1 & 2, EN 50018:1994, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005	BAS00ATEX2097X	SGS FIMCO Oy 0598
DB4B G Speaker	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0229X	SGS FIMCO Oy 0598
DB4B GD Speaker	EN 60079-0:2012, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-31:2014, EN 60079-1:2014	Baseefa13ATEX0231X	SGS FIMCO Oy 0598
DB4BE G Speaker	EN 60079-0:2012, EN 60079-1:2007, EN60079-7:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013	Baseefa13ATEX0232X	SGS FIMCO Oy 0598
DB4BE GD Speaker	EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012:A11:2013, EN 60079-7:2015, EN 60079-31:2014	Baseefa13ATEX0233X	SGS FIMCO Oy 0598
DB4E Speaker	EN 50014:1997 & AMDS 1 & 2, EN 50018:1994, EN 50019:1994, EN 50281-1-1:1998.	EN 60079-0:2012/A11:2013, EN 60079-1:2007, EN 60079-7:2015, IEC60364-4-41:2005	BAS00ATEX2098X	SGS FIMCO Oy 0598
DB5 Sounder	EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013 EN 60079-26:2015	BAS00ATEX1259X	SGS FIMCO Oy 0598
DB51 Sounder	EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013 EN 60079-26:2015	BAS00ATEX1259X	SGS FIMCO Oy 0598
DB51M Sounder	EN 50014:1997 + Amds 1 & 2, EN 50020:1994, EN 50303:2000,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013 EN 60079-11:2012	MECS01ATEX4260	SGS FIMCO Oy 0598
DB6 Sounder	IEC 60079-0:2007 Edition 5, EN 60079-1:2007 Edition 6	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0257,	SGS FIMCO Oy 0598
DB7 Sounder	EN 50014:1997 & AMDS 1 & 2, EN 50020:1994, EN 50284:1999	EN 60079-0:2012/A11:2013, EN 60079-11:2012, EN 60079-26:2015, IEC60364-4-41:2005	BAS00ATEX1260	SGS FIMCO Oy 0598
FB11 Filament Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS99ATEX2195X	SGS FIMCO Oy 0598
FB12 Filament Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS99ATEX2196X	SGS FIMCO Oy 0598
FB15 Filament Beacon	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa04ATEX0009X, IECEx BAS 05.0048X	SGS FIMCO Oy 0598
FB4 Filament Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa02ATEX0224X	SGS FIMCO Oy 0598
FB4E Filament Beacon	EN 60079-0:2006, EN 60079-1:2004, EN 60079-7:2007,EN 61241-0:2006, EN 61241-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, EN 60079-31:2014.	Baseefa02ATEX0224X	SGS FIMCO Oy 0598
FGB1, FGB2. FBG3 Gland Blank Component	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0392U	SGS FIMCO Oy 0598
FL11 Fluorescent Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012A11:2013, EN 60079-1:2014	BAS99ATEX2195X	SGS FIMCO Oy 0598
FL12 Fluorescent Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS99ATEX2196X	SGS FIMCO Oy 0598
FL4 Fluorescent Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa02ATEX0224X	SGS FIMCO Oy 0598
FL4E Fluorescent Beacon	EN 60079-0:2006, EN 60079-1:2004, EN60079-7:2007,EN61241-0:2006, EN61241-1:2004	EN 60079-0:2012, EN 60079-1:2014, EN 60079-31:2014, IEC60364-4-41:2005	Baseefa02ATEX0224X	SGS FIMCO Oy 0598
FSR1 Lighting Fitting Unit	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005	Baseefa03ATEX0405	SGS FIMCO Oy 0598
GboX Range	EN 60079-0:2012, EN 60079-7:2007, EN60079-31:2014, EN60079-28:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013 EN 60079-7:2015	CML14ATEX3045	CML 2503
GP1 Audio Control	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005	Baseefa02ATEX0030	SGS FIMCO Oy 0598
GP1 Control A15	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0098	SGS FIMCO Oy 0598
GP1 Control A5	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005	Baseefa04ATEX0164	SGS FIMCO Oy 0598
GP1 Control B15	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0174	SGS FIMCO Oy 0598
GP1 Control B5	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0249	SGS FIMCO Oy 0598
GP1 Control C5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0326	SGS FIMCO Oy 0598
GP1 Control D1	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa11ATEX0047	SGS FIMCO Oy 0598
GP1 Control D5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0386	SGS FIMCO Oy 0598
GP1 Control E5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0387	SGS FIMCO Oy 0598
GP1 Control F5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0079	SGS FIMCO Oy 0598
GP1 Control G5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0217	SGS FIMCO Oy 0598
GP1 Control H5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0200	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
GP1 Control J4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS01ATEX2362	SGS FIMCO Oy 0598
GP1 Control J5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0085	SGS FIMCO Oy 0598
GP1 Control K4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS01ATEX2381	SGS FIMCO Oy 0598
GP1 Control K5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0106	SGS FIMCO Oy 0598
GP1 Control L5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0103	SGS FIMCO Oy 0598
GP1 Control M4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0008	SGS FIMCO Oy 0598
GP1 Control M5	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0160	SGS FIMCO Oy 0598
GP1 Control N4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0042	SGS FIMCO Oy 0598
GP1 Control N5	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0012	SGS FIMCO Oy 0598
GP1 Control P4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0047	SGS FIMCO Oy 0598
GP1 Control P5	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0079	SGS FIMCO Oy 0598
GP1 Control R4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0038	SGS FIMCO Oy 0598
GP1 Control R5	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa10ATEX0073	SGS FIMCO Oy 0598
GP1 Control S4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0039	SGS FIMCO Oy 0598
GP1 Control S5	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa14ATEX0010	SGS FIMCO Oy 0598
GP1 Control T4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0040	SGS FIMCO Oy 0598
GP1 Control V4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0138	SGS FIMCO Oy 0598
GP1 Control W4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0238	SGS FIMCO Oy 0598
GP1 Control Y4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0369	SGS FIMCO Oy 0598
GP1 Control Z4	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0165	SGS FIMCO Oy 0598
GP1 Distribution A15	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0230	SGS FIMCO Oy 0598
GP1 Distribution Board D	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa12ATEX0120	SGS FIMCO Oy 0598
GP1 Pump Control A2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0221	SGS FIMCO Oy 0598
GP1 Starter	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0296	SGS FIMCO Oy 0598
GP1 Starter B	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0055	SGS FIMCO Oy 0598
GP1 Starter C	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0243	SGS FIMCO Oy 0598
GP1 Terminal Box C	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2032	SGS FIMCO Oy 0598
GP175 Component Enclosure	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS01ATEX2008U	SGS FIMCO Oy 0598
GP2 CCTV Panel 1	EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0190	SGS FIMCO Oy 0598
GP2 Choke Unit	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0283	SGS FIMCO Oy 0598
GP2 Comms A1	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0222	SGS FIMCO Oy 0598
GP2 Component Enclosure	EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014.	BAS01ATEX2010U	SGS FIMCO Oy 0598
GP2 Control A15	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0234	SGS FIMCO Oy 0598
GP2 Control A2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0237	SGS FIMCO Oy 0598
GP2 Control A3	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0177	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
GP2 Control B2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0009	SGS FIMCO Oy 0598
GP2 Control B3	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0180	SGS FIMCO Oy 0598
GP2 Control C2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0370	SGS FIMCO Oy 0598
GP2 Control C3	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0269	SGS FIMCO Oy 0598
GP2 Control C4	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0370	SGS FIMCO Oy 0598
GP2 Control C5	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0265	SGS FIMCO Oy 0598
GP2 Control D2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0508	SGS FIMCO Oy 0598
GP2 Control D3	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0267	SGS FIMCO Oy 0598
GP2 Control E2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0579	SGS FIMCO Oy 0598
GP2 Control E3	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0271	SGS FIMCO Oy 0598
GP2 Control F2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0263	SGS FIMCO Oy 0598
GP2 Control F3	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa10ATEX0110	SGS FIMCO Oy 0598
GP2 Control G2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0259	SGS FIMCO Oy 0598
GP2 Control G3	EN 60079-0:2009, EN 60079-1:2007, EN60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa12ATEX0068	SGS FIMCO Oy 0598
GP2 Control H2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0282	SGS FIMCO Oy 0598
GP2 Control H3	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa12ATEX0135	SGS FIMCO Oy 0598
GP2 Control J2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0040	SGS FIMCO Oy 0598
GP2 Control K2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0044	SGS FIMCO Oy 0598
GP2 Control L1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS01ATEX2323	SGS FIMCO Oy 0598
GP2 Control L2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0072	SGS FIMCO Oy 0598
GP2 Control M1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS01ATEX2443	SGS FIMCO Oy 0598
GP2 Control M2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0070	SGS FIMCO Oy 0598
GP2 Control N1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS01ATEX2442	SGS FIMCO Oy 0598
GP2 Control N2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0152	SGS FIMCO Oy 0598
GP2 Control P1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2024	SGS FIMCO Oy 0598
GP2 Control P2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0218	SGS FIMCO Oy 0598
GP2 Control Q	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0203	SGS FIMCO Oy 0598
GP2 Control R2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0115	SGS FIMCO Oy 0598
GP2 Control S2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0176	SGS FIMCO Oy 0598
GP2 Control T1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2139	SGS FIMCO Oy 0598
GP2 Control T2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0215	SGS FIMCO Oy 0598
GP2 Control V1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2142	SGS FIMCO Oy 0598
GP2 Control V2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0261	SGS FIMCO Oy 0598
GP2 Control W1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2178	SGS FIMCO Oy 0598
GP2 Control W2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0257	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
GP2 Control Y1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0138	SGS FIMCO Oy 0598
GP2 Control Y2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0350	SGS FIMCO Oy 0598
GP2 Control Z1	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa02ATEX0229	SGS FIMCO Oy 0598
GP2 Control Z2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0175	SGS FIMCO Oy 0598
GP2 Distribution D	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0003	SGS FIMCO Oy 0598
GP2 Distribution G	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0243	SGS FIMCO Oy 0598
GP2 Distribution H	EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014	Baseefa11ATEX0216	SGS FIMCO Oy 0598
GP2 Distribution J	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa12ATEX0118	SGS FIMCO Oy 0598
GP2 EMC A1 Unit	EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014	Baseefa12ATEX0047	SGS FIMCO Oy 0598
GP2 MCCB A15	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0236	SGS FIMCO Oy 0598
GP2 MCCB Enclosure D	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0086	SGS FIMCO Oy 0598
GP2 Starter A1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa11ATEX0137	SGS FIMCO Oy 0598
GP2 Terminal Box A	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0022	SGS FIMCO Oy 0598
GP2 Transformer A	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0056	SGS FIMCO Oy 0598
GP2 Twin PSU	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0213	SGS FIMCO Oy 0598
GP3 Auto C/O Panel	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2034	SGS FIMCO Oy 0598
GP3 Busbar Unit B	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0238	SGS FIMCO Oy 0598
GP3 Control A15	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0035	SGS FIMCO Oy 0598
GP3 Control A17	EN 60079-0:2012/A11:2013, EN 60079-1:2007	EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa17ATEX0035	SGS FIMCO Oy 0598
GP3 Control A2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2047	SGS FIMCO Oy 0598
GP3 Control A3	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0096	SGS FIMCO Oy 0598
GP3 Control B2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2138	SGS FIMCO Oy 0598
GP3 Control C2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2137	SGS FIMCO Oy 0598
GP3 Control D2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2133	SGS FIMCO Oy 0598
GP3 Control F2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2216	SGS FIMCO Oy 0598
GP3 Control G2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0029	SGS FIMCO Oy 0598
GP3 Control H2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0262	SGS FIMCO Oy 0598
GP3 Control J2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0240	SGS FIMCO Oy 0598
GP3 Control K2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0230	SGS FIMCO Oy 0598
GP3 Control L2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0249	SGS FIMCO Oy 0598
GP3 Control M2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0644	SGS FIMCO Oy 0598
GP3 Control N2	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0206	SGS FIMCO Oy 0598
GP3 Control P2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0327	SGS FIMCO Oy 0598
GP3 Control Q	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0380	SGS FIMCO Oy 0598
GP3 Control Q1	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2231	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
GP3 Control Q2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0112	SGS FIMCO Oy 0598
GP3 Control R2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0123X	SGS FIMCO Oy 0598
GP3 Control S2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0115	SGS FIMCO Oy 0598
GP3 Control T2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0320	SGS FIMCO Oy 0598
GP3 Control V2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0125	SGS FIMCO Oy 0598
GP3 Control W2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0158	SGS FIMCO Oy 0598
GP3 Control Y	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa10ATEX0140	SGS FIMCO Oy 0598
GP3 Control Y2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0287	SGS FIMCO Oy 0598
GP3 Control Z2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0080	SGS FIMCO Oy 0598
GP3 Distribution A1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0111	SGS FIMCO Oy 0598
GP3 DOL Starter D	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2066	SGS FIMCO Oy 0598
GP3 Fuse Panel A	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2215	SGS FIMCO Oy 0598
GP3 Isolator E	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2208	SGS FIMCO Oy 0598
GP3 MCCB A15	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0235	SGS FIMCO Oy 0598
GP3 Soft start Unit	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS02ATEX2210	SGS FIMCO Oy 0598
GP3 Soft start Unit A	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa10ATEX0162	SGS FIMCO Oy 0598
GP3 Starter Panel	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0727	SGS FIMCO Oy 0598
GP3 Transformer C	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0281	SGS FIMCO Oy 0598
GP3 Twin Starter B	EN 60079-0:2009, EN 60079-1:2007,IEC60364-4-41:2005	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS01ATEX2382X	SGS FIMCO Oy 0598
GP3 Twin Starter C	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0224	SGS FIMCO Oy 0598
GP300 Component Enclosure	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS01ATEX2009U	SGS FIMCO Oy 0598
GP4 Component Enclosure	EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014	Baseefa05ATEX0016U	SGS FIMCO Oy 0598
GP4 Control A1	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0284	SGS FIMCO Oy 0598
GP4 Control B1	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0151	SGS FIMCO Oy 0598
GP4 Control C1	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0212	SGS FIMCO Oy 0598
GP4 Control D1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0308	SGS FIMCO Oy 0598
GP4 Control E1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0014	SGS FIMCO Oy 0598
GP4 Control F1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0109	SGS FIMCO Oy 0598
GP4 Control G1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0049	SGS FIMCO Oy 0598
GP4 Control H1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0234	SGS FIMCO Oy 0598
GP4 Control H2	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa14ATEX0161	SGS FIMCO Oy 0598
GP4 Control J1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0162	SGS FIMCO Oy 0598
GP4 Control K2	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa10ATEX0095	SGS FIMCO Oy 0598
GP4 Control L1	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa12ATEX0176	SGS FIMCO Oy 0598
GP4 Distribution A1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0071	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
GP4 Distribution B1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa11ATEX0138	SGS FIMCO Oy 0598
GP4 VSD Unit	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa10ATEX0248	SGS FIMCO Oy 0598
GRP Terminal Chamber Component Enclosure	EN 50014:1997 & AMDS 1 & 2, EN 50019:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa02ATEX0223U	SGS FIMCO Oy 0598
HD1 Exd IIB Heat Detector	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014, IEC60364-4-41:2005	Baseefa03ATEX0447	SGS FIMCO Oy 0598
HD1 Exd IIC Heat Detector	EN 60079-0:2006, EN 60079-1:2007, EN 61241-0:2006, EN 61241-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN60079-31:2009, IEC60364-4-41:2005.	Baseefa08ATEX0320	SGS FIMCO Oy 0598
HD1 Exe Heat Detector	EN 50014:1997 & AMDS 1 & 2, EN 50019:2000, EN 50028:1987 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, EN 60079-18:2015.	Baseefa03ATEX0428	SGS FIMCO Oy 0598
HD1 Exi Heat Detector	EN 60079-0:2012, EN 60079-11:2012, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013	Baseefa03ATEX0427	SGS FIMCO Oy 0598
HL1 Head Light Unit	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0404X	SGS FIMCO Oy 0598
HMI 5 - PAGA Acess Panel	EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007	EN 60079-0:2012/A11:2013 EN 60079-26:2015	ITS13ATEX27897X	Intertek 0359
HMI Br - Safety Interface Board	EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007	EN 60079-0:2012/A11:2013 EN 60079-26:2015	ITS13ATEX27896X	Intertek 0359
HMI Mute & HMI Mute (D)	EN 60079-0:2012/A11:2013, EN 60079-1:2007, EN 60079-11:2012, EN 60079-26:2007	EN 60079-1:2014	ITS14ATEX2853X	Intertek 0359
HS5 High Pressure Sodium Beacon	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50019:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, IEC60364-4-41:2005	Baseefa02ATEX0225X	SGS FIMCO Oy 0598
JB10 Junction Box	IEC 60079-0:2011, EN 60079-7:2007	EN 60079-0:2012/A11:2013 EN 60079-7:2015	Baseefa12ATEX0039X	SGS FIMCO Oy 0598
JB11 Junction Box	IEC 60079-0:2011, EN 60079-7:2007	EN 60079-0:2012/A11:2013 EN 60079-7:2015	Baseefa12ATEX0039X	SGS FIMCO Oy 0598
JL 4/2 Control Unit A18	EN 60079-0:2012 +A11:2013, EN 60079-1:2014	N/A	BaseefaATEX0055	SGS FIMCO Oy 0598
JL1/2 Component Enclosure	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0129U	SGS FIMCO Oy 0598
JL4/2 CCTV Panel 1	EN 60079-0:2012, EN 60079-1:2007	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa16ATEX0176	SGS FIMCO Oy 0598
JL4/2 Component Enclosure	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0130U	SGS FIMCO Oy 0598
JL4/2 Control A14	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa14ATEX0275	SGS FIMCO Oy 0598
JL4/2 Control A2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0395	SGS FIMCO Oy 0598
JL4/2 Control B2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0396	SGS FIMCO Oy 0598
JL4/2 Control C2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0397	SGS FIMCO Oy 0598
JL4/2 Control D2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0020	SGS FIMCO Oy 0598
JL4/2 Control E2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0077	SGS FIMCO Oy 0598
JL4/2 Control F2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0124	SGS FIMCO Oy 0598
JL4/2 Control G2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0145	SGS FIMCO Oy 0598
JL4/2 Control H2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0179	SGS FIMCO Oy 0598
JL4/2 Control J2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0210	SGS FIMCO Oy 0598
JL4/2 Control K2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0231	SGS FIMCO Oy 0598
JL4/2 Control L	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0495	SGS FIMCO Oy 0598
JL4/2 Control L2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0102	SGS FIMCO Oy 0598
JL4/2 Control M	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN60079-31:2009, IEC60364-4-41:2005.	Baseefa03ATEX0497	SGS FIMCO Oy 0598
JL4/2 Control M2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0216	SGS FIMCO Oy 0598
JL4/2 Control N	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN60079-31:2009, IEC60364-4-41:2005.	Baseefa03ATEX0565	SGS FIMCO Oy 0598
JL4/2 Control N2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0087	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
JL4/2 Control P	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN60079-31:2009, IEC60364-4-41:2005.	Baseefa03ATEX0662	SGS FIMCO Oy 0598
JL4/2 Control P2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0147	SGS FIMCO Oy 0598
JL4/2 Control R	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0752	SGS FIMCO Oy 0598
JL4/2 Control R2	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0219	SGS FIMCO Oy 0598
JL4/2 Control S	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0017	SGS FIMCO Oy 0598
JL4/2 Control S2	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0348	SGS FIMCO Oy 0598
JL4/2 Control T	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa04ATEX0107	SGS FIMCO Oy 0598
Jl4/2 Control T2	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0128	SGS FIMCO Oy 0598
JL4/2 Control V	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0127	SGS FIMCO Oy 0598
JL4/2 Control V2	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa10ATEX0114	SGS FIMCO Oy 0598
JL4/2 Control W	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0125	SGS FIMCO Oy 0598
JL4/2 Control W2	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa10ATEX0153	SGS FIMCO Oy 0598
JL4/2 Control Y	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0174	SGS FIMCO Oy 0598
JL4/2 Control Y2	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa10ATEX0152	SGS FIMCO Oy 0598
JL4/2 Control Z	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0385	SGS FIMCO Oy 0598
JL4/2 Fibre Optics Control A	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0250	SGS FIMCO Oy 0598
JL4/2 I/S Relay Unit A	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0176	SGS FIMCO Oy 0598
JL4/2 Junction Box A	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN60079-31:2009, IEC60364-4-41:2005.	Baseefa03ATEX0496	SGS FIMCO Oy 0598
JL4/2 Surge Suppressor	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa07ATEX0088	SGS FIMCO Oy 0598
JL4/2 Twin Starter A	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN60079-31:2009, IEC60364-4-41:2005.	Baseefa03ATEX0560	SGS FIMCO Oy 0598
JL4/2 Twin Starter Unit	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0044	SGS FIMCO Oy 0598
JL4/3 CCTV Panel 1	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa16ATEX0001	SGS FIMCO Oy 0598
JL4/3 CCTV Panel 2	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa16ATEX0110	SGS FIMCO Oy 0598
JL4/3 Component Enclosure	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0131U	SGS FIMCO Oy 0598
JL4/3 Control A1	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0229	SGS FIMCO Oy 0598
JL4/3 Control A2	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0193	SGS FIMCO Oy 0598
JL4/3 Control B1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0018	SGS FIMCO Oy 0598
JL4/3 Control C1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa08ATEX0135	SGS FIMCO Oy 0598
JL4/3 Control D1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0021	SGS FIMCO Oy 0598
JL4/3 Control E1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0106	SGS FIMCO Oy 0598
JL4/3 Control F2	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0260	SGS FIMCO Oy 0598
JL4/3 Control G1	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0271	SGS FIMCO Oy 0598
JL4/3 Control H2	EN 60079-0:2006, EN 60079-1:2007	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa10ATEX0151	SGS FIMCO Oy 0598
JL4/3 Control J1	EN 60079-0:2006, EN 60079-1:2007	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa11ATEX0009	SGS FIMCO Oy 0598
JL4/3 Control K1	EN 60079-0:2006, EN 60079-1:2007	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa11ATEX0100	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
JL4/3 Control L1	EN 60079-0:2006, EN 60079-1:2007	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa11ATEX0144	SGS FIMCO Oy 0598
JL4/3 Control M1	EN 60079-0:2006, EN 60079-1:2007	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa11ATEX0148	SGS FIMCO Oy 0598
JL4/3 Control S	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa03ATEX0162	SGS FIMCO Oy 0598
JL4/3 Control T	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0201	SGS FIMCO Oy 0598
JL4/3 Control Y	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0332	SGS FIMCO Oy 0598
JL4/3 Control Z	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa05ATEX0180	SGS FIMCO Oy 0598
JL4/3 Distribution A	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0047	SGS FIMCO Oy 0598
JL4/3 Distribution B	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0255	SGS FIMCO Oy 0598
JL4/3 Main Isolator	EN 60079-0:2006, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa09ATEX0338	SGS FIMCO Oy 0598
JL4/3 MCB A15	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa15ATEX0217	SGS FIMCO Oy 0598
JL4/3 Selector Switch	EN 60079-0:2004, EN 60079-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa06ATEX0351	SGS FIMCO Oy 0598
JL4/3 Surge A1	EN 60079-0:2012, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0216	SGS FIMCO Oy 0598
JL4/3 Twin Starter	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	Baseefa04ATEX0129	SGS FIMCO Oy 0598
LD15 Led Beacon	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa04ATEX0009X, IECEx BAS 05.0048X	SGS FIMCO Oy 0598
MCJ1	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0123	SGS FIMCO Oy 0598
MCP1	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0125	SGS FIMCO Oy 0598
MCS1	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0083	SGS FIMCO Oy 0598
MCS2	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0084	SGS FIMCO Oy 0598
MCS7 MCS7W	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009,IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa13ATEX0124	SGS FIMCO Oy 0598
PBE Call Point	EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, EN 60079-18:2009, EN60079-31:2009,IEC60364-4-41:2005	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015 EN 60079-18:2015	BAS02ATEX2105X	SGS FIMCO Oy 0598
PBI Call Point	EN 60079-0:2012, EN 60079-11:2012, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013	Baseefa03ATEX0084X	SGS FIMCO Oy 0598
PH1 Pull Handle	EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014	ITSATEX17308X	Intertek 0359
Resistor Block Unit	EN 50014:1997 & AMDS 1 & 2, EN 50028:1987	EN 60079-0:2012/A11:2013, EN 60079-18:2015, IEC60364-4-41:2005.	Baseefa03ATEX0672U	SGS FIMCO Oy 0598
SL15 Status Light - Filament Beacon	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa04ATEX0009X, IECEx BAS 05.0048X	SGS FIMCO Oy 0598
SL15 Status Light - LED Beacon	EN 60079-0:2012, EN 60079-1:2007, EN60079-31:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa04ATEX0009X, IECEx BAS 05.0048X	SGS FIMCO Oy 0598
SL15 Status Light - Xenon Beacon	EN 60079-0:2012, EN 60079-1:2014, EN60079-31:2014, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa04ATEX0009X, IECEx BAS 05.0048X	SGS FIMCO Oy 0598
SL5 Status Light	EN 60079-0:2009, EN 60079-7:2007, EN 60079-18:2009, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013 EN 60079-7:2015, EN 60079-18:2015	BAS02ATEX2108	SGS FIMCO Oy 0598
SM87 Camera Enclosure	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014, IEC60364-4-41:2005	Baseefa03ATEX0706	SGS FIMCO Oy 0598
SM87 Display Enclosure	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50281-1-1:1998	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014, IEC60364-4-41:2005	Baseefa03ATEX0707	SGS FIMCO Oy 0598
SM87 IIB Component Enclosure	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0345U	SGS FIMCO Oy 0598
SM87 IIC Component Enclosure	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa09ATEX0018U	SGS FIMCO Oy 0598
SM87BGLD Call Point	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0075	SGS FIMCO Oy 0598
SM87BGLI Call Point	EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-11:2012, EN 60079-26:2015	Baseefa02ATEX0152X	SGS FIMCO Oy 0598
SM87HXB Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0222	SGS FIMCO Oy 0598
SM87JB Junction Box	EN 60079-0:2006, EN 60079-1:2007, EN 61241-0:2006, EN 61241-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014, IEC60364-4-41:2005	Baseefa03ATEX0463	SGS FIMCO Oy 0598

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards	EC Type Examination Certificate Number	Issued by Notified Body and Number
SM87LBGLD Call Point	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0075	SGS FIMCO Oy 0598
SM87LBGLI Call point	EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-11:2012, EN 60079-26:2015	Baseefa02ATEX0152X	SGS FIMCO Oy 0598
SM87LED Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0222	SGS FIMCO Oy 0598
SM87LU1 Fluorescent Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0222	SGS FIMCO Oy 0598
SM87LU3 Filament Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0222	SGS FIMCO Oy 0598
SM87PBD Call Point	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0075	SGS FIMCO Oy 0598
SM87PBI Call Point	EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-11:2012, EN 60079-26:2015	Baseefa02ATEX0152X	SGS FIMCO Oy 0598
SM87PBMD Call Point	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0075	SGS FIMCO Oy 0598
SM87PBMI Call Point	EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-11:2012, EN 60079-26:2015	Baseefa02ATEX0152X	SGS FIMCO Oy 0598
SM87XBT Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	Baseefa03ATEX0222	SGS FIMCO Oy 0598
TH12 Rotating Beacon	EN 50014:1997, EN 50018:1994	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005.	BAS99ATEX2196X	SGS FIMCO Oy 0598
TH5 Rotating Beacon	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50019:2000	EN 60079-0:2012/A11:2013, EN60079-1:2007, IEC60364-4-41:2005.	Baseefa02ATEX0225X	SGS FIMCO Oy 0598
VMI-1410 Camera Housing and VMI 1420 Pan and Tilt	EN 60079-0:2006, EN 60079-1:2007, EN 61241-0:2006, EN 61241-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014	ITS08ATEX15927X	Intertek 0359
VMI-2410-xx Camera Housing and VMI-2420-xx Pan/Tilt Unit	EN 60079-0:2006, EN60079-1:2007, EN61241-0:2006, EN 61241-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014	ITS08ATEX15950X	Intertek 0359
XB10 Camera Unit Enclosure	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50281-1-1:1998 AMD 1	EN 60079-0:2012/A11:2013, EN 60079-1:2014, IEC60364-4-41:2005	Baseefa04ATEX0406X	SGS FIMCO Oy 0598
XB10 Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS00ATEX2204X	SGS FIMCO Oy 0598
XB10E Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015	BAS00ATEX2226X	SGS FIMCO Oy 0598
XB11 Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60079-31:2008, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS99ATEX2195X	SGS FIMCO Oy 0598
XB12 Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS99ATEX2196X	SGS FIMCO Oy 0598
XB15 Xenon Beacon	EN 60079-0:2012, EN 60079-1:2014, EN60079-31:2014, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013	Baseefa04ATEX0009X, IECEx BAS 05.0048X	SGS FIMCO Oy 0598
XB4 Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, EN60079-7:2007, EN 61241-0:2006, EN 61241-1:2004	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, IEC60079-31:2013.	Baseefa02ATEX0224X	SGS FIMCO Oy 0598
XB5 Xenon Beacon	EN 50014:1997 & AMDS 1 & 2, EN 50018:2000 & AMD 1, EN 50019:2000	EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-7:2015, IEC60364-4-41:2005	Baseefa02ATEX0225X	SGS FIMCO Oy 0598
XB8 Xenon Beacon	EN 60079-0:2009, EN 60079-11:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-11:2012	BAS02ATEX1258	SGS FIMCO Oy 0598
XB9 Xenon Beacon	EN 60079-0:2009, EN 60079-1:2007, IEC60364-4-41:2005.	EN 60079-0:2012/A11:2013, EN 60079-1:2014	BAS00ATEX2031	SGS FIMCO Oy 0598

Notified Body for Production	SGS FIMCO 0598

EU DECLARATION OF CONFORMITY - EMC

Model **Refer to Table 2 for Product Model Types**

Legislation ***The declaration described above is in conformity with the relevant Union harmonisation legislation, Directive 2014/30/EU***

Table 2

Product Model Types	These products have been designed, Manufactured & Tested in accordance with the following standards	And there are no changes required to enable compliance to the harmonised replacement standards
14XX and 24XX Pan and Tilt Cameras (XF,XP,XC,XT)	EN61000-6-2 :1998, EN 61000-6-4:2007, FCC CFR 47:2015 Part 15.107 and 15.109	EN 61000-6-2:2005, EN 61000-6-4:2007+A1:2011, FCC CFR 47:2015 Part 15.107 and 15.109
CU1 Combination Unit	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
DB1 Sounder	EN 61000-6-2:2005, EN 61000-6-3:2007	EN 61000-6-3:2007+A1:2011/AC:2012
DB1H Sounder	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
DB3 Sounder	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
DB12 Sounder	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
DB15 Sounder	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
DB3B Sounder	EN 61000-6-2-2005, EN 61000-6-4:2007+A1:2011	N/A
DB5 Sounder	EN 61000-6-2:2005, EN 61000-6-3:2007	EN 61000-6-3:2007+A1:2011/AC:2012
DB6 Sounder	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
DB7 Sounder	This declaration is for equipment intended for use in	EN 61000-6-3:2007+A1:2011/AC:2012
FL11 Fluorescent Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
FL12 Fluorescent Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
FL4 Fluorescent Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
LD15 Led Beacon	EN 61000-6-2-2005, EN 61000-6-4:2007+A1:2011	N/A
SL5 Status Light	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
SL15 Status Light - LED Beacon	EN 61000-6-2-2005, EN 61000-6-4:2007+A1:2011	N/A
SL15 Status Light - Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-3:2007	EN 61000-6-3:2007+A1:2011/AC:2012
SM87HXB Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
SM87LED Beacon	EN 61000-6-2:2005, EN 61000-6-3:2007	EN 61000-6-3:2007+A1:2011/AC:2012
SM87LU1 Fluorescent Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
TH12 Rotating Beacon	EN 61000-6-2:2005, EN 61000-6-3:2007	EN 61000-6-3:2007+A1:2011/AC:2012
VMI-1410 Camera Housing and VMI 1420 Pan and Tilt Including 14XX Hybrid Models For Use With 24XX Series	EN61000-6-2 :1998, EN 61000-6-4:2007, FCC CFR 47:2015 Part 15.107 and 15.109	EN 61000-6-2:2005, EN 61000-6-4:2007+A1:2011, FCC CFR 47:2015 Part 15.107 and 15.109
VMI-2410-xx Camera Housing and VMI-2420-xx Pan/Tilt Unit	EN61000-6-2 :1998, EN 61000-6-4:2007, FCC CFR 47:2015 Part 15.107 and 15.109	EN 61000-6-2:2005, EN 61000-6-4:2007+A1:2011, FCC CFR 47:2015 Part 15.107 and 15.109
XB10 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
XB11 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-3:2007	EN 61000-6-4:2007+A1:2011
XB12 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
XB13 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
XB15 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-3:2007	EN 61000-6-3:2007+A1:2011/AC:2012
XB4 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
XB8 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011
XB9 Xenon Beacon	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-4:2007+A1:2011

On behalf of the above named company, I declare that,on the date the equipment accompanied by this declaration is placed on the market, it conforms with all technical and regulatory requirements of the above listed directives

M. Swindell
Certification Manager
Date: 24th June 2019. Sutton-In-Ashfield

Powering Business Worldwide

EU-Konformitätserklärung
EU-Declaration of conformity
UE-Déclaration de conformité

BVS 22 ATEX E032 X (1)

GHG 900 1000 P0227 -

Wir / *We / Nous*

Cooper Crouse-Hinds GmbH
Neuer Weg-Nord 49
D-69412 Eberbach

erklären in alleiniger Verantwortung, dass das Produkt
hereby declare in our sole responsibility, that the product
déclarons de notre seule responsabilité, que le produit

Steuergeräte
control units
boites de commande

⟨Ex⟩ II 2 G / ⟨Ex⟩ II 2 D

GHG 411, 412, 43. .... R ....

den folgenden EU-Richtlinien, den entsprechenden harmonisierten Normen, und weiteren normativen Dokumenten entspricht.
complies with the following EU directives, their corresponding harmonised standards, and other normative documents.
correspond aux directives européennes suivantes, à leurs normes harmonisées, et aux autres documents normatifs suivants.

Bestimmungen der Richtlinie Terms of the directive *Prescription de la directive*		Titel und / oder Nr. sowie Ausgabedatum der Norm *Title and / or No. and date of issue of the standard* *Titre et / ou No. ainsi que date d'émission des normes:*
2014/34/EU: 2014/34/EU: 2014/34/UE:	Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen. *Equipment and protective systems intended for use in potentially explosive atmospheres.* *Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles.* *(OJ L 96, 29.3.2014, p. 309–356)*	EN IEC 60 079-0: 2018 EN 60 079-1: 2014 EN IEC 60 079-7: 2015+A1:2018 EN 60 079-11: 2012 (x) EN 60 079-18: 2015+A1:2017 (x) EN 60 079-31: 2014 **(x)** je nach angewandter Zündschutzart, acc. to type of protection, selon type de protection
		EN 60 947-1: 2007 + A1: 2011 + A2: 2014 EN 60 947-5-1: 2004 + A1: 2009 EN 61 010-1: 2010 EN 60 529: 1991 + A1: 2000 + A2: 2013
2014/30/EU: 2014/30/EU: 2014/30/UE:	Elektromagnetische Verträglichkeit *Electromagnetic compatibility* *Compatibilité électromagnétique* *(OJ L 96, 29.3.2014, p. 79–106)*	EN 61 326-1: 2013 EN 55 015: 2013
2011/65/EU: 2011/65/UE:	RoHS –Richtlinie, *RoHS – directive,* *Directive RoHS* *(OJ L 174, 01.7.2011, p. 88–110 as well as their subsequent amendments in place at the date of this declaration)*	EN IEC 63 000: 2018

Eberbach, den 05.09.2022

Ort und Datum
Place and date
Lieu et date

Dr. Matthias Stelzer
Geschäftsführer
Managing Director
Président-directeur général

ppa. Volker Daul
Leitender Controller
Senior Controller
Contrôleur principal

(1) Benannte Stelle (EU-Baumusterprüfbescheinigung)
Notified body (EU-type examination certificate)
Organisme notifié (Examen UE de type)

DEKRA Testing and Certification GmbH (0158)
Dinnendahlstraße 9
D-44809 Bochum

BVS 20 ATEX ZQS/E332 (2)

(2) Benannte Stelle (Qualitätssicherung Produktion)
Notified body (Production Quality Assurance)
Organisme notifié (Assurance Qualité de Production)

DEKRA Testing and Certification GmbH (0158)
Dinnendahlstraße 9
D-44809 Bochum

Für den sicheren Betrieb des Betriebsmittels sind die Angaben der zugehörigen Betriebsanleitung zu beachten.
For the safe use of this equipment, the information given in the accompanying operating instructions must be followed.
Afin d'assurer le bon fonctionnement de nos appareils, prière de respecter les directives du mode d'emploi correspondant à ceux-ci.

EC DECLARATION OF CONFORMITY

Fire & Gas Detection Technologies Inc. declares under our sole responsibility that our equipment or protective system conform to the relevant safety and health related requirements of the appropriate EU directive.

Equipment or protective system	FlameSpec UV-IR Flame Detector
Model No.	FLS-UV-IR-ASXX
Serial No.	
ATEX Directive	**2014/34/EU**
Approval Body	ICQC LTD 63-19, Skolas Street, Jurmala, LV-2016 Latvia
Notified body No.	2549
EC Certificate Number(s):	ICQC19ATEX 424X
Reference Standards	EN 60079-0:2018, EN 0079-1:2014, EN 60079-7 :2015, EN 60079-31 :2014
Markings	 II2G Ex db IIC T6 Gb or Ex db eb IIC T5 Gb II2D Ex tb IIIC T80°C Db -55°C<Ta<60°C  II2G Ex db IIC T5 Gb or Ex db eb IIC T5 Gb II2D Ex tb IIIC T95°C Db -55°C<Ta<75°C  II2G Ex db IIC T4 Gb or Ex db eb IIC T4 Gb II2D Ex tb IIIC T105°C Db -55°C<Ta<85°C

EMC Directive	**2014/30/EU**
Reference Standards	EN50130-4 :2011 EN6100-6-4 :2007/A1 :2011
CPR Construction Product Regulation	**2011/305/EU**
Notified body	ÉMI Építésügyi Minőségellenőrző Innovációs Nonprofit Kft. Hungary
Notified body number	1415
EC Certificate Number(s)	1415-CPR-92-(C-63/2019)
Harmonized standard	EN 54-10:2002/A1:2005

Name : Idan Celeste

Date : **30/9/2024**

Signature :



TEST REPORT
GAS DETECTOR
FLAME DETECTOR

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Calibration Certificates



Dräger Marine & Offshore has a long history of providing dedicated support to their customers, by supplying a wide range of quality products and services to a global audience for marine and offshore. This approach facilitates a Firefighting, Rescue and Safety (FRS) equipment and service capability from a single source. The Dräger Marine & Offshore organisation is built around the proven total care FRS concept.

Dräger Marine & Offshore

Project : **PR.23.034.0**
Date : **06-09-2024**
Version : **01**

Dräger. Technology for Life®

Contents

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2 H2 Ultrasonic leak detector – Polytron 8900 9

3 O2 Point detector - Polytron 8100 19

Dräger Nederland B.V.
Marine & Offshore
Beurtschipperstraat 1
NL-3194 DK Hoogvliet-RT
Telephone :+31(0)10-2952710
Web: www.draeger-mo.nl
E-mail: service-mo.sd.nl@draeger.com

Calibration Certificate: Gas Detector Polytron 8200 H2

Certificaat: Gas Detector Polytron 8200 H2

Date *Datum*	Validity [months] *Geldigheid [maanden]*	Vessel / Installation *Scheepsnaam / Installatie*	Certificate No *Certificaat Nr*
28-06-2024	**12**	**Base Load Power Hub (BLPH)**	**PR.23.034.0 - CS-24002463**

The gas detectors are inspected and calibrated as described in this certificate. The used calibration gasses are traceable according to (inter)national standards.
De gasdetectoren zijn geïnspecteerd en gekalibreerd zoals beschreven in dit certificaat. De gebruikte kalibratiegassen zijn traceerbaar vorlgens de (inter)nationale standaards..

Sensor no	Manufacturer	Type	Serial no	Barcode	GDS panel	Location	Remark
950-GDZ-02101	Dräger	Dräger: Polytron 8200	ARTC-2193	FC4576951	N/A	N/A	New Delivery
950-GDZ-02102	Dräger	Dräger: Polytron 8200	ARTC-2196	FC4576952	N/A	N/A	New Delivery
950-GDZ-02103	Dräger	Dräger: Polytron 8200	ARTC-2197	FC4576953	N/A	N/A	New Delivery
950-GDZ-02104	Dräger	Dräger: Polytron 8200	ARTB-1620	FC4576954	N/A	N/A	New Delivery
950-GDZ-02105	Dräger	Dräger: Polytron 8200	ARTC-2185	FC4576955	N/A	N/A	New Delivery
950-GDZ-02106	Dräger	Dräger: Polytron 8200	ARTC-2201	FC4576956	N/A	N/A	New Delivery
950-GDZ-02107	Dräger	Dräger: Polytron 8200	ARTC-2206	FC4576957	N/A	N/A	New Delivery
950-GDZ-02108	Dräger	Dräger: Polytron 8200	ARTC-2198	FC4576958	N/A	N/A	New Delivery
950-GDZ-02109	Dräger	Dräger: Polytron 8200	ARTC-2203	FC4576959	N/A	N/A	New Delivery

DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN UDISSEL

PO# : 123A90

Signed by: .....

Dräger Nederland B.V.
Marine & Offshore
Beurtschipperstraat 1
NL-3194 DK Hoogvliet-RT
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Calibration Certificate: Gas Detector Polytron 8200 H2

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950-GDZ-02110	Dräger	Dräger: Polytron 8200	ARTC-2204	FC4576960	N/A	N/A	New Delivery
950-GDZ-02111	Dräger	Dräger: Polytron 8200	ARTB-1618	FC4576961	N/A	N/A	New Delivery
950-GDZ-02112	Dräger	Dräger: Polytron 8200	ARTC-2192	FC4576962	N/A	N/A	New Delivery
950-GDZ-02113	Dräger	Dräger: Polytron 8200	ARTC-2207	FC4576963	N/A	N/A	New Delivery
950-GDZ-02114	Dräger	Dräger: Polytron 8200	ARTC-2200	FC4576964	N/A	N/A	New Delivery
950-GDZ-02115	Dräger	Dräger: Polytron 8200	ARTB-1615	FC4576965	N/A	N/A	New Delivery
950-GDZ-02116	Dräger	Dräger: Polytron 8200	ARTC-2208	FC4576966	N/A	N/A	New Delivery
950-GDZ-04201	Dräger	Dräger: Polytron 8200	ARTB-1611	FC4576967	N/A	N/A	New Delivery
950-GDZ-04202	Dräger	Dräger: Polytron 8200	ARTB-1625	FC4576968	N/A	N/A	New Delivery
950-GDZ-04203	Dräger	Dräger: Polytron 8200	ARTB-1631	FC4576969	N/A	N/A	New Delivery
950-GDZ-04204	Dräger	Dräger: Polytron 8200	ARTC-2205	FC4576970	N/A	N/A	New Delivery

DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN UDISSEL

PO# : 123A90

Signed by: .....

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950-GDZ-04205	Dräger	Dräger: Polytron 8200	ARTC-2202	FC4576971	N/A	N/A	New Delivery
950-GDZ-04206	Dräger	Dräger: Polytron 8200	ARTB-1613	FC4576972	N/A	N/A	New Delivery
950-GDZ-04207	Dräger	Dräger: Polytron 8200	ARTB-1635	FC4576973	N/A	N/A	New Delivery
950-GDZ-04208	Dräger	Dräger: Polytron 8200	ARTB-0199	FC4576974	N/A	N/A	New Delivery
950-GDZ-04209	Dräger	Dräger: Polytron 8200	ARTB-1633	FC4576975	N/A	N/A	New Delivery
950-GDZ-04210	Dräger	Dräger: Polytron 8200	ARTB-1619	FC4576976	N/A	N/A	New Delivery
950-GDZ-04211	Dräger	Dräger: Polytron 8200	ARTB-1628	FC4576977	N/A	N/A	New Delivery
950-GDZ-04212	Dräger	Dräger: Polytron 8200	ARTB-1627	FC4576978	N/A	N/A	New Delivery
950-GDZ-04213	Dräger	Dräger: Polytron 8200	ARTB-0202	FC4576979	N/A	N/A	New Delivery
950-GDZ-04214	Dräger	Dräger: Polytron 8200	ARTB-1616	FC4576980	N/A	N/A	New Delivery
950-GDZ-04215	Dräger	Dräger: Polytron 8200	ARTB-1621	FC4576981	N/A	N/A	New Delivery

PO# : 123A90

Signed by: .....

DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN DISSEL

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Certificaat: Gas Detector Polytron 8200 H2

Date *Datum*	Validity [months] *Geldigheid [maanden]*	Vessel / Installation *Scheepsnaam / Installatie*	Certificate No *Certificaat Nr*
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De gasdetectoren zijn geïnspecteerd en gekalibreerd zoals beschreven in dit certificaat. De gebruikte kalibratiegassen zijn traceerbaar vorlgens de (inter)nationale standaards..

950-GDZ-04216	Dräger	Dräger: Polytron 8200	ARTB-1614	FC4576982	N/A	N/A	New Delivery
950-GDZ-04217	Dräger	Dräger: Polytron 8200	ARTB-1610	FC4576983	N/A	N/A	New Delivery
950-GDZ-04218	Dräger	Dräger: Polytron 8200	ARTC-2199	FC4576984	N/A	N/A	New Delivery
950-GDZ-05101	Dräger	Dräger: Polytron 8200	ARTB-1626	FC4576985	N/A	N/A	New Delivery
950-GDZ-05102	Dräger	Dräger: Polytron 8200	ARTB-1623	FC4576986	N/A	N/A	New Delivery
950-GDZ-05103	Dräger	Dräger: Polytron 8200	ARTB-1622	FC4576987	N/A	N/A	New Delivery
950-GDZ-05104	Dräger	Dräger: Polytron 8200	ARSD-0457	FC4576988	N/A	N/A	New Delivery
950-GDZ-05105	Dräger	Dräger: Polytron 8200	ARTB-1612	FC4576989	N/A	N/A	New Delivery
950-GDZ-05106	Dräger	Dräger: Polytron 8200	ARTB-1617	FC4576990	N/A	N/A	New Delivery
950-GDZ-06201	Dräger	Dräger: Polytron 8200	ARTB-1634	FC4576991	N/A	N/A	New Delivery
950-GDZ-06202	Dräger	Dräger: Polytron 8200	ARTB-1629	FC4576992	N/A	N/A	New Delivery

DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN DISSEL

PO# : 123A90

Signed by: .....

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Date *Datum*	Validity [months] *Geldigheid [maanden]*	Vessel / Installation *Scheepsnaam / Installatie*	Certificate No *Certificaat Nr*
28-06-2024	**12**	**Base Load Power Hub (BLPH)**	**PR.23.034.0 - CS-24002463**

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950-GDZ-06203	Dräger	Dräger: Polytron 8200	ARTB-1639	FC4576993	N/A	N/A	New Delivery
950-GDZ-06204	Dräger	Dräger: Polytron 8200	ARTB-1637	FC4576994	N/A	N/A	New Delivery
950-GDZ-06205	Dräger	Dräger: Polytron 8200	ARTB-0204	FC4576995	N/A	N/A	New Delivery
950-GDZ-06206	Dräger	Dräger: Polytron 8200	ARSD-0466	FC4576996	N/A	N/A	New Delivery
950-GDZ-03104	Dräger	Dräger: Polytron 8200	ARTB-1624	FC4576997	N/A	N/A	New Delivery
950-GDZ-03105	Dräger	Dräger: Polytron 8200	ARTB-1630	FC4576998	N/A	N/A	New Delivery
950-GDZ-01103	Dräger	Dräger: Polytron 8200	ARTB-0194	FC4576999	N/A	N/A	New Delivery
xxx-xxx-xxxxx	Dräger	Dräger: Polytron 8200	ARTB-0185	FC4577000	N/A	N/A	New Delivery

Sensor type	Zero gas	Calibration setting
EC	H2	Detection range 0-100% LEL H2

DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN UDISSEL

PO# : 123A90

Signed by: .....

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Dräger

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1676

Sound Pressure Level / Schallpegel:	96,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

This Certificate was generated automatically and is valid without signature.
Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1682

Sound Pressure Level / Schallpegel:	95,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

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Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1681

Sound Pressure Level / Schallpegel:	95,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

This Certificate was generated automatically and is valid without signature.
Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1683

Sound Pressure Level / Schallpegel:	96,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

This Certificate was generated automatically and is valid without signature.
Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1680

Sound Pressure Level / Schallpegel:	95,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

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Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Dräger

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1685

Sound Pressure Level / Schallpegel:	95,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

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Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Dräger

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1686

Sound Pressure Level / Schallpegel:	97,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

This Certificate was generated automatically and is valid without signature.
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Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Dräger

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1688

Sound Pressure Level / Schallpegel:	96,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

This Certificate was generated automatically and is valid without signature.
Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1684

Sound Pressure Level / Schallpegel:	96,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

This Certificate was generated automatically and is valid without signature.
Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Safety AG & Co. KGaA
Revalstraße 1
D - 23560 Lübeck
Germany

Dräger

Factory Calibration Certificate

Kalibrierzertifikat

Product / Produkt:	Polytron 8900 UGLD d S 4-20/HART relay
Part Number / Sachnummer:	8328030
Serial Number / Seriennummer:	ARTA-1687

Sound Pressure Level / Schallpegel:	97,0 dB
Max. Deviation / max. Abweichung:	± 3 dB

The calibration was performed consistent with procedure described in instructions for use.
Die Kalibrierung erfolgte äquivalent zu dem in der Gebrauchsanweisung beschriebenen Verfahren.

Date of Calibration / Datum der Kalibrierung: 31.01.2024

This Certificate was generated automatically and is valid without signature.
Dieses Zertifikat wurde automatisch generiert und ist ohne Unterschrift gültig.

The calibration was done in accordance to the Dräger Quality System, certified by the German TÜV to meet ISO 9001.
Die Durchführung der Kalibrierung erfolgt nach den Vorgaben des Dräger Qualitätssystems und entspricht den Anforderungen der ISO 9001 Zertifizierung.

Dräger Nederland B.V.
Marine & Offshore
Beurtschipperstraat 1
NL-3194 DK Hoogvliet-RT
Telephone :+31(0)10-2952710
Web: www.draeger-mo.nl
E-mail: service-mo.sd.nl@draeger.com

Calibration Certificate: Gas Detector Polytron 8100 O2

Certificaat: Gas Detector Polytron 8100 O2

Date *Datum*	Validity [months] *Geldigheid [maanden]*	Vessel / Installation *Scheepsnaam / Installatie*	Certificate No *Certificaat Nr*
28-06-2024	**12**	**Base Load Power Hub (BLPH)**	**PR.23.034.0 - CS-24002463**

The gas detectors are inspected and calibrated as described in this certificate. The used calibration gasses are traceable according to (inter)national standards.
De gasdetectoren zijn geïnspecteerd en gekalibreerd zoals beschreven in dit certificaat. De gebruikte kalibratiegassen zijn traceerbaar vorlgens de (inter)nationale standaards..

Sensor no	Manufacturer	Type	Serial no	Barcode	GDS panel	Location	Remark
950-GDZ-03107	Dräger	Dräger: Polytron 8100	ARTA-4693	FC4537338	N/A	N/A	New Delivery
950-GDZ-03108	Dräger	Dräger: Polytron 8100	ARTA-4680	FC4537339	N/A	N/A	New Delivery
950-GDZ-03109	Dräger	Dräger: Polytron 8100	ARTA-4689	FC4537340	N/A	N/A	New Delivery
xxx-xxx-xxxxx	Dräger	Dräger: Polytron 8100	ARTA-4678	FC4537341	N/A	N/A	New Delivery

Sensor type	Zero gas	Calibration setting
EC	O2	Detection Range: 0.5 – 100 Vol.%

DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN DISSEL

PO# : 123A90

Signed by: .....

FIRE & GAS DETECTION TECHNOLOGIES INC.

4222 E La Palma Ave
Anaheim, CA 92807

CERTIFICATE OF CONFORMANCE

Fire and Gas Detection Technologies, Inc hereby certifies that the products serial numbers listed below have been fully tested in accordance with the FGDT test procedure and have successfully fulfilled the following requirements:

- Complete functional test to ensure product meets specification.
- Final performance test.
- Final inspection including functional test and visual verifications.

Product Type: Flame Detector/ FLS-UV-IR-AS21

Qty: 23

Sales Order Number: SO 24000271

Date of Shipment: 07/18/2024

Product Serial Number(s): 604927, 605167, 606438, 606448, 606461, 606470, 606487, 606494, 606521, 606523, 606524, 606525, 606527, 606528, 606529, 606530, 606531, 606564, 606568, 606569, 606572, 606575, 606576

07/18/2024

Quality Assurance / Date

FIRE & GAS DETECTION TECHNOLOGIES INC.

4222 E La Palma Ave
Anaheim, CA 92807

CERTIFICATE OF CONFORMANCE

Fire and Gas Detection Technologies, Inc hereby certifies that the products serial numbers listed below have been fully tested in accordance with the FGDT test procedure and have successfully fulfilled the following requirements:

- Complete functional test to ensure product meets specification.
- Final performance test.
- Final inspection including functional test and visual verifications.

Product Type: Flame Simulator/ FLS-FSIM-UV-IR

Qty: 1

Sales Order Number: SO 24000271

Date of Shipment: 07/18/2024

Product Serial Number(s): 1544

07/18/2024

Quality Assurance / Date

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 604927

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
26/03/2024 22:13	Calibrate	Anaheim Station 6	Detector Identity Test	True	-
26/03/2024 22:13	Calibrate	Anaheim Station 6	Detector Sub Model Type	True	-
26/03/2024 22:14	Calibrate	Anaheim Station 6	Calibrate Sensors From Master	True	-
26/03/2024 22:14	Calibrate	Anaheim Station 6	Clear Logs	True	-
26/03/2024 22:16	Calibrate	Anaheim Station 6	TestFilters	True	-
26/03/2024 22:17	Calibrate	Anaheim Station 6	Bit Normal Test	True	-
26/03/2024 22:18	Calibrate	Anaheim Station 6	Bit Failure Test	True	-
26/03/2024 22:18	Calibrate	Anaheim Station 6	Bit Returns to Normal Test	True	-
26/03/2024 22:18	Calibrate	Anaheim Station 6	Basic Identification Test	True	-
14/05/2024 19:50	Lab_Tests	Anaheim Tech 2	Detector Identity Test	True	-
14/05/2024 19:50	Lab_Tests	Anaheim Tech 2	Detector Sub Model Type	True	-
14/05/2024 19:50	Lab_Tests	Anaheim Tech 2	Verify Dielectric Test	True	-
14/05/2024 20:00	Lab_Tests	Anaheim Tech 2	Set voltage to 24V	True	-
14/05/2024 19:59	Lab_Tests	Anaheim Tech 2	Verify Green Led	True	-

14/05/2024 19:51	Lab_Tests	Anaheim Tech 2	Noise Level	True	-
14/05/2024 19:53	Lab_Tests	Anaheim Tech 2	Bit Manual Test	True	-
14/05/2024 19:54	Lab_Tests	Anaheim Tech 2	Check Total Current 24V	True	-
14/05/2024 19:54	Lab_Tests	Anaheim Tech 2	Check HART on 4-20	True	-
14/05/2024 19:55	Lab_Tests	Anaheim Tech 2	Heater Test	True	-
14/05/2024 19:57	Lab_Tests	Anaheim Tech 2	Set voltage to 18V	True	-
14/05/2024 19:58	Lab_Tests	Anaheim Tech 2	Check Total Current 18V	True	-
14/05/2024 19:59	Lab_Tests	Anaheim Tech 2	Set voltage to 32V	True	-
14/05/2024 19:59	Lab_Tests	Anaheim Tech 2	Check Total Current 32V	True	-
14/05/2024 20:00	Lab_Tests	Anaheim Tech 2	Check 4/20 Current and Relays	True	-
14/05/2024 20:01	Lab_Tests	Anaheim Tech 2	Alarm Test	True	-
14/05/2024 20:02	Lab_Tests	Anaheim Tech 2	Verify Red Led	True	-
14/05/2024 20:02	Lab_Tests	Anaheim Tech 2	Check Error Flags	True	-
14/05/2024 20:02	Lab_Tests	Anaheim Tech 2	Verify Visual Inspection	True	-
14/05/2024 20:02	Lab_Tests	Anaheim Tech 2	Basic Identification Test	True	-
17/05/2024 23:27	TempChamber	-	Temp Chamber Report	True	-
20/05/2024 15:35	Clean_Before_Delivery	Anaheim Tech 2	Detector Identity Test	True	-
20/05/2024 15:35	Clean_Before_Delivery	Anaheim Tech 2	Detector Sub Model Type	True	-
20/05/2024 15:37	Clean_Before_Delivery	Anaheim Tech 2	TestFilters	True	-
20/05/2024 15:38	Clean_Before_Delivery	Anaheim Tech 2	Check Total Current 24V	True	-
20/05/2024 15:39	Clean_Before_Delivery	Anaheim Tech 2	Bit Normal Test no write	True	-
20/05/2024 15:39	Clean_Before_Delivery	Anaheim Tech 2	Check Error Flags	True	-
20/05/2024 15:39	Clean_Before_Delivery	Anaheim Tech 2	Clear Logs	True	-
20/05/2024 15:39	Clean_Before_Delivery	Anaheim Tech 2	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 605167

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
07/05/2024 16:11	Calibrate	Anaheim Station 1	Detector Identity Test	True	-
07/05/2024 16:11	Calibrate	Anaheim Station 1	Detector Sub Model Type	True	-
07/05/2024 16:13	Calibrate	Anaheim Station 1	Calibrate Sensors From Master	True	-
07/05/2024 16:13	Calibrate	Anaheim Station 1	Clear Logs	True	-
07/05/2024 16:14	Calibrate	Anaheim Station 1	TestFilters	True	-
07/05/2024 16:16	Calibrate	Anaheim Station 1	Bit Normal Test	True	-
07/05/2024 16:17	Calibrate	Anaheim Station 1	Bit Failure Test	True	-
07/05/2024 16:17	Calibrate	Anaheim Station 1	Bit Returns to Normal Test	True	-
07/05/2024 16:17	Calibrate	Anaheim Station 1	Basic Identification Test	True	-
08/05/2024 16:18	Lab_Tests	Anaheim Station 2	Detector Identity Test	True	-
08/05/2024 16:18	Lab_Tests	Anaheim Station 2	Detector Sub Model Type	True	-
08/05/2024 16:19	Lab_Tests	Anaheim Station 2	Verify Dielectric Test	True	-
08/05/2024 16:24	Lab_Tests	Anaheim Station 2	Set voltage to 24V	True	-
08/05/2024 16:24	Lab_Tests	Anaheim Station 2	Verify Green Led	True	-

08/05/2024 16:20	Lab_Tests	Anaheim Station 2	Noise Level	True	-
08/05/2024 16:20	Lab_Tests	Anaheim Station 2	Bit Manual Test	True	-
08/05/2024 16:20	Lab_Tests	Anaheim Station 2	Check Total Current 24V	True	-
08/05/2024 16:21	Lab_Tests	Anaheim Station 2	Check HART on 4-20	True	-
08/05/2024 16:21	Lab_Tests	Anaheim Station 2	Heater Test	True	-
08/05/2024 16:22	Lab_Tests	Anaheim Station 2	Set voltage to 18V	True	-
08/05/2024 16:22	Lab_Tests	Anaheim Station 2	Check Total Current 18V	True	-
08/05/2024 16:23	Lab_Tests	Anaheim Station 2	Set voltage to 32V	True	-
08/05/2024 16:23	Lab_Tests	Anaheim Station 2	Check Total Current 32V	True	-
08/05/2024 16:24	Lab_Tests	Anaheim Station 2	Check 4/20 Current and Relays	True	-
08/05/2024 16:26	Lab_Tests	Anaheim Station 2	Alarm Test	True	-
08/05/2024 16:26	Lab_Tests	Anaheim Station 2	Verify Red Led	True	-
08/05/2024 16:26	Lab_Tests	Anaheim Station 2	Check Error Flags	True	-
08/05/2024 16:26	Lab_Tests	Anaheim Station 2	Verify Visual Inspection	True	-
08/05/2024 16:26	Lab_Tests	Anaheim Station 2	Basic Identification Test	True	-
08/05/2024 04:14	TempChamber	-	Temp Chamber Report	True	-
08/05/2024 16:26	Clean_Before_Delivery	Anaheim Station 2	Detector Identity Test	True	-
08/05/2024 16:26	Clean_Before_Delivery	Anaheim Station 2	Detector Sub Model Type	True	-
08/05/2024 16:29	Clean_Before_Delivery	Anaheim Station 2	TestFilters	True	-
08/05/2024 16:30	Clean_Before_Delivery	Anaheim Station 2	Check Total Current 24V	True	-
08/05/2024 16:31	Clean_Before_Delivery	Anaheim Station 2	Bit Normal Test no write	True	-
08/05/2024 16:31	Clean_Before_Delivery	Anaheim Station 2	Check Error Flags	True	-
08/05/2024 16:31	Clean_Before_Delivery	Anaheim Station 2	Clear Logs	True	-
08/05/2024 16:31	Clean_Before_Delivery	Anaheim Station 2	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606438

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
26/03/2024 13:50	Calibrate	May	Detector Identity Test	True	-
26/03/2024 13:50	Calibrate	May	Detector Sub Model Type	True	-
26/03/2024 13:50	Calibrate	May	Calibrate Sensors From Master	True	-
26/03/2024 13:51	Calibrate	May	Clear Logs	True	-
26/03/2024 13:52	Calibrate	May	TestFilters	True	-
26/03/2024 13:53	Calibrate	May	Bit Normal Test	True	-
26/03/2024 13:54	Calibrate	May	Bit Failure Test	True	-
26/03/2024 13:54	Calibrate	May	Bit Returns to Normal Test	True	-
26/03/2024 13:55	Calibrate	May	Basic Identification Test	True	-
24/04/2024 22:59	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
24/04/2024 22:59	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
24/04/2024 22:59	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
24/04/2024 23:05	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
24/04/2024 23:05	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

24/04/2024 23:00	Lab_Tests	Anaheim Station 7	Noise Level	True	-
24/04/2024 23:02	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
24/04/2024 23:02	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
24/04/2024 23:02	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
24/04/2024 23:03	Lab_Tests	Anaheim Station 7	Heater Test	True	-
24/04/2024 23:04	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
24/04/2024 23:04	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
24/04/2024 23:05	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
24/04/2024 23:05	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
24/04/2024 23:05	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
24/04/2024 23:06	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
24/04/2024 23:11	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
24/04/2024 23:11	Lab_Tests	Anaheim Station 7	Check Error Flags	True	
24/04/2024 23:11	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
24/04/2024 23:11	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
31/03/2024 13:23	TempChamber	-	Temp Chamber Report	True	-
31/03/2024 13:36	Clean_Before_Delivery	May	Detector Identity Test	True	-
31/03/2024 13:36	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
31/03/2024 13:37	Clean_Before_Delivery	May	TestFilters	True	-
31/03/2024 13:38	Clean_Before_Delivery	May	Check Total Current 24V	True	-
31/03/2024 13:39	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
31/03/2024 13:39	Clean_Before_Delivery	May	Check Error Flags	True	-
31/03/2024 13:39	Clean_Before_Delivery	May	Clear Logs	True	-
31/03/2024 13:39	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606448

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
28/03/2024 08:16	Calibrate	May	Detector Identity Test	True	-
28/03/2024 08:16	Calibrate	May	Detector Sub Model Type	True	-
28/03/2024 08:17	Calibrate	May	Calibrate Sensors From Master	True	-
28/03/2024 08:17	Calibrate	May	Clear Logs	True	-
28/03/2024 08:19	Calibrate	May	TestFilters	True	-
28/03/2024 08:21	Calibrate	May	Bit Normal Test	True	-
28/03/2024 08:21	Calibrate	May	Bit Failure Test	True	-
28/03/2024 08:22	Calibrate	May	Bit Returns to Normal Test	True	-
28/03/2024 08:22	Calibrate	May	Basic Identification Test	True	-
26/04/2024 18:36	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
26/04/2024 18:36	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
26/04/2024 18:37	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
26/04/2024 18:40	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
26/04/2024 18:40	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

26/04/2024 18:37	Lab_Tests	Anaheim Station 7	Noise Level	True	-
26/04/2024 18:39	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
26/04/2024 18:39	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
26/04/2024 18:39	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
26/04/2024 18:39	Lab_Tests	Anaheim Station 7	Heater Test	True	-
26/04/2024 18:39	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
26/04/2024 18:40	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
26/04/2024 18:40	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
26/04/2024 18:40	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
26/04/2024 18:40	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
26/04/2024 18:42	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
26/04/2024 18:43	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
26/04/2024 18:43	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
26/04/2024 18:43	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
26/04/2024 18:43	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
28/03/2024 20:42	TempChamber	-	Temp Chamber Report	True	-
31/03/2024 05:23	Clean_Before_Delivery	May	Detector Identity Test	True	-
31/03/2024 05:23	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
31/03/2024 05:25	Clean_Before_Delivery	May	TestFilters	True	-
31/03/2024 05:25	Clean_Before_Delivery	May	Check Total Current 24V	True	-
31/03/2024 05:27	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
31/03/2024 05:27	Clean_Before_Delivery	May	Check Error Flags	True	-
31/03/2024 05:27	Clean_Before_Delivery	May	Clear Logs	True	-
31/03/2024 05:27	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606461

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
31/03/2024 07:18	Calibrate	May	Detector Identity Test	True	-
31/03/2024 07:18	Calibrate	May	Detector Sub Model Type	True	-
31/03/2024 07:18	Calibrate	May	Calibrate Sensors From Master	True	-
31/03/2024 07:19	Calibrate	May	Clear Logs	True	-
31/03/2024 07:20	Calibrate	May	TestFilters	True	-
31/03/2024 07:22	Calibrate	May	Bit Normal Test	True	-
31/03/2024 07:23	Calibrate	May	Bit Failure Test	True	-
31/03/2024 07:23	Calibrate	May	Bit Returns to Normal Test	True	-
31/03/2024 07:23	Calibrate	May	Basic Identification Test	True	-
29/04/2024 16:00	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
29/04/2024 16:00	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
29/04/2024 16:01	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
29/04/2024 16:04	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
29/04/2024 16:04	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

29/04/2024 16:01	Lab_Tests	Anaheim Station 7	Noise Level	True	-
29/04/2024 16:02	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
29/04/2024 16:02	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
29/04/2024 16:02	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
29/04/2024 16:03	Lab_Tests	Anaheim Station 7	Heater Test	True	-
29/04/2024 16:03	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
29/04/2024 16:03	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
29/04/2024 16:03	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
29/04/2024 16:04	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
29/04/2024 16:04	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
29/04/2024 16:05	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
29/04/2024 16:07	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
29/04/2024 16:07	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
29/04/2024 16:07	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
29/04/2024 16:07	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
31/03/2024 19:55	TempChamber	-	Temp Chamber Report	True	-
01/04/2024 05:18	Clean_Before_Delivery	May	Detector Identity Test	True	-
01/04/2024 05:18	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
01/04/2024 05:20	Clean_Before_Delivery	May	TestFilters	True	-
01/04/2024 05:20	Clean_Before_Delivery	May	Check Total Current 24V	True	-
01/04/2024 05:22	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
01/04/2024 05:22	Clean_Before_Delivery	May	Check Error Flags	True	-
01/04/2024 05:22	Clean_Before_Delivery	May	Clear Logs	True	-
01/04/2024 05:22	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606470

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
31/03/2024 07:36	Calibrate	May	Detector Identity Test	True	-
31/03/2024 07:36	Calibrate	May	Detector Sub Model Type	True	-
31/03/2024 07:36	Calibrate	May	Calibrate Sensors From Master	True	-
31/03/2024 07:37	Calibrate	May	Clear Logs	True	-
31/03/2024 07:39	Calibrate	May	TestFilters	True	-
31/03/2024 07:40	Calibrate	May	Bit Normal Test	True	-
31/03/2024 07:41	Calibrate	May	Bit Failure Test	True	-
31/03/2024 07:41	Calibrate	May	Bit Returns to Normal Test	True	-
31/03/2024 07:41	Calibrate	May	Basic Identification Test	True	-
26/04/2024 16:41	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
26/04/2024 16:41	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
26/04/2024 16:41	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
26/04/2024 16:43	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
26/04/2024 16:43	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

26/04/2024 16:41	Lab_Tests	Anaheim Station 7	Noise Level	True	-
26/04/2024 16:42	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
26/04/2024 16:42	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
26/04/2024 16:42	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
26/04/2024 16:42	Lab_Tests	Anaheim Station 7	Heater Test	True	-
26/04/2024 16:43	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
26/04/2024 16:43	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
26/04/2024 16:43	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
26/04/2024 16:43	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
26/04/2024 16:43	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
26/04/2024 16:45	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
26/04/2024 16:51	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
26/04/2024 16:51	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
26/04/2024 16:51	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
26/04/2024 16:51	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
31/03/2024 19:55	TempChamber	-	Temp Chamber Report	True	-
01/04/2024 05:38	Clean_Before_Delivery	May	Detector Identity Test	True	-
01/04/2024 05:38	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
01/04/2024 05:40	Clean_Before_Delivery	May	TestFilters	True	-
01/04/2024 05:41	Clean_Before_Delivery	May	Check Total Current 24V	True	-
01/04/2024 05:42	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
01/04/2024 05:44	Clean_Before_Delivery	May	Check Error Flags	True	-
01/04/2024 05:44	Clean_Before_Delivery	May	Clear Logs	True	-
01/04/2024 05:44	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606487

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
01/04/2024 10:47	Calibrate	May	Detector Identity Test	True	-
01/04/2024 10:47	Calibrate	May	Detector Sub Model Type	True	-
01/04/2024 10:48	Calibrate	May	Calibrate Sensors From Master	True	-
01/04/2024 10:48	Calibrate	May	Clear Logs	True	-
01/04/2024 10:49	Calibrate	May	TestFilters	True	-
01/04/2024 10:51	Calibrate	May	Bit Normal Test	True	-
01/04/2024 10:51	Calibrate	May	Bit Failure Test	True	-
01/04/2024 10:51	Calibrate	May	Bit Returns to Normal Test	True	-
01/04/2024 10:51	Calibrate	May	Basic Identification Test	True	-
26/04/2024 19:43	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
26/04/2024 19:43	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
26/04/2024 19:43	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

26/04/2024 19:51	Lab_Tests	Anaheim Station 7	Noise Level	True	-
26/04/2024 19:52	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
26/04/2024 19:55	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
26/04/2024 19:55	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Heater Test	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
26/04/2024 19:56	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
26/04/2024 19:58	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
26/04/2024 19:58	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
26/04/2024 19:58	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
26/04/2024 19:59	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
26/04/2024 19:59	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
01/04/2024 18:26	TempChamber	-	Temp Chamber Report	True	-
02/04/2024 05:43	Clean_Before_Delivery	May	Detector Identity Test	True	-
02/04/2024 05:43	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
02/04/2024 05:44	Clean_Before_Delivery	May	TestFilters	True	-
02/04/2024 05:45	Clean_Before_Delivery	May	Check Total Current 24V	True	-
02/04/2024 05:46	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
02/04/2024 05:46	Clean_Before_Delivery	May	Check Error Flags	True	-
02/04/2024 05:46	Clean_Before_Delivery	May	Clear Logs	True	-
02/04/2024 05:46	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606494

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
02/04/2024 06:23	Calibrate	May	Detector Identity Test	True	-
02/04/2024 06:23	Calibrate	May	Detector Sub Model Type	True	-
02/04/2024 06:23	Calibrate	May	Calibrate Sensors From Master	True	-
02/04/2024 06:24	Calibrate	May	Clear Logs	True	-
02/04/2024 06:26	Calibrate	May	TestFilters	True	-
02/04/2024 06:27	Calibrate	May	Bit Normal Test	True	-
02/04/2024 06:28	Calibrate	May	Bit Failure Test	True	-
02/04/2024 06:28	Calibrate	May	Bit Returns to Normal Test	True	-
02/04/2024 06:28	Calibrate	May	Basic Identification Test	True	-
26/04/2024 20:29	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
26/04/2024 20:29	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
26/04/2024 20:29	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
26/04/2024 20:33	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
26/04/2024 20:33	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

26/04/2024 20:30	Lab_Tests	Anaheim Station 7	Noise Level	True	-
26/04/2024 20:30	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
26/04/2024 20:31	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
26/04/2024 20:32	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
26/04/2024 20:32	Lab_Tests	Anaheim Station 7	Heater Test	True	-
26/04/2024 20:32	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
26/04/2024 20:32	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
26/04/2024 20:32	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
26/04/2024 20:32	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
26/04/2024 20:33	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
26/04/2024 20:34	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
26/04/2024 20:35	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
26/04/2024 20:35	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
26/04/2024 20:35	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
26/04/2024 20:35	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
02/04/2024 18:24	TempChamber	-	Temp Chamber Report	True	-
03/04/2024 05:17	Clean_Before_Delivery	May	Detector Identity Test	True	-
03/04/2024 05:18	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
03/04/2024 05:19	Clean_Before_Delivery	May	TestFilters	True	-
03/04/2024 05:20	Clean_Before_Delivery	May	Check Total Current 24V	True	-
03/04/2024 05:21	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
03/04/2024 05:21	Clean_Before_Delivery	May	Check Error Flags	True	-
03/04/2024 05:21	Clean_Before_Delivery	May	Clear Logs	True	-
03/04/2024 05:21	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606521

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
04/04/2024 12:01	Calibrate	Orian	Detector Identity Test	True	-
04/04/2024 12:01	Calibrate	Orian	Detector Sub Model Type	True	-
04/04/2024 12:01	Calibrate	Orian	Calibrate Sensors From Master	True	-
04/04/2024 12:02	Calibrate	Orian	Clear Logs	True	-
04/04/2024 12:03	Calibrate	Orian	TestFilters	True	-
04/04/2024 12:05	Calibrate	Orian	Bit Normal Test	True	-
04/04/2024 12:05	Calibrate	Orian	Bit Failure Test	True	-
04/04/2024 12:06	Calibrate	Orian	Bit Returns to Normal Test	True	-
04/04/2024 12:06	Calibrate	Orian	Basic Identification Test	True	-
02/05/2024 20:05	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
02/05/2024 20:05	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
02/05/2024 20:05	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
02/05/2024 20:11	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
02/05/2024 20:11	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

02/05/2024 20:06	Lab_Tests	Anaheim Station 7	Noise Level	True	-
02/05/2024 20:07	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
02/05/2024 20:09	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
02/05/2024 20:09	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
02/05/2024 20:09	Lab_Tests	Anaheim Station 7	Heater Test	True	-
02/05/2024 20:09	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
02/05/2024 20:10	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
02/05/2024 20:10	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
02/05/2024 20:10	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
02/05/2024 20:11	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
02/05/2024 20:13	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
02/05/2024 20:13	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
02/05/2024 20:13	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
02/05/2024 20:13	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
02/05/2024 20:13	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
07/04/2024 18:59	TempChamber	-	Temp Chamber Report	True	-
08/04/2024 05:22	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
08/04/2024 05:22	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
08/04/2024 05:24	Clean_Before_Delivery	Orian	TestFilters	True	-
08/04/2024 05:25	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
08/04/2024 05:30	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
08/04/2024 05:30	Clean_Before_Delivery	Orian	Check Error Flags	True	-
08/04/2024 05:30	Clean_Before_Delivery	Orian	Clear Logs	True	-
08/04/2024 05:30	Clean_Before_Delivery	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606523

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
04/04/2024 12:25	Calibrate	Orian	Detector Identity Test	True	-
04/04/2024 12:25	Calibrate	Orian	Detector Sub Model Type	True	-
04/04/2024 12:25	Calibrate	Orian	Calibrate Sensors From Master	True	-
04/04/2024 12:25	Calibrate	Orian	Clear Logs	True	-
04/04/2024 12:28	Calibrate	Orian	TestFilters	True	-
04/04/2024 12:29	Calibrate	Orian	Bit Normal Test	True	-
04/04/2024 12:29	Calibrate	Orian	Bit Failure Test	True	-
04/04/2024 12:30	Calibrate	Orian	Bit Returns to Normal Test	True	-
04/04/2024 12:30	Calibrate	Orian	Basic Identification Test	True	-
01/05/2024 22:38	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
01/05/2024 22:38	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
01/05/2024 22:38	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
01/05/2024 22:44	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
01/05/2024 22:43	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

01/05/2024 22:40	Lab_Tests	Anaheim Station 7	Noise Level	True	-
01/05/2024 22:40	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
01/05/2024 22:42	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
01/05/2024 22:42	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
01/05/2024 22:42	Lab_Tests	Anaheim Station 7	Heater Test	True	-
01/05/2024 22:42	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
01/05/2024 22:43	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
01/05/2024 22:43	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
01/05/2024 22:43	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
01/05/2024 22:44	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
01/05/2024 22:45	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
01/05/2024 22:47	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
01/05/2024 22:47	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
01/05/2024 22:47	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
01/05/2024 22:47	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
04/04/2024 19:06	TempChamber	-	Temp Chamber Report	True	-
07/04/2024 06:27	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
07/04/2024 06:27	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
07/04/2024 06:28	Clean_Before_Delivery	Orian	TestFilters	True	-
07/04/2024 06:29	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
07/04/2024 06:30	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
07/04/2024 06:30	Clean_Before_Delivery	Orian	Check Error Flags	True	-
07/04/2024 06:31	Clean_Before_Delivery	Orian	Clear Logs	True	-
07/04/2024 06:31	Clean_Before_Delivery	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606524

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
04/04/2024 12:37	Calibrate	Orian	Detector Identity Test	True	-
04/04/2024 12:37	Calibrate	Orian	Detector Sub Model Type	True	-
04/04/2024 12:38	Calibrate	Orian	Calibrate Sensors From Master	True	-
04/04/2024 12:38	Calibrate	Orian	Clear Logs	True	-
04/04/2024 12:40	Calibrate	Orian	TestFilters	True	-
04/04/2024 12:41	Calibrate	Orian	Bit Normal Test	True	-
04/04/2024 12:42	Calibrate	Orian	Bit Failure Test	True	-
04/04/2024 12:42	Calibrate	Orian	Bit Returns to Normal Test	True	-
04/04/2024 12:42	Calibrate	Orian	Basic Identification Test	True	-
01/05/2024 23:04	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
01/05/2024 23:04	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
01/05/2024 23:04	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
01/05/2024 23:08	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
01/05/2024 23:08	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

01/05/2024 23:05	Lab_Tests	Anaheim Station 7	Noise Level	True	-
01/05/2024 23:05	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
01/05/2024 23:06	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
01/05/2024 23:06	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
01/05/2024 23:06	Lab_Tests	Anaheim Station 7	Heater Test	True	-
01/05/2024 23:07	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
01/05/2024 23:07	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
01/05/2024 23:07	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
01/05/2024 23:07	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
01/05/2024 23:08	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
01/05/2024 23:09	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
01/05/2024 23:10	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
01/05/2024 23:10	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
01/05/2024 23:10	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
01/05/2024 23:10	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
04/04/2024 19:06	TempChamber	-	Temp Chamber Report	True	-
07/04/2024 06:09	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
07/04/2024 06:09	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
07/04/2024 06:11	Clean_Before_Delivery	Orian	TestFilters	True	-
07/04/2024 06:11	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
07/04/2024 06:13	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
07/04/2024 06:13	Clean_Before_Delivery	Orian	Check Error Flags	True	-
07/04/2024 06:13	Clean_Before_Delivery	Orian	Clear Logs	True	-
07/04/2024 06:13	Clean_Before_Delivery	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606525

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
04/04/2024 12:53	Calibrate	Orian	Detector Identity Test	True	-
04/04/2024 12:53	Calibrate	Orian	Detector Sub Model Type	True	-
04/04/2024 12:53	Calibrate	Orian	Calibrate Sensors From Master	True	-
04/04/2024 12:54	Calibrate	Orian	Clear Logs	True	-
04/04/2024 12:55	Calibrate	Orian	TestFilters	True	-
04/04/2024 12:57	Calibrate	Orian	Bit Normal Test	True	-
04/04/2024 12:58	Calibrate	Orian	Bit Failure Test	True	-
04/04/2024 12:58	Calibrate	Orian	Bit Returns to Normal Test	True	-
04/04/2024 12:58	Calibrate	Orian	Basic Identification Test	True	-
02/05/2024 20:30	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
02/05/2024 20:30	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
02/05/2024 20:30	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
02/05/2024 20:34	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
02/05/2024 20:34	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

02/05/2024 20:31	Lab_Tests	Anaheim Station 7	Noise Level	True	-
02/05/2024 20:32	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
02/05/2024 20:32	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
02/05/2024 20:32	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
02/05/2024 20:33	Lab_Tests	Anaheim Station 7	Heater Test	True	-
02/05/2024 20:33	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
02/05/2024 20:33	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
02/05/2024 20:33	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
02/05/2024 20:34	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
02/05/2024 20:34	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
02/05/2024 20:35	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
02/05/2024 20:38	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
02/05/2024 20:38	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
02/05/2024 20:38	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
02/05/2024 20:38	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
08/04/2024 11:17	TempChamber	-	Temp Chamber Report	True	-
08/04/2024 11:44	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
08/04/2024 11:44	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
08/04/2024 11:46	Clean_Before_Delivery	Orian	TestFilters	True	-
08/04/2024 11:50	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
08/04/2024 11:51	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
08/04/2024 11:51	Clean_Before_Delivery	Orian	Check Error Flags	True	-
08/04/2024 11:51	Clean_Before_Delivery	Orian	Clear Logs	True	-
08/04/2024 11:51	Clean_Before_Delivery	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606527

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
07/04/2024 07:24	Calibrate	Orian	Detector Identity Test	True	-
07/04/2024 07:24	Calibrate	Orian	Detector Sub Model Type	True	-
07/04/2024 07:25	Calibrate	Orian	Calibrate Sensors From Master	True	-
07/04/2024 07:26	Calibrate	Orian	Clear Logs	True	-
07/04/2024 07:27	Calibrate	Orian	TestFilters	True	-
07/04/2024 07:29	Calibrate	Orian	Bit Normal Test	True	-
07/04/2024 07:30	Calibrate	Orian	Bit Failure Test	True	-
07/04/2024 07:30	Calibrate	Orian	Bit Returns to Normal Test	True	-
07/04/2024 07:31	Calibrate	Orian	Basic Identification Test	True	-
02/05/2024 21:51	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
02/05/2024 21:51	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
02/05/2024 21:51	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
02/05/2024 21:56	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
02/05/2024 21:56	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

02/05/2024 21:52	Lab_Tests	Anaheim Station 7	Noise Level	True	-
02/05/2024 21:54	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
02/05/2024 21:54	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
02/05/2024 21:55	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
02/05/2024 21:55	Lab_Tests	Anaheim Station 7	Heater Test	True	-
02/05/2024 21:55	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
02/05/2024 21:55	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
02/05/2024 21:55	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
02/05/2024 21:56	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
02/05/2024 21:56	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
02/05/2024 21:57	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
02/05/2024 21:58	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
02/05/2024 21:58	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
02/05/2024 21:58	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
02/05/2024 21:58	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
08/04/2024 11:17	TempChamber	-	Temp Chamber Report	True	-
08/04/2024 12:02	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
08/04/2024 12:02	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
08/04/2024 12:04	Clean_Before_Delivery	Orian	TestFilters	True	-
08/04/2024 12:05	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
08/04/2024 12:06	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
08/04/2024 12:06	Clean_Before_Delivery	Orian	Check Error Flags	True	-
08/04/2024 12:06	Clean_Before_Delivery	Orian	Clear Logs	True	-
08/04/2024 12:06	Clean_Before_Delivery	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606528

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
07/04/2024 07:39	Calibrate	Orian	Detector Identity Test	True	-
07/04/2024 07:39	Calibrate	Orian	Detector Sub Model Type	True	-
07/04/2024 07:39	Calibrate	Orian	Calibrate Sensors From Master	True	-
07/04/2024 07:39	Calibrate	Orian	Clear Logs	True	-
07/04/2024 07:41	Calibrate	Orian	TestFilters	True	-
07/04/2024 07:42	Calibrate	Orian	Bit Normal Test	True	-
07/04/2024 07:43	Calibrate	Orian	Bit Failure Test	True	-
07/04/2024 07:43	Calibrate	Orian	Bit Returns to Normal Test	True	-
07/04/2024 07:43	Calibrate	Orian	Basic Identification Test	True	-
02/05/2024 20:19	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
02/05/2024 20:19	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
02/05/2024 20:19	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
02/05/2024 20:22	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
02/05/2024 20:22	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

02/05/2024 20:19	Lab_Tests	Anaheim Station 7	Noise Level	True	-
02/05/2024 20:20	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
02/05/2024 20:21	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
02/05/2024 20:21	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
02/05/2024 20:21	Lab_Tests	Anaheim Station 7	Heater Test	True	-
02/05/2024 20:22	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
02/05/2024 20:22	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
02/05/2024 20:22	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
02/05/2024 20:22	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
02/05/2024 20:22	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
02/05/2024 20:24	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
02/05/2024 20:24	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
02/05/2024 20:24	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
02/05/2024 20:24	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
02/05/2024 20:24	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
08/04/2024 11:17	TempChamber	-	Temp Chamber Report	True	-
08/04/2024 11:55	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
08/04/2024 11:55	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
08/04/2024 11:57	Clean_Before_Delivery	Orian	TestFilters	True	-
08/04/2024 11:57	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
08/04/2024 11:59	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
08/04/2024 11:59	Clean_Before_Delivery	Orian	Check Error Flags	True	-
08/04/2024 11:59	Clean_Before_Delivery	Orian	Clear Logs	True	-
08/04/2024 11:59	Clean_Before_Delivery	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606529

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
07/04/2024 10:03	Calibrate	Orian	Detector Identity Test	True	-
07/04/2024 10:03	Calibrate	Orian	Detector Sub Model Type	True	-
07/04/2024 10:03	Calibrate	Orian	Calibrate Sensors From Master	True	-
07/04/2024 10:04	Calibrate	Orian	Clear Logs	True	-
07/04/2024 10:05	Calibrate	Orian	TestFilters	True	-
07/04/2024 10:07	Calibrate	Orian	Bit Normal Test	True	-
07/04/2024 10:07	Calibrate	Orian	Bit Failure Test	True	-
07/04/2024 10:07	Calibrate	Orian	Bit Returns to Normal Test	True	-
07/04/2024 10:07	Calibrate	Orian	Basic Identification Test	True	-
02/05/2024 19:48	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
02/05/2024 19:48	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
02/05/2024 19:48	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
02/05/2024 19:52	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
02/05/2024 19:52	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

02/05/2024 19:50	Lab_Tests	Anaheim Station 7	Noise Level	True	-
02/05/2024 19:50	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
02/05/2024 19:50	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
02/05/2024 19:50	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
02/05/2024 19:51	Lab_Tests	Anaheim Station 7	Heater Test	True	-
02/05/2024 19:51	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
02/05/2024 19:51	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
02/05/2024 19:51	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
02/05/2024 19:51	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
02/05/2024 19:52	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
02/05/2024 19:53	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
02/05/2024 20:00	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
02/05/2024 20:00	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
02/05/2024 20:00	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
02/05/2024 20:00	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
08/04/2024 11:17	TempChamber	-	Temp Chamber Report	True	-
08/04/2024 12:16	Clean_Before_Delivery	May	Detector Identity Test	True	-
08/04/2024 12:16	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
08/04/2024 12:18	Clean_Before_Delivery	May	TestFilters	True	-
08/04/2024 12:19	Clean_Before_Delivery	May	Check Total Current 24V	True	-
08/04/2024 12:21	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
08/04/2024 12:21	Clean_Before_Delivery	May	Check Error Flags	True	-
08/04/2024 12:21	Clean_Before_Delivery	May	Clear Logs	True	-
08/04/2024 12:21	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606530

Tests Result: Passed

There are missing tests for SN 606530

Test Date	Test Set	Tester	Test Name	Result	Details
07/04/2024 12:41	Calibrate	Orian	Detector Identity Test	True	-
07/04/2024 12:41	Calibrate	Orian	Detector Sub Model Type	True	-
07/04/2024 12:42	Calibrate	Orian	Calibrate Sensors From Master	True	-
07/04/2024 12:42	Calibrate	Orian	Clear Logs	True	-
07/04/2024 12:43	Calibrate	Orian	TestFilters	True	-
07/04/2024 12:45	Calibrate	Orian	Bit Normal Test	True	-
07/04/2024 12:48	Calibrate	Orian	Bit Failure Test	True	-
07/04/2024 12:48	Calibrate	Orian	Bit Returns to Normal Test	True	-
07/04/2024 12:48	Calibrate	Orian	Basic Identification Test	True	-
02/05/2024 21:29	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
02/05/2024 21:29	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
02/05/2024 21:29	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
02/05/2024 21:33	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
02/05/2024 21:33	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-

02/05/2024 21:29	Lab_Tests	Anaheim Station 7	Noise Level	True	-
02/05/2024 21:31	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
02/05/2024 21:31	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
02/05/2024 21:32	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-
02/05/2024 21:32	Lab_Tests	Anaheim Station 7	Heater Test	True	-
02/05/2024 21:32	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
02/05/2024 21:33	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
02/05/2024 21:33	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
02/05/2024 21:33	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
02/05/2024 21:33	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
02/05/2024 21:35	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
02/05/2024 21:35	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
02/05/2024 21:35	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
02/05/2024 21:35	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
02/05/2024 21:35	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
08/04/2024 11:17	TempChamber	-	Temp Chamber Report	True	-
08/04/2024 11:29	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
08/04/2024 11:29	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
08/04/2024 11:31	Clean_Before_Delivery	Orian	TestFilters	True	-
08/04/2024 11:31	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
08/04/2024 11:32	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
08/04/2024 11:33	Clean_Before_Delivery	Orian	Check Error Flags	True	-
08/04/2024 11:33	Clean_Before_Delivery	Orian	Clear Logs	True	-
08/04/2024 11:33	Clean_Before_Delivery	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606531

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
08/04/2024 06:07	Calibrate	Orian	Detector Identity Test	True	-
08/04/2024 06:07	Calibrate	Orian	Detector Sub Model Type	True	-
08/04/2024 06:07	Calibrate	Orian	Calibrate Sensors From Master	True	-
08/04/2024 06:08	Calibrate	Orian	Clear Logs	True	-
08/04/2024 06:10	Calibrate	Orian	TestFilters	True	-
02/05/2024 20:43	Lab_Tests	Anaheim Station 7	Detector Identity Test	True	-
02/05/2024 20:44	Lab_Tests	Anaheim Station 7	Detector Sub Model Type	True	-
02/05/2024 20:44	Lab_Tests	Anaheim Station 7	Verify Dielectric Test	True	-
02/05/2024 20:51	Lab_Tests	Anaheim Station 7	Set voltage to 24V	True	-
02/05/2024 20:51	Lab_Tests	Anaheim Station 7	Verify Green Led	True	-
02/05/2024 20:47	Lab_Tests	Anaheim Station 7	Noise Level	True	-
02/05/2024 20:48	Lab_Tests	Anaheim Station 7	Bit Manual Test	True	-
02/05/2024 20:48	Lab_Tests	Anaheim Station 7	Check Total Current 24V	True	-
02/05/2024 20:49	Lab_Tests	Anaheim Station 7	Check HART on 4-20	True	-

02/05/2024 20:50	Lab_Tests	Anaheim Station 7	Heater Test	True	-
02/05/2024 20:50	Lab_Tests	Anaheim Station 7	Set voltage to 18V	True	-
02/05/2024 20:50	Lab_Tests	Anaheim Station 7	Check Total Current 18V	True	-
02/05/2024 20:51	Lab_Tests	Anaheim Station 7	Set voltage to 32V	True	-
02/05/2024 20:51	Lab_Tests	Anaheim Station 7	Check Total Current 32V	True	-
02/05/2024 20:51	Lab_Tests	Anaheim Station 7	Check 4/20 Current and Relays	True	-
02/05/2024 20:53	Lab_Tests	Anaheim Station 7	Alarm Test	True	-
02/05/2024 20:53	Lab_Tests	Anaheim Station 7	Verify Red Led	True	-
02/05/2024 20:53	Lab_Tests	Anaheim Station 7	Check Error Flags	True	-
02/05/2024 20:53	Lab_Tests	Anaheim Station 7	Verify Visual Inspection	True	-
02/05/2024 20:53	Lab_Tests	Anaheim Station 7	Basic Identification Test	True	-
07/04/2024 18:59	TempChamber	-	Temp Chamber Report	True	-
08/04/2024 06:15	Clean_Before_Delivery	Orian	Detector Identity Test	True	-
08/04/2024 06:15	Clean_Before_Delivery	Orian	Detector Sub Model Type	True	-
08/04/2024 06:16	Clean_Before_Delivery	Orian	TestFilters	True	-
08/04/2024 06:17	Clean_Before_Delivery	Orian	Check Total Current 24V	True	-
08/04/2024 06:19	Clean_Before_Delivery	Orian	Bit Normal Test no write	True	-
08/04/2024 06:19	Clean_Before_Delivery	Orian	Check Error Flags	True	-
08/04/2024 06:19	Clean_Before_Delivery	Orian	Clear Logs	True	-
08/04/2024 06:19	Clean_Before_Delivery	Orian	Basic Identification Test	True	-
08/04/2024 06:13	Calibrate	Orian	Bit Normal Test	True	-
08/04/2024 06:14	Calibrate	Orian	Bit Failure Test	True	-
08/04/2024 06:14	Calibrate	Orian	Bit Returns to Normal Test	True	-
08/04/2024 06:14	Calibrate	Orian	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606564

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
10/04/2024 05:21	Calibrate	May	Detector Identity Test	True	-
10/04/2024 05:21	Calibrate	May	Detector Sub Model Type	True	-
10/04/2024 05:21	Calibrate	May	Calibrate Sensors From Master	True	-
10/04/2024 05:22	Calibrate	May	Clear Logs	True	-
10/04/2024 05:23	Calibrate	May	TestFilters	True	-
10/04/2024 05:24	Calibrate	May	Bit Normal Test	True	-
10/04/2024 05:25	Calibrate	May	Bit Failure Test	True	-
10/04/2024 05:25	Calibrate	May	Bit Returns to Normal Test	True	-
10/04/2024 05:25	Calibrate	May	Basic Identification Test	True	-
06/05/2024 19:37	Lab_Tests	Anaheim Station 2	Detector Identity Test	True	-
06/05/2024 19:37	Lab_Tests	Anaheim Station 2	Detector Sub Model Type	True	-
06/05/2024 19:37	Lab_Tests	Anaheim Station 2	Verify Dielectric Test	True	-
06/05/2024 19:41	Lab_Tests	Anaheim Station 2	Set voltage to 24V	True	-
06/05/2024 19:41	Lab_Tests	Anaheim Station 2	Verify Green Led	True	-

06/05/2024 19:38	Lab_Tests	Anaheim Station 2	Noise Level	True	-
06/05/2024 19:39	Lab_Tests	Anaheim Station 2	Bit Manual Test	True	-
06/05/2024 19:39	Lab_Tests	Anaheim Station 2	Check Total Current 24V	True	-
06/05/2024 19:39	Lab_Tests	Anaheim Station 2	Check HART on 4-20	True	-
06/05/2024 19:40	Lab_Tests	Anaheim Station 2	Heater Test	True	-
06/05/2024 19:40	Lab_Tests	Anaheim Station 2	Set voltage to 18V	True	-
06/05/2024 19:40	Lab_Tests	Anaheim Station 2	Check Total Current 18V	True	-
06/05/2024 19:40	Lab_Tests	Anaheim Station 2	Set voltage to 32V	True	-
06/05/2024 19:41	Lab_Tests	Anaheim Station 2	Check Total Current 32V	True	-
06/05/2024 19:41	Lab_Tests	Anaheim Station 2	Check 4/20 Current and Relays	True	-
06/05/2024 19:42	Lab_Tests	Anaheim Station 2	Alarm Test	True	-
06/05/2024 19:42	Lab_Tests	Anaheim Station 2	Verify Red Led	True	-
06/05/2024 19:42	Lab_Tests	Anaheim Station 2	Check Error Flags	True	-
06/05/2024 19:42	Lab_Tests	Anaheim Station 2	Verify Visual Inspection	True	-
06/05/2024 19:42	Lab_Tests	Anaheim Station 2	Basic Identification Test	True	-
10/04/2024 17:31	TempChamber	-	Temp Chamber Report	True	-
11/04/2024 05:40	Clean_Before_Delivery	May	Detector Identity Test	True	-
11/04/2024 05:40	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
11/04/2024 05:42	Clean_Before_Delivery	May	TestFilters	True	-
11/04/2024 05:42	Clean_Before_Delivery	May	Check Total Current 24V	True	-
11/04/2024 05:43	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
11/04/2024 05:43	Clean_Before_Delivery	May	Check Error Flags	True	-
11/04/2024 05:43	Clean_Before_Delivery	May	Clear Logs	True	-
11/04/2024 05:44	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606568

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
10/04/2024 10:53	Calibrate	May	Detector Identity Test	True	-
10/04/2024 10:53	Calibrate	May	Detector Sub Model Type	True	-
10/04/2024 10:54	Calibrate	May	Calibrate Sensors From Master	True	-
10/04/2024 10:54	Calibrate	May	Clear Logs	True	-
10/04/2024 10:56	Calibrate	May	TestFilters	True	-
10/04/2024 10:57	Calibrate	May	Bit Normal Test	True	-
10/04/2024 10:57	Calibrate	May	Bit Failure Test	True	-
10/04/2024 10:58	Calibrate	May	Bit Returns to Normal Test	True	-
10/04/2024 10:58	Calibrate	May	Basic Identification Test	True	-
08/05/2024 22:39	Lab_Tests	Anaheim Tech 2	Detector Identity Test	True	-
08/05/2024 22:39	Lab_Tests	Anaheim Tech 2	Detector Sub Model Type	True	-
08/05/2024 22:39	Lab_Tests	Anaheim Tech 2	Verify Dielectric Test	True	-
08/05/2024 22:44	Lab_Tests	Anaheim Tech 2	Set voltage to 24V	True	-
08/05/2024 22:44	Lab_Tests	Anaheim Tech 2	Verify Green Led	True	-

08/05/2024 22:40	Lab_Tests	Anaheim Tech 2	Noise Level	True	-
08/05/2024 22:41	Lab_Tests	Anaheim Tech 2	Bit Manual Test	True	-
08/05/2024 22:41	Lab_Tests	Anaheim Tech 2	Check Total Current 24V	True	-
08/05/2024 22:41	Lab_Tests	Anaheim Tech 2	Check HART on 4-20	True	-
08/05/2024 22:42	Lab_Tests	Anaheim Tech 2	Heater Test	True	-
08/05/2024 22:43	Lab_Tests	Anaheim Tech 2	Set voltage to 18V	True	-
08/05/2024 22:43	Lab_Tests	Anaheim Tech 2	Check Total Current 18V	True	-
08/05/2024 22:44	Lab_Tests	Anaheim Tech 2	Set voltage to 32V	True	-
08/05/2024 22:44	Lab_Tests	Anaheim Tech 2	Check Total Current 32V	True	-
08/05/2024 22:45	Lab_Tests	Anaheim Tech 2	Check 4/20 Current and Relays	True	-
08/05/2024 22:46	Lab_Tests	Anaheim Tech 2	Alarm Test	True	-
08/05/2024 22:47	Lab_Tests	Anaheim Tech 2	Verify Red Led	True	-
08/05/2024 22:47	Lab_Tests	Anaheim Tech 2	Check Error Flags	True	-
08/05/2024 22:47	Lab_Tests	Anaheim Tech 2	Verify Visual Inspection	True	-
08/05/2024 22:47	Lab_Tests	Anaheim Tech 2	Basic Identification Test	True	-
09/05/2024 21:57	TempChamber	-	Temp Chamber Report	True	-
10/05/2024 21:59	Clean_Before_Delivery	Anaheim Tech 2	Detector Identity Test	True	-
10/05/2024 21:59	Clean_Before_Delivery	Anaheim Tech 2	Detector Sub Model Type	True	-
10/05/2024 22:01	Clean_Before_Delivery	Anaheim Tech 2	TestFilters	True	-
10/05/2024 22:02	Clean_Before_Delivery	Anaheim Tech 2	Check Total Current 24V	True	-
10/05/2024 22:03	Clean_Before_Delivery	Anaheim Tech 2	Bit Normal Test no write	True	-
10/05/2024 22:03	Clean_Before_Delivery	Anaheim Tech 2	Check Error Flags	True	-
10/05/2024 22:03	Clean_Before_Delivery	Anaheim Tech 2	Clear Logs	True	-
10/05/2024 22:03	Clean_Before_Delivery	Anaheim Tech 2	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606569

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
10/04/2024 10:33	Calibrate	May	Detector Identity Test	True	-
10/04/2024 10:33	Calibrate	May	Detector Sub Model Type	True	-
10/04/2024 10:34	Calibrate	May	Calibrate Sensors From Master	True	-
10/04/2024 10:35	Calibrate	May	Clear Logs	True	-
10/04/2024 10:37	Calibrate	May	TestFilters	True	-
10/04/2024 10:38	Calibrate	May	Bit Normal Test	True	-
10/04/2024 10:39	Calibrate	May	Bit Failure Test	True	-
10/04/2024 10:39	Calibrate	May	Bit Returns to Normal Test	True	-
10/04/2024 10:39	Calibrate	May	Basic Identification Test	True	-
08/05/2024 22:20	Lab_Tests	Anaheim Tech 2	Detector Identity Test	True	-
08/05/2024 22:20	Lab_Tests	Anaheim Tech 2	Detector Sub Model Type	True	-
08/05/2024 22:20	Lab_Tests	Anaheim Tech 2	Verify Dielectric Test	True	-
08/05/2024 22:24	Lab_Tests	Anaheim Tech 2	Set voltage to 24V	True	-
08/05/2024 22:23	Lab_Tests	Anaheim Tech 2	Verify Green Led	True	-

08/05/2024 22:21	Lab_Tests	Anaheim Tech 2	Noise Level	True	-
08/05/2024 22:21	Lab_Tests	Anaheim Tech 2	Bit Manual Test	True	-
08/05/2024 22:22	Lab_Tests	Anaheim Tech 2	Check Total Current 24V	True	-
08/05/2024 22:22	Lab_Tests	Anaheim Tech 2	Check HART on 4-20	True	-
08/05/2024 22:22	Lab_Tests	Anaheim Tech 2	Heater Test	True	-
08/05/2024 22:22	Lab_Tests	Anaheim Tech 2	Set voltage to 18V	True	-
08/05/2024 22:23	Lab_Tests	Anaheim Tech 2	Check Total Current 18V	True	-
08/05/2024 22:23	Lab_Tests	Anaheim Tech 2	Set voltage to 32V	True	-
08/05/2024 22:23	Lab_Tests	Anaheim Tech 2	Check Total Current 32V	True	-
08/05/2024 22:24	Lab_Tests	Anaheim Tech 2	Check 4/20 Current and Relays	True	-
08/05/2024 22:28	Lab_Tests	Anaheim Tech 2	Alarm Test	True	-
08/05/2024 22:28	Lab_Tests	Anaheim Tech 2	Verify Red Led	True	-
08/05/2024 22:28	Lab_Tests	Anaheim Tech 2	Check Error Flags	True	-
08/05/2024 22:28	Lab_Tests	Anaheim Tech 2	Verify Visual Inspection	True	-
08/05/2024 22:28	Lab_Tests	Anaheim Tech 2	Basic Identification Test	True	-
09/05/2024 21:57	TempChamber	-	Temp Chamber Report	True	-
10/05/2024 21:43	Clean_Before_Delivery	Anaheim Tech 2	Detector Identity Test	True	-
10/05/2024 21:43	Clean_Before_Delivery	Anaheim Tech 2	Detector Sub Model Type	True	-
10/05/2024 21:46	Clean_Before_Delivery	Anaheim Tech 2	TestFilters	True	-
10/05/2024 21:46	Clean_Before_Delivery	Anaheim Tech 2	Check Total Current 24V	True	-
10/05/2024 21:48	Clean_Before_Delivery	Anaheim Tech 2	Bit Normal Test no write	True	-
10/05/2024 21:48	Clean_Before_Delivery	Anaheim Tech 2	Check Error Flags	True	-
10/05/2024 21:48	Clean_Before_Delivery	Anaheim Tech 2	Clear Logs	True	-
10/05/2024 21:48	Clean_Before_Delivery	Anaheim Tech 2	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606572

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
10/04/2024 11:07	Calibrate	May	Detector Identity Test	True	-
10/04/2024 11:07	Calibrate	May	Detector Sub Model Type	True	-
10/04/2024 11:07	Calibrate	May	Calibrate Sensors From Master	True	-
10/04/2024 11:08	Calibrate	May	Clear Logs	True	-
10/04/2024 11:09	Calibrate	May	TestFilters	True	-
10/04/2024 11:11	Calibrate	May	Bit Normal Test	True	-
10/04/2024 11:11	Calibrate	May	Bit Failure Test	True	-
10/04/2024 11:11	Calibrate	May	Bit Returns to Normal Test	True	-
10/04/2024 11:12	Calibrate	May	Basic Identification Test	True	-
07/05/2024 22:08	Lab_Tests	Anaheim Station 6	Detector Identity Test	True	-
07/05/2024 22:08	Lab_Tests	Anaheim Station 6	Detector Sub Model Type	True	-
07/05/2024 22:08	Lab_Tests	Anaheim Station 6	Verify Dielectric Test	True	-
07/05/2024 22:12	Lab_Tests	Anaheim Station 6	Set voltage to 24V	True	-
07/05/2024 22:12	Lab_Tests	Anaheim Station 6	Verify Green Led	True	-

07/05/2024 22:09	Lab_Tests	Anaheim Station 6	Noise Level	True	-
07/05/2024 22:09	Lab_Tests	Anaheim Station 6	Bit Manual Test	True	-
07/05/2024 22:10	Lab_Tests	Anaheim Station 6	Check Total Current 24V	True	-
07/05/2024 22:10	Lab_Tests	Anaheim Station 6	Check HART on 4-20	True	-
07/05/2024 22:10	Lab_Tests	Anaheim Station 6	Heater Test	True	-
07/05/2024 22:10	Lab_Tests	Anaheim Station 6	Set voltage to 18V	True	-
07/05/2024 22:11	Lab_Tests	Anaheim Station 6	Check Total Current 18V	True	-
07/05/2024 22:11	Lab_Tests	Anaheim Station 6	Set voltage to 32V	True	-
07/05/2024 22:11	Lab_Tests	Anaheim Station 6	Check Total Current 32V	True	-
07/05/2024 22:12	Lab_Tests	Anaheim Station 6	Check 4/20 Current and Relays	True	-
07/05/2024 22:14	Lab_Tests	Anaheim Station 6	Alarm Test	True	-
07/05/2024 22:14	Lab_Tests	Anaheim Station 6	Verify Red Led	True	-
07/05/2024 22:14	Lab_Tests	Anaheim Station 6	Check Error Flags	True	-
07/05/2024 22:14	Lab_Tests	Anaheim Station 6	Verify Visual Inspection	True	-
07/05/2024 22:14	Lab_Tests	Anaheim Station 6	Basic Identification Test	True	-
10/04/2024 17:31	TempChamber	-	Temp Chamber Report	True	-
11/04/2024 05:36	Clean_Before_Delivery	May	Detector Identity Test	True	-
11/04/2024 05:36	Clean_Before_Delivery	May	Detector Sub Model Type	True	-
11/04/2024 05:38	Clean_Before_Delivery	May	TestFilters	True	-
11/04/2024 05:38	Clean_Before_Delivery	May	Check Total Current 24V	True	-
11/04/2024 05:39	Clean_Before_Delivery	May	Bit Normal Test no write	True	-
11/04/2024 05:39	Clean_Before_Delivery	May	Check Error Flags	True	-
11/04/2024 05:39	Clean_Before_Delivery	May	Clear Logs	True	-
11/04/2024 05:39	Clean_Before_Delivery	May	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606575

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
14/04/2024 07:04	Calibrate	Ziv	Detector Identity Test	True	-
14/04/2024 07:04	Calibrate	Ziv	Detector Sub Model Type	True	-
14/04/2024 07:05	Calibrate	Ziv	Calibrate Sensors From Master	True	-
14/04/2024 07:05	Calibrate	Ziv	Clear Logs	True	-
14/04/2024 07:07	Calibrate	Ziv	TestFilters	True	-
14/04/2024 07:08	Calibrate	Ziv	Bit Normal Test	True	-
14/04/2024 07:09	Calibrate	Ziv	Bit Failure Test	True	-
14/04/2024 07:09	Calibrate	Ziv	Bit Returns to Normal Test	True	-
14/04/2024 07:09	Calibrate	Ziv	Basic Identification Test	True	-
07/05/2024 19:45	Lab_Tests	Anaheim Station 6	Detector Identity Test	True	-
07/05/2024 19:45	Lab_Tests	Anaheim Station 6	Detector Sub Model Type	True	-
07/05/2024 19:45	Lab_Tests	Anaheim Station 6	Verify Dielectric Test	True	-
07/05/2024 19:49	Lab_Tests	Anaheim Station 6	Set voltage to 24V	True	-
07/05/2024 19:49	Lab_Tests	Anaheim Station 6	Verify Green Led	True	-

07/05/2024 19:46	Lab_Tests	Anaheim Station 6	Noise Level	True	-
07/05/2024 19:46	Lab_Tests	Anaheim Station 6	Bit Manual Test	True	-
07/05/2024 19:47	Lab_Tests	Anaheim Station 6	Check Total Current 24V	True	-
07/05/2024 19:47	Lab_Tests	Anaheim Station 6	Check HART on 4-20	True	-
07/05/2024 19:47	Lab_Tests	Anaheim Station 6	Heater Test	True	-
07/05/2024 19:48	Lab_Tests	Anaheim Station 6	Set voltage to 18V	True	-
07/05/2024 19:48	Lab_Tests	Anaheim Station 6	Check Total Current 18V	True	-
07/05/2024 19:48	Lab_Tests	Anaheim Station 6	Set voltage to 32V	True	-
07/05/2024 19:48	Lab_Tests	Anaheim Station 6	Check Total Current 32V	True	-
07/05/2024 19:49	Lab_Tests	Anaheim Station 6	Check 4/20 Current and Relays	True	-
07/05/2024 19:51	Lab_Tests	Anaheim Station 6	Alarm Test	True	-
07/05/2024 19:51	Lab_Tests	Anaheim Station 6	Verify Red Led	True	-
07/05/2024 19:51	Lab_Tests	Anaheim Station 6	Check Error Flags	True	-
07/05/2024 19:51	Lab_Tests	Anaheim Station 6	Verify Visual Inspection	True	-
07/05/2024 19:51	Lab_Tests	Anaheim Station 6	Basic Identification Test	True	-
14/04/2024 17:12	TempChamber	-	Temp Chamber Report	True	-
15/04/2024 05:20	Clean_Before_Delivery	Ziv	Detector Identity Test	True	-
15/04/2024 05:20	Clean_Before_Delivery	Ziv	Detector Sub Model Type	True	-
15/04/2024 05:22	Clean_Before_Delivery	Ziv	TestFilters	True	-
15/04/2024 05:22	Clean_Before_Delivery	Ziv	Check Total Current 24V	True	-
15/04/2024 05:24	Clean_Before_Delivery	Ziv	Bit Normal Test no write	True	-
15/04/2024 05:24	Clean_Before_Delivery	Ziv	Check Error Flags	True	-
15/04/2024 05:24	Clean_Before_Delivery	Ziv	Clear Logs	True	-
15/04/2024 05:24	Clean_Before_Delivery	Ziv	Basic Identification Test	True	-

Fire & Gas Detection Technologies

Electrical Test Report. Model: FLS-UV-IR ASX1, S/N: 606576

Tests Result: Passed

Test Date	Test Set	Tester	Test Name	Result	Details
11/04/2024 07:27	Calibrate	Ziv	Detector Identity Test	True	-
11/04/2024 07:27	Calibrate	Ziv	Detector Sub Model Type	True	-
11/04/2024 07:28	Calibrate	Ziv	Calibrate Sensors From Master	True	-
11/04/2024 07:28	Calibrate	Ziv	Clear Logs	True	-
11/04/2024 07:30	Calibrate	Ziv	TestFilters	True	-
11/04/2024 07:31	Calibrate	Ziv	Bit Normal Test	True	-
11/04/2024 07:31	Calibrate	Ziv	Bit Failure Test	True	-
11/04/2024 07:32	Calibrate	Ziv	Bit Returns to Normal Test	True	-
11/04/2024 07:32	Calibrate	Ziv	Basic Identification Test	True	-
13/05/2024 22:00	Lab_Tests	Anaheim Tech 2	Detector Identity Test	True	-
13/05/2024 22:00	Lab_Tests	Anaheim Tech 2	Detector Sub Model Type	True	-
13/05/2024 22:00	Lab_Tests	Anaheim Tech 2	Verify Dielectric Test	True	-
13/05/2024 22:06	Lab_Tests	Anaheim Tech 2	Set voltage to 24V	True	-
13/05/2024 22:05	Lab_Tests	Anaheim Tech 2	Verify Green Led	True	-

13/05/2024 22:01	Lab_Tests	Anaheim Tech 2	Noise Level	True	-
13/05/2024 22:02	Lab_Tests	Anaheim Tech 2	Bit Manual Test	True	-
13/05/2024 22:02	Lab_Tests	Anaheim Tech 2	Check Total Current 24V	True	-
13/05/2024 22:02	Lab_Tests	Anaheim Tech 2	Check HART on 4-20	True	-
13/05/2024 22:02	Lab_Tests	Anaheim Tech 2	Heater Test	True	-
13/05/2024 22:04	Lab_Tests	Anaheim Tech 2	Set voltage to 18V	True	-
13/05/2024 22:04	Lab_Tests	Anaheim Tech 2	Check Total Current 18V	True	-
13/05/2024 22:05	Lab_Tests	Anaheim Tech 2	Set voltage to 32V	True	-
13/05/2024 22:05	Lab_Tests	Anaheim Tech 2	Check Total Current 32V	True	-
13/05/2024 22:06	Lab_Tests	Anaheim Tech 2	Check 4/20 Current and Relays	True	-
13/05/2024 22:07	Lab_Tests	Anaheim Tech 2	Alarm Test	True	-
13/05/2024 22:08	Lab_Tests	Anaheim Tech 2	Verify Red Led	True	-
13/05/2024 22:08	Lab_Tests	Anaheim Tech 2	Check Error Flags	True	-
13/05/2024 22:08	Lab_Tests	Anaheim Tech 2	Verify Visual Inspection	True	-
13/05/2024 22:08	Lab_Tests	Anaheim Tech 2	Basic Identification Test	True	-
14/05/2024 22:20	TempChamber	-	Temp Chamber Report	True	-
15/05/2024 15:47	Clean_Before_Delivery	Anaheim Tech 2	Detector Identity Test	True	-
15/05/2024 15:48	Clean_Before_Delivery	Anaheim Tech 2	Detector Sub Model Type	True	-
15/05/2024 15:49	Clean_Before_Delivery	Anaheim Tech 2	TestFilters	True	-
15/05/2024 15:51	Clean_Before_Delivery	Anaheim Tech 2	Check Total Current 24V	True	-
15/05/2024 15:52	Clean_Before_Delivery	Anaheim Tech 2	Bit Normal Test no write	True	-
15/05/2024 15:52	Clean_Before_Delivery	Anaheim Tech 2	Check Error Flags	True	-
15/05/2024 15:52	Clean_Before_Delivery	Anaheim Tech 2	Clear Logs	True	-
15/05/2024 15:52	Clean_Before_Delivery	Anaheim Tech 2	Basic Identification Test	True	-

SINGLE COMPONENTS MANUAL COLLECTION
Ref to doc. 1724000821-IN-MAN-00010 TECHNICAL OPERATING AND MAINTENANCE MANUAL

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INSPECTION RELEASE NOTE

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ROSETTI MARINO	RELEASE NOTE	Nr. RN-0821-FOR-01	Sheet **1** of **2**
		DATA *Date* 26/09/2024	**Rev**. 00

PROGETTO *Project*	**CLIENTE** *Client*	**COMMESSA** *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	***123A90***

FORNITORE *Vendor*	**NUMERO D' ORDINE** *Purchase Order No.*
Fores	1724000821

Release Note	☐ FOR PAYMENT	☒ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.	

RELEASE NOTE FOR SHIPMENT

POS. *Item*	**QTÀ** *Quantity*	**DESCRIZIONE** *Description*	**Nr. TAG** *TAG No.*	**TIPO DI ISPEZIONE** *Kind of Inspection*	**ESITO** *Result*
10	22	Flame Detector	FLS-UV-IR-AS11	N/A	N/A
20	49	Gas Detector	POLYTRON 8200	N/A	N/A
40	9	Gas Detector	Polytron 8900	N/A	N/A
50	3	Gas Detector	Polytron 8100	N/A	N/A
60	24	Smoke Detector	MR601TEX	N/A	N/A
80	21	Emergency Push Button	STEXCP8PTDDLAS3A1RN24ExxxR	N/A	N/A
90	20	Emergency Push Button	STEXCP8PTDDLAS3A1YN24ExxxR	N/A	N/A
100	13	Beacon and Signalers	STEXB2LD2DC024AS3A1A	N/A	N/A
110	13	Beacon and Signalers	STEXB2LD2DC024AS3A1R	N/A	N/A
120	17	Alarm Horn	STEXS1FDC024AS3A1R	N/A	N/A
130	1	Flame Calibrator	FLAMESPEC UV-IR FLAME DETECTOR	N/A	N/A
140	2	Gas Kit Test	Calibration set H2	N/A	N/A
150	1	Gas Kit Test	Calibration set O2	N/A	N/A
160	N/A	Spare Parts	F&G FIELD EQP. 2-YEARS SPARE	N/A	N/A
190	32	Electrical Equipment Accessories		N/A	N/A

Warehouse open Monday to Friday from 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

INCARICATO *Person in charge* **ROSETTI MARINO** *Supply Management dept.*		**RAPPR. DEL CLIENTE** *Client Representative*	**FORNITORE** *Vendor*	**CONSTRUCTION MANAGER** *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Leonardo PASQUALI		N/A	N/A	N/A

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*
MOD-PRO-18-Rev. 2016-02 Release Note Report

ROSETTI MARINO	**RELEASE NOTE**	**Nr.** RN-0821-FOR-01	Sheet **2** of **2**
		DATA *Date* 26/09/2024	**Rev**. 00

PROGETTO *Project*	**CLIENTE** *Client*	**COMMESSA** *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	***123A90***

FORNITORE *Vendor*	**NUMERO D' ORDINE** *Purchase Order No.*
Fores	1724000821

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	**TIPO DI DOCUMENTO** *Type of Document*	**NUMERO DI DOCUMENTO** *Document Number*	**Rev.**	**COD. DI APPROV.** *Approval Code*
N/A	PO	1724000821	02	N/A
N/A	Packing List	224D10-00 Packing List	N/A	N/A

PUNCH LIST:

☐ **SI** / *YES* **VEDI PUNCH LIST ALLEGATA N°** / *REFER TO ATTACHED PUNCH LIST N°*

☒ **NO**/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE / *PERFORMANCE or WARRANTY BOND expiration date check*

Estensione Fidejussione Richiesta / *Performance or Warranty Bond Extension of Validity required*

☐ **SI** / *YES* ☒ **NO**/ *NO*

Acceptance Method: Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.

RELEASE NOTE

RISULTATO *RESULT*	**FORNITURA** *SUPPLY*	**DISTRIBUZIONE A** *DISTRIBUTION TO:*	
☒POSITIVO / *POSITIVE*	☒COMPLETA / *COMPLETE*	☒Project Manager	☒Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐PUNTI PENDENTI / *PUNCH-LIST*	☐ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

None

INCARICATO *Person in charge* **ROSETTI MARINO** *Supply Management dept.*		**RAPPR. DEL CLIENTE** *Client Representative*	**FORNITORE** *Vendor*	**CONSTRUCTION MANAGER** *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Leonardo PASQUALI		N/A	N/A	N/A

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*

MOD-PRO-18-Rev. 2016-02 Release Note Report