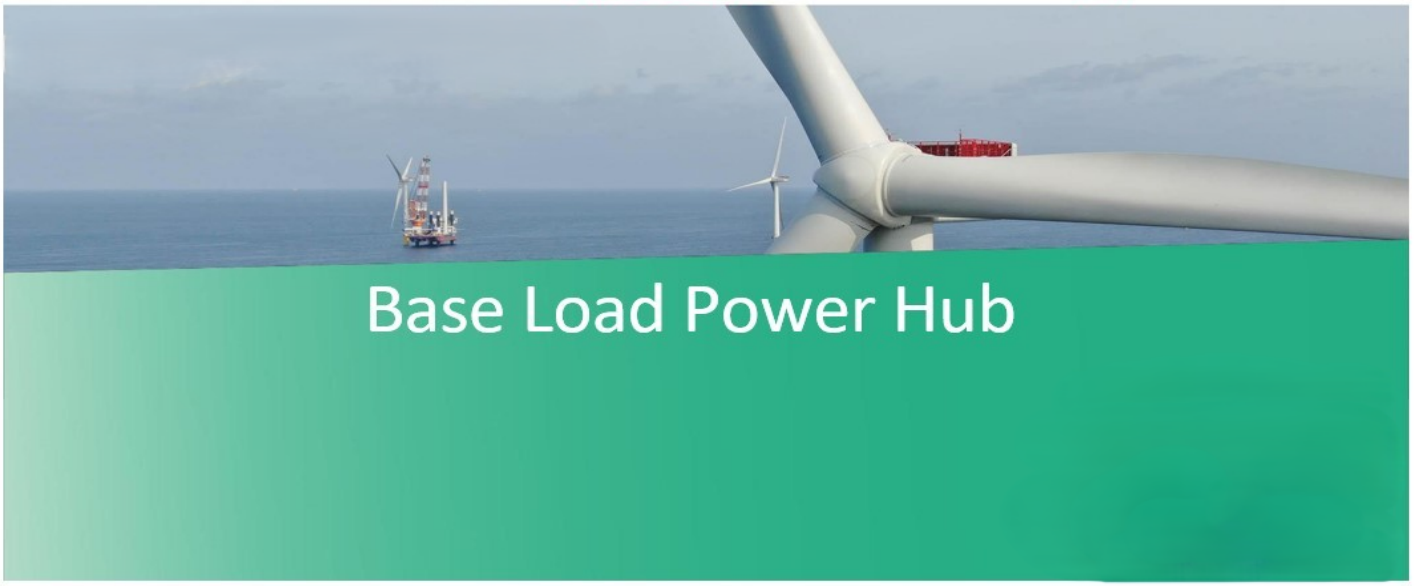
CROSSWIND

ROSETTI MARINO

PROVERUS

PROJECT **123A90 - HOLLANDSE KUST NOORD WIND PARK**
BLPH Project



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM	70 Safety and Facility Systems
SUBSYSTEM	70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

ROSETTI MARINO

Sub System N°:	70-15	**Tick as appropriate**	ONSHORE	OK
Description:	F&G Devices FZ-04 (B-400 I&T Equipment Room)		OFFSHORE	

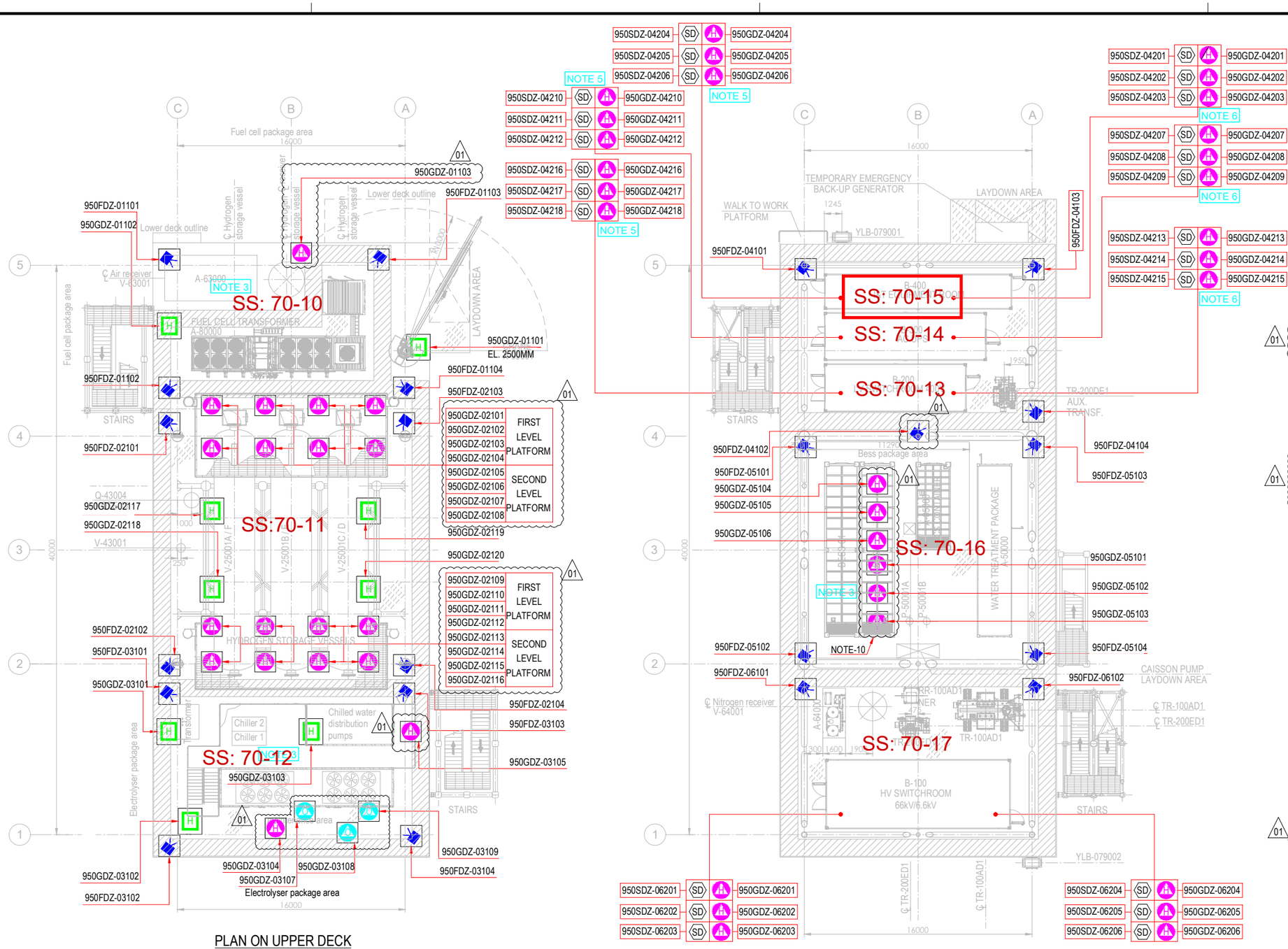
1. *SUB-SYSTEM DEFINITION*	OK
1.1 Sub-System Description / Boundary Limit Drawings	
2. *READY FOR OPERATION CERTIFICATE*	OK
2.1 Achievement Of Ready for Operation Certificate (RFO)	
2.2 Exception Punch Lists (per discipline)	
2.3 “As-Commissioned” P&ID’s / SLD’s / D&ID’s / C&E’s	
3. *CONSOLIDATED PUNCH LISTS*	OK
3.1 Cleared and Residual Items (sorted by discipline)	
4. *FUNCTIONAL TESTS SHEETS*	OK
4.1 Electrical functional test sheets index	
4.2 Electrical “As-Commissioned” interconnection diagrams	
4.3 Instrumentation Functional Test Sheets Index	
4.4 Instrumentation “As-Commissioned” interconnection diagrams	
4.5 Telecommunication Functional Test Sheets Index	
4.6 Telecommunication “As-Commissioned” I.C.D. / TSLD’s	
5. *SITE / OPERATIONAL:*	OK
5.1 Operational Test Procedure	
5.2 Operational Test Certificates	
6. *PIPING AND VESSEL PREPARATION*	NA
6.1 Final Mechanical / Vessel Inspection Checks Index	
6.2 Leak Test / Drying / Inerting Test Sheets Index	
6.3 Chemical Loading & First Fill records Index	
6.4 Chemical Cleaning Reports and Records Index	
6.5 Lubrication Schedule	
7. *VENDORS*	OK
7.1 Vendor Package Summary Index	
7.2 SAT Procedure with associated punch list and reference (Front Page)	
7.3 Vendor Spares & Special Tools lists references	
7.4 Vendor Data / Operations / Maintenance Manuals References	
8. *LIST OF MODIFICATIONS*	NA
8.1 List of changes initiated during the WORKSITE Commissioning phase pertaining to the relevant Sub-System will be incorporated in this section with relevant references (with location and position of blinds/spades, isolation LO & LC valves, list of electrical isolation status, and remaining inhibits and overrides)	
9. *SUPPORTING DOCUMENTS*	NA
9.1 Other supporting documents (as applicable)	

	Contractor Commissioning Site Leader	Company Commissioning Site Leader
Name	Anthony Iveson	Martin Taylor
Date	2025-04-25	2025-04-25
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-25T10:51:05.349Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-25T13:30:19.319Z

Section 1 SUB-SYSTEM DEFINITION

DRAWING NO. 123A90-DDL-PP-DL-30027

REV. 00



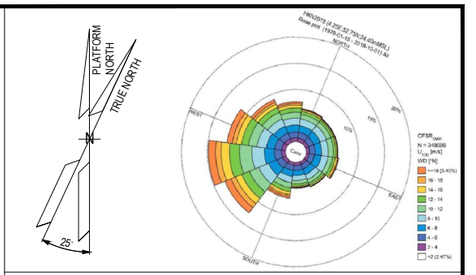
PLAN ON UPPER DECK
EL+30.310 T.O.S.

PLAN ON LOWER DECK
EL+23.310 T.O.S.

EQUIPMENT LIST

TAG NUMBER	DESCRIPTION	TAG NUMBER	DESCRIPTION
A-20000	ELECTROLYSER	TR-200DE1	TRANSFORMER AUX. 6.6kV/0.4kV
A-63000	INSTRUMENT AIR PACKAGE	TR-200ED1	SOLAR TRANSFORMER PV FARM EQUIPMENT
A-80000	FUEL CELL	RR-100AD1-NER	NEUTRAL EARTHING RESISTOR
A-85000	BESS	V-63001	AIR RECEIVER
A-50000	WATER TREATMENT PACKAGE	V-64001	NITROGEN RECEIVER
P-50001A/B	SEAWATER LIFT PUMPS	X-99001	CRANE
Q-43004	HYDROGEN VENT		
A-64000	NITROGEN SYSTEM		
V-25001A-F	HYDROGEN STORAGE VESSELS		
V-43001	HYDROGEN VENT KO DRUM		
YLB-079001/2	LIFE RAFTS		
B-100	HV/MV SWITCHROOM 66kV/6.6kV		
B-200	LV SWITCHROOM 400V		
B-300	AC UPS EQUIPMENT ROOM		
B-400	I&T EQUIPMENT ROOM		
TR-100AD1	TRANSFORMER MAIN 66kV/6.6kV		

SYMBOL	DESCRIPTION	QTY.
	UV-IR FLAME DETECTOR (FDZ)	22
	POINT SOURCE HYDROGEN DETECTOR (GDZ)	46
SD	SMOKE DETECTOR (SDZ)	24
	POINT SOURCE OXYGEN DETECTOR (GDZ)	3
H	ULTRA SONIC HYDROGEN DETECTOR (GDZ)	9



NOTES

1. ALL DIMENSIONS IN mm U.N.O
2. ALL ELEVATIONS IN METERS.
3. VENDOR TO DEFINE AND SUPPLY ALL FIRE & GAS DETECTORS TO BE USED IN FUEL CELL, ELECTROLYSER AND BESS. TO BE IN COMPLIANCE WITH PROJECT REQUIREMENTS. THESE WILL BE SHOWN IN THE NEXT REVISON OF THE DOCUMENT.
4. PERSONNEL EXPECTED TO USE HANDHELD HYDROGEN AND LOW OXYGEN DETECTORS WHEN WORKING IN CONFINED SPACES ENTRY.
5. F&G LAYOUTS FOR I&T EQUIPMENT ROOM, AC UPS, LV SWITCH ROOM AND HV/MV SWITCHROOM CONTAINERS LOCATED AT DOOR ENTRANCE OF EACH ROOM (2003) AND START ABANDON.
6. SMOKE DETECTORS (2003) AND POINT SOURCE HYDROGEN DETECTORS (2003) TO BE PROVIDED AROUND HVAC INLET AREAS AND UPON CONFIRMED DETECTION CLOSE DAMPERS TO ROOMS.
7. ULTRASONIC H2 DETECTORS TO BE LOCATED ON VALVE ACCESS PLATFORMS FOR H2 STORAGE VESSELS.
8. POINT SOURCE H2 DETECTORS TO BE LOCATED ON VALVE ACCESS PLATFORM FOR H2 STORAGE VESSELS.
9. EXACT LOCATION OF F&G DETECTORS AND DEVICES IS SHOWN IN THE 3D MODEL.
10. LOCATION OF THE 6 SENSOR (950GDZ-05101/102/103/104/105/106) AT CEALING ABOVE BESS ROOF, TO AVOID GAS ACCUMULATION AT POCKETS

ELEVATION

FDZ = 2.0m El.
GDZ = 2.5m El. INSIDE THE COTAINER
SDZ = 2.0m El.

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DS-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-PP-DS-70071	PLOT PLAN - BELOW LOWER DECK
123A90-DDL-SAF-RE-30020	FERA REPORT

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	10/07/24	MMA	CCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	12/02/24	MMA	CCA	DLO	ISSUE FOR APPROVAL (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :

F & G DETECTORS LAYOUT - LOWER & UPPER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN	CHECKED C. CARACCIOLO	APPROVED D. LO STERZO	DATE 10/07/24
A1	DRAWING NO. 123A90-DDL-SAF-DL-30027	SHEET 001	REV. 01

File Name : 123A90-DDL-SAF-DL-30027 Rev.01

Section 2 READY FOR OPERATION

Section 2.1 Achievement Of Ready for Operation Certificate (RFO)

ROSETTI MARINO

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

CROSSWIND

Ready For Operation (RFO) Certificate

COMPLETE	●	PARTIAL	

Revision:	1		Issued on:	2025-04-05	

System:	70	/	Safety and Facility Systems
SubSystem:	70-15	/	F&G Devices FZ-04 (B-400 I&T Equipment Room)

We hereby confirm that all Mechanical Completion (MC) and Pre-Commissioning/Commissioning (Pre-Comm./Comm.) activities for the above-mentioned System/Sub-System have been successfully completed in accordance with project specifications, relevant standards and contractual requirements. The System/Sub-System has been tested and verified to ensure readiness for operation. Issuance of this Certificate shall not release CONTRACTOR from any of his obligations, responsibilities or liabilities under the CONTRACT.

	Mechanical Completion: All required MC activities have been completed and approved
	Pre-Commissioning & Commissioning: All required Pre-Comm. and Comm. activities and OTPs have been completed and approved (Status Index attached)
	Punch List: All Punch items categorized as A and B have been cleared (PL report attached)
	Documentation: As-built documentation and Commissioning dossier has been completed, reviewed and approved

PUNCH LIST	PENDING POINTS
Note: All Category "A" and "B" Items must be cleared prior to issuance of the Ready For Operation (RFO) Certificate	B: 5

REMARKS:

	CONTRACTOR Commissioning Manager	**COMPANY** Commissioning Lead
Name	Anthony Iveson	Martin Taylor
Date	2025-04-08	2025-04-24
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-08T11:58:58.215Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-24T11:41:17.434Z

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 70-15 & process: COMM

Instrumental	70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
77-HY-012	B-400 Fire Damper AHU7 Inlet Air	ONSHORE	C10003792	FJ01D	100	2025-02-24	RFO 1
77-HY-013	B-400 Fire Damper AHU7 Return Air	ONSHORE	C10003802	FJ01D	100	2025-02-24	RFO 1
77-HY-014	B-400 Fire Damper AHU8 Inlet Air	ONSHORE	C10003804	FJ01D	100	2025-02-24	RFO 1
77-HY-015	B-400 Fire Damper AHU8 Return Air	ONSHORE	C10003807	FJ01D	100	2025-02-24	RFO 1
77-HY-016	B-400 Fire Damper Exhaust Air	ONSHORE	C10003809	FJ01D	100	2025-02-24	RFO 1
77-ZSL-012	B-400 Fire Damper AHU7 Inlet Air	ONSHORE	C10003793	FJ01D	100	2025-02-24	RFO 1
77-ZSL-013	B-400 Fire Damper AHU7 Return Air	ONSHORE	C10003803	FJ01D	100	2025-02-24	RFO 1
77-ZSL-014	B-400 Fire Damper AHU8 Inlet Air	ONSHORE	C10003805	FJ01D	100	2025-02-24	RFO 1
77-ZSL-015	B-400 Fire Damper AHU8 Return Air	ONSHORE	C10003808	FJ01D	100	2025-02-24	RFO 1
77-ZSL-016	B-400 Fire Damper Exhaust Air	ONSHORE	C10003810	FJ01D	100	2025-02-24	RFO 1
950-GDZ-04201	H2 GD FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003102	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04202	H2 GD FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003101	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04203	H2 GD FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003100	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04204	H2 GD FZ-04 B-400 Ambient	ONSHORE	C10003099	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04205	H2 GD FZ-04 B-400 Ambient	ONSHORE	C10003098	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04206	H2 GD FZ-04 B-400 Ambient	ONSHORE	C10003097	FJ04G	100	2025-01-13	RFO 1
950-MFA-04201	FZ-04 MFA Activation - B-400 Indoor	ONSHORE	C10004421	FJ04PB_FGS	100	2025-01-13	RFO 1
950-SDZ-04201	Smoke Detector - FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003072	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04202	Smoke Detector - FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003071	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04203	Smoke Detector - FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003070	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04204	Smoke Detector - FZ-04 B-400 Ambient	ONSHORE	C10003069	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04205	Smoke Detector - FZ-04 B-400 Ambient	ONSHORE	C10003068	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04206	Smoke Detector - FZ-04 B-400 Ambient	ONSHORE	C10003067	FJ04S	100	2025-01-28	RFO 1
950-XL-04201	FZ-04 Gas Beacon Act. - B-400 Indoor	ONSHORE	C10004448	FJ04FB	100	2025-01-13	RFO 1
950-XL-04202	FZ-04 Fire Beacon Act. - B-400 Indoor	ONSHORE	C10004449	FJ04FB	100	2025-01-13	RFO 1
950-XZ-04201	FZ-04 Sounder Act. - B-400 Indoor	ONSHORE	C10004467	FJ04MS	100	2025-02-11	RFO 1

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000627	A	C-950-XZ-04201 /B400-FGS-002 C10000414	The cable armor is not connected to the reference BTM . (C-950-XZ-04201/B400-FGS-002 - C-950-XL-04201/B400-FGS-002	.		APolo 2024-11-20	2024-12-07	Ecarotenuto 2024-12-07	2024-12-07
C30001099	A	C-950-SDZ-042 02/B400-FGS-0 03	Cable outer sheath is orange instead of blue as per cable schedule.	.		Ecarotenuto 2024-11-30	2024-12-05	LNovaga 2024-12-05	2024-12-05
C30001100	A	C-950-SDZ-042 03/B400-FGS-0 03	Cable outer sheath is orange instead of blue as per cable schedule.	.		Ecarotenuto 2024-11-30	2024-12-05	LNovaga 2024-12-05	2024-12-05
C30001111	A	950-SDZ-04205 C10001082	instrument is not accessible for inspection .	.		APolo 2024-12-02	2025-01-15	Ecarotenuto 2025-01-15	2025-01-15
C30001112	A	C-950-SDZ-042 05/B400-FGS-0 03	cable gland and instrument are not accessible for inspection . side C-950-SDZ-04205	.		APolo 2024-12-02	2025-01-15	Ecarotenuto 2025-01-15	2025-01-15
C30001333	A	950-GDZ-04205 C10001026	Instrument is not accessible for maintenance	.		Lmussi 2024-12-04	2025-01-15	Ecarotenuto 2025-01-15	2025-01-15
C30000625	B	C-950-XZ-04201 /B400-FGS-002 C10000414	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-20	2025-02-22	APolo 2025-02-22	2025-02-22
C30000626	B	C-950-XZ-04201 /B400-FGS-002 C10000414	Missing the tag plastic project on the cable , cabinet input B400-FGS-002.	.		APolo 2024-11-20	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000628	B	C-950-XL-04201 /B400-FGS-002 C10000415	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-20	2025-02-22	APolo 2025-02-22	2025-02-22

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000629	B	C-950-XL-04201 /B400-FGS-002 C10000415	Missing the tag plastic project on the cable , cabinet input B400-FGS-002.	.		APolo 2024-11-20	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000630	B	C-950-XL-04202 /B400-FGS-002 C10000416	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-20	2025-02-21	JKrizanic 2025-02-21	2025-02-21
C30000631	B	C-950-XL-04202 /B400-FGS-002 C10000416	Missing the tag plastic project on the cable , cabinet input B400-FGS-002.	.		APolo 2024-11-20	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000632	B	950-XL-04201 C10001114	the protective grid of the instrument is damaged (it is not fixed)	.		APolo 2024-11-20	2025-03-26	Gtangianu 2025-03-26	2025-03-26
C30000633	B	950-XL-04201 C10001114	Missing instrument S.S. project tag.	.		APolo 2024-11-20	2025-01-21	APolo 2025-01-21	2025-01-21
C30000634	B	950-XL-04201 C10001114	Missing n°1 fixing bolt	.		APolo 2024-11-20	2024-12-28	Gtangianu 2024-12-28	2024-12-28
C30000635	B	950-XZ-04201 C10001135	the earth cable is not fixed to the instrument	.		APolo 2024-11-20	2024-12-28	Gtangianu 2024-12-28	2024-12-28
C30000677	B	950-XL-04202 C10001115	Missing instrument S.S. project tag.	.		Ecarotenuto 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21
C30000678	B	950-XZ-04201 C10001135	Missing instrument S.S. project tag.	.		Ecarotenuto 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000717	B	C-950-GDZ-04203/B400-FGS-003	Missing the cross-ferruling (Cores + Shields) . Cabinet side B400-FGS-003 / stru. 950-GDZ-04203 . (see document	.		APolo 2024-11-21	2025-02-22	APolo 2025-02-22	2025-02-22
C30000718	B	C-950-GDZ-04203/B400-FGS-003	Missing the tag plastic project on the cable , cabinet input B400-FGS-003	.		APolo 2024-11-21	2025-01-22	APolo 2025-01-22	2025-01-22
C30000719	B	C-950-GDZ-04203/B400-FGS-003	The cable armor is not connected to the reference BTM .	.		APolo 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21
C30000720	B	C-950-GDZ-04203/B400-FGS-003	Double shield connected to one terminal on shield bar	.		APolo 2024-11-21	2025-03-03	Gtangianu 2025-03-03	2025-03-03
C30000721	B	950-GDZ-04203 C10001024	the earth cable is not fixed to the instrument	.		APolo 2024-11-21	2024-12-30	Gtangianu 2024-12-30	2024-12-30
C30000722	B	C-950-GDZ-04206/B400-FGS-003	Missing the tag plastic project on the cable , cabinet input B400-FGS-003	.		APolo 2024-11-21	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000723	B	C-950-GDZ-04206/B400-FGS-003	Missing the cross-ferruling (Cores + Shields) . Pannel side B400-FGS-002 / STRU. 950-GDZ-04206 . (see document	.		APolo 2024-11-21	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30000724	B	C-950-GDZ-04206/B400-FGS-003	The cable armor is not connected to the reference BTM .	.		APolo 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21
C30000725	B	C-950-GDZ-04206/B400-FGS-003	Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003	.		APolo 2024-11-21	2025-02-27	AAndreani 2025-02-27	2025-02-27

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000726	B	C-950-SDZ-04206/B400-FGS-003	Missing the tag plastic project on the cable , cabinet input B400-FGS-003	.		APolo 2024-11-21	2025-02-21	APolo 2025-02-21	2025-02-21
C30000727	B	C-950-SDZ-04206/B400-FGS-003	Missing the cross-ferruling (Cores + Shields) . Cabinet side B400-FGS-003 / JB 950-SDZ-04206 . (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-21	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30000728	B	C-950-SDZ-04206/B400-FGS-003	The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003 / stru. 950-SDZ-04206	.		APolo 2024-11-21			
C30000729	B	C-950-SDZ-04206/B400-FGS-003	Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003	.		APolo 2024-11-21	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30000795	B	950-GDZ-04206 C10001027	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-23	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001023	B	C-950-SDZ-04202/B400-FGS-003	Missing cable tags on all routing (C-950-SDZ-04202/B400-FGS-003).	.		Gtangianu 2024-11-29	2025-02-03	APolo 2025-02-03	2025-02-03
C30001024	B	C-950-SDZ-04202/B400-FGS-003	Identification tag wires missing both side (C-950-SDZ-04202/B400-FGS-003) connection.	.		Gtangianu 2024-11-29	2025-02-26	JKrizanic 2025-02-26	2025-02-26
C30001029	B	C-950-SDZ-04203/B400-FGS-003	Identification tag wires missing both side the (C-950-SDZ-04203/B400-FGS-003) connection.	.		Gtangianu 2024-11-29			
C30001030	B	C-950-SDZ-04203/B400-FGS-003	Missing cable tags on all routing ,and inside the panel C-950-SDZ-04203/B400-FGS-003.	.		Gtangianu 2024-11-29	2025-02-26	Gtangianu 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001103	B	C-950-MFA-04201/B400-FGS-003	Missing cable tag by B400-FGS-003 side	.		Ecarotenuto 2024-11-30	2025-01-07	Gtangianu 2025-01-07	2025-01-07
C30001110	B	950-SDZ-04205 C10001082	the plug installed is not conforms to specification. to be replace with Nickel Plated Brass, (see 123A90-DDL-IN-HD-40079_Rev.02 sh. 32)	.		APolo 2024-12-02	2025-02-26	APolo 2025-02-26	2025-02-26
C30001113	B	C-950-SDZ-04205/B400-FGS-003	Missing cable tag , cabinet input B400-FGS-003	.		APolo 2024-12-02	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30001114	B	C-950-SDZ-04205/B400-FGS-003	Missing the cross-ferruling (Cores) . Pannel side B400-FGS-003 . (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-12-02	2025-02-26	JKrizanic 2025-02-26	2025-02-26
C30001115	B	C-950-SDZ-04205/B400-FGS-003	Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003	.		APolo 2024-12-02	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001116	B	C-950-SDZ-04205/B400-FGS-003	The copper conductor of the cable armor must be individually connected to the earthing bar. side B400-FGS-003 See 123A90-DDL-EL-DD-20090.	.		APolo 2024-12-02	2025-01-21	APolo 2025-01-21	2025-01-21
C30001117	B	C-950-SDZ-04205/B400-FGS-003	The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003.	.		APolo 2024-12-02			
C30001118	B	C-950-SDZ-04205/B400-FGS-003	The cable is not correctly segregated in accordance with specification. must be installed the Barrier strip. side B400-FGS-003	.		APolo 2024-12-02			
C30001327	B	950-GDZ-04201 C10001022	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-01-21	APolo 2025-01-21	2025-01-21

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001328	B	950-GDZ-04201 C10001022	The earthing cable passes inside the unistrut and through the fixing holes. It should be dressed outside unistrut and fixed with SS cable ties.	.		Lmussi 2024-12-04	2025-01-29	APolo 2025-01-29	2025-01-29
C30001329	B	950-GDZ-04202 C10001023	The earthing cable passes inside the unistrut and through the fixing holes. It should be dressed outside unistrut and fixed with SS cable ties.	.		Lmussi 2024-12-04	2025-01-02	Ecarotenuto 2025-01-02	2025-01-02
C30001330	B	950-GDZ-04202 C10001023	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-02-28	AAndreani 2025-02-28	2025-02-28
C30001331	B	950-GDZ-04205 C10001026	Protective cap is missing	.		Lmussi 2024-12-04	2025-02-28	AAndreani 2025-02-28	2025-02-28
C30001332	B	950-GDZ-04205 C10001026	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001334	B	950-GDZ-04204 C10001025	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001335	B	C-950-GDZ-042 01/B400-FGS-0 03	On instrument side, bending radius to be better dressed.	.		Lmussi 2024-12-04	2025-02-25	APolo 2025-02-25	2025-02-25
C30001336	B	C-950-GDZ-042 01/B400-FGS-0 03	On Panel B400-FGS-003, core tags are missing for all wires. On instrument side, core tags are wrong for all wires.	.		Lmussi 2024-12-04	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001337	B	C-950-GDZ-042 01/B400-FGS-0 03	Cable labelling is missing outside B400-FGS-003 panel and MCT	.		Lmussi 2024-12-04	2025-02-03	APolo 2025-02-03	2025-02-03

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001338	B	C-950-GDZ-04202/B400-FGS-003	On instrument side, bending radius to be better dressed	.		Lmussi 2024-12-04	2025-02-08	GBertuccelli 2025-02-08	2025-02-08
C30001339	B	C-950-GDZ-04202/B400-FGS-003	Cable labelling is missing outside B400-FGS-003 panel and MCT.	.		Lmussi 2024-12-04	2025-02-22	JKrizanic 2025-02-22	2025-02-22
C30001340	B	C-950-GDZ-04202/B400-FGS-003	On Panel B400-FGS-003, core tags are mnissing for all wires. On instrument side, core tags are not as per Cross-Ferrules Philosophy for all cores.	.		Lmussi 2024-12-04	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001343	B	C-950-GDZ-04204/B400-FGS-003	Cable labeling reports C-950-GDZ-04204/B400-FGS-002 instead of C-950-GDZ-04204/B400-FGS-003 on instrumnet	.		Lmussi 2024-12-05	2025-02-03	APolo 2025-02-03	2025-02-03
C30001344	B	C-950-GDZ-04204/B400-FGS-003	On Panel B400-FGS-003, core tags all missing for all wires. On instrumnet side, core tags are not as per Cross-Ferruling Philosophy.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001347	B	C-950-GDZ-04204/B400-FGS-003	Two shield wires from different cables end up in the same termination.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001349	B	C-950-GDZ-04205/B400-FGS-003	Cable labeling is missing outside B400-FGS-003 Panel and MCT.	.		Lmussi 2024-12-05	2025-02-03	APolo 2025-02-03	2025-02-03
C30001350	B	C-950-GDZ-04205/B400-FGS-003	On Panel B400-FGS-003 side, core tags are missing for all wires. On instrument side, core tags are not as per Cross-Ferruling Philosophy.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001351	B	C-950-GDZ-04205/B400-FGS-003	Two shield wires from different cables end up in the same termination.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001592	B	C-950-SDZ-04204/B400-FGS-003	Identification tag wire missing side B400-FGS-003 (TB-B400-FGS-002-2 pin 1/2) connection.	.		Gtangianu 2024-12-10	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001593	B	C-950-SDZ-04204/B400-FGS-003	Missing cable tag side the instrument (950-SDZ-04204).	.		Gtangianu 2024-12-10	2025-02-26	Gtangianu 2025-02-26	2025-02-26
C30001594	B	C-950-SDZ-04201/B400-FGS-003	cable glande need to be tight. side the instrument (950-SDZ-04201).	.		Gtangianu 2024-12-10	2025-01-21	APolo 2025-01-21	2025-01-21
C30001595	B	C-950-SDZ-04201/B400-FGS-003	Identification tag wire missing both side (C-950-SDZ-04201/B400-FGS-003).	.		Gtangianu 2024-12-10			
C30001596	B	C-950-SDZ-04201/B400-FGS-003	Missing cable tag side the instrument (950-SDZ-04201).	.		Gtangianu 2024-12-10	2025-02-28	AAndreani 2025-02-28	2025-02-28

Section 2.2 Exception Punch Lists (per discipline)

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000728	B	C-950-SDZ-04206/B400-FGS-003	The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003 / stru. 950-SDZ-04206	.		APolo 2024-11-21			
C30001117	B	C-950-SDZ-04205/B400-FGS-003	The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003.	.		APolo 2024-12-02			
C30001118	B	C-950-SDZ-04205/B400-FGS-003	The cable is not correctly segregated in accordance with specification. must be installed the Barrier strip. side B400-FGS-003	.		APolo 2024-12-02			

Section 2.3 “As-Commissioned” P&ID's / SLD's / D&ID's / C&E's

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000627	A	C-950-XZ-04201 /B400-FGS-002 C10000414	The cable armor is not connected to the reference BTM . (C-950-XZ-04201/B400-FGS-002 - C-950-XL-04201/B400-FGS-002	.		APolo 2024-11-20	2024-12-07	Ecarotenuto 2024-12-07	2024-12-07
C30001099	A	C-950-SDZ-042 02/B400-FGS-0 03	Cable outer sheath is orange instead of blue as per cable schedule.	.		Ecarotenuto 2024-11-30	2024-12-05	LNovaga 2024-12-05	2024-12-05
C30001100	A	C-950-SDZ-042 03/B400-FGS-0 03	Cable outer sheath is orange instead of blue as per cable schedule.	.		Ecarotenuto 2024-11-30	2024-12-05	LNovaga 2024-12-05	2024-12-05
C30001111	A	950-SDZ-04205 C10001082	instrument is not accessible for inspection .	.		APolo 2024-12-02	2025-01-15	Ecarotenuto 2025-01-15	2025-01-15
C30001112	A	C-950-SDZ-042 05/B400-FGS-0 03	cable gland and instrument are not accessible for inspection . side C-950-SDZ-04205	.		APolo 2024-12-02	2025-01-15	Ecarotenuto 2025-01-15	2025-01-15
C30001333	A	950-GDZ-04205 C10001026	Instrument is not accessible for maintenance	.		Lmussi 2024-12-04	2025-01-15	Ecarotenuto 2025-01-15	2025-01-15
C30000625	B	C-950-XZ-04201 /B400-FGS-002 C10000414	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-20	2025-02-22	APolo 2025-02-22	2025-02-22
C30000626	B	C-950-XZ-04201 /B400-FGS-002 C10000414	Missing the tag plastic project on the cable , cabinet input B400-FGS-002.	.		APolo 2024-11-20	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000628	B	C-950-XL-04201 /B400-FGS-002 C10000415	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-20	2025-02-22	APolo 2025-02-22	2025-02-22

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000629	B	C-950-XL-04201 /B400-FGS-002 C10000415	Missing the tag plastic project on the cable , cabinet input B400-FGS-002.	.		APolo 2024-11-20	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000630	B	C-950-XL-04202 /B400-FGS-002 C10000416	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-20	2025-02-21	JKrizanic 2025-02-21	2025-02-21
C30000631	B	C-950-XL-04202 /B400-FGS-002 C10000416	Missing the tag plastic project on the cable , cabinet input B400-FGS-002.	.		APolo 2024-11-20	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000632	B	950-XL-04201 C10001114	the protective grid of the instrument is damaged (it is not fixed)	.		APolo 2024-11-20	2025-03-26	Gtangianu 2025-03-26	2025-03-26
C30000633	B	950-XL-04201 C10001114	Missing instrument S.S. project tag.	.		APolo 2024-11-20	2025-01-21	APolo 2025-01-21	2025-01-21
C30000634	B	950-XL-04201 C10001114	Missing n°1 fixing bolt	.		APolo 2024-11-20	2024-12-28	Gtangianu 2024-12-28	2024-12-28
C30000635	B	950-XZ-04201 C10001135	the earth cable is not fixed to the instrument	.		APolo 2024-11-20	2024-12-28	Gtangianu 2024-12-28	2024-12-28
C30000677	B	950-XL-04202 C10001115	Missing instrument S.S. project tag.	.		Ecarotenuto 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21
C30000678	B	950-XZ-04201 C10001135	Missing instrument S.S. project tag.	.		Ecarotenuto 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000717	B	C-950-GDZ-04203/B400-FGS-003	Missing the cross-ferruling (Cores + Shields) . Cabinet side B400-FGS-003 / stru. 950-GDZ-04203 . (see document	.		APolo 2024-11-21	2025-02-22	APolo 2025-02-22	2025-02-22
C30000718	B	C-950-GDZ-04203/B400-FGS-003	Missing the tag plastic project on the cable , cabinet input B400-FGS-003	.		APolo 2024-11-21	2025-01-22	APolo 2025-01-22	2025-01-22
C30000719	B	C-950-GDZ-04203/B400-FGS-003	The cable armor is not connected to the reference BTM .	.		APolo 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21
C30000720	B	C-950-GDZ-04203/B400-FGS-003	Double shield connected to one terminal on shield bar	.		APolo 2024-11-21	2025-03-03	Gtangianu 2025-03-03	2025-03-03
C30000721	B	950-GDZ-04203 C10001024	the earth cable is not fixed to the instrument	.		APolo 2024-11-21	2024-12-30	Gtangianu 2024-12-30	2024-12-30
C30000722	B	C-950-GDZ-04206/B400-FGS-003	Missing the tag plastic project on the cable , cabinet input B400-FGS-003	.		APolo 2024-11-21	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30000723	B	C-950-GDZ-04206/B400-FGS-003	Missing the cross-ferruling (Cores + Shields) . Pannel side B400-FGS-002 / STRU. 950-GDZ-04206 . (see document	.		APolo 2024-11-21	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30000724	B	C-950-GDZ-04206/B400-FGS-003	The cable armor is not connected to the reference BTM .	.		APolo 2024-11-21	2025-01-21	APolo 2025-01-21	2025-01-21
C30000725	B	C-950-GDZ-04206/B400-FGS-003	Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003	.		APolo 2024-11-21	2025-02-27	AAndreani 2025-02-27	2025-02-27

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000726	B	C-950-SDZ-04206/B400-FGS-003	Missing the tag plastic project on the cable , cabinet input B400-FGS-003	.		APolo 2024-11-21	2025-02-21	APolo 2025-02-21	2025-02-21
C30000727	B	C-950-SDZ-04206/B400-FGS-003	Missing the cross-ferruling (Cores + Shields) . Cabinet side B400-FGS-003 / JB 950-SDZ-04206 . (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-21	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30000728	B	C-950-SDZ-04206/B400-FGS-003	The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003 / stru. 950-SDZ-04206	.		APolo 2024-11-21	2025-06-26	Ecarotenuto 2025-06-26	2025-06-26
C30000729	B	C-950-SDZ-04206/B400-FGS-003	Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003	.		APolo 2024-11-21	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30000795	B	950-GDZ-04206 C10001027	The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-11-23	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001023	B	C-950-SDZ-04202/B400-FGS-003	Missing cable tags on all routing (C-950-SDZ-04202/B400-FGS-003).	.		Gtangianu 2024-11-29	2025-02-03	APolo 2025-02-03	2025-02-03
C30001024	B	C-950-SDZ-04202/B400-FGS-003	Identification tag wires missing both side (C-950-SDZ-04202/B400-FGS-003) connection.	.		Gtangianu 2024-11-29	2025-02-26	JKrizanic 2025-02-26	2025-02-26
C30001029	B	C-950-SDZ-04203/B400-FGS-003	Identification tag wires missing both side the (C-950-SDZ-04203/B400-FGS-003) connection.	.		Gtangianu 2024-11-29	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30001030	B	C-950-SDZ-04203/B400-FGS-003	Missing cable tags on all routing ,and inside the panel C-950-SDZ-04203/B400-FGS-003.	.		Gtangianu 2024-11-29	2025-02-26	Gtangianu 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001103	B	C-950-MFA-04201/B400-FGS-003	Missing cable tag by B400-FGS-003 side	.		Ecarotenuto 2024-11-30	2025-01-07	Gtangianu 2025-01-07	2025-01-07
C30001110	B	950-SDZ-04205 C10001082	the plug installed is not conforms to specification. to be replace with Nickel Plated Brass, (see 123A90-DDL-IN-HD-40079_Rev.02 sh. 32)	.		APolo 2024-12-02	2025-02-26	APolo 2025-02-26	2025-02-26
C30001113	B	C-950-SDZ-04205/B400-FGS-003	Missing cable tag , cabinet input B400-FGS-003	.		APolo 2024-12-02	2025-01-03	Gtangianu 2025-01-03	2025-01-03
C30001114	B	C-950-SDZ-04205/B400-FGS-003	Missing the cross-ferruling (Cores) . Pannel side B400-FGS-003 . (see document 123A90-DDL-IN-DG-40016 sh.3)	.		APolo 2024-12-02	2025-02-26	JKrizanic 2025-02-26	2025-02-26
C30001115	B	C-950-SDZ-04205/B400-FGS-003	Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003	.		APolo 2024-12-02	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001116	B	C-950-SDZ-04205/B400-FGS-003	The copper conductor of the cable armor must be individually connected to the earthing bar. side B400-FGS-003 See 123A90-DDL-EL-DD-20090.	.		APolo 2024-12-02	2025-01-21	APolo 2025-01-21	2025-01-21
C30001117	B	C-950-SDZ-04205/B400-FGS-003	The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003.	.		APolo 2024-12-02	2025-06-26	Ecarotenuto 2025-06-26	2025-06-26
C30001118	B	C-950-SDZ-04205/B400-FGS-003	The cable is not correctly segregated in accordance with specification. must be installed the Barrier strip. side B400-FGS-003	.		APolo 2024-12-02	2025-05-22	Gtangianu 2025-05-22	2025-05-22
C30001327	B	950-GDZ-04201 C10001022	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-01-21	APolo 2025-01-21	2025-01-21

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001328	B	950-GDZ-04201 C10001022	The earthing cable passes inside the unistrut and through the fixing holes. It should be dressed outside unistrut and fixed with SS cable ties.	.		Lmussi 2024-12-04	2025-01-29	APolo 2025-01-29	2025-01-29
C30001329	B	950-GDZ-04202 C10001023	The earthing cable passes inside the unistrut and through the fixing holes. It should be dressed outside unistrut and fixed with SS cable ties.	.		Lmussi 2024-12-04	2025-01-02	Ecarotenuto 2025-01-02	2025-01-02
C30001330	B	950-GDZ-04202 C10001023	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-02-28	AAndreani 2025-02-28	2025-02-28
C30001331	B	950-GDZ-04205 C10001026	Protective cap is missing	.		Lmussi 2024-12-04	2025-02-28	AAndreani 2025-02-28	2025-02-28
C30001332	B	950-GDZ-04205 C10001026	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001334	B	950-GDZ-04204 C10001025	Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but	.		Lmussi 2024-12-04	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001335	B	C-950-GDZ-042 01/B400-FGS-0 03	On instrument side, bending radius to be better dressed.	.		Lmussi 2024-12-04	2025-02-25	APolo 2025-02-25	2025-02-25
C30001336	B	C-950-GDZ-042 01/B400-FGS-0 03	On Panel B400-FGS-003, core tags are missing for all wires. On instrument side, core tags are wrong for all wires.	.		Lmussi 2024-12-04	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001337	B	C-950-GDZ-042 01/B400-FGS-0 03	Cable labelling is missing outside B400-FGS-003 panel and MCT	.		Lmussi 2024-12-04	2025-02-03	APolo 2025-02-03	2025-02-03

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001338	B	C-950-GDZ-04202/B400-FGS-003	On instrument side, bending radius to be better dressed	.		Lmussi 2024-12-04	2025-02-08	GBertuccelli 2025-02-08	2025-02-08
C30001339	B	C-950-GDZ-04202/B400-FGS-003	Cable labelling is missing outside B400-FGS-003 panel and MCT.	.		Lmussi 2024-12-04	2025-02-22	JKrizanic 2025-02-22	2025-02-22
C30001340	B	C-950-GDZ-04202/B400-FGS-003	On Panel B400-FGS-003, core tags are mnissing for all wires. On instrument side, core tags are not as per Cross-Ferrules Philosophy for all cores.	.		Lmussi 2024-12-04	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001343	B	C-950-GDZ-04204/B400-FGS-003	Cable labeling reports C-950-GDZ-04204/B400-FGS-002 instead of C-950-GDZ-04204/B400-FGS-003 on instrumnet	.		Lmussi 2024-12-05	2025-02-03	APolo 2025-02-03	2025-02-03
C30001344	B	C-950-GDZ-04204/B400-FGS-003	On Panel B400-FGS-003, core tags all missing for all wires. On instrumnet side, core tags are not as per Cross-Ferruling Philosophy.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001347	B	C-950-GDZ-04204/B400-FGS-003	Two shield wires from different cables end up in the same termination.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001349	B	C-950-GDZ-04205/B400-FGS-003	Cable labeling is missing outside B400-FGS-003 Panel and MCT.	.		Lmussi 2024-12-05	2025-02-03	APolo 2025-02-03	2025-02-03
C30001350	B	C-950-GDZ-04205/B400-FGS-003	On Panel B400-FGS-003 side, core tags are missing for all wires. On instrument side, core tags are not as per Cross-Ferruling Philosophy.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03
C30001351	B	C-950-GDZ-04205/B400-FGS-003	Two shield wires from different cables end up in the same termination.	.		Lmussi 2024-12-05	2025-03-03	JKrizanic 2025-03-03	2025-03-03

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001592	B	C-950-SDZ-04204/B400-FGS-003	Identification tag wire missing side B400-FGS-003 (TB-B400-FGS-002-2 pin 1/2) connection.	.		Gtangianu 2024-12-10	2025-02-27	AAndreani 2025-02-27	2025-02-27
C30001593	B	C-950-SDZ-04204/B400-FGS-003	Missing cable tag side the instrument (950-SDZ-04204).	.		Gtangianu 2024-12-10	2025-02-26	Gtangianu 2025-02-26	2025-02-26
C30001594	B	C-950-SDZ-04201/B400-FGS-003	cable glande need to be tight. side the instrument (950-SDZ-04201).	.		Gtangianu 2024-12-10	2025-01-21	APolo 2025-01-21	2025-01-21
C30001595	B	C-950-SDZ-04201/B400-FGS-003	Identification tag wire missing both side (C-950-SDZ-04201/B400-FGS-003).	.		Gtangianu 2024-12-10	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30001596	B	C-950-SDZ-04201/B400-FGS-003	Missing cable tag side the instrument (950-SDZ-04201).	.		Gtangianu 2024-12-10	2025-02-28	AAndreani 2025-02-28	2025-02-28

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001351

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000412	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04205/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Two shield wires from different cables end up in the same termination.

Name: Luca Mussi

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-03

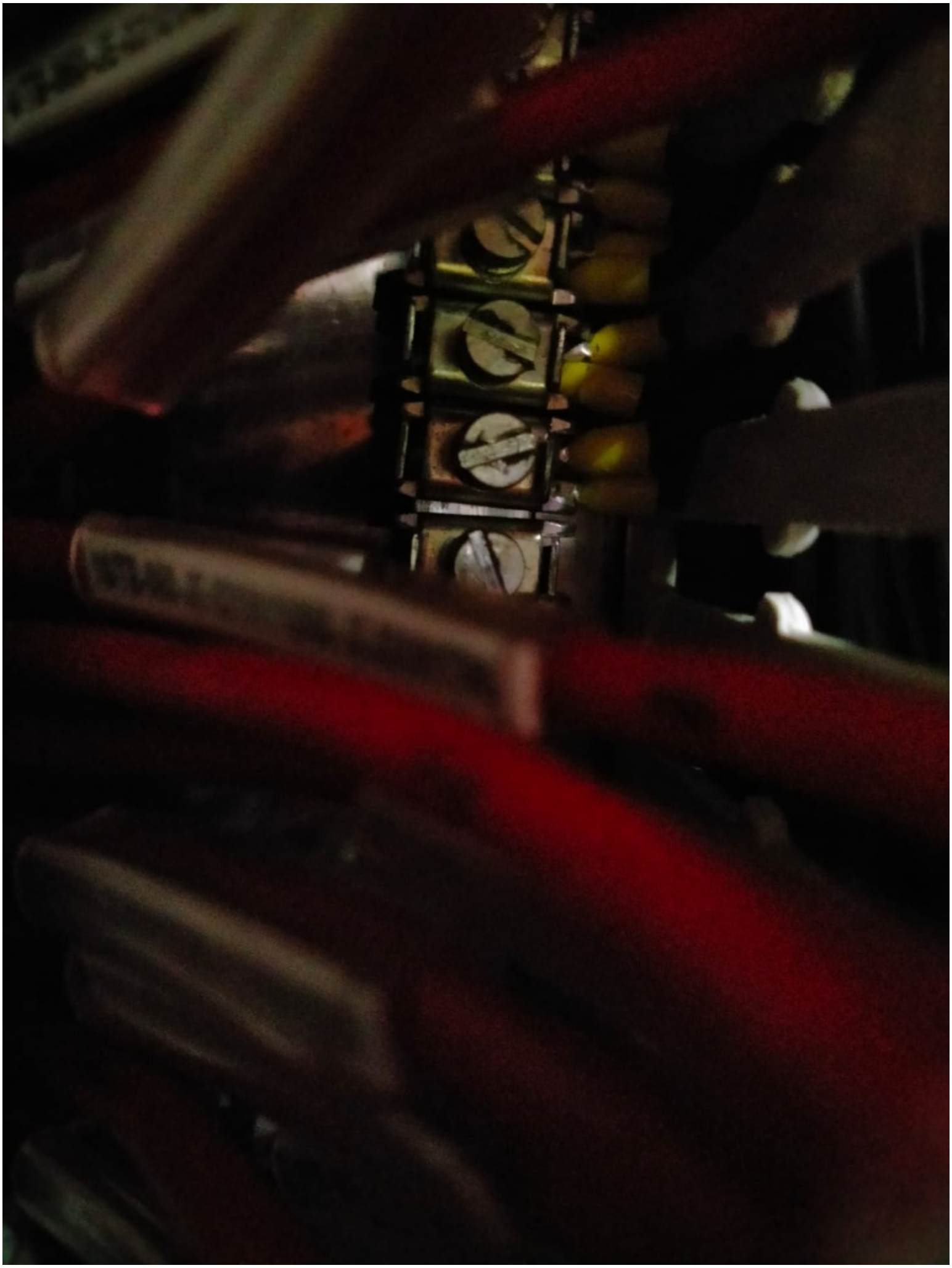
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001592

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000405	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04204/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Identification tag wire missing side B400-FGS-003 (TB-B400-FGS-002-2 pin 1/2) connection.

Name: Giovanni Tangianu
Date: 2024-12-10
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-10
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani
Date: 2025-02-27
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


TB-400-FGS-002-2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001593

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000405	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04204/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing cable tag side the instrument (950-SDZ-04204).

Name: Giovanni Tangianu
Date: 2024-12-10
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-10
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-02-26
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001594

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000402	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04201/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

cable glande need to be tight. side the instrument (950-SDZ-04201).

Name: Giovanni Tangianu
Date: 2024-12-10
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-10
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-01-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001595

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000402	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04201/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Identification tag wire missing both side (C-950-SDZ-04201/B400-FGS-003).

Name: Giovanni Tangianu
Date: 2024-12-10
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-10
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-04-08
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001596

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000402	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04201/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing cable tag side the instrument (950-SDZ-04201).

Name: Giovanni Tangianu
Date: 2024-12-10
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-10
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani
Date: 2025-02-28
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001024

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000403	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04202/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Identification tag wires missing both side (C-950-SDZ-04202/B400-FGS-003) connection.

Name: Giovanni Tangianu

Date: 2024-11-29

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-29
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-02-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001029

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000404	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04203/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Identification tag wires missing both side the (C-950-SDZ-04203/B400-FGS-003) connection.

Name: Giovanni Tangianu

Date: 2024-11-29

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-29
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-08

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001030

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000404	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04203/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing cable tags on all routing ,and inside the panel C-950-SDZ-04203/B400-FGS-003.

Name: Giovanni Tangianu

Date: 2024-11-29

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-29
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001099

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000403	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04202/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Cable outer sheath is orange instead of blue as per cable schedule.

Name: Eleonora Carotenuto

Date: 2024-11-30

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-30
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

RLMU Done.

Name: Lorenzo Novaga

Date: 2024-12-05

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001100

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000404	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04203/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Cable outer sheath is orange instead of blue as per cable schedule.

Name: Eleonora Carotenuto

Date: 2024-11-30

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-30
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

RLMU Done.

Name: Lorenzo Novaga

Date: 2024-12-05

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001103

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000417	1.4 Discipline	Instrumental
1.2 Item	C-950-MFA-04201/B400-FGS-003	MANUAL FIRE ALARM / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing cable tag by B400-FGS-003 side

Name: Eleonora Carotenuto

Date: 2024-11-30

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-30
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-07

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001110

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001082	1.4 Discipline	Instrumental
1.2 Item	950-SDZ-04205	Smoke Detector - FZ-04 B-400 Ambient	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

the plug installed is not conforms to specification. to be replace with
Nickel Plated Brass, (see 123A90-DDL-IN-HD-40079_Rev.02 sh. 32)

Name: Alessio Polo
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-02-26
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


STATIC CHARGING HAZARD - SEE INSTRUCTIONS

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001111

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001082	1.4 Discipline	Instrumental
1.2 Item	950-SDZ-04205	Smoke Detector - FZ-04 B-400 Ambient	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

instrument is not accessible for inspection .

Name: Alessio Polo

Date: 2024-12-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Instrument has been inspected with positive result

Name: Eleonora Carotenuto

Date: 2025-01-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001112

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000406	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04205/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

cable gland and instrument are not accessible for inspection . side C-950-SDZ-04205

Name: Alessio Polo

Date: 2024-12-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Instrument and cable gland have been inspected with positive result

Name: Eleonora Carotenuto

Date: 2025-01-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:




ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTIONS

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001113

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000406	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04205/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing cable tag , cabinet input B400-FGS-003

Name: Alessio Polo

Date: 2024-12-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-01-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001114

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000406	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04205/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the cross-ferruling (Cores) . Pannel side B400-FGS-003 . (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic
Date: 2025-02-26
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


TB-400-FGS-002-2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
5 6 7 8 9 10 11 12

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001115

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000406	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04205/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003

Name: Alessio Polo

Date: 2024-12-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-27

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

TB-950-JE-04208
TB-400-FGS-002-2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001116

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000406	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04205/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The copper conductor of the cable armor must be individually connected to the earthing bar. side B400-FGS-003 See 123A90-DDL-EL-DD-20090.

Name: Alessio Polo
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-01-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001117

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000406	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04205/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003.

Name: Alessio Polo
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Eleonora Carotenuto
Date: 2025-06-26
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

TB-950-JE-04208
TB-400-FGS-002-2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001118

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000406	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04205/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The cable is not correctly segregated in accordance with specification. must be installed the Barrier strip. side B400-FGS-003

Name: Alessio Polo
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

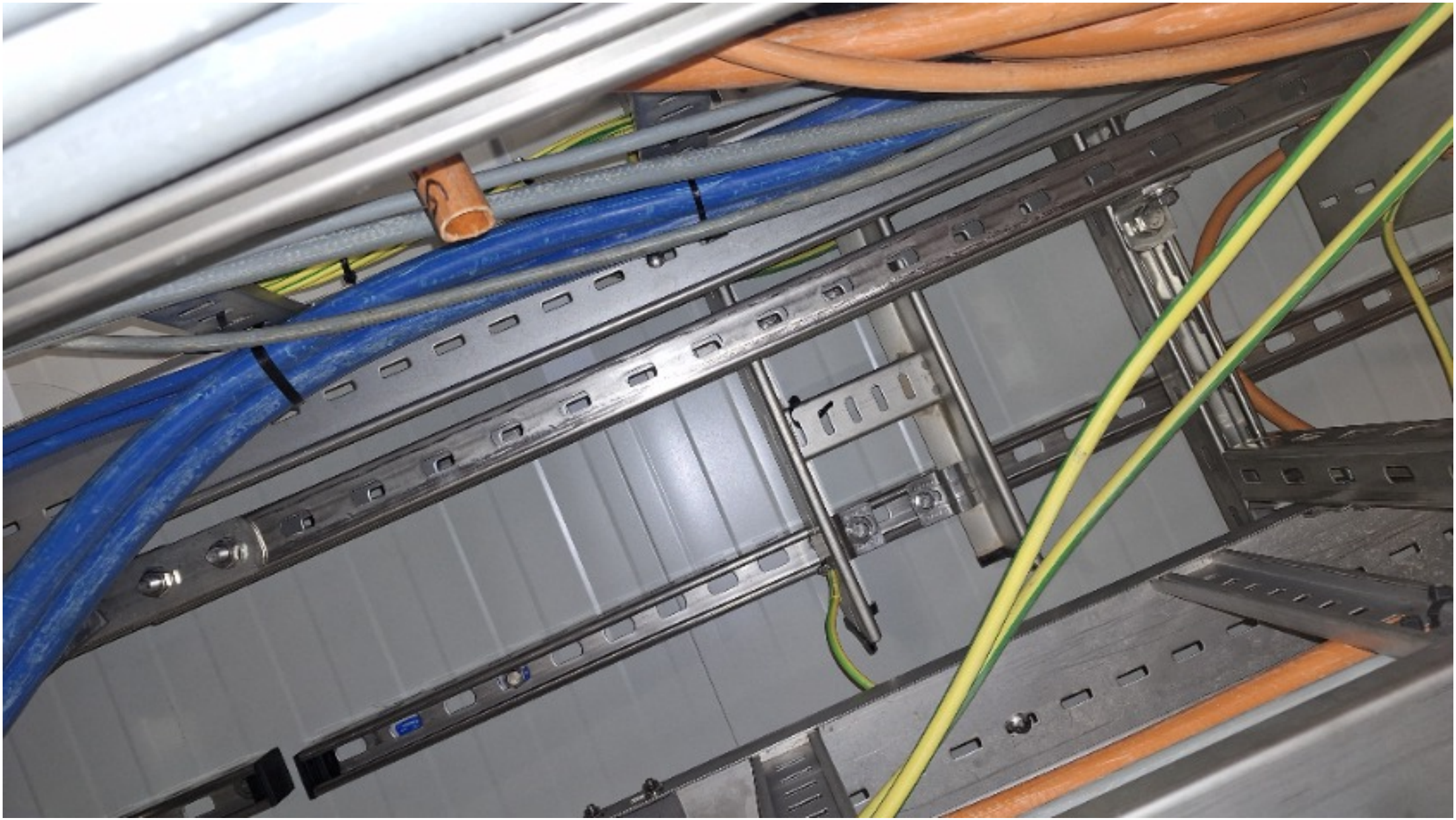
5 - CLEARANCE CHECK

Accepted as per compliance IEC 60079-14:2013 clause 12.2.1

Name: Giovanni Tangianu
Date: 2025-05-22
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:





ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001327

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001022	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04201	H2 GD FZ-04 B-400 HVAC Air Intake	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but in plastic)

Name: Luca Mussi
Date: 2024-12-04
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

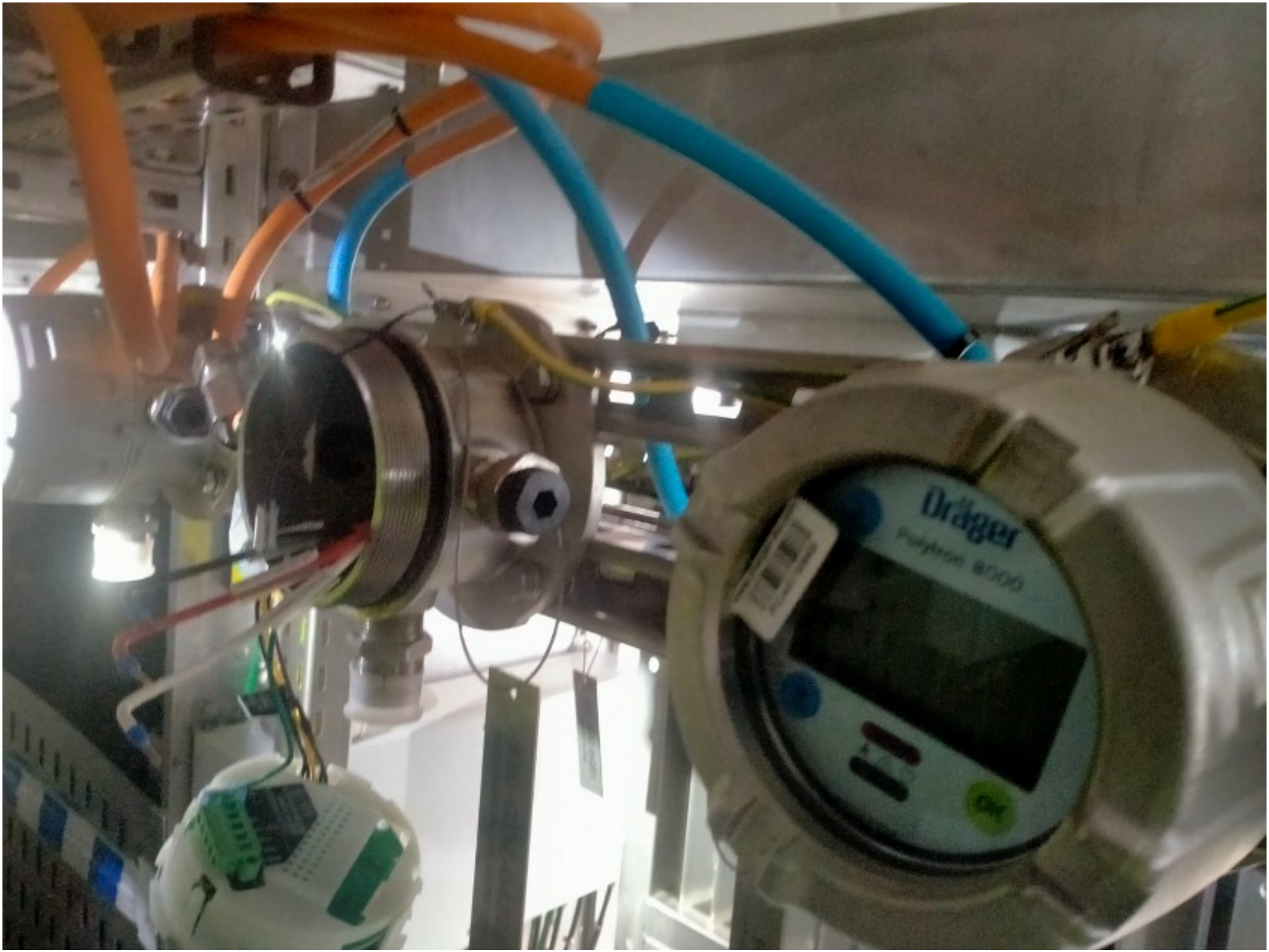
5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-01-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


Dräger

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001328

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001022	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04201	H2 GD FZ-04 B-400 HVAC Air Intake	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The earthing cable passes inside the unistrut and through the fixing holes.
It should be dressed outside unistrut and fixed with SS cable ties.

Name: Luca Mussi
Date: 2024-12-04
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-01-29
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001329

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001023	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04202	H2 GD FZ-04 B-400 HVAC Air Intake	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The earthing cable passes inside the unistrut and through the fixing holes.
It should be dressed outside unistrut and fixed with SS cable ties.

Name: Luca Mussi
Date: 2024-12-04
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

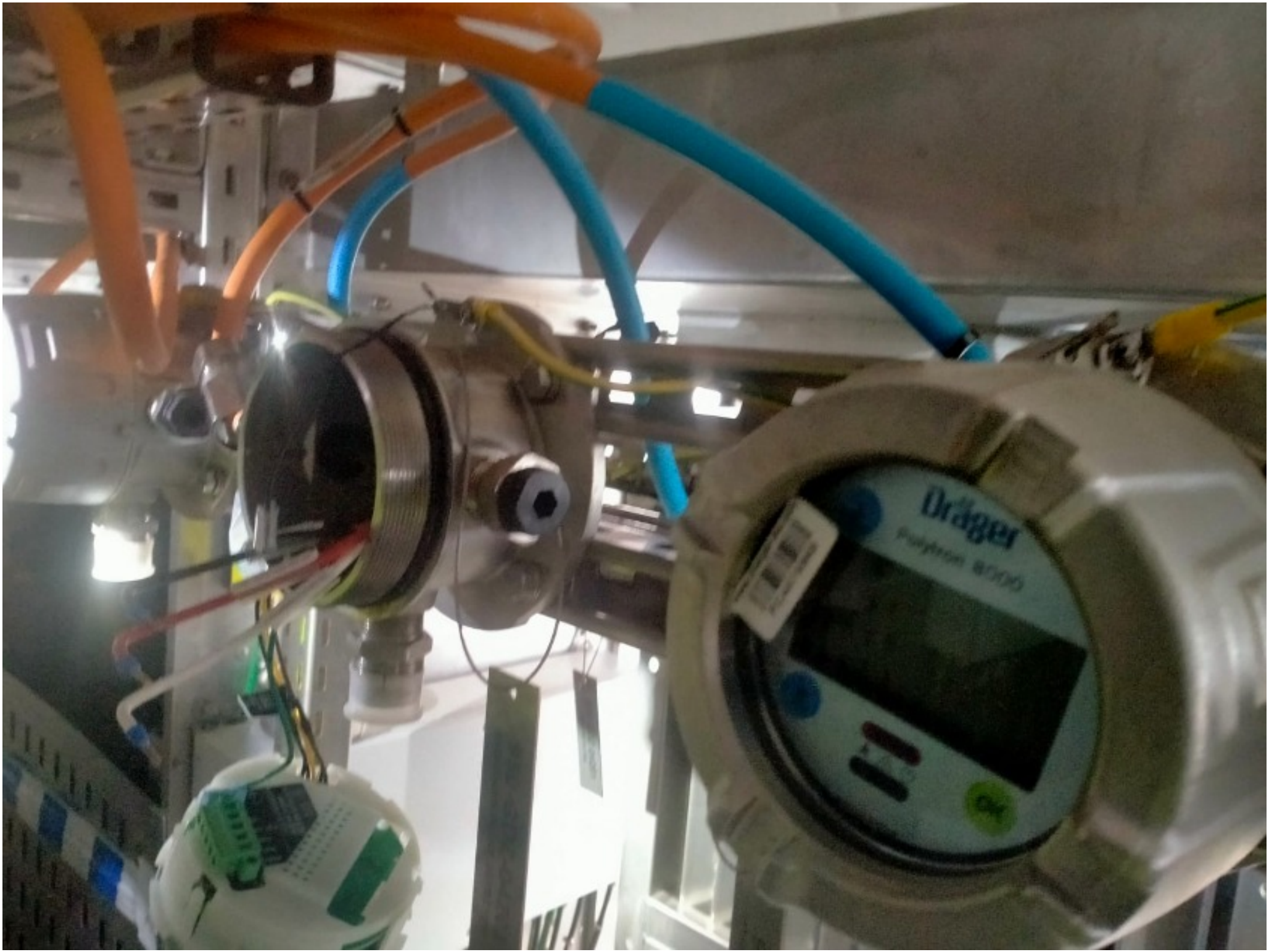
5 - CLEARANCE CHECK

DONE

Name: Eleonora Carotenuto
Date: 2025-01-02
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


Dräger

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001330

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001023	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04202	H2 GD FZ-04 B-400 HVAC Air Intake	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but in plastic)

Name: Luca Mussi
Date: 2024-12-04
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name
Date
Signature

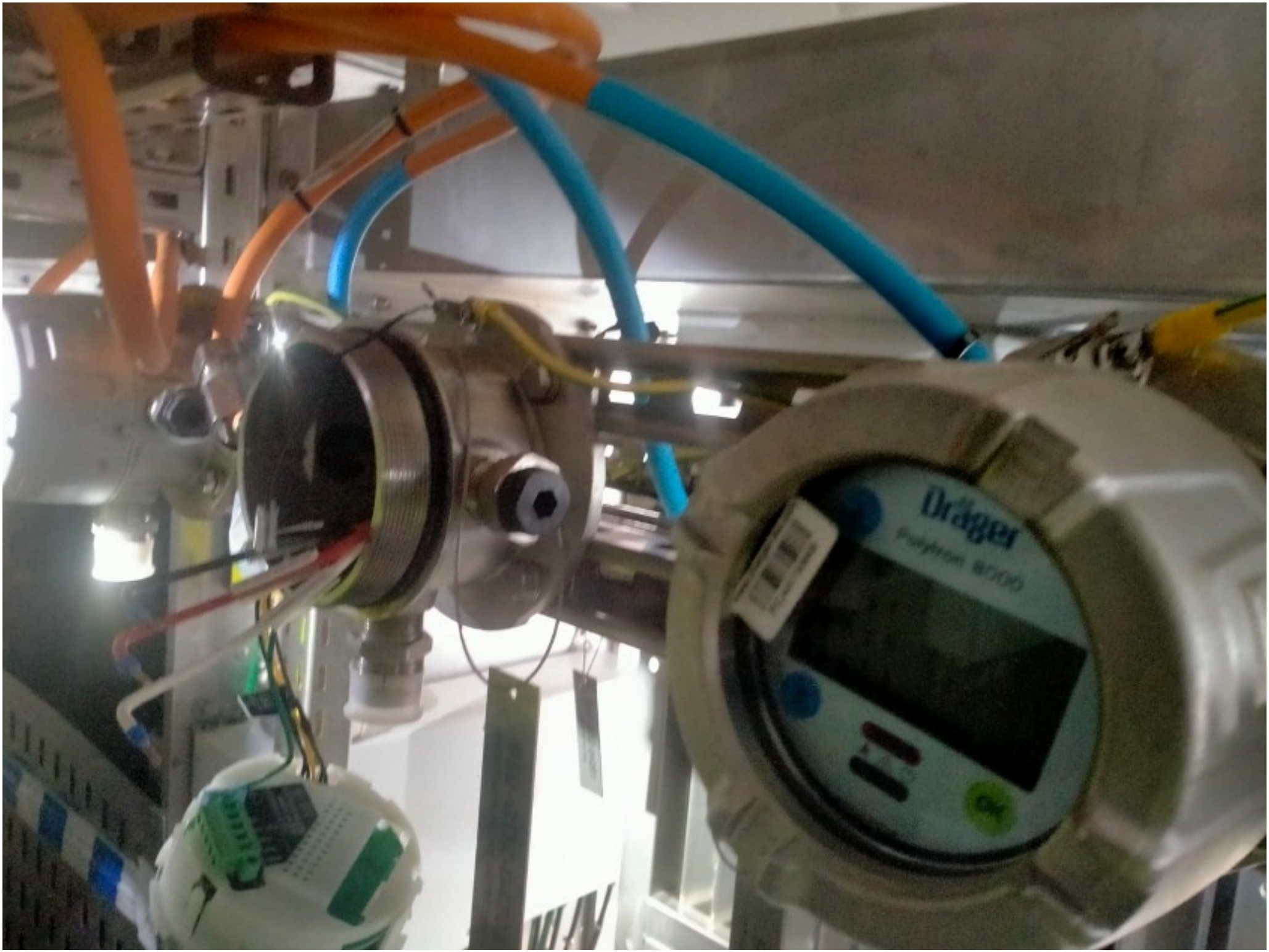
5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani
Date: 2025-02-28
Signature

6- CLEARANCE APPROVAL

Name
Date
Signature


Dräger

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001331

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001026	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04205	H2 GD FZ-04 B-400 Ambient	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Protective cap is missing

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-28

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


950-GD
HYDROGEN
PWR-6400-FGS-002-J13
PWR-6400-FGS-002-J15

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001332

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001026	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04205	H2 GD FZ-04 B-400 Ambient	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but in plastic)

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-27

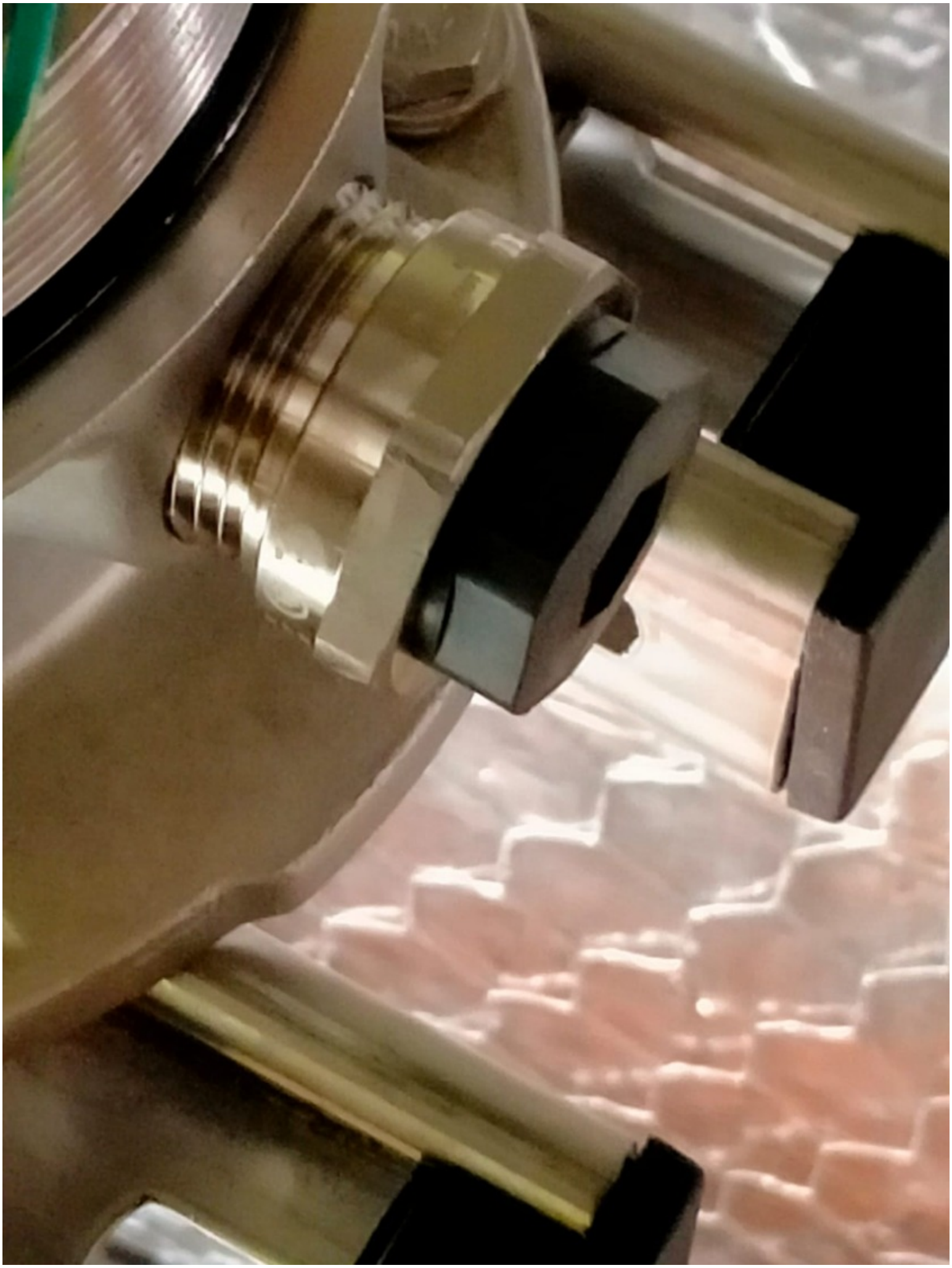
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001333

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001026	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04205	H2 GD FZ-04 B-400 Ambient	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Instrument is not accessible for maintenance

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Position of instrument confirmed by RM-ENG

Name: Eleonora Carotenuto

Date: 2025-01-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001334

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001025	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04204	H2 GD FZ-04 B-400 Ambient	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Installation is not as per 123A90-FDL-IN-HD-40079 rev 2 sheet 34 pos. 8 (plug is not Nickel Plated Brass Ex-D/e IIC T1 but in plastic)

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-27

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001335

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000408	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04201/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

On instrument side, bending radius to be better dressed.

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-25

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001336

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000408	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04201/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

On Panel B400-FGS-003, core tags are missing for all wires.

On instrument side, core tags are wrong for all wires.

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001337

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000408	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04201/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Cable labelling is missing outside B400-FGS-003 panel and MCT

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001338

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000409	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04202/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

On instrument side, bending radius to be better dressed

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done

Name: Gabriele Bertuccelli

Date: 2025-02-07

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001339

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000409	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04202/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Cable labelling is missing outside B400-FGS-003 panel and MCT.

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-02-22

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001340

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000409	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04202/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

On Panel B400-FGS-003, core tags are mnissing for all wires.

On instrument side, core tags are not as per Cross-Ferrules Philosophy for all cores.

Name: Luca Mussi

Date: 2024-12-04

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-27

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001343

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000411	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04204/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Cable labeling reports C-950-GDZ-04204/B400-FGS-002 instead of C-950-GDZ-04204/B400-FGS-003 on instrumnet side.

Cable labeling is missing outside B400-FGS-300 Panel and MCT.

Name: Luca Mussi

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


C-950-GDZ-04204/B400-FGS-002

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001344

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000411	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04204/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

On Panel B400-FGS-003, core tags all missing for all wires.

On instrumnet side, core tags are not as per Cross-Ferruling Philosophy.

Name: Luca Mussi

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001347

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000411	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04204/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Two shield wires from different cables end up in the same termination.

Name: Luca Mussi

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-03

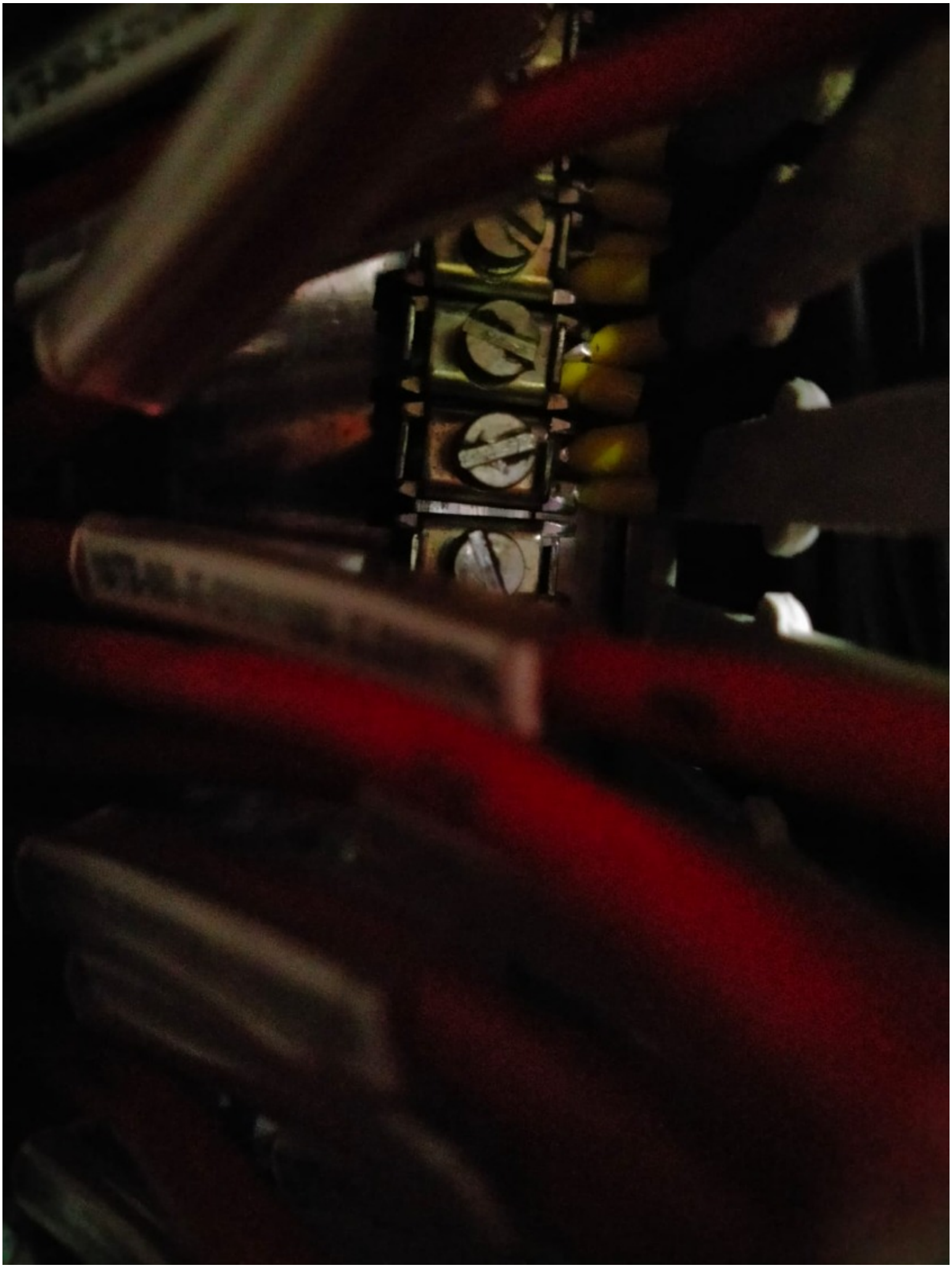
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001349

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000412	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04205/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Cable labeling is missing outside B400-FGS-003 Panel and MCT.

Name: Luca Mussi

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001350

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000412	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04205/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

On Panel B400-FGS-003 side, core tags are missing for all wires.

On instrument side, core tags are not as per Cross-Ferruling Philosophy.

Name: Luca Mussi

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Luca Mussi
3.4 Activity code	MC Mechanical Completion	Date	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000625

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000414	1.4 Discipline	Instrumental
1.2 Item	C-950-XZ-04201/B400-FGS-002	SOUNDER / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo
Date: 2024-11-20
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-02-22
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


Sh/B400-FGS-002/SPARE
1/B400-FGS-002-6-3/1
2/B400-FGS-002-6-4/3

TB-B400-FGS-002-6
TB-C-NC-200F2.01

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000626

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000414	1.4 Discipline	Instrumental
1.2 Item	C-950-XZ-04201/B400-FGS-002	SOUNDER / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the tag plastic project on the cable , cabinet input B400-FGS-002.

Name: Alessio Polo

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-03

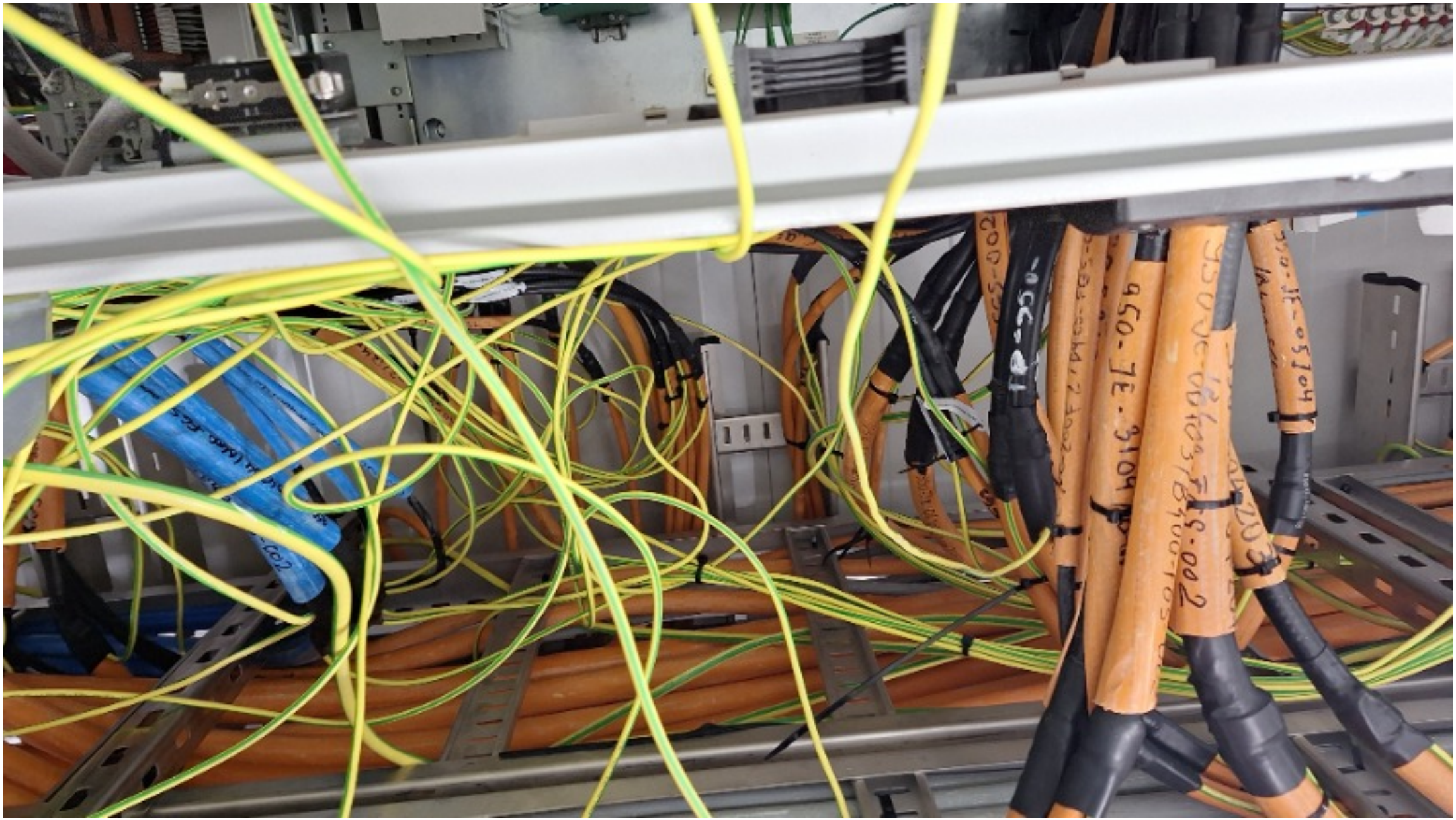
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000627

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000414	1.4 Discipline	Instrumental
1.2 Item	C-950-XZ-04201/B400-FGS-002	SOUNDER / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The cable armor is not connected to the reference BTM . (C-950-XZ-04201/B400-FGS-002 - C-950-XL-04201/B400-FGS-002 -C-950-XL-04202/B400-FGS-002 - B100-HSB-001/B400-FGS-002 - B200-HSB-001/B400-FGS-002 - B300-HSB-001/B400-FGS-002).

Name: Alessio Polo
Date: 2024-11-20
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

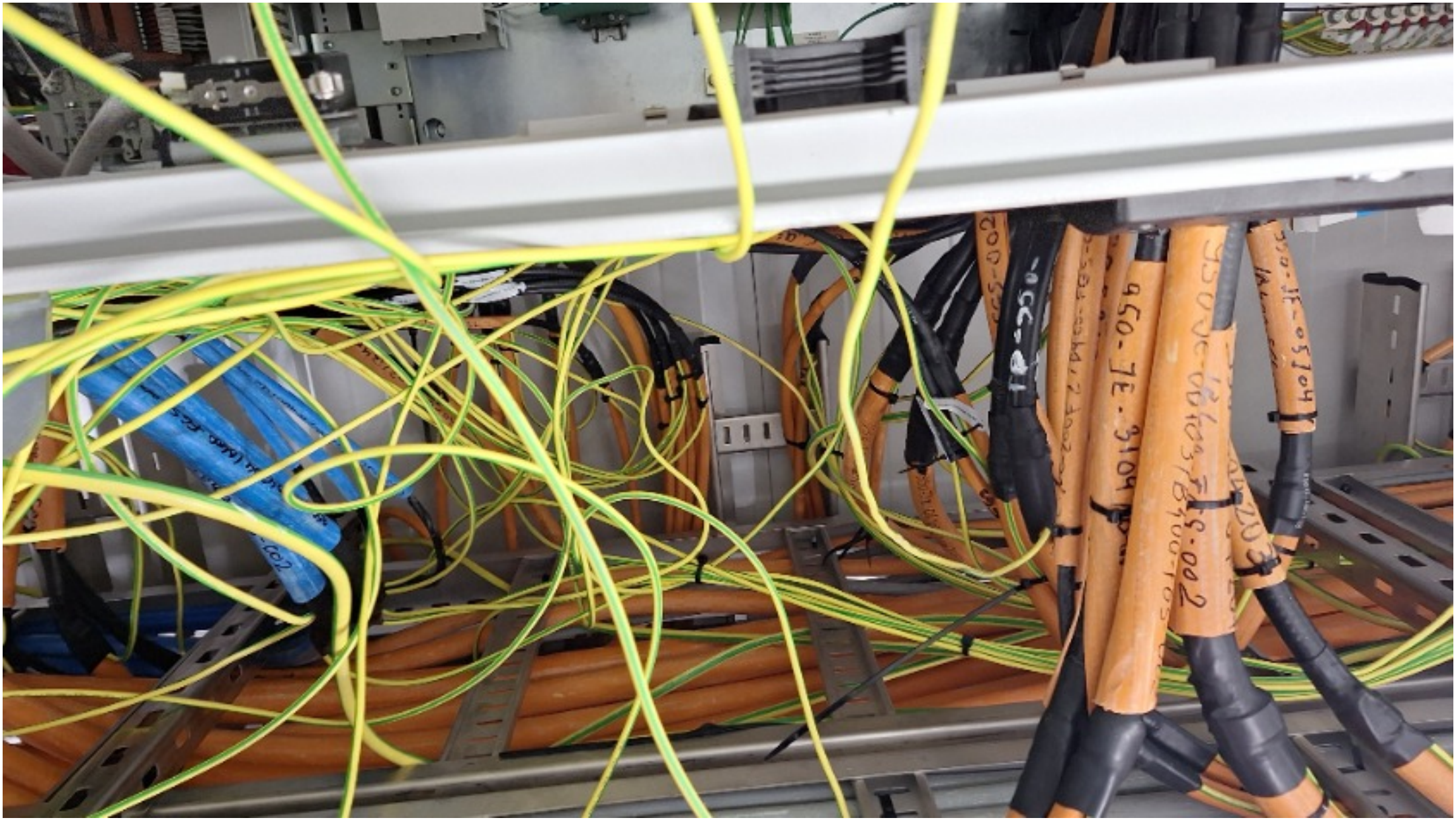
5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto
Date: 2024-12-07
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000628

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000415	1.4 Discipline	Instrumental
1.2 Item	C-950-XL-04201/B400-FGS-002	BEACON / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo
Date: 2024-11-20
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-02-22
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


Sh/B400-FGS-002/SPARE
1/B400-FGS-002-6-3/1
2/B400-FGS-002-6-4/3

TB-B400-FGS-002-6
TB-C-NC-200F2.01

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000629

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000415	1.4 Discipline	Instrumental
1.2 Item	C-950-XL-04201/B400-FGS-002	BEACON / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the tag plastic project on the cable , cabinet input B400-FGS-002.

Name: Alessio Polo

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-03

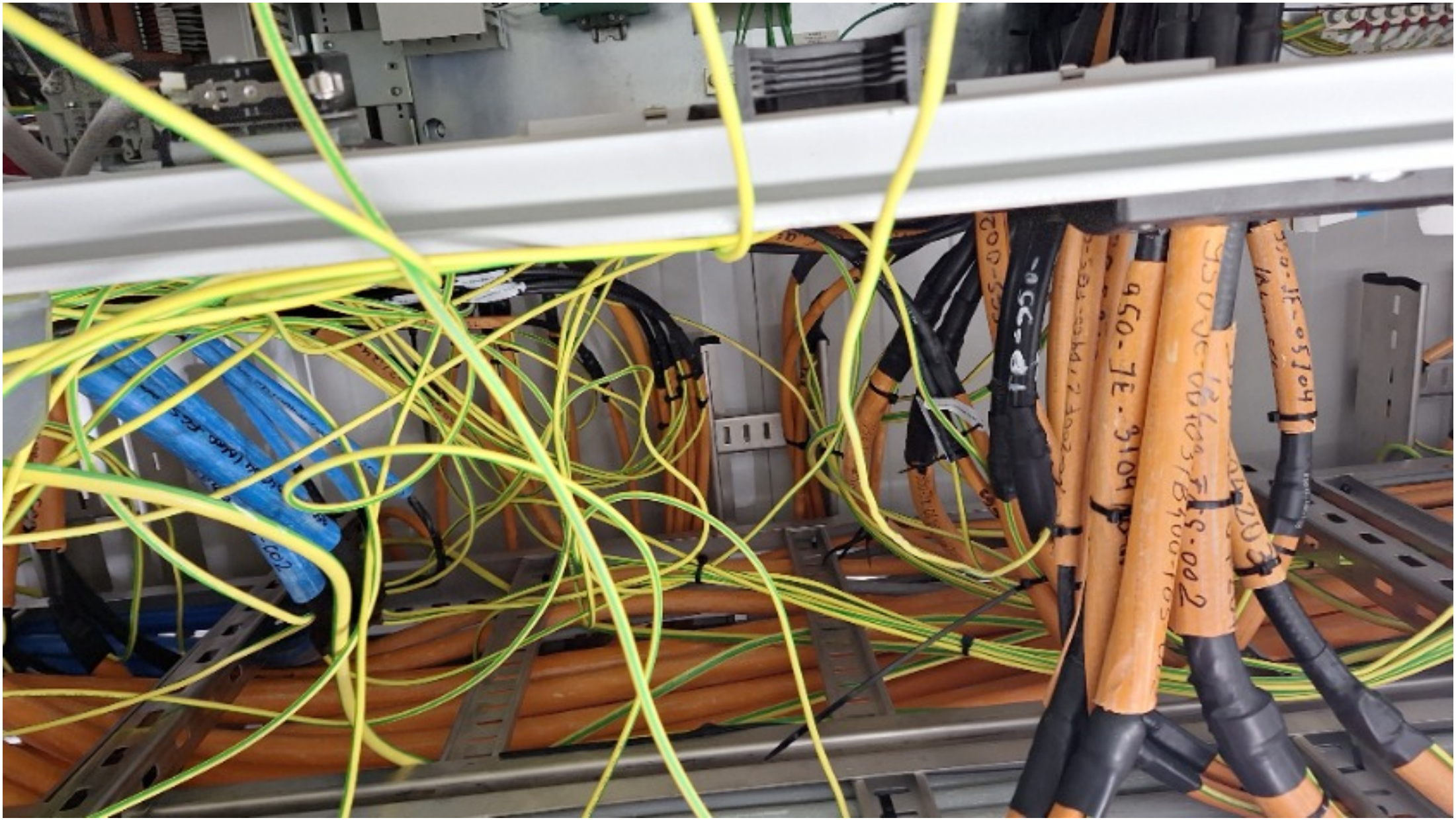
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000630

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000416	1.4 Discipline	Instrumental
1.2 Item	C-950-XL-04202/B400-FGS-002	BEACON / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo
Date: 2024-11-20
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

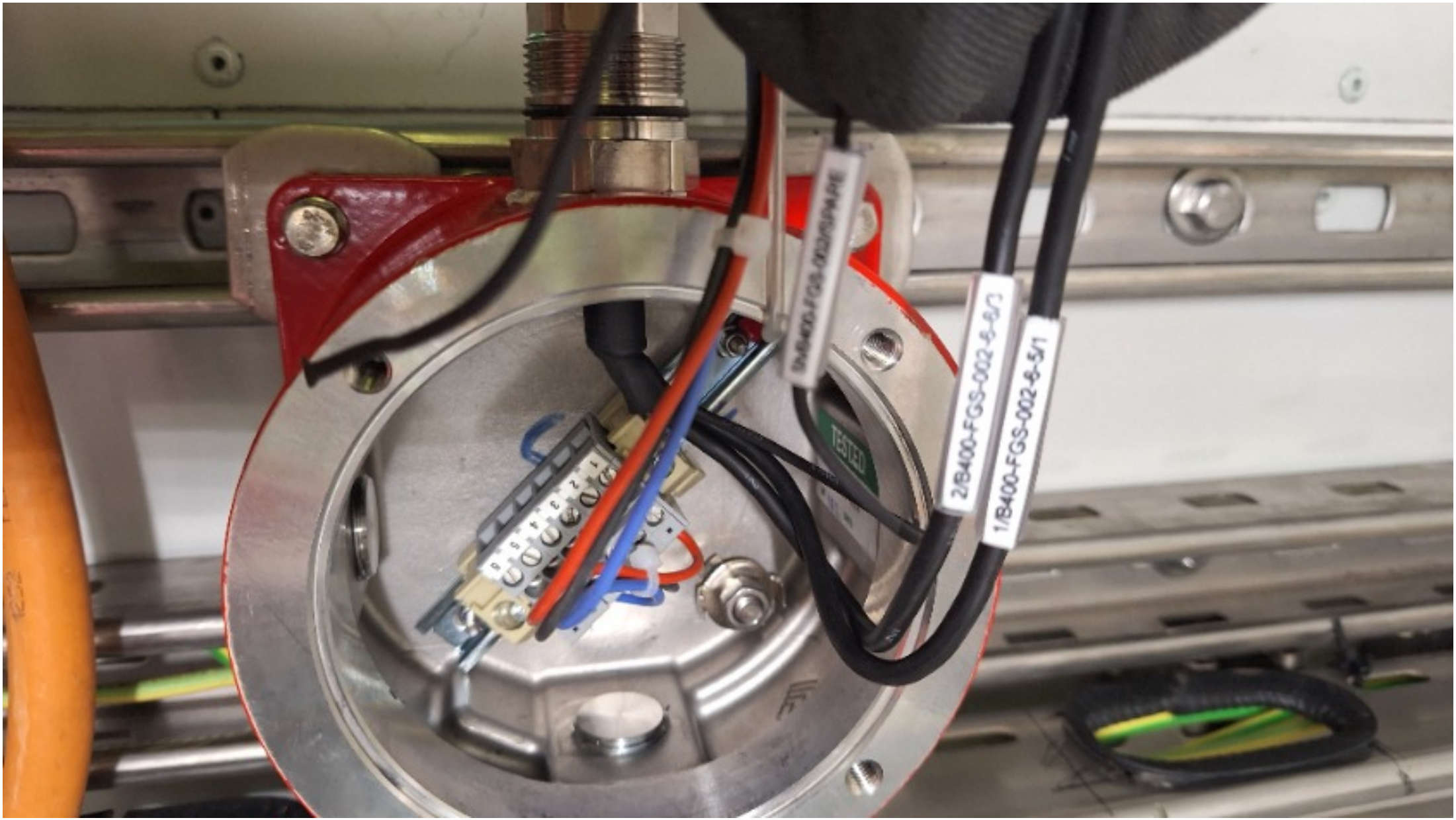
5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic
Date: 2025-02-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


2/B400-FGS-002-8-5/1
1/B400-FGS-002-8-5/1

TB-B400-FGS-002-6
TB-C-NC-200F2.01

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000631

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000416	1.4 Discipline	Instrumental
1.2 Item	C-950-XL-04202/B400-FGS-002	BEACON / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the tag plastic project on the cable , cabinet input B400-FGS-002.

Name: Alessio Polo

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-03

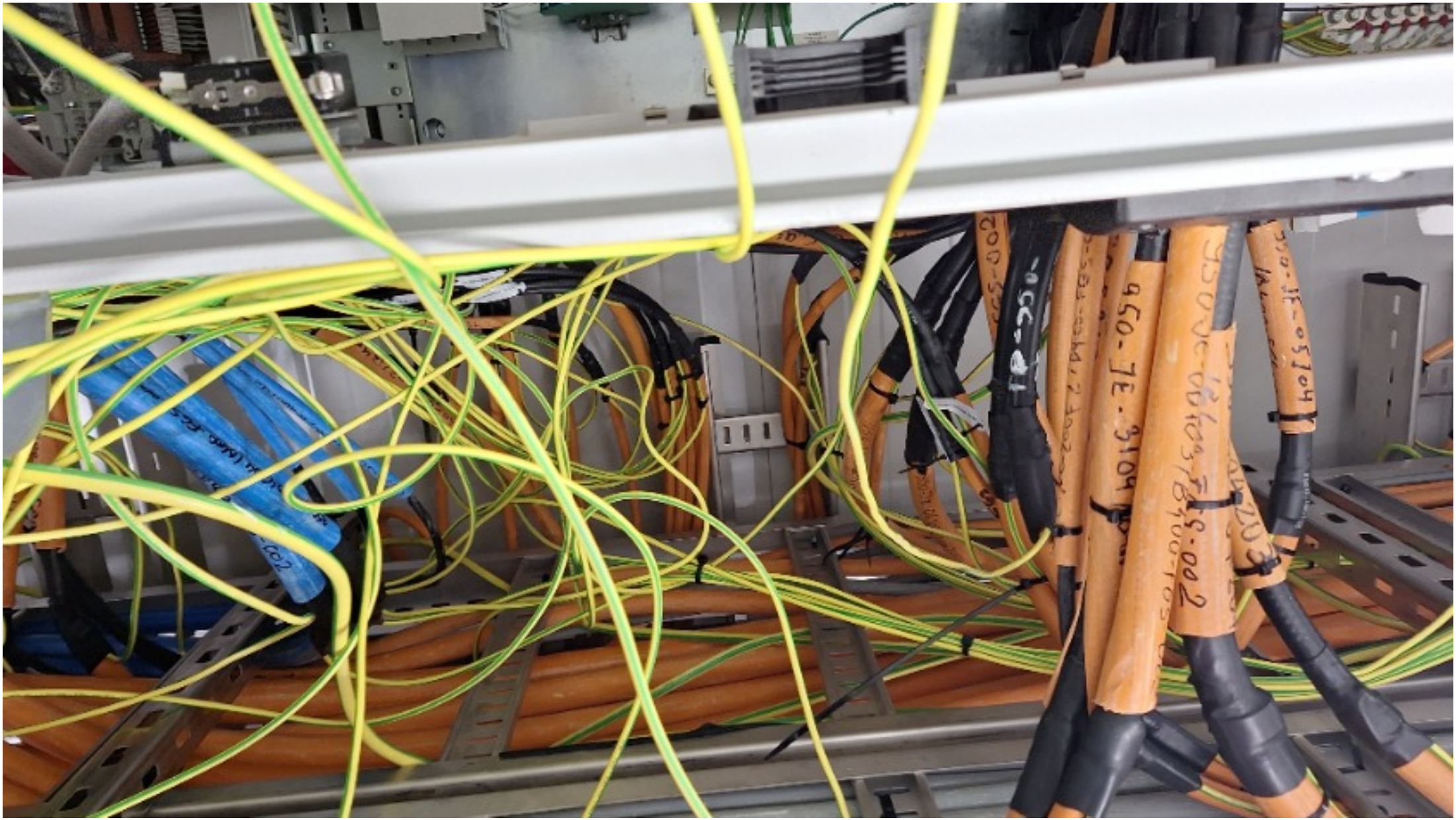
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000632

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001114	1.4 Discipline	Instrumental
1.2 Item	950-XL-04201	FZ-04 Gas Beacon Act. - B-400 Indoor	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

the protective grid of the instrument is damaged (it is not fixed)

Name: Alessio Polo

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done

Name: Giovanni Tangianu

Date: 2025-03-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000633

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001114	1.4 Discipline	Instrumental
1.2 Item	950-XL-04201	FZ-04 Gas Beacon Act. - B-400 Indoor	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing instrument S.S. project tag.

Name: Alessio Polo

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-21

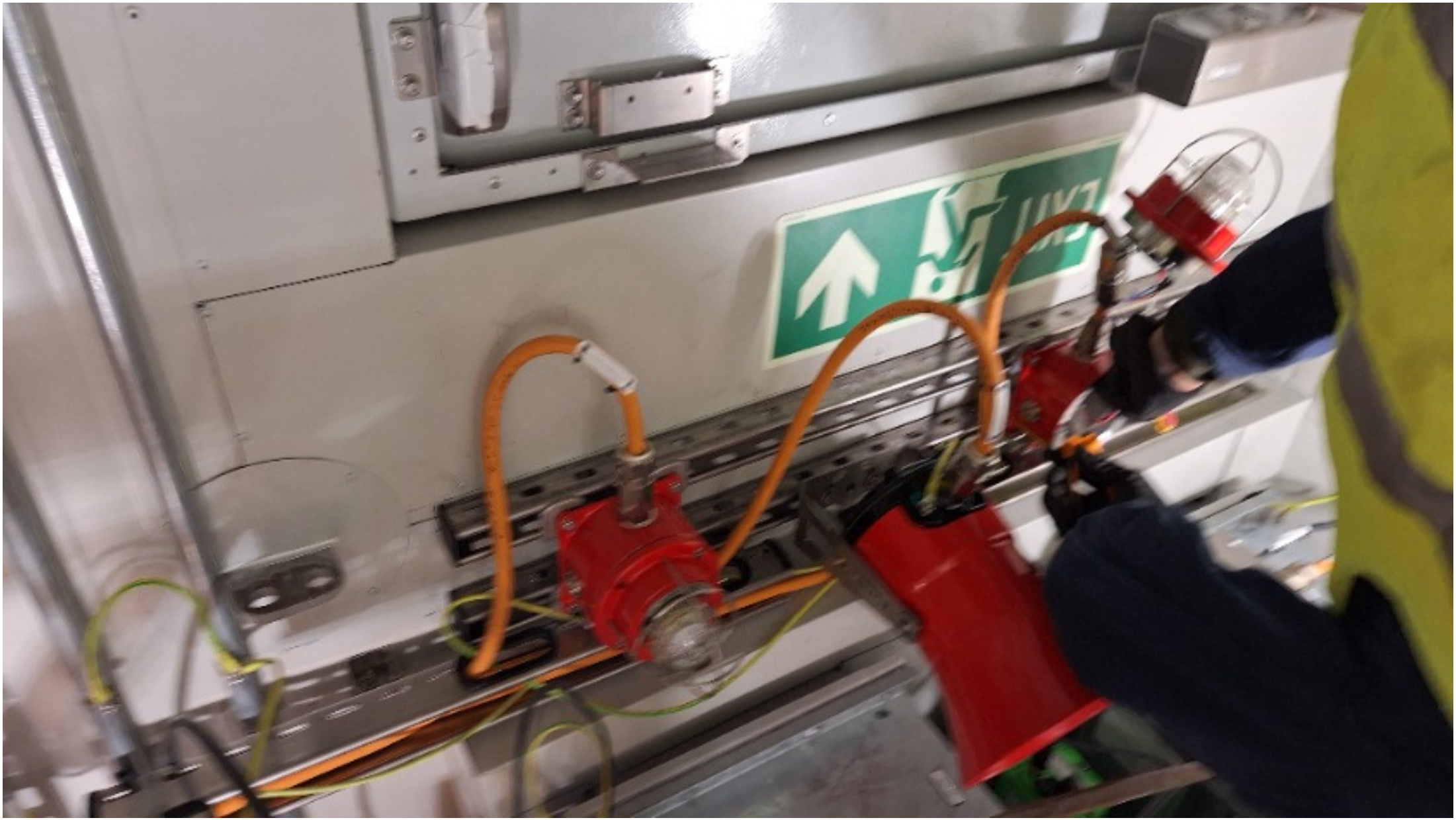
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000634

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001114	1.4 Discipline	Instrumental
1.2 Item	950-XL-04201	FZ-04 Gas Beacon Act. - B-400 Indoor	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing n°1 fixing bolt

Name: Alessio Polo

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2024-12-28

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


FLET - 2X2,5 SQMM

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000635

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001135	1.4 Discipline	Instrumental
1.2 Item	950-XZ-04201	FZ-04 Sounder Act. - B-400 Indoor	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

the earth cable is not fixed to the instrument

Name: Alessio Polo

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Connected.

Name: Giovanni Tangianu

Date: 2024-12-28

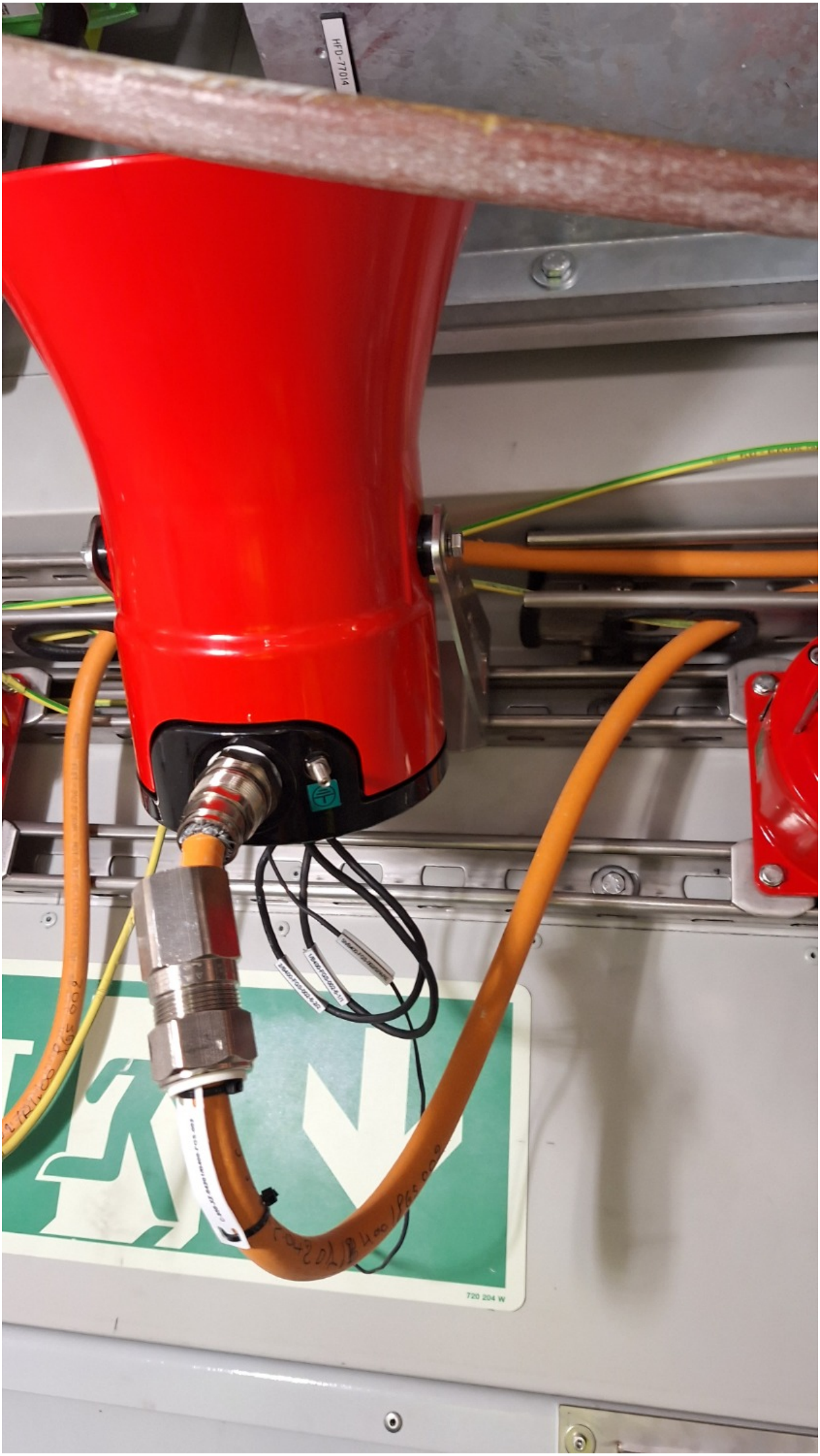
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


HFD-7704
720 204 W

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000677

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001115	1.4 Discipline	Instrumental
1.2 Item	950-XL-04202	FZ-04 Fire Beacon Act. - B-400 Indoor	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing instrument S.S. project tag.

Name: Eleonora Carotenuto

Date: 2024-11-21

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000678

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001135	1.4 Discipline	Instrumental
1.2 Item	950-XZ-04201	FZ-04 Sounder Act. - B-400 Indoor	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing instrument S.S. project tag.

Name: Eleonora Carotenuto

Date: 2024-11-21

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000717

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000410	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04203/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the cross-ferruling (Cores + Shields) . Cabinet side B400-FGS-003 / stru. 950-GDZ-04203 . (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

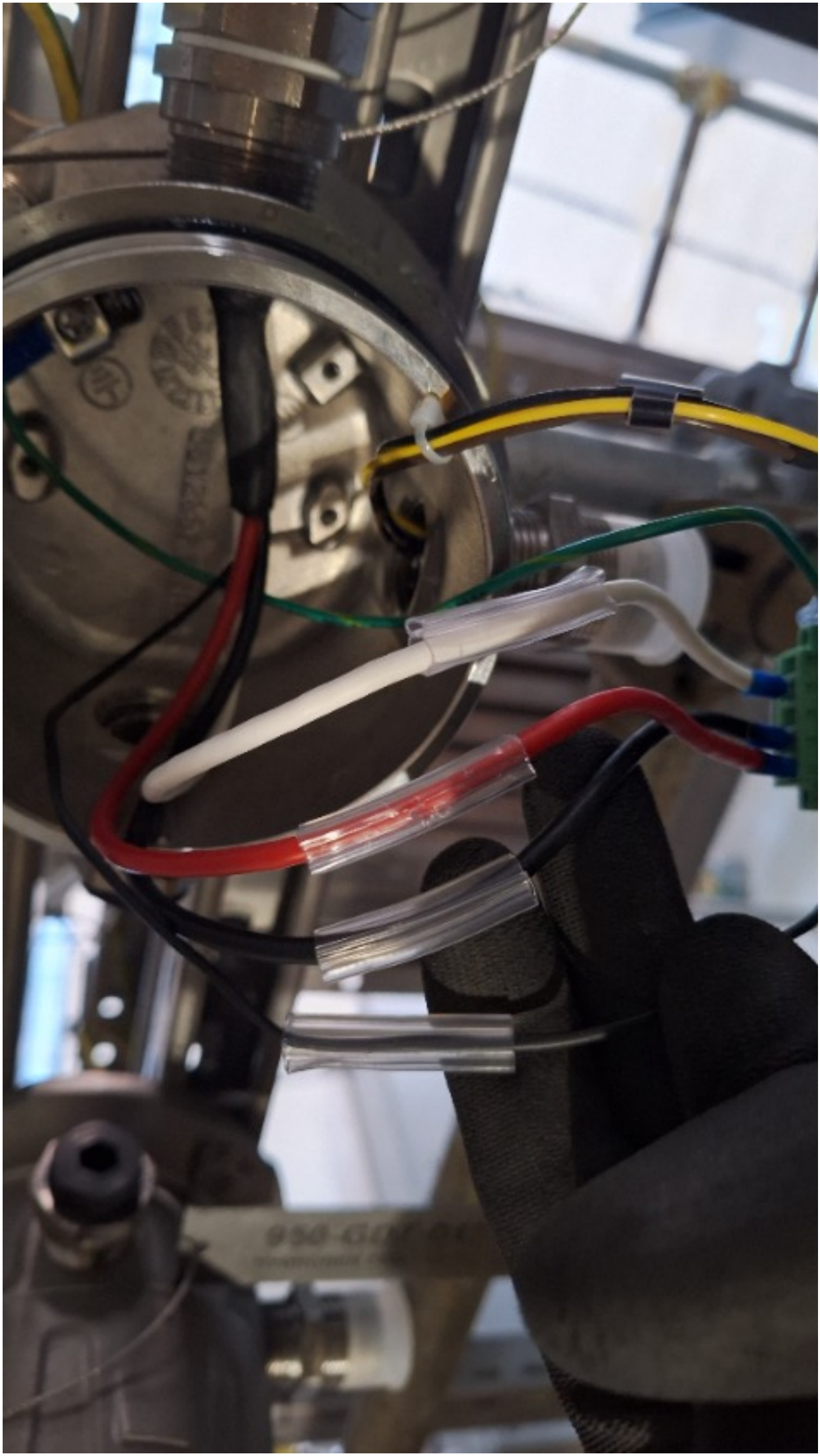
5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-02-22
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



TB-B400-FGS-002-3

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000718

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000410	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04203/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the tag plastic project on the cable , cabinet input B400-FGS-003

Name: Alessio Polo

Date: 2024-11-21

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-22

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000719

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000410	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04203/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The cable armor is not connected to the reference BTM .

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

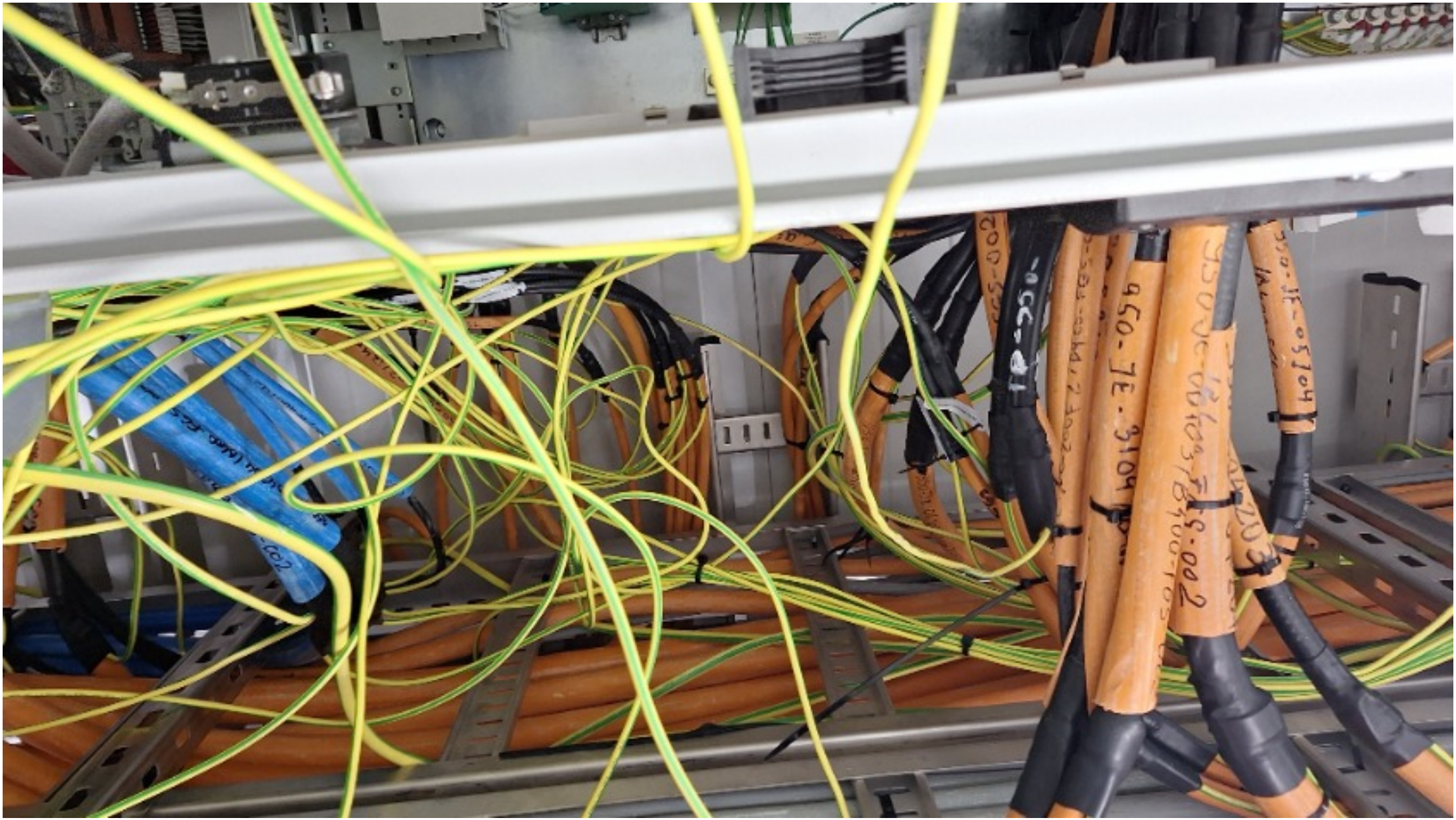
5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-01-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000720

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000410	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04203/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Double shield connected to one terminal on shield bar

Name: Alessio Polo

Date: 2024-11-21

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-03-03

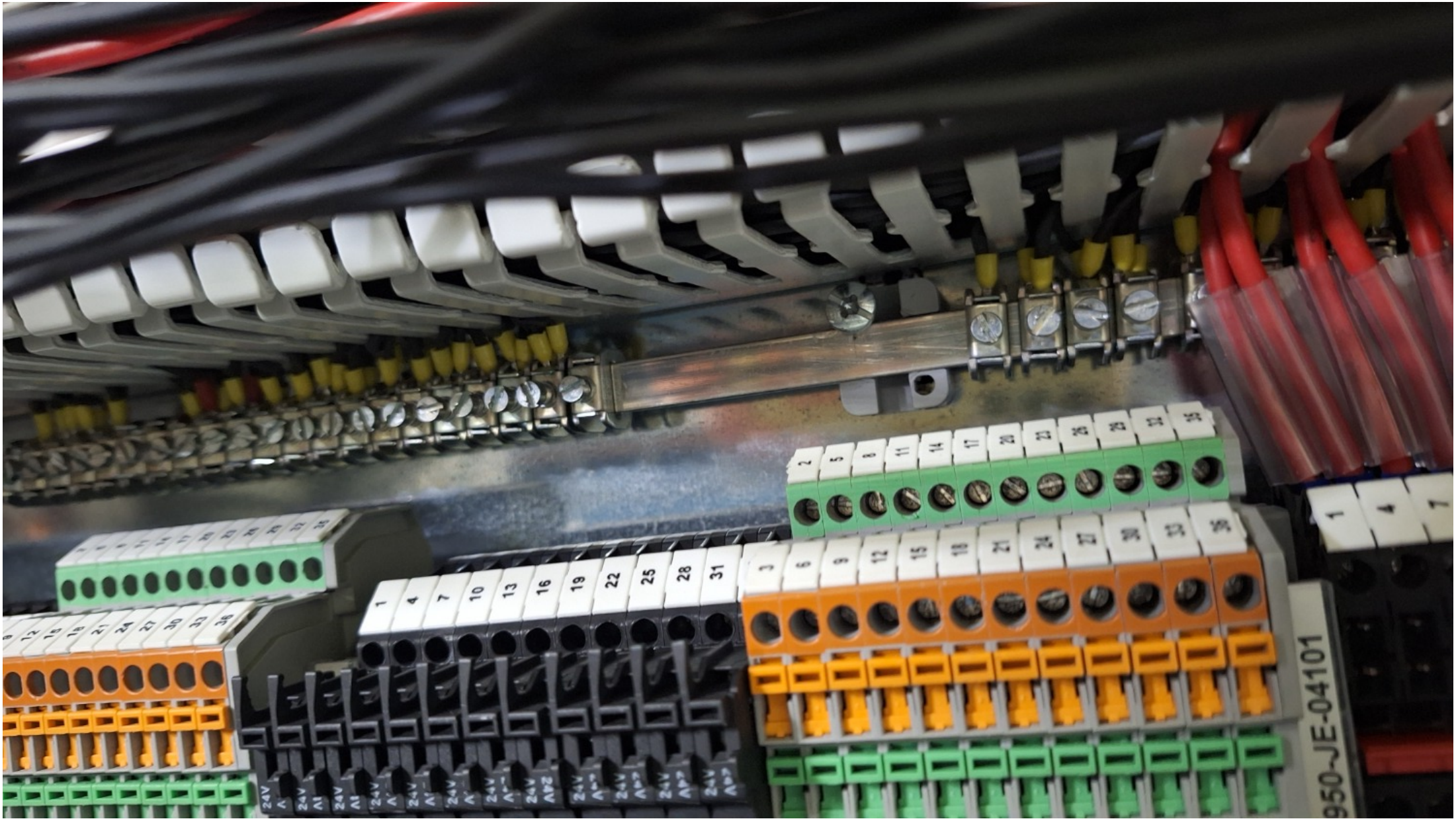
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


950-JE-04101

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000721

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001024	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04203	H2 GD FZ-04 B-400 HVAC Air Intake	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

the earth cable is not fixed to the instrument

Name: Alessio Polo

Date: 2024-11-21

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2024-12-30

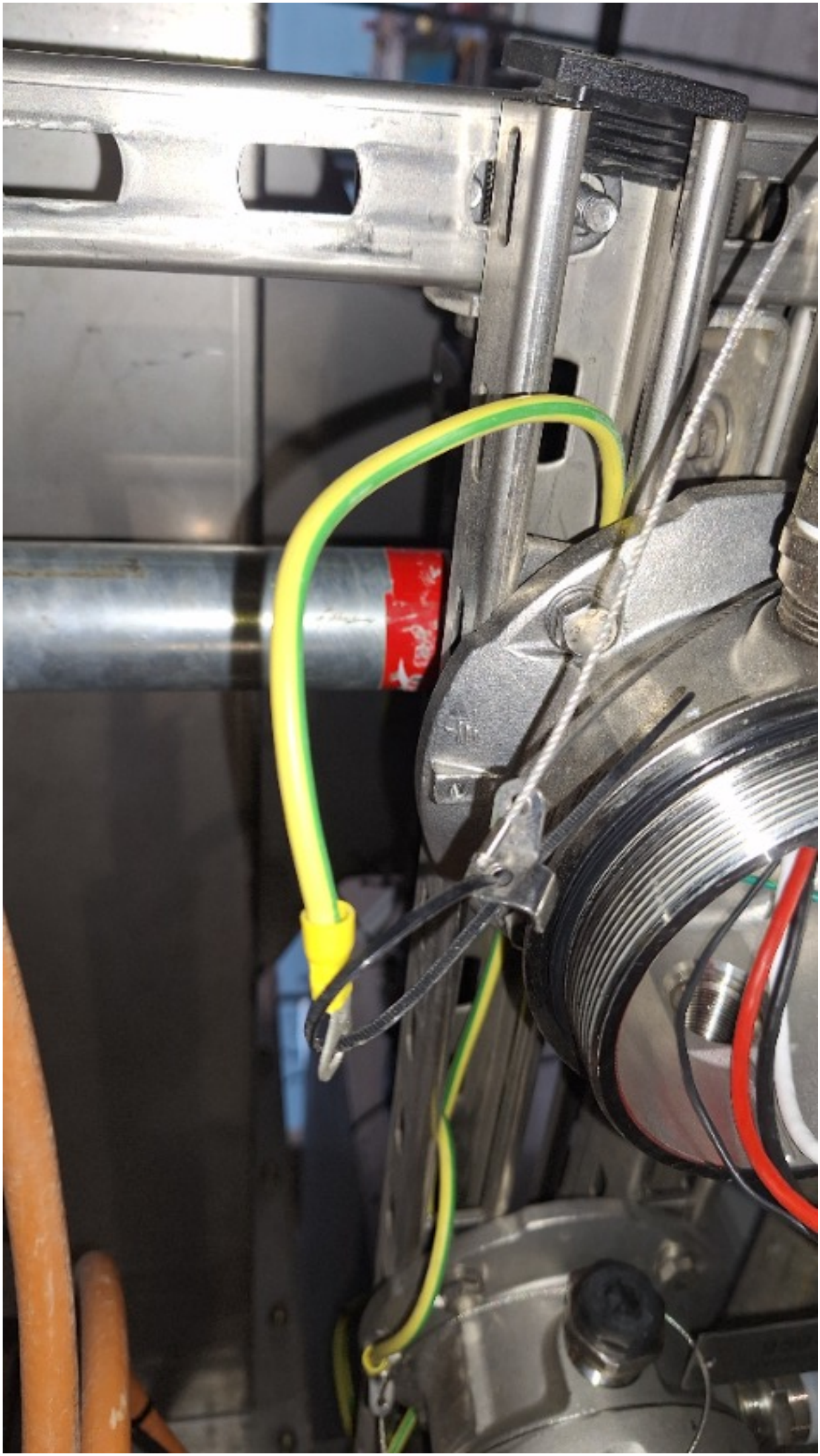
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000722

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000413	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04206/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the tag plastic project on the cable , cabinet input B400-FGS-003

Name: Alessio Polo

Date: 2024-11-21

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000723

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000413	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04206/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the cross-ferruling (Cores + Shields) . Pannel side B400-FGS-002 / STRU. 950-GDZ-04206 . (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

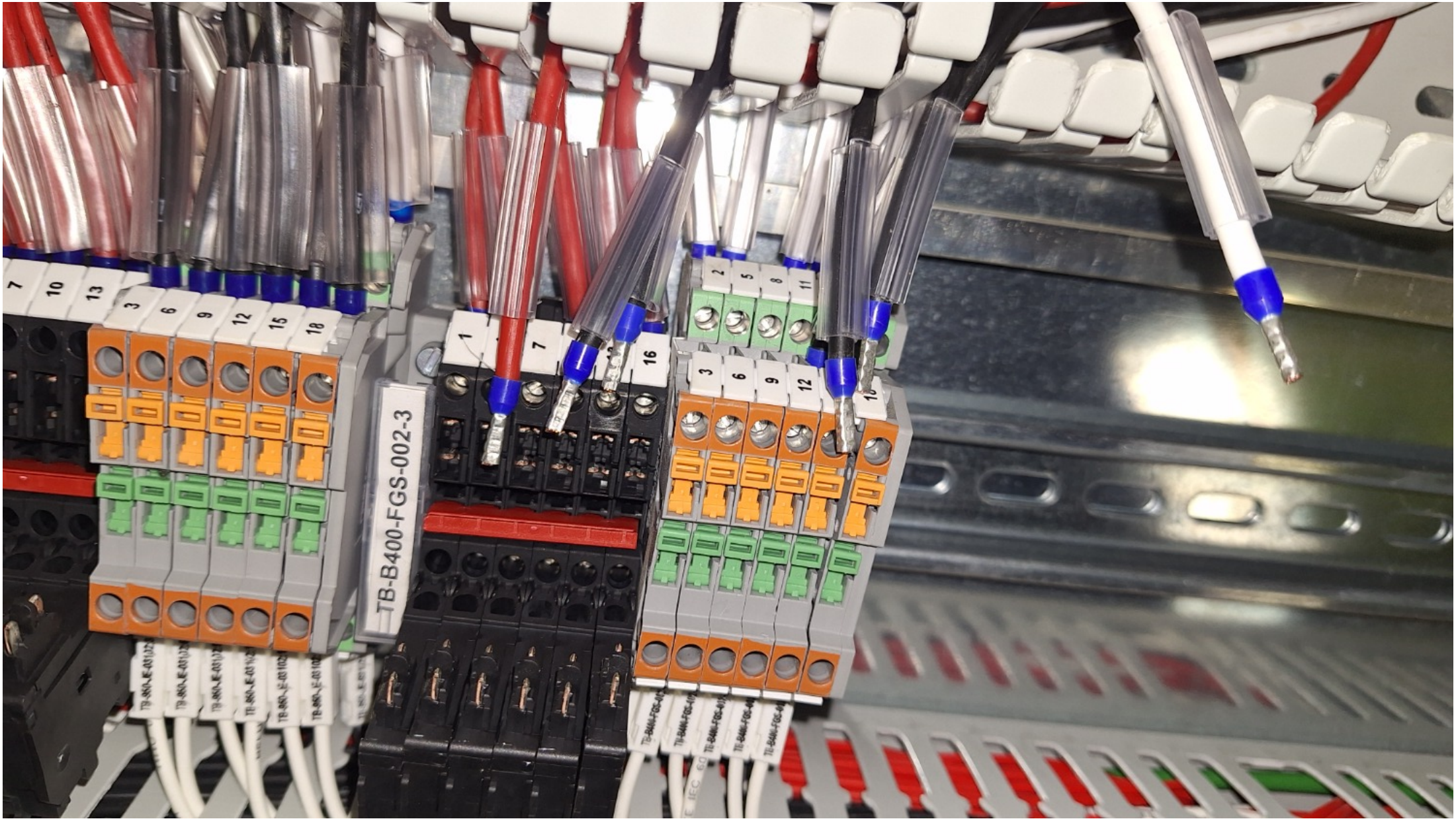
DONE

Name: Josip Krizanic
Date: 2025-02-20
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


Sh/B400-FGS-002/SPARE
WH/B400-FGS-002-3-17/4-20mA
BK/B400-FGS-002-3-18/PWR-
RD/B400-FGS-002-3-19/PWR+


TB-B400-FGS-002-3

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000724

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000413	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04206/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The cable armor is not connected to the reference BTM .

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

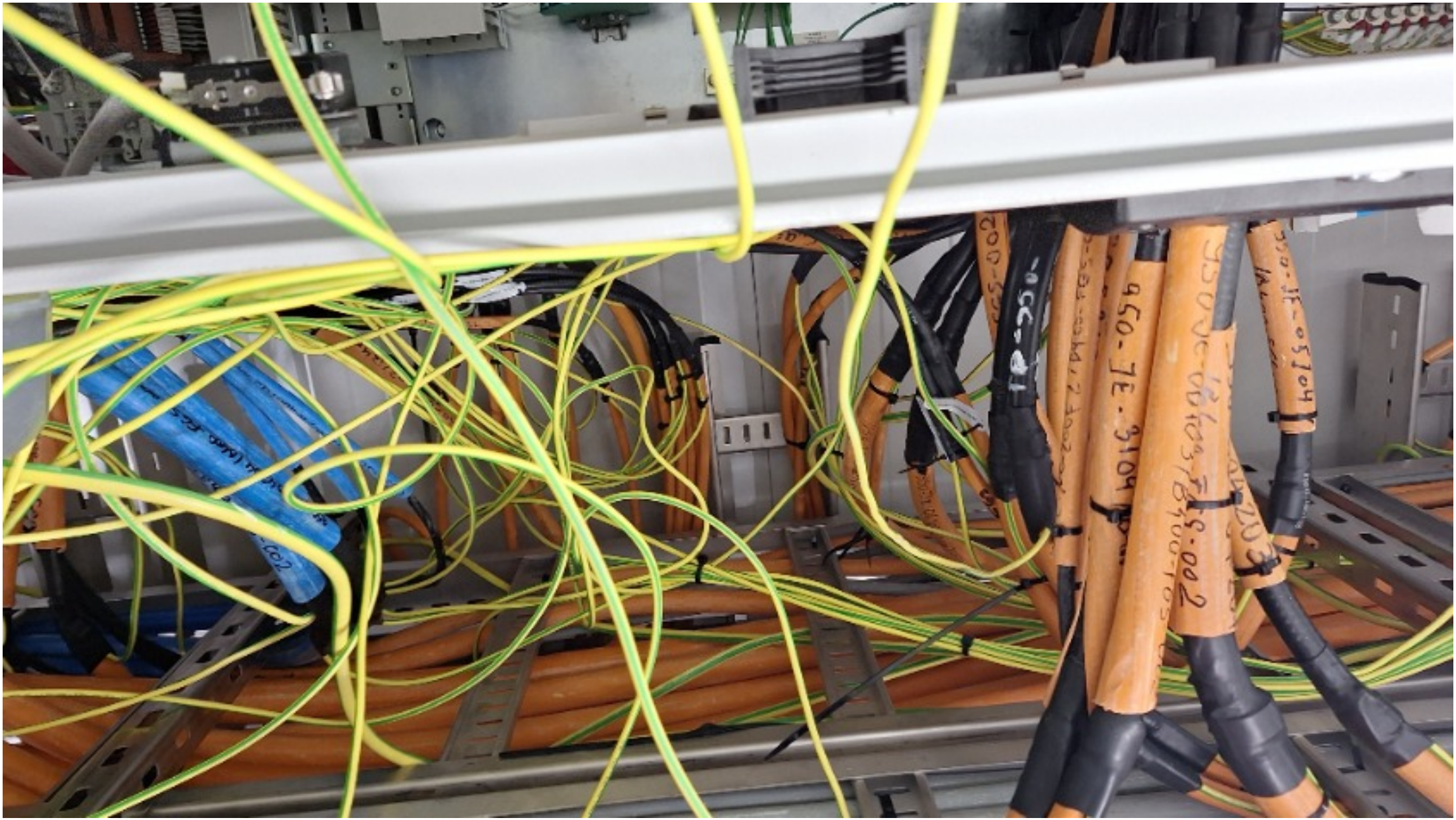
5 - CLEARANCE CHECK

DONE

Name: Alessio Polo
Date: 2025-01-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000725

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000413	1.4 Discipline	Instrumental
1.2 Item	C-950-GDZ-04206/B400-FGS-003	GAS DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

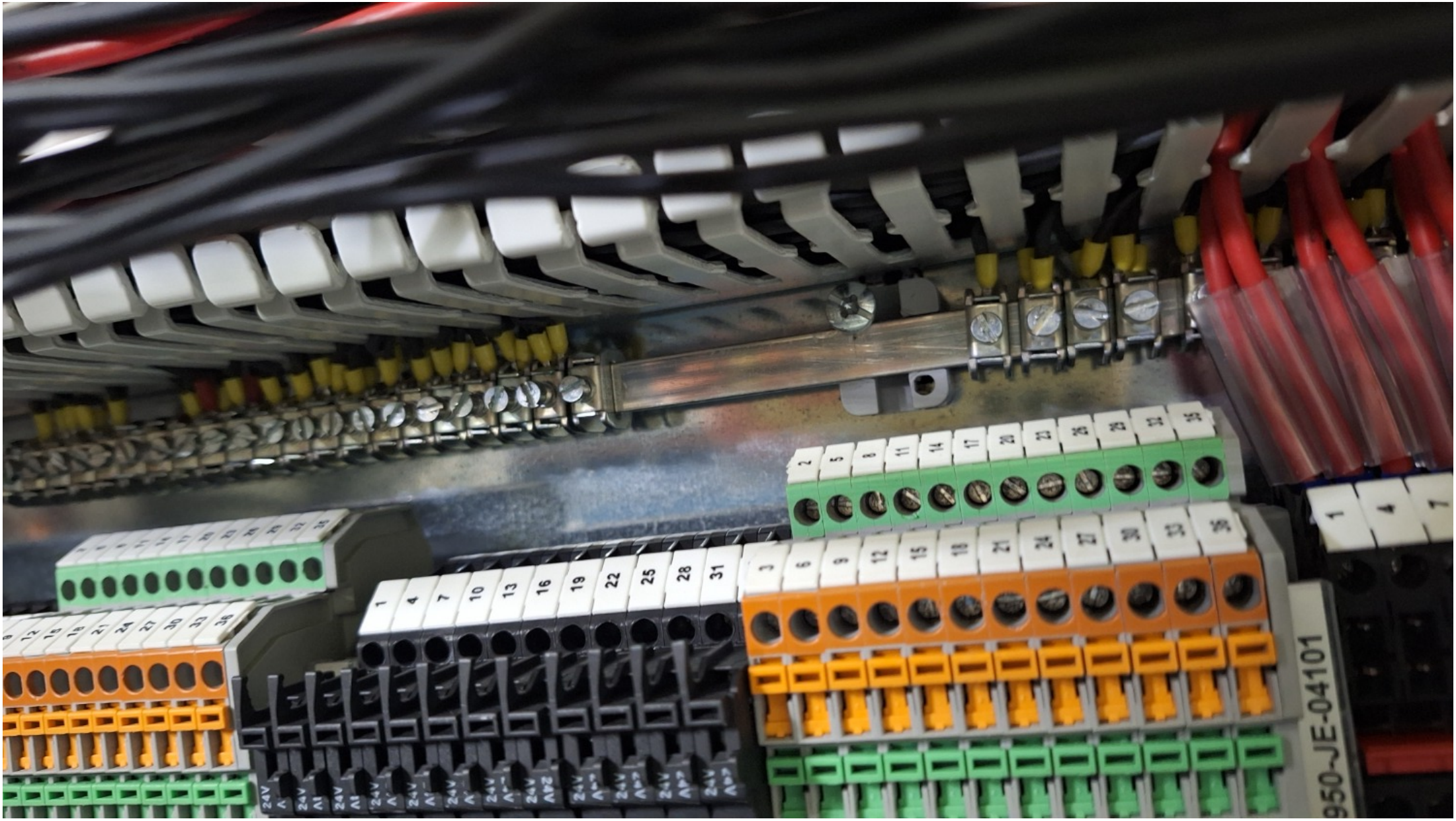
5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani
Date: 2025-02-27
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


950-JE-04101

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000726

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000407	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04206/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the tag plastic project on the cable , cabinet input B400-FGS-003

Name: Alessio Polo

Date: 2024-11-21

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000727

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000407	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04206/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing the cross-ferruling (Cores + Shields) . Cabinet side B400-FGS-003 / JB 950-SDZ-04206 . (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

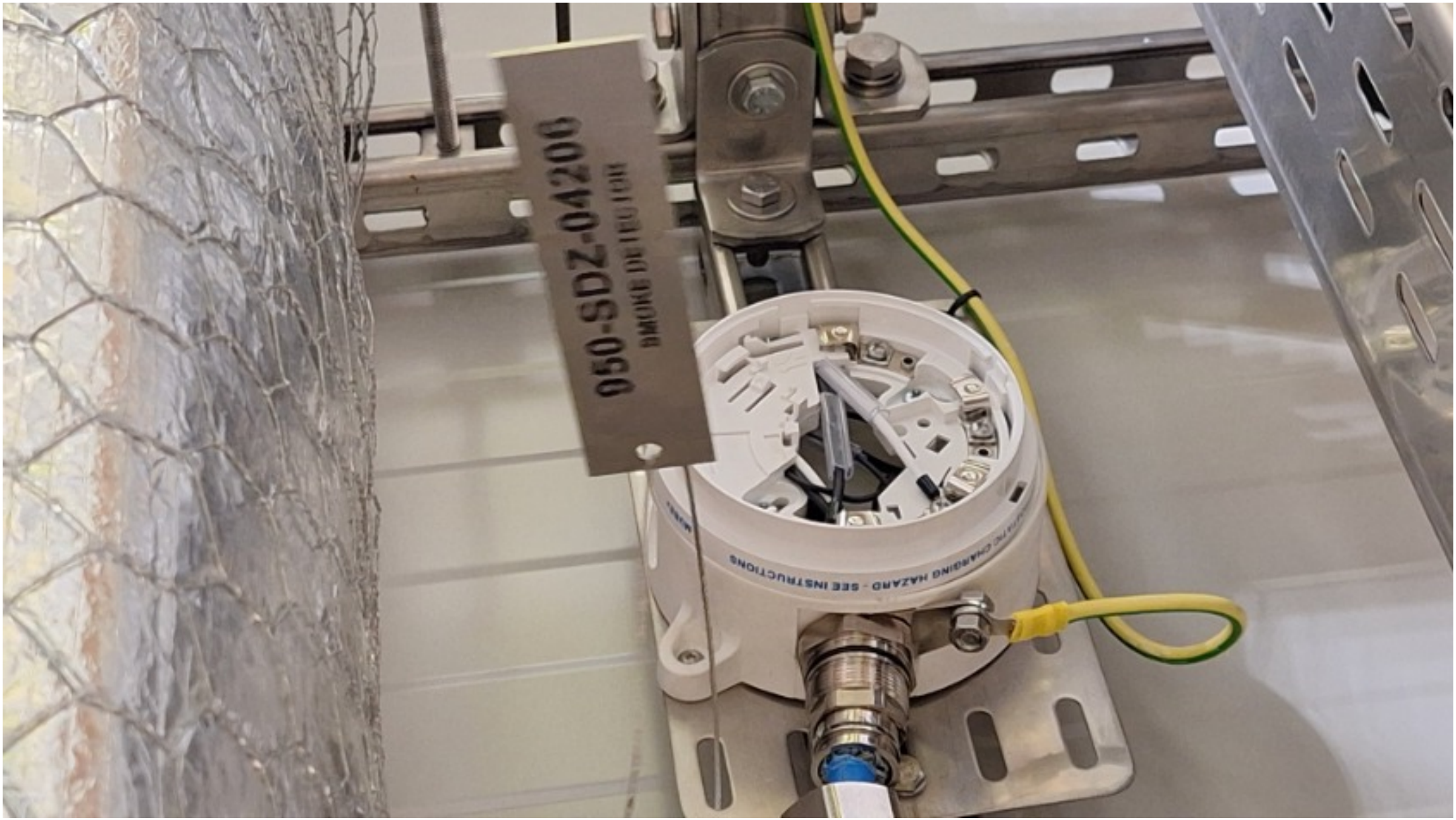
5 - CLEARANCE CHECK

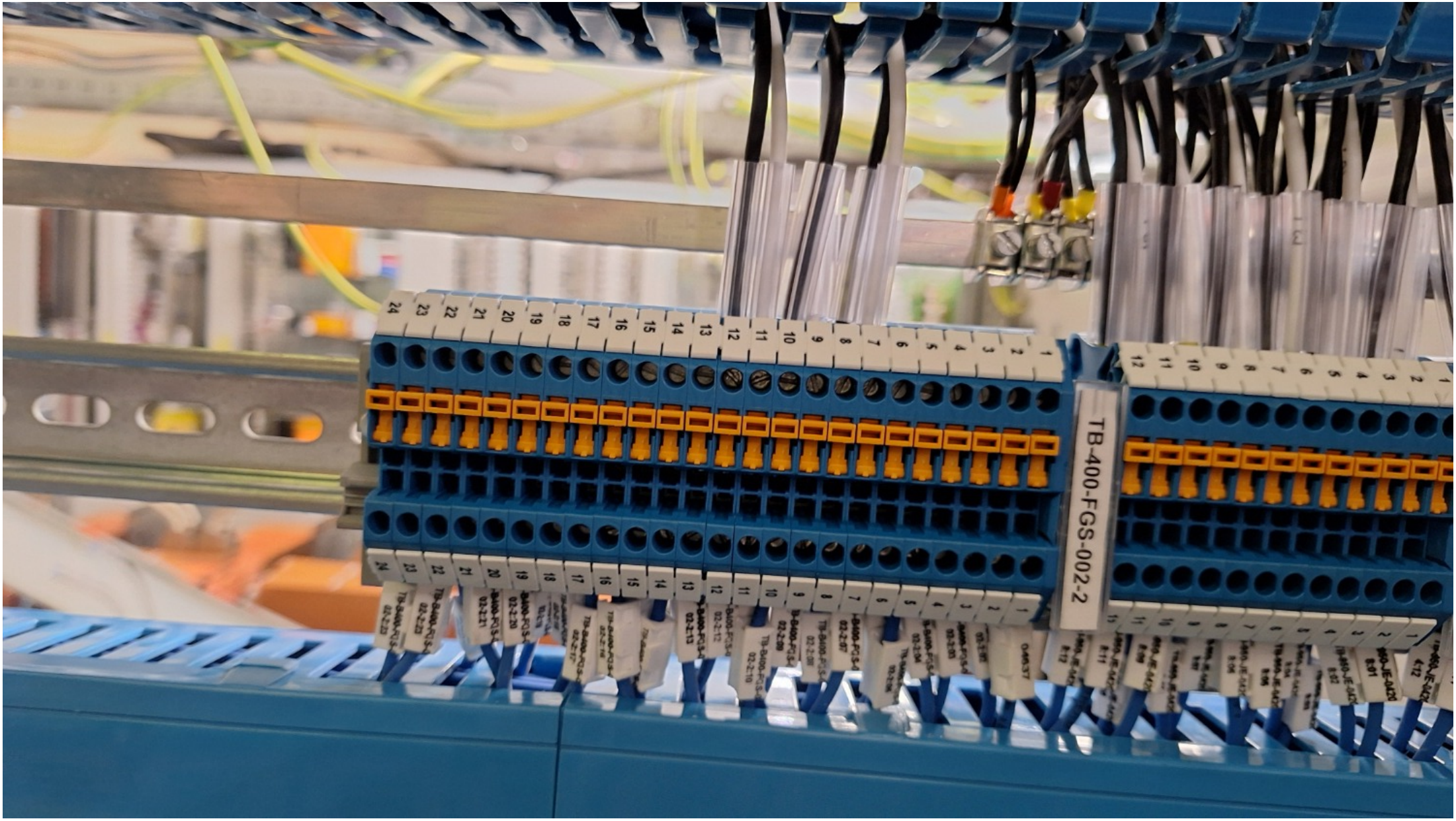
DONE

Name: Josip Krizanic
Date: 2025-03-03
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


050-SDZ-04200
BMONO DETECTOR


TB-400-FGS-002-2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000728

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000407	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04206/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The shield sheaths are not BLUE in color. To be replaced .cabinet side B400-FGS-003 / stru. 950-SDZ-04206

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

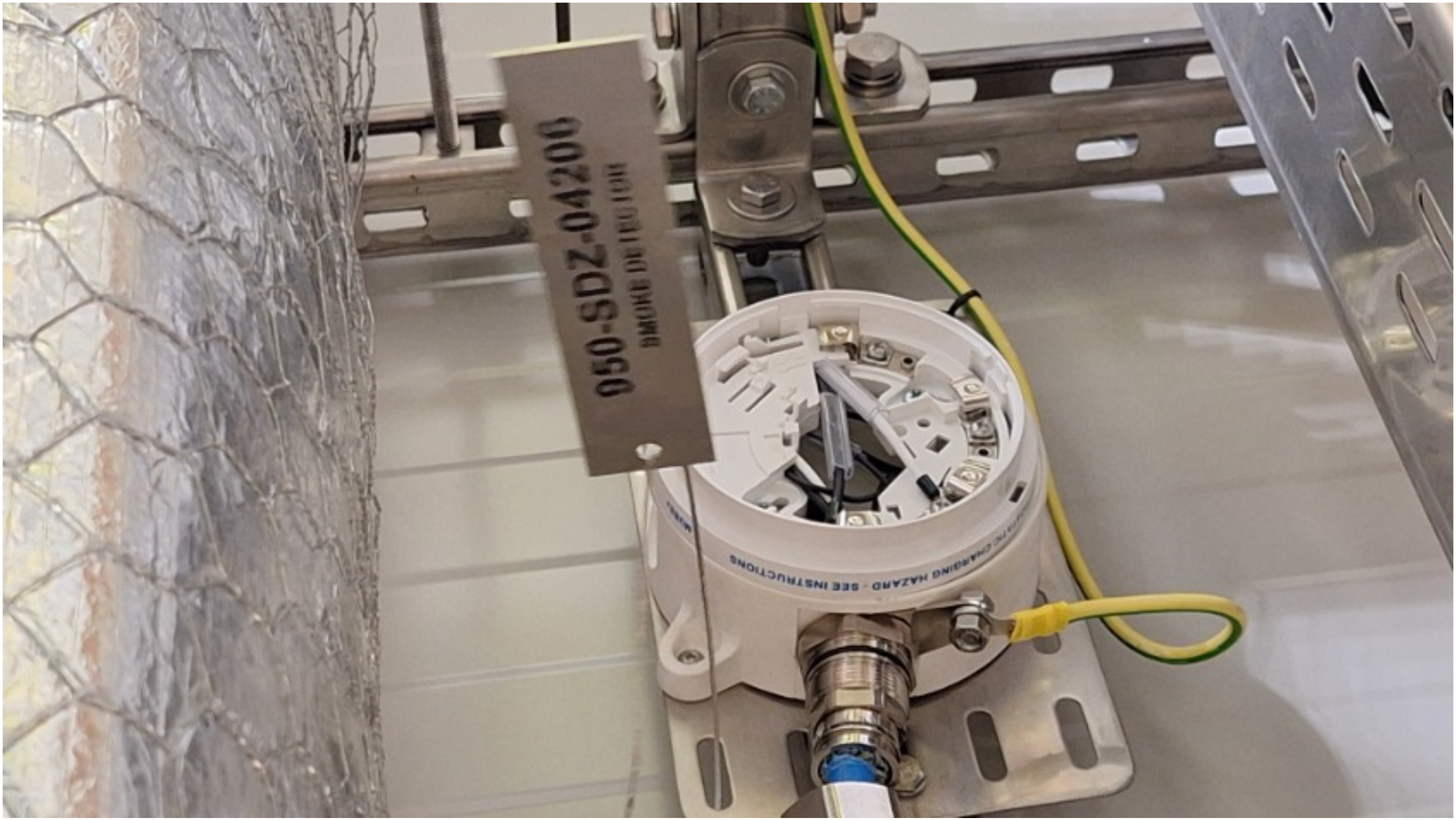
5 - CLEARANCE CHECK

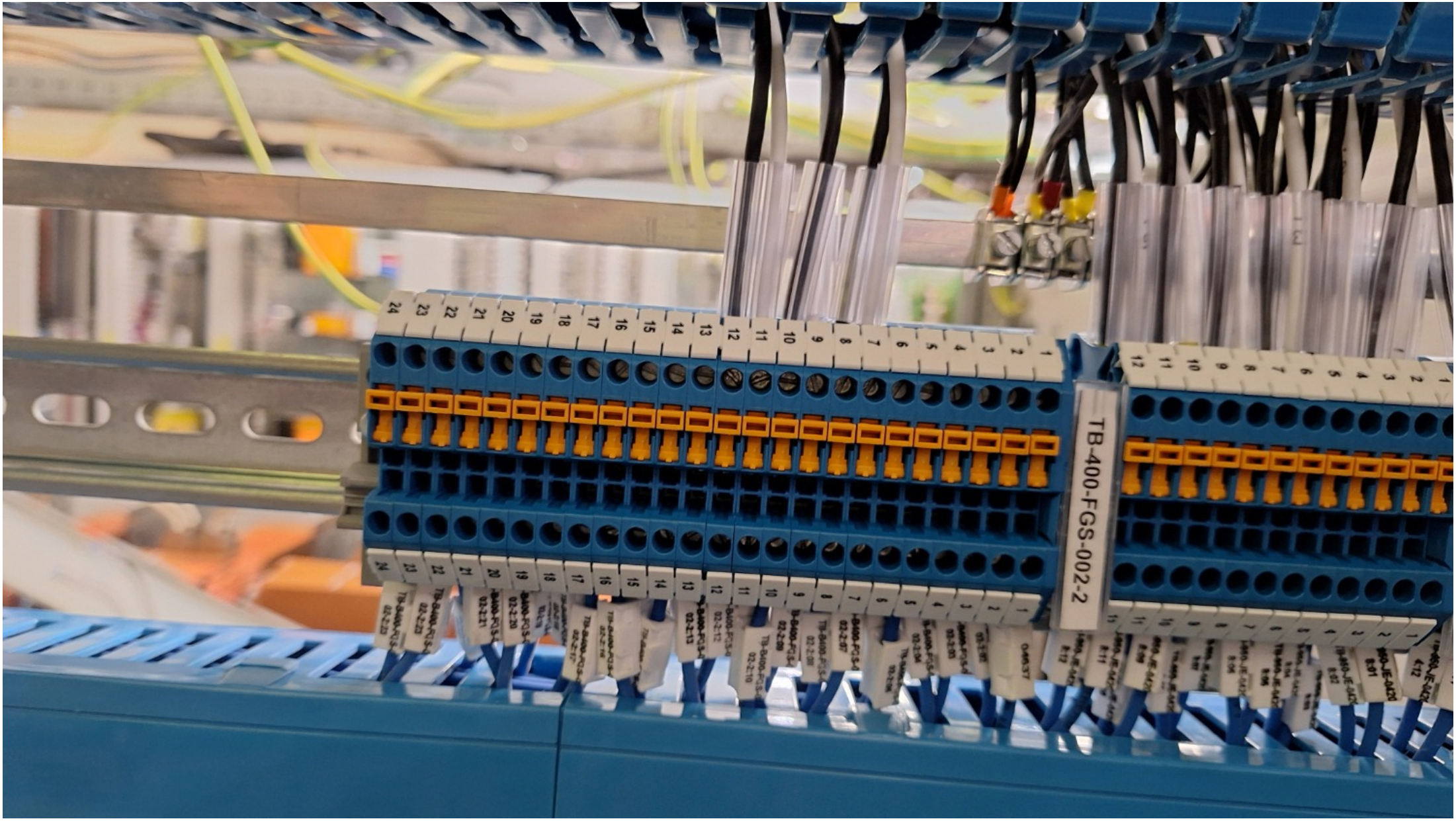
DONE

Name: Eleonora Carotenuto
Date: 2025-06-26
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


050-SDZ-04200
BMONO DETECTOR


TB-400-FGS-002-2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000729

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000407	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04206/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Double shield connected to one terminal on shield bar. this point is valid also for cabinet side B400-FGS-003

Name: Alessio Polo
Date: 2024-11-21
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-21
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

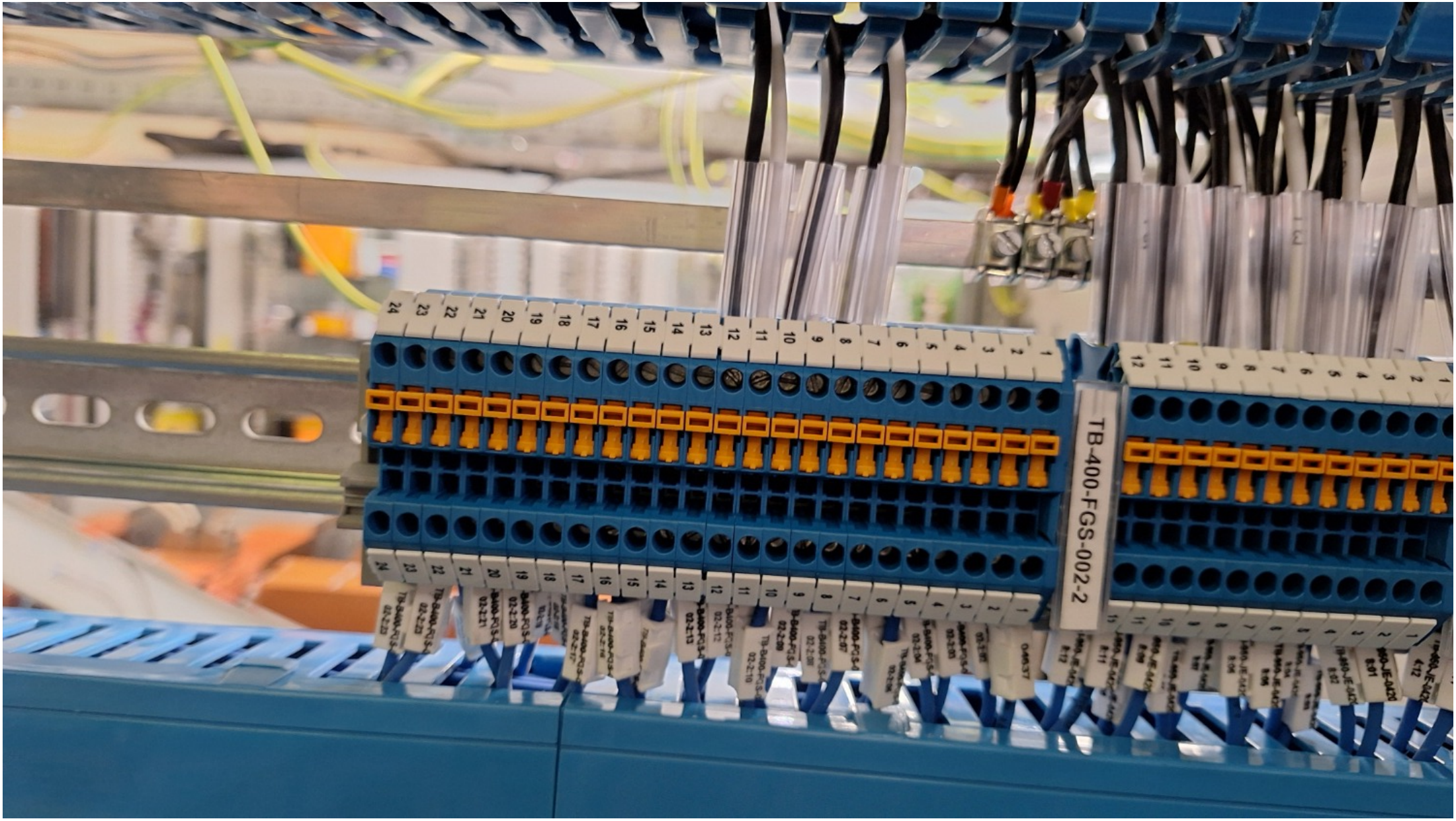
5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani
Date: 2025-02-27
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


TB-400-FGS-002-2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000795

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001027	1.4 Discipline	Instrumental
1.2 Item	950-GDZ-04206	H2 GD FZ-04 B-400 Ambient	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

The philosophy of cross-ferruling are wrong cabinet and instrument side. (see document 123A90-DDL-IN-DG-40016 sh.3)

Name: Alessio Polo

Date: 2024-11-23

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-23
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


Sh/B400-FGS-002/SPARE
WH/B400-FGS-002-3-17/4-20mA
BK/B400-FGS-002-3-18/PWR-
RD/B400-FGS-002-3-19/PWR+

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001023

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000403	1.4 Discipline	Instrumental
1.2 Item	C-950-SDZ-04202/B400-FGS-003	SMOKE DETECTOR / MARSHALLING PCS	
1.3 Subsystem	70-15	F&G Devices FZ-04 (B-400 I&T Equipment Room)	

2 - OBSERVATION

Missing cable tags on all routing (C-950-SDZ-04202/B400-FGS-003).

Name: Giovanni Tangianu

Date: 2024-11-29

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-29
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

Section 4 FUNCTIONAL TESTS SHEETS

Section 4.1 Electrical functional test sheets index

NOT APPLICABLE

Section 4.2 Electrical
“As-Commissioned” interconnection diagrams

NOT APPLICABLE

Section 4.3 Instrumentation functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 70-15 & discipline : I

Instrumental	70-15 F&G Devices FZ-04 (B-400 I&T Equipment Room)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
77-HY-012	B-400 Fire Damper AHU7 Inlet Air	ONSHORE	C10003792	FJ01D	100	2025-02-24	RFO 1
77-HY-013	B-400 Fire Damper AHU7 Return Air	ONSHORE	C10003802	FJ01D	100	2025-02-24	RFO 1
77-HY-014	B-400 Fire Damper AHU8 Inlet Air	ONSHORE	C10003804	FJ01D	100	2025-02-24	RFO 1
77-HY-015	B-400 Fire Damper AHU8 Return Air	ONSHORE	C10003807	FJ01D	100	2025-02-24	RFO 1
77-HY-016	B-400 Fire Damper Exhaust Air	ONSHORE	C10003809	FJ01D	100	2025-02-24	RFO 1
77-ZSL-012	B-400 Fire Damper AHU7 Inlet Air	ONSHORE	C10003793	FJ01D	100	2025-02-24	RFO 1
77-ZSL-013	B-400 Fire Damper AHU7 Return Air	ONSHORE	C10003803	FJ01D	100	2025-02-24	RFO 1
77-ZSL-014	B-400 Fire Damper AHU8 Inlet Air	ONSHORE	C10003805	FJ01D	100	2025-02-24	RFO 1
77-ZSL-015	B-400 Fire Damper AHU8 Return Air	ONSHORE	C10003808	FJ01D	100	2025-02-24	RFO 1
77-ZSL-016	B-400 Fire Damper Exhaust Air	ONSHORE	C10003810	FJ01D	100	2025-02-24	RFO 1
950-GDZ-04201	H2 GD FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003102	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04202	H2 GD FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003101	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04203	H2 GD FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003100	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04204	H2 GD FZ-04 B-400 Ambient	ONSHORE	C10003099	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04205	H2 GD FZ-04 B-400 Ambient	ONSHORE	C10003098	FJ04G	100	2025-01-13	RFO 1
950-GDZ-04206	H2 GD FZ-04 B-400 Ambient	ONSHORE	C10003097	FJ04G	100	2025-01-13	RFO 1
950-MFA-04201	FZ-04 MFA Activation - B-400 Indoor	ONSHORE	C10004421	FJ04PB_FGS	100	2025-01-13	RFO 1
950-SDZ-04201	Smoke Detector - FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003072	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04202	Smoke Detector - FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003071	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04203	Smoke Detector - FZ-04 B-400 HVAC Air Intake	ONSHORE	C10003070	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04204	Smoke Detector - FZ-04 B-400 Ambient	ONSHORE	C10003069	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04205	Smoke Detector - FZ-04 B-400 Ambient	ONSHORE	C10003068	FJ04S	100	2025-01-28	RFO 1
950-SDZ-04206	Smoke Detector - FZ-04 B-400 Ambient	ONSHORE	C10003067	FJ04S	100	2025-01-28	RFO 1
950-XL-04201	FZ-04 Gas Beacon Act. - B-400 Indoor	ONSHORE	C10004448	FJ04FB	100	2025-01-13	RFO 1
950-XL-04202	FZ-04 Fire Beacon Act. - B-400 Indoor	ONSHORE	C10004449	FJ04FB	100	2025-01-13	RFO 1
950-XZ-04201	FZ-04 Sounder Act. - B-400 Indoor	ONSHORE	C10004467	FJ04MS	100	2025-02-11	RFO 1

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-SDZ-04206	: Smoke Detector - FZ-04 B-400 Ambient	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400		
TASK	code	C10003067	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ04S	Smoke Detection

LOOP DATA

Loop TAG	950-SDZ-04206			TSLD	123A90-DDL-IN-DG-40014 SHEET 274 REV. 1_A		
IO Type	Input Yes	Output Yes		Energy by transmitter	NA	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal 02A-02B		Slot 05	Rack 01	Chanel 02	

LOOP TEST

1	Check earth isolation of the loop							OK
2	Connect loop to terminal							OK
3	Confirm Process Scale	Unit %		Min 0%		Max 34%		OK

LOOP RANGE		**0%**	**25%**	**50%**	**75%**	**100%**
4	Physical value applied for test	Unit					
5	Control System Display	Unit					

LOOP SERVICE

		Value	Trip	Gen Alarm	DCS Alarm	SOE	DCS display	
6	Threshold 1	34%	NA	Yes	Yes	NA	OK	OK
7	Threshold 2							
8	Threshold 3							
9	Threshold 4							
10	Checking of line monitoring		Yes	Yes	Yes	NA	OK	OK
11	Checking of Maintenance Inhibition		No	No	No	No	OK	OK
12	Associated safety Level / bar		ASD					OK
13	Associated outputs							

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
ELECTRIC CALIBRATOR FLUKE 725	4498694	7717/24	10/07/2025
SOLO A10S HFC-FREE SMOKE DETECTOR	SOLO A10S-001/2552945429		

LOOP DOCUMENTATION

14	Loop diagram is marked up and attached to this test sheet	OK
15	Cause and effect chart is highlighted accordingly	
16	Any defect is recorded for punch list issuance	NA

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Mohammed Barghouti	Giandonato Delmissier	John Mackillop
Date	2025-01-22	2025-01-22	2025-01-28
Signature	PROVERLIS Digitaly signed by Mohammed Barghouti 2025-01-22T07:45:09.821Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-22T07:56:30.497Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-28T19:46:17.412Z

Drawing no. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

TAG: 950-SDZ-04206

TS-1

L1 WH
L BK

C-950-SDZ-04206/B400-FGS-003
~~C-950-SDZ-04206/B400-FGS-002~~

1x2x0.75 mm2

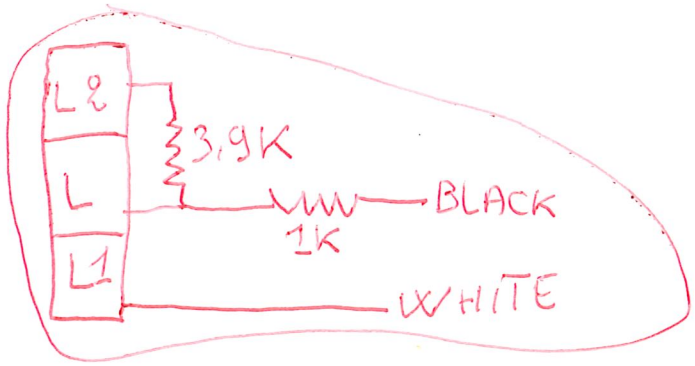
TB-B400-FGS-002-2

1WH 11
18K 12

TB CAB. : B400-FGS-003			
LOCATION : B-400			
FTA NAME : TB-01-05			
TERM. N°	DESCR.	IN	
02A	24V	02	
02B	COM		
TB :	HiCTB16		
BARRIER:	HiC2025		

TAG : 950-SDZ-04206			
FGS CAB. : B400-FGS-001			
I/O MODULARITY :	16		
RACK :	01	AI	
SLOT :	05		
CHANNEL :	02		
IOM TYPE : SAI143			

950
SDZ
04206



RED MARK UP 15/01/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
950-SDZ-04206
FZ-04 SMOKE DETECT. IN B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 274	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01



solo™
detectortesters

*A **single** testing system.*
*A **complete** range of testing tools.*





detectortesters
testing technology from No Climb

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.

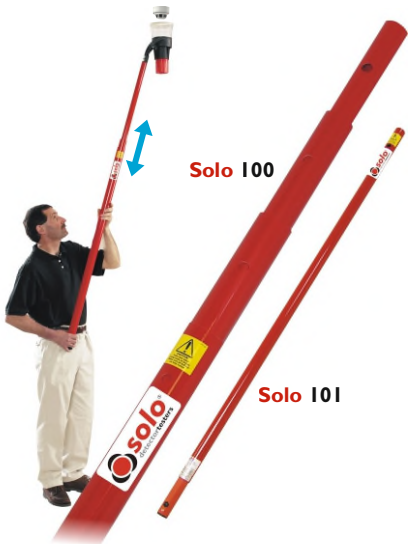


Ordering information	Product Code:
Solo A10S 250ml	SOLO A10S-001
Sold in multiples of 12	

detectortesters

www.solo-tester.com

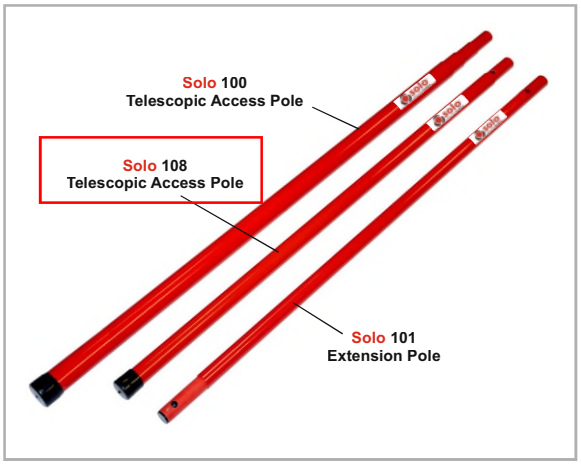
TELESCOPIC ACCESS POLES



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.

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.

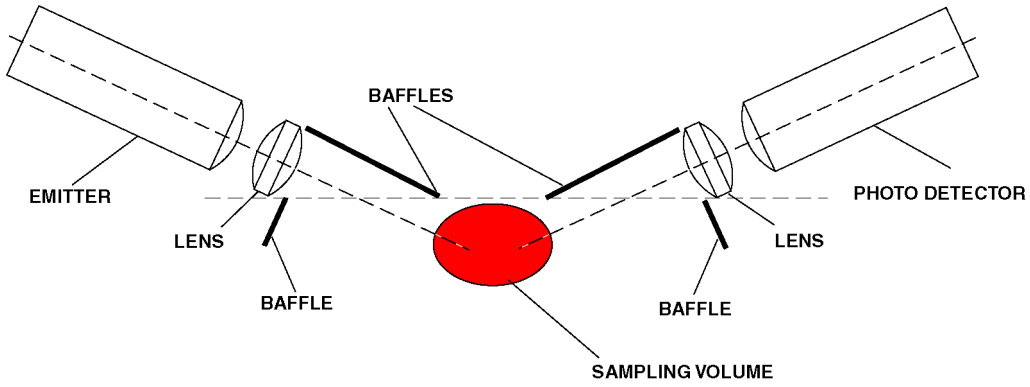


Fig. 1 Optical System Schematic

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

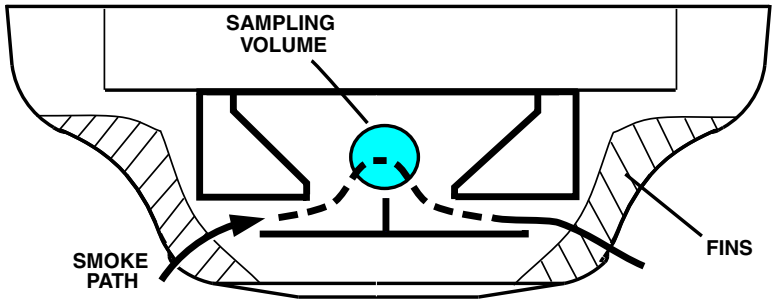


Fig. 2 Measuring Chamber Showing Smoke Flow Path

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.

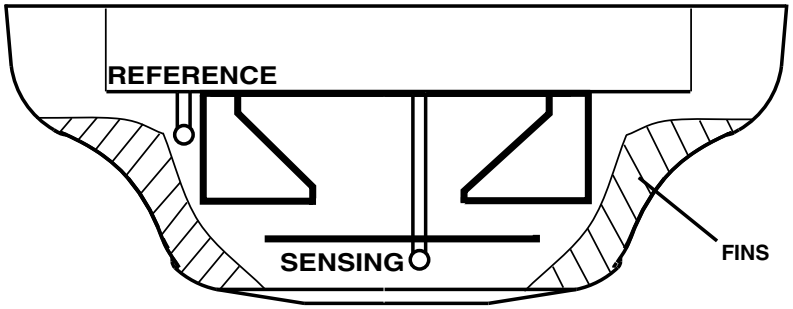


Fig. 3 Thermal Measuring System

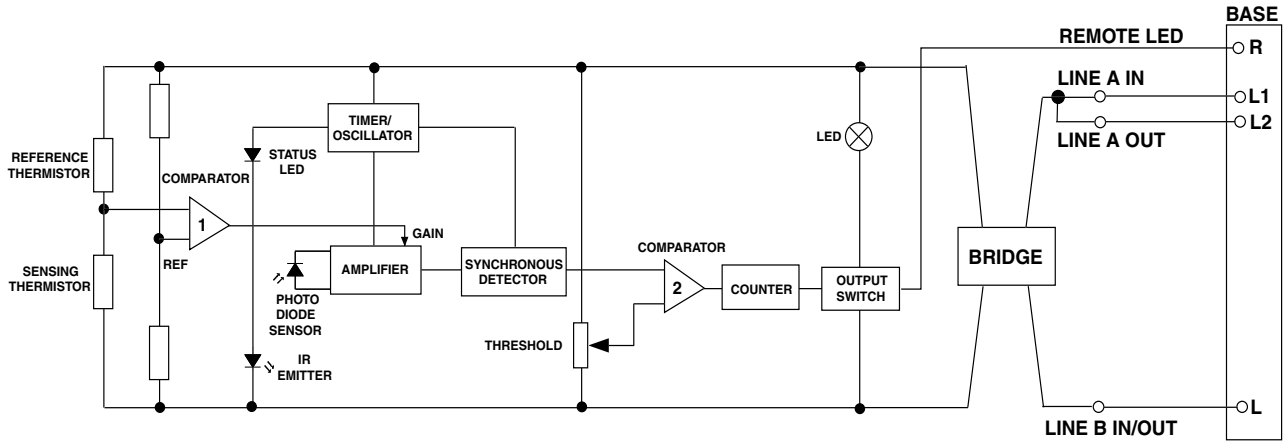


Fig. 4 Block Schematic of Detector

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.

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

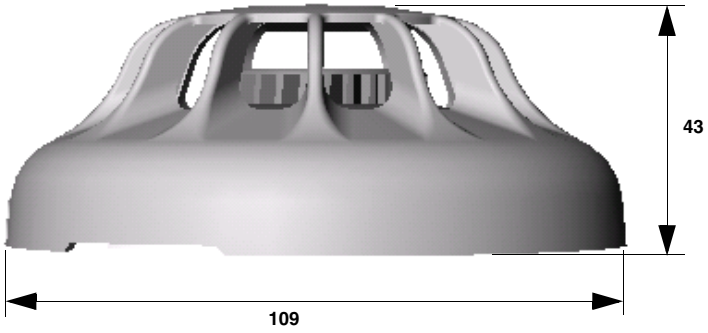


Fig. 5 Overall Dimensions of MR601TEx

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

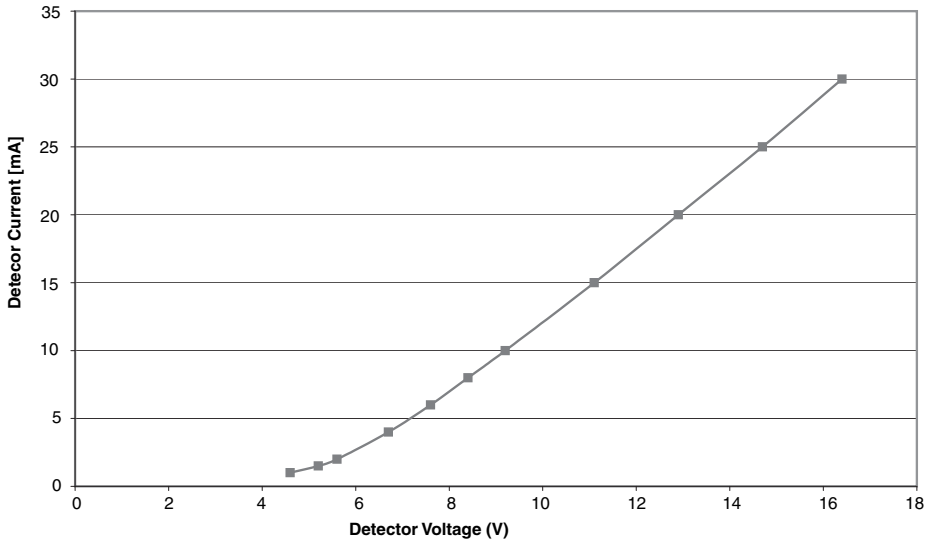


Fig. 7 Alarm Load Presented to the Controller

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).

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

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.

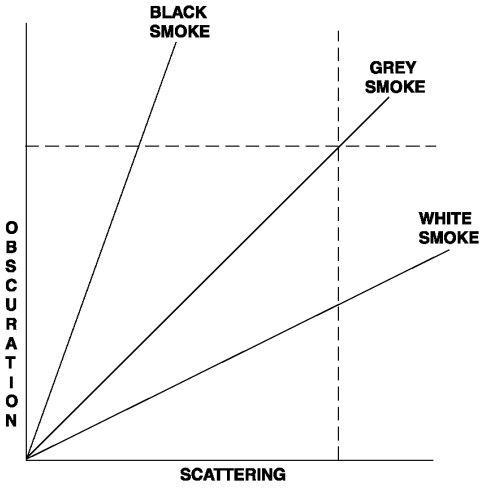


Fig. 8 Response Threshold vs Smoke Colour

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.

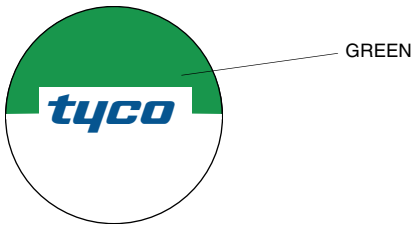


Fig. 9 Detector identification

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

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-SDZ-04205	: Smoke Detector - FZ-04 B-400 Ambient	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400		
TASK	code	C10003068	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ04S	Smoke Detection

LOOP DATA

Loop TAG	950-SDZ-04205			TSLD	123A90-DDL-IN-DG-40014 SHEET 273 REV. 1_A		
IO Type	Input	Output	Yes	Energy by transmitter	NA	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	02A-02B	Slot	03	Rack 01	Chanel 02

LOOP TEST

1	Check earth isolation of the loop					OK
2	Connect loop to terminal					OK
3	Confirm Process Scale	Unit %		Min 0%	Max 34%	OK

LOOP RANGE		0%	25%	50%	75%	100%
4	Physical value applied for test	Unit					
5	Control System Display	Unit					

LOOP SERVICE

		Value	Trip	Gen Alarm	DCS Alarm	SOE	DCS display	
6	Threshold 1	34%	NA	Yes	Yes	NA	OK	OK
7	Threshold 2							
8	Threshold 3							
9	Threshold 4							
10	Checking of line monitoring		Yes	Yes	Yes	NA	OK	OK
11	Checking of Maintenance Inhibition		No	No	No	No	OK	OK
12	Associated safety Level / bar		ASD					OK
13	Associated outputs							

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
ELECTRIC CALIBRATOR FLUKE 725	4498694	7717/24	10/07/2025
SOLO A10S HFC-FREE SMOKE DETECTOR	SOLO A10S-001/2552945429		

LOOP DOCUMENTATION

14	Loop diagram is marked up and attached to this test sheet	OK
15	Cause and effect chart is highlighted accordingly	
16	Any defect is recorded for punch list issuance	NA

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Mohammed Barghouti	Giandonato Delmissier	John Mackillop
Date	2025-01-22	2025-01-22	2025-01-28
Signature	Digitaly signed by Mohammed Barghouti 2025-01-22T07:45:23.522Z	Digitaly signed by Giandonato Delmissier 2025-01-22T07:57:00.148Z	Digitaly signed by John Mackillop 2025-01-28T19:46:34.454Z

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

TAG: 950-SDZ-04205

TS-1

L1 — WH
L — BK

C-950-SDZ-04205/B400-FGS-003
~~C-950-SDZ-04205/B400-FGS-002~~

1x2x0.75 mm2

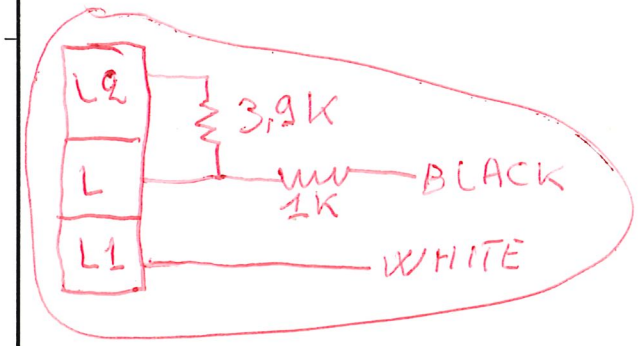
TB-B400-FGS-002-2

1WH — 09
1BK — 10
OS — US — Shield Bar

TB CAB. : B400-FGS-003			
LOCATION : B-400			
FTA NAME : TB-01-03			
TERM. N°	DESCR.	IN	
02A	24V	02	
02B	COM		
TB :	HiCTB16		
BARRIER:	HiC2025		

TAG : 950-SDZ-04205		
FGS CAB. : B400-FGS-001		
I/O MODULARITY : 16		
RACK : 01	AI	
SLOT : 03		
CHANNEL : 02		
IOM TYPE : SAI143		

950 SDZ 04205



REDMARK 4P 15/01/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
950-SDZ-04205
FZ-04 SMOKE DETECT. IN B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 273	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01



solo™
detectortesters

*A **single** testing system.*
*A **complete** range of testing tools.*





detectortesters
testing technology from No Climb

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.

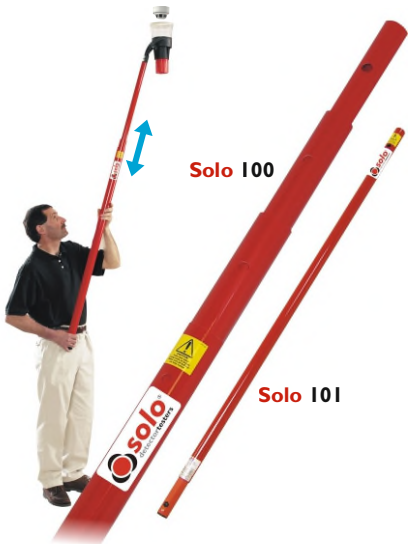


Ordering information	Product Code:
Solo A10S 250ml	SOLO A10S-001
Sold in multiples of 12	

detectortesters

www.solo-tester.com

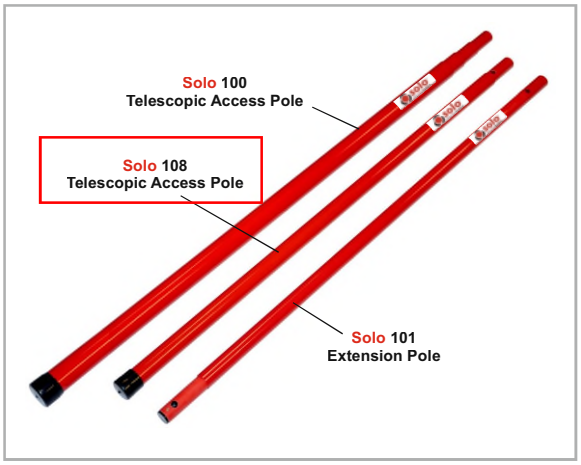
TELESCOPIC ACCESS POLES



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.

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.

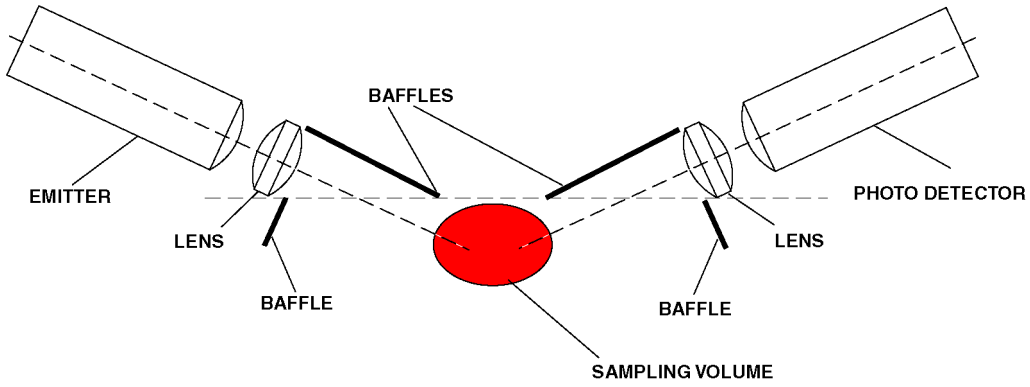


Fig. 1 Optical System Schematic

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

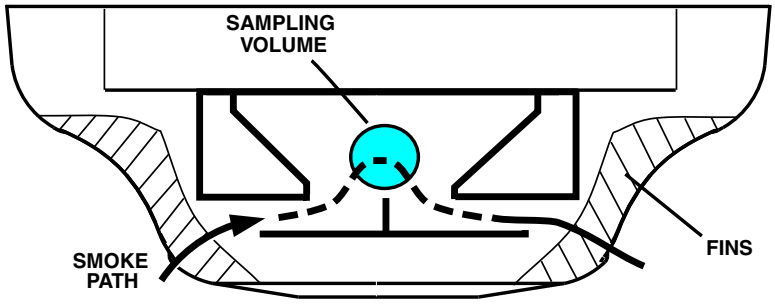


Fig. 2 Measuring Chamber Showing Smoke Flow Path

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.

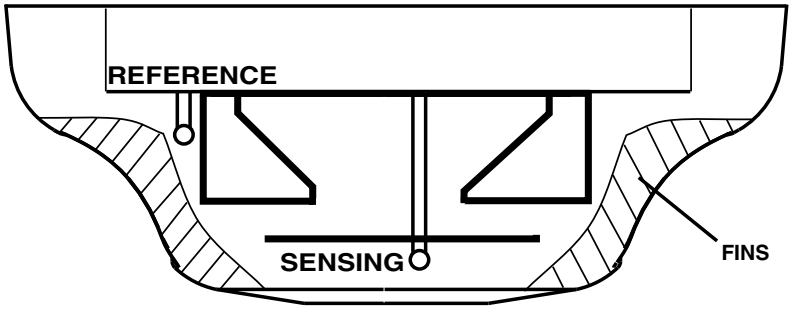


Fig. 3 Thermal Measuring System

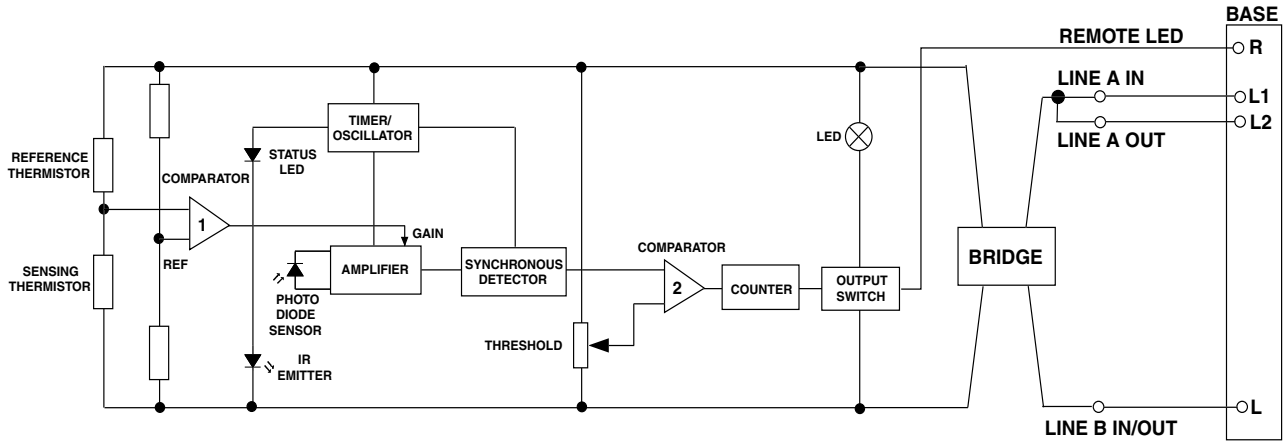


Fig. 4 Block Schematic of Detector

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.

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

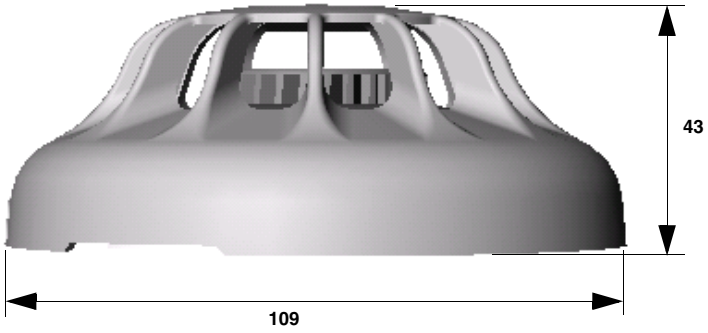


Fig. 5 Overall Dimensions of MR601TEx

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

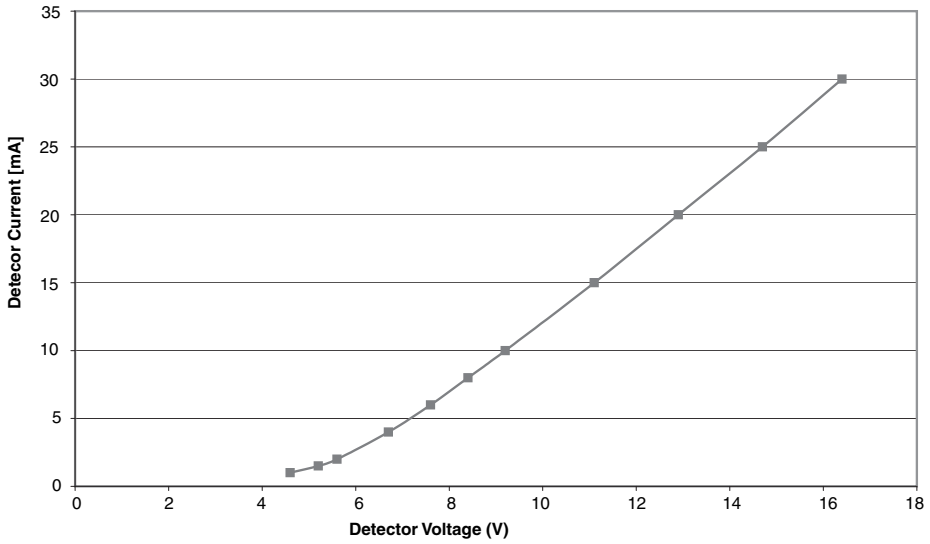


Fig. 7 Alarm Load Presented to the Controller

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).

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

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.

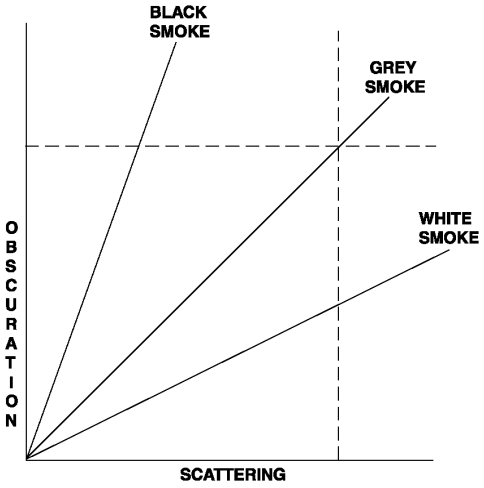


Fig. 8 Response Threshold vs Smoke Colour

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.

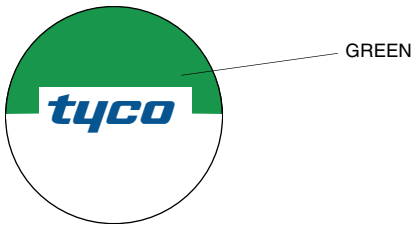


Fig. 9 Detector identification

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

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-SDZ-04204	: Smoke Detector - FZ-04 B-400 Ambient	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400		
TASK	code	C10003069	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ04S	Smoke Detection

LOOP DATA

Loop TAG	950-SDZ-4204			TSLD	123A90-DDL-IN-DG-40014 SHEET 272 REV. 1_A		
IO Type	Input Yes	Output Yes		Energy by transmitter	NA	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal 02A-02B		Slot 01	Rack 01	Chanel 02	

LOOP TEST

1	Check earth isolation of the loop				OK
2	Connect loop to terminal				OK
3	Confirm Process Scale	Unit %	Min 0%	Max 34%	OK

LOOP RANGE		0%	25%	50%	75%	100%	
4	Physical value applied for test	Unit					
5	Control System Display	Unit					

LOOP SERVICE

		Value	Trip	Gen Alarm	DCS Alarm	SOE	DCS display	
6	Threshold 1	34%	NA	Yes	Yes	NA	OK	OK
7	Threshold 2							
8	Threshold 3							
9	Threshold 4							
10	Checking of line monitoring		Yes	Yes	Yes	NA	OK	OK
11	Checking of Maintenance Inhibition		No	No	No	No	OK	OK
12	Associated safety Level / bar		ASD					OK
13	Associated outputs							

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
ELECTRIC CALIBRATOR FLUKE 725	4498694	7717/24	10/07/2025
SOLO A10S HFC-FREE SMOKE DETECTOR	SOLO A10S-001/2552945429		

LOOP DOCUMENTATION

14	Loop diagram is marked up and attached to this test sheet	OK
15	Cause and effect chart is highlighted accordingly	
16	Any defect is recorded for punch list issuance	NA

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Mohammed Barghouti	Giandonato Delmissier	John Mackillop
Date	2025-01-22	2025-01-22	2025-01-28
Signature	Digitaly signed by Mohammed Barghouti 2025-01-22T07:45:39.478Z	Digitaly signed by Giandonato Delmissier 2025-01-22T07:57:31.158Z	Digitaly signed by John Mackillop 2025-01-28T19:46:52.719Z

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

TAG: 950-SDZ-04204

TS-1

L1 WH
L BK

C-950-SDZ-04204/B400-FGS-003
~~C-950-SDZ-04204/B400-FGS-002~~

1x2x0.75 mm2

TB-B400-FGS-002-2

1WH 07
1BK 08

TB CAB. : B400-FGS-003		
LOCATION : B-400		
FTA NAME : TB-01-01		
TERM. N°	DESCR.	IN
02A	24V	02
02B	COM	
TB :	HiCTB16	
BARRIER:	HiC2025	

TAG : 950-SDZ-04204		
FGS CAB. : B400-FGS-001		
I/O MODULARITY : 16		
RACK : 01	AI	
SLOT : 01		
CHANNEL : 02		
IOM TYPE : SAI143		

950 SDZ 04204

L2 — 3,9K
L — BLACK
1K
L1 — WHITE

RED MARK UP 15/01/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
950-SDZ-04204
FZ-04 SMOKE DETECT. IN B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-IN-DG-40014	272	01

File Name : 123A90-DDL-IN-DG-40014_REV01



solo™
detectortesters

*A **single** testing system.*
*A **complete** range of testing tools.*





detectortesters
testing technology from No Climb

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.

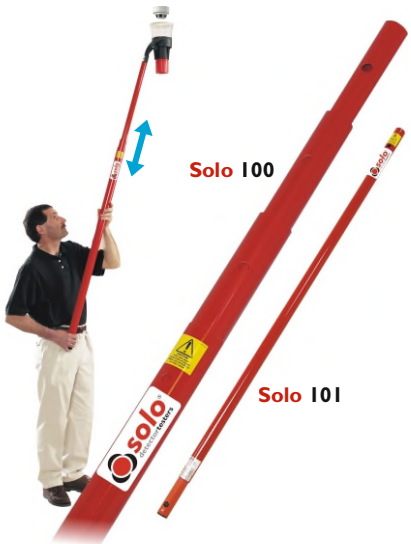


Ordering information	Product Code:
Solo A10S 250ml	SOLO A10S-001
Sold in multiples of 12	

detectortesters

www.solo-tester.com

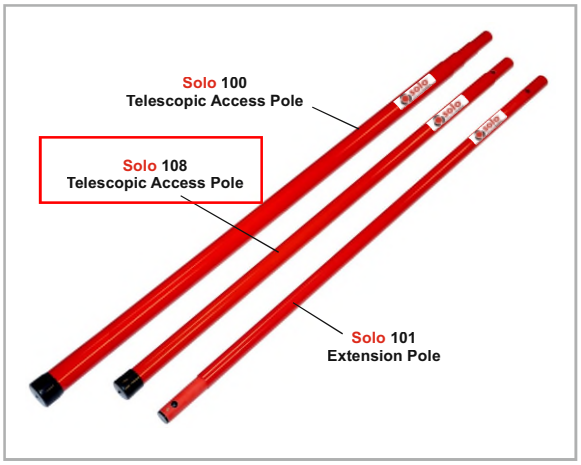
TELESCOPIC ACCESS POLES



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.

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.

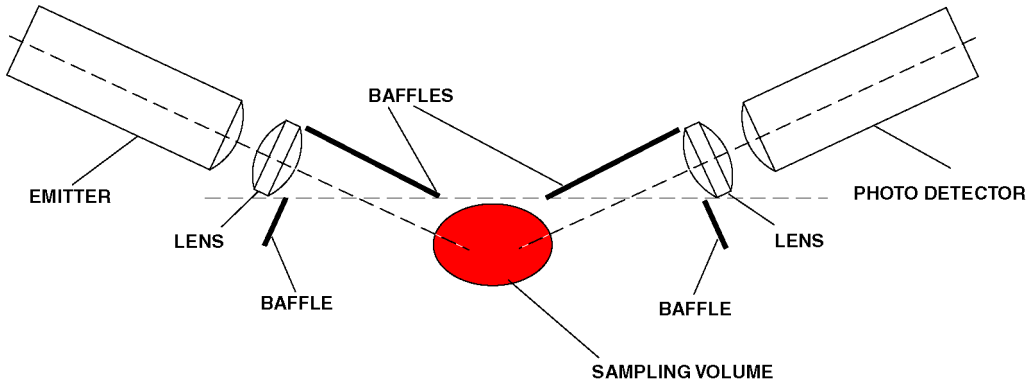


Fig. 1 Optical System Schematic

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

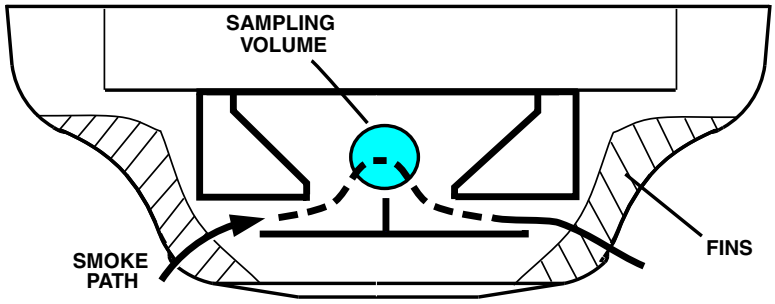


Fig. 2 Measuring Chamber Showing Smoke Flow Path

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.

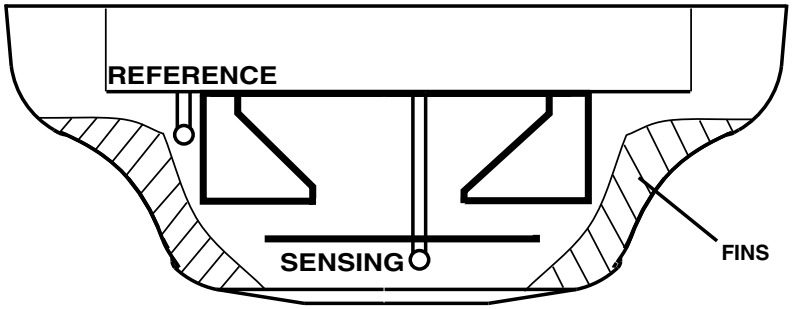


Fig. 3 Thermal Measuring System

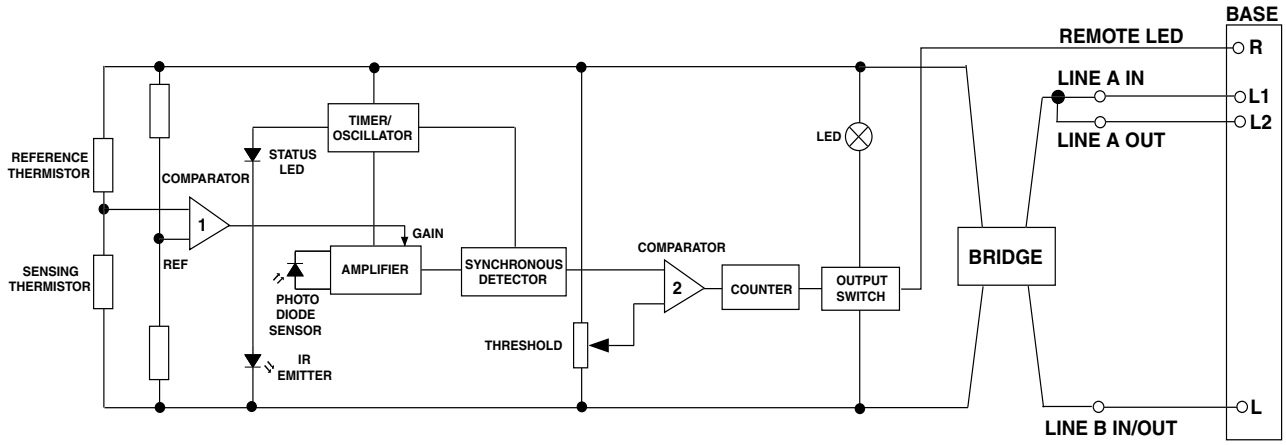


Fig. 4 Block Schematic of Detector

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.

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

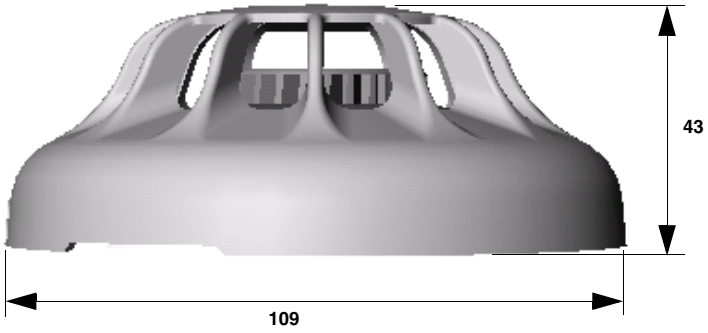


Fig. 5 Overall Dimensions of MR601TEx

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

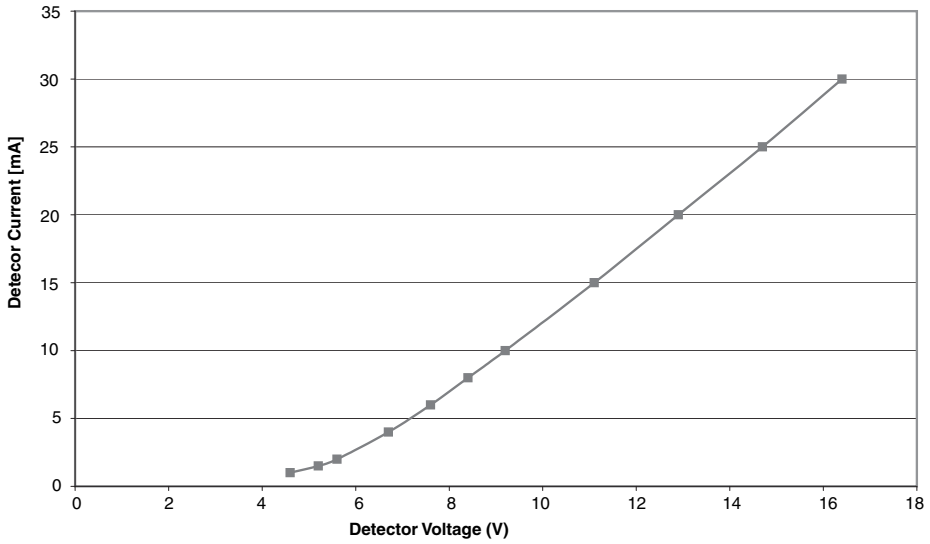


Fig. 7 Alarm Load Presented to the Controller

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).

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

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.

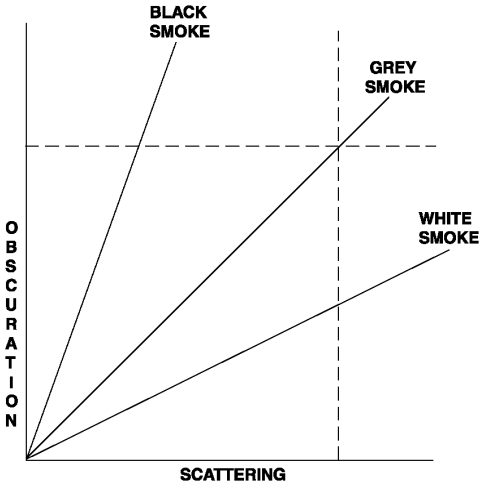


Fig. 8 Response Threshold vs Smoke Colour

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.

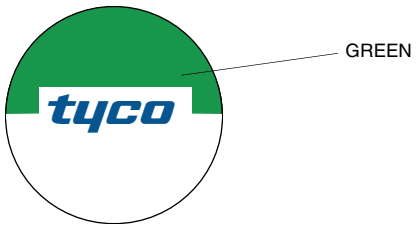


Fig. 9 Detector identification

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

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-SDZ-04203	: Smoke Detector - FZ-04 B-400 HVAC Air Intake	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400_Ext		
TASK	code	C10003070	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ04S	Smoke Detection

LOOP DATA

Loop TAG	950-SDZ-04203			TSLD	123A90-DDL-IN-DG-40014 SHEET 271 REV. 1_A		
IO Type	Input Yes	Output Yes		Energy by transmitter	NA	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal 01A-01B		Slot 05	Rack 01	Chanel 01	

LOOP TEST

1	Check earth isolation of the loop				OK
2	Connect loop to terminal				OK
3	Confirm Process Scale	Unit %	Min 0%	Max 34%	OK

LOOP RANGE		0%	25%	50%	75%	100%	
4	Physical value applied for test	Unit					
5	Control System Display	Unit					

LOOP SERVICE

		Value	Trip	Gen Alarm	DCS Alarm	SOE	DCS display	
6	Threshold 1	34%	NA	Yes	Yes	NA	OK	OK
7	Threshold 2							
8	Threshold 3							
9	Threshold 4							
10	Checking of line monitoring		Yes	Yes	Yes	NA	OK	OK
11	Checking of Maintenance Inhibition		No	No	No	No	OK	OK
12	Associated safety Level / bar		ESD-D1					OK
13	Associated outputs							

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
ELECTRIC CALIBRATOR FLUKE 725	4498694	7717/24	10/07/2025
SOLO A10S HFC-FREE SMOKE	SOLO A10S-001/2552945429		

LOOP DOCUMENTATION

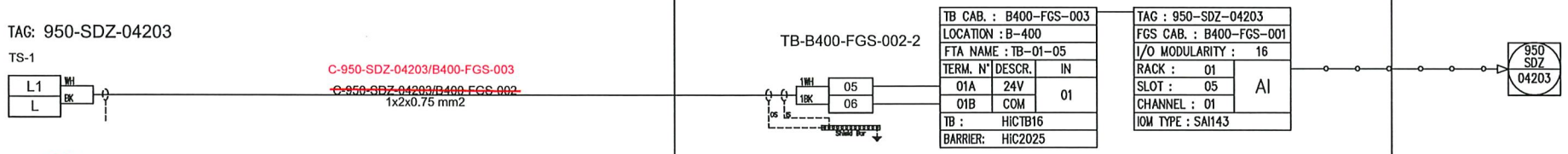
14	Loop diagram is marked up and attached to this test sheet	OK
15	Cause and effect chart is highlighted accordingly	
16	Any defect is recorded for punch list issuance	NA

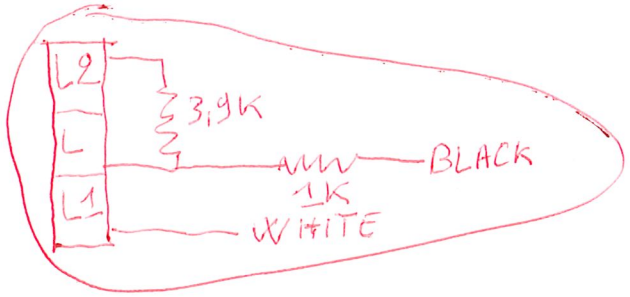
Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Mohammed Barghouti	Giandonato Delmissier	John Mackillop
Date	2025-01-22	2025-01-22	2025-01-28
Signature	PROVERLIS Digitaly signed by Mohammed Barghouti 2025-01-22T07:45:53.089Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-22T07:57:56.709Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-28T19:47:11.071Z

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE





RED MARK UP 14/01/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
950-SDZ-04203
FZ-04 SMOKE DETECT. IN B-400 HVAC AIR INTAKE

CONTRACT NO./TITLE CONTRACT_NO. | SCALE 1:1

DRAWN: VBA | CHECKED: LCA | APPROVED: DLO | DATE 23/10/2024

A3 | DRAWING NO. 123A90-DDL-IN-DG-40014 | SHEET 271 | REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV01



solo™
detectortesters

*A **single** testing system.*
*A **complete** range of testing tools.*





detectortesters
testing technology from No Climb

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.

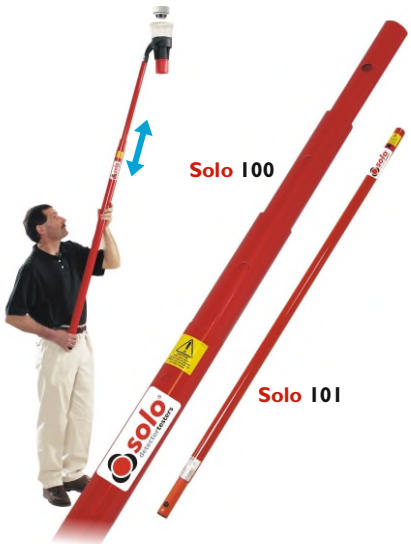


Ordering information	Product Code:
Solo A10S 250ml	SOLO A10S-001
Sold in multiples of 12	

detectortesters

www.solo-tester.com

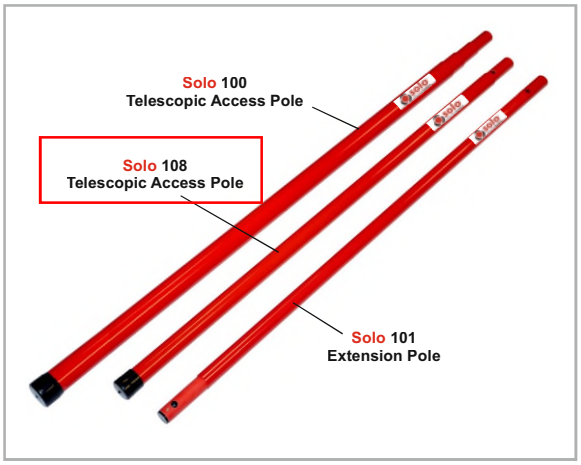
TELESCOPIC ACCESS POLES



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.

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.

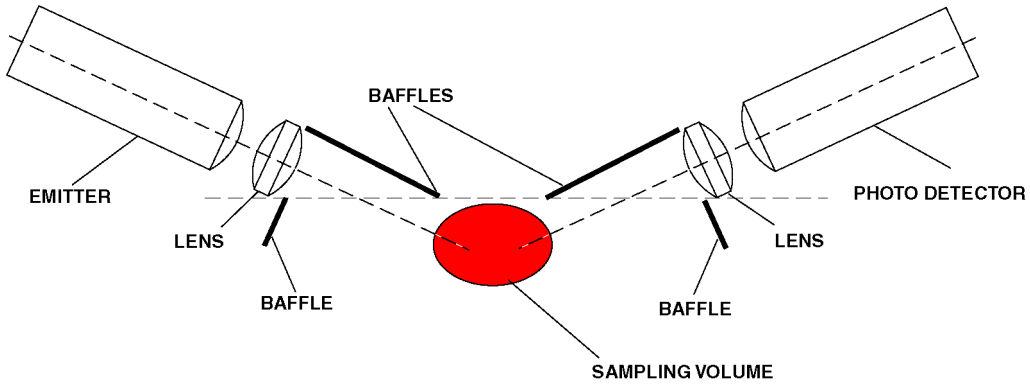


Fig. 1 Optical System Schematic

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

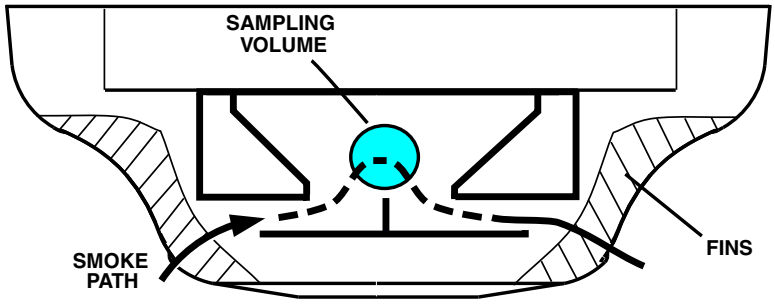


Fig. 2 Measuring Chamber Showing Smoke Flow Path

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.

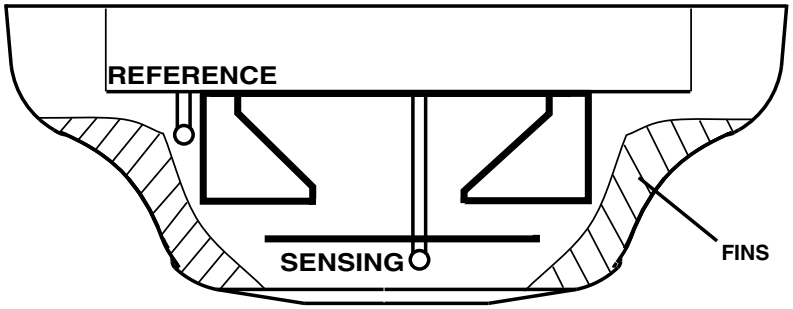


Fig. 3 Thermal Measuring System

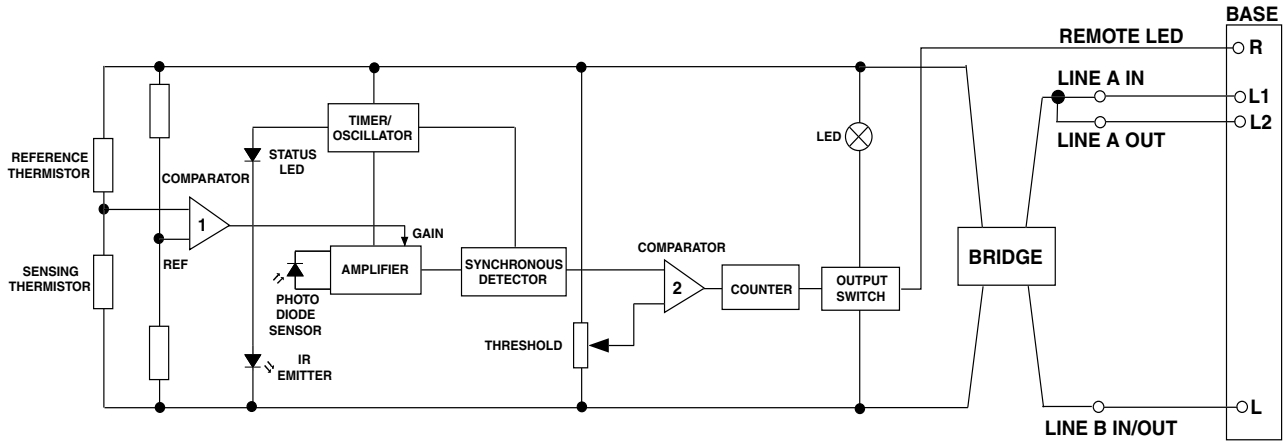


Fig. 4 Block Schematic of Detector

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.

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

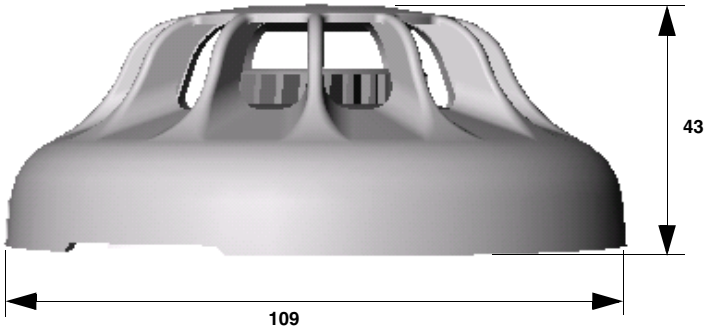


Fig. 5 Overall Dimensions of MR601TEx

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

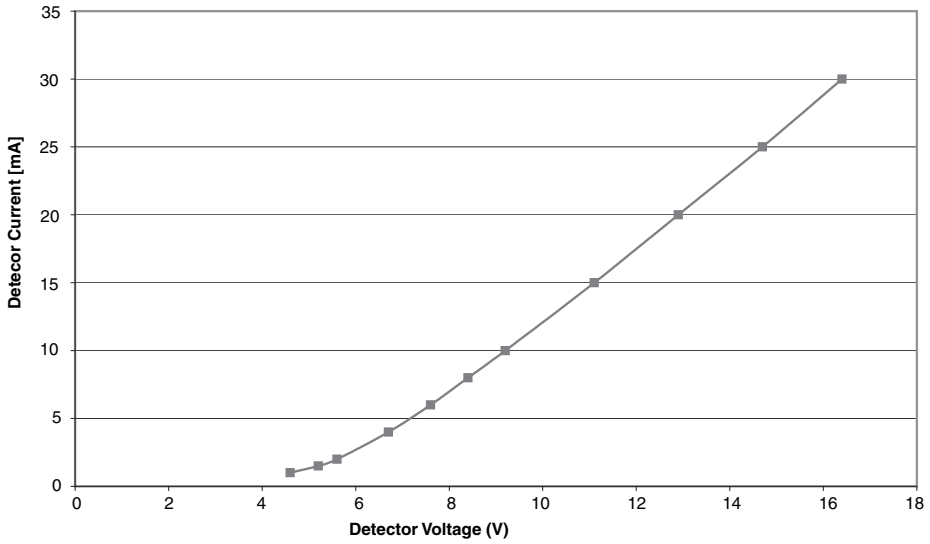


Fig. 7 Alarm Load Presented to the Controller

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).

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

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.

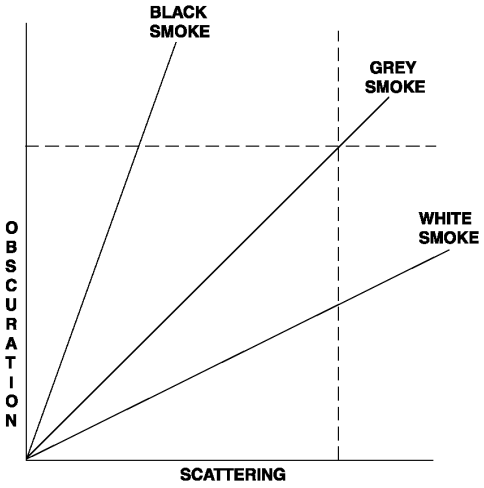


Fig. 8 Response Threshold vs Smoke Colour

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.

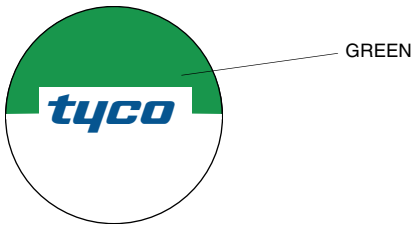


Fig. 9 Detector identification

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

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

ROSETTI MARINO — PROVERLIS — CROSSWIND

ITEM	Tag	950-SDZ-04202	: Smoke Detector - FZ-04 B-400 HVAC Air Intake	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400_Ext		
TASK	code	C10003071	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ04S	Smoke Detection

LOOP DATA

Loop TAG	950-SDZ-04202			TSLD	123A90-DDL-IN-DG-40014 SHEET 270 REV. 1_A		
IO Type	Input Yes	Output Yes		Energy by transmitter	NA	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal 01A-01B		Slot 03	Rack 01	Chanel 01	

LOOP TEST

1	Check earth isolation of the loop						OK
2	Connect loop to terminal						OK
3	Confirm Process Scale	Unit %		Min 0 %		Max 34 %	OK

LOOP RANGE		**0%**	**25%**	**50%**	**75%**	**100%**
4	Physical value applied for test	Unit					
5	Control System Display	Unit					

LOOP SERVICE

		Value	**Trip**	**Gen Alarm**	**DCS Alarm**	**SOE**	**DCS display**	
6	Threshold 1	34 %	NA	Yes	Yes	NA	OK	OK
7	Threshold 2							
8	Threshold 3							
9	Threshold 4							
10	Checking of line monitoring		Yes	Yes	Yes	NA	OK	OK
11	Checking of Maintenance Inhibition		No	No	No	No	OK	OK
12	Associated safety Level / bar		ESD-1D					OK
13	Associated outputs							

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
ELECTRIC CALIBRATOR FLUKE 725	4498694	7717/24	10/07/2025
SOLO A10S SMOKE AEROSOL	SOLO A10S-001		

LOOP DOCUMENTATION

14	Loop diagram is marked up and attached to this test sheet	OK
15	Cause and effect chart is highlighted accordingly	
16	Any defect is recorded for punch list issuance	OK

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Mohammed Barghouti	Giandonato Delmissier	John Mackillop
Date	2025-01-22	2025-01-22	2025-01-28
Signature	PROVERLIS Digitaly signed by Mohammed Barghouti 2025-01-22T06:08:07.644Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-22T07:31:53.527Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-28T19:47:30.181Z

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

TAG: 950-SDZ-04202

TS-1

L1 WH
L BK

C-950-SDZ-04202/B400-FGS-003
~~C-950-SDZ-04202/B400-FGS-002~~
1x2x0.75 mm2

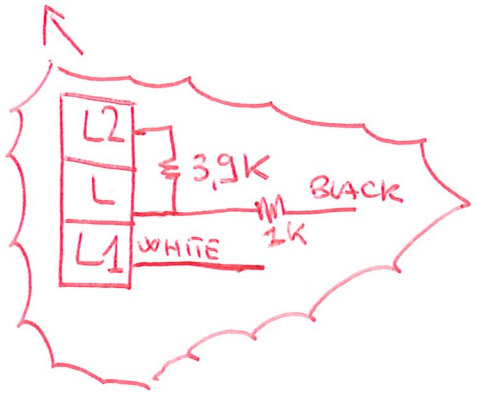
TB-B400-FGS-002-2

1WH 03
1BK 04
DS
Shield Bar

TB CAB. : B400-FGS-003			
LOCATION : B-400			
FTA NAME : TB-01-03			
TERM. N°	DESCR.	IN	
01A	24V	01	
01B	COM		
TB :	HiCTB16		
BARRIER:	HiC2025		

TAG : 950-SDZ-04202			
FGS CAB. : B400-FGS-001			
I/O MODULARITY :	16		
RACK :	01	AI	
SLOT :	03		
CHANNEL :	01		
IOM TYPE : SAI143			

950 SDZ 04202



15/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
950-SDZ-04202
FZ-04 SMOKE DETECT. IN B-400 HVAC AIR INTAKE

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024
A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 270	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01



solo™
detectortesters

*A **single** testing system.*
*A **complete** range of testing tools.*





detectortesters
testing technology from No Climb

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.

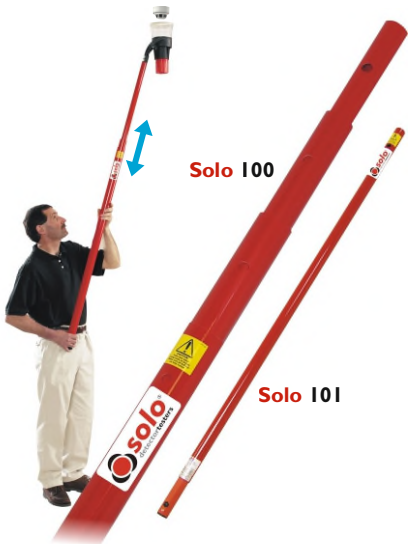


Ordering information	Product Code:
Solo A10S 250ml	SOLO A10S-001
Sold in multiples of 12	

detectortesters

www.solo-tester.com

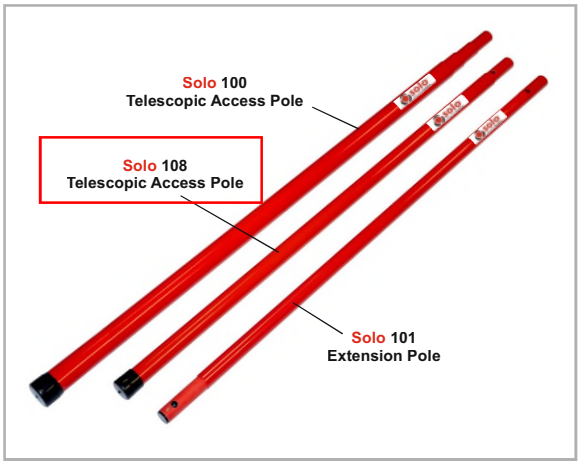
TELESCOPIC ACCESS POLES



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.

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.

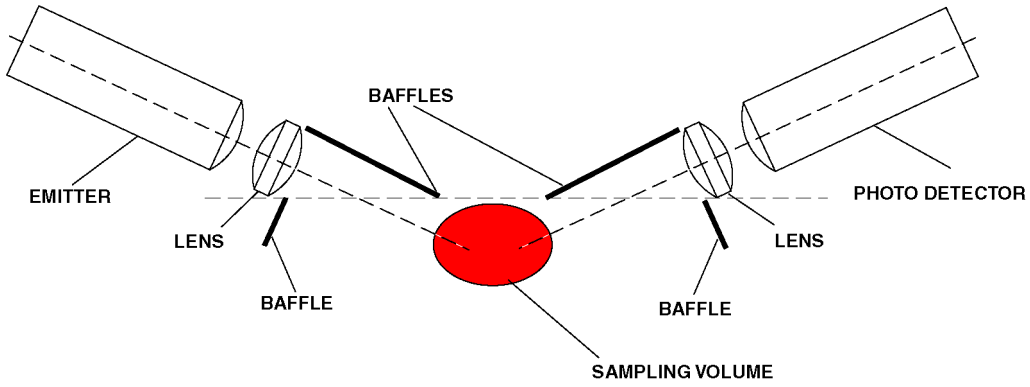


Fig. 1 Optical System Schematic

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

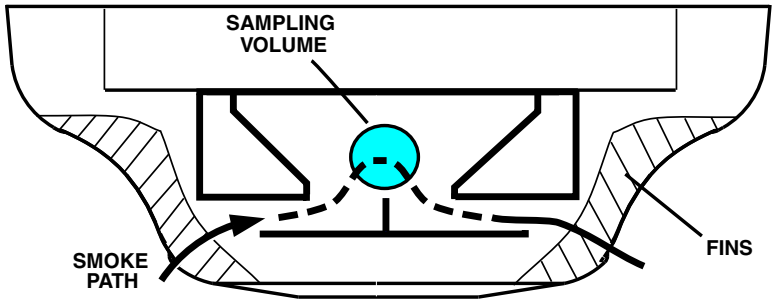


Fig. 2 Measuring Chamber Showing Smoke Flow Path

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.

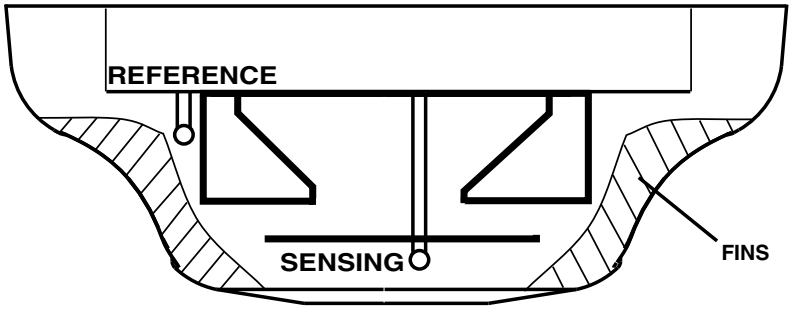


Fig. 3 Thermal Measuring System

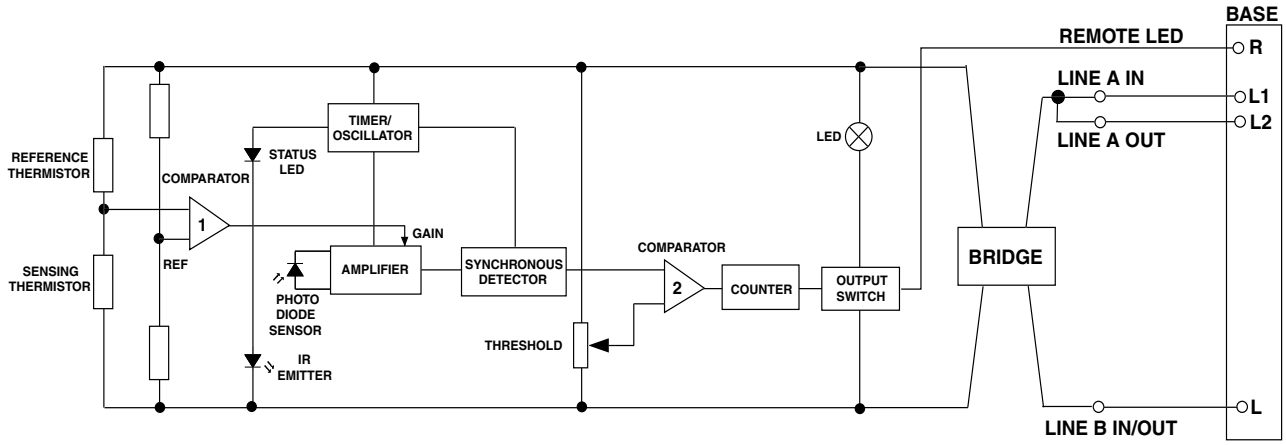


Fig. 4 Block Schematic of Detector

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.

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

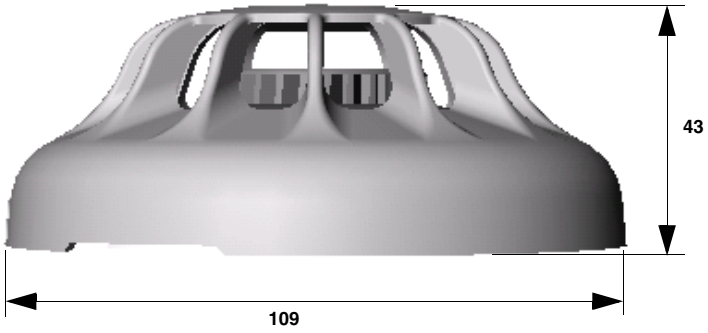


Fig. 5 Overall Dimensions of MR601TEx

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

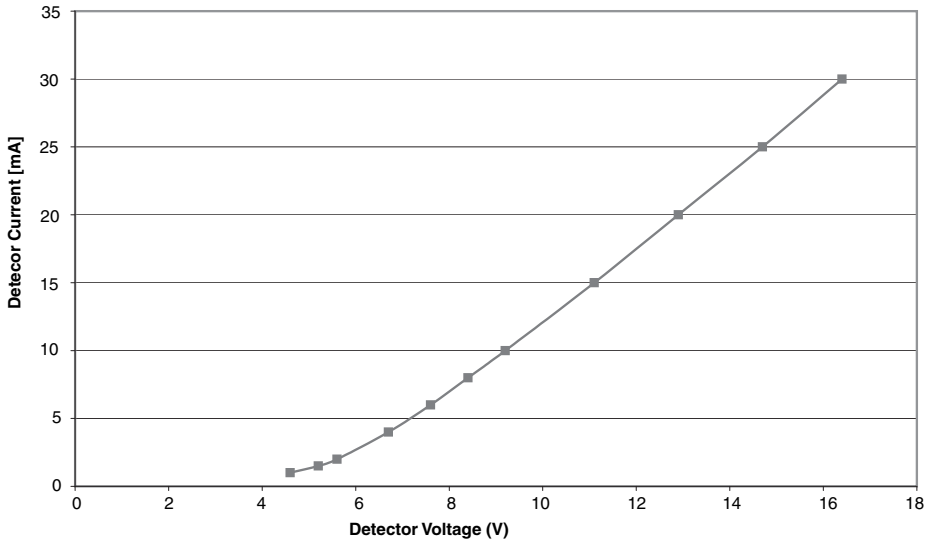


Fig. 7 Alarm Load Presented to the Controller

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).

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

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.

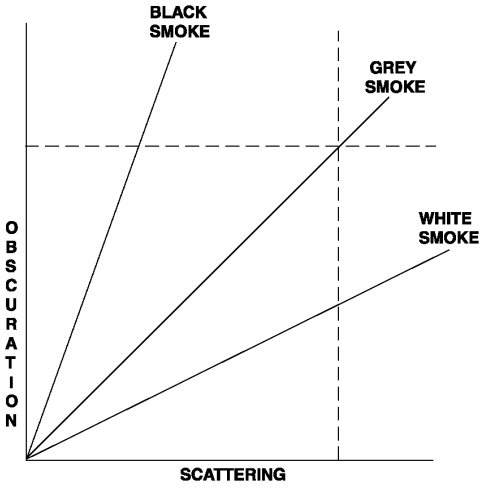


Fig. 8 Response Threshold vs Smoke Colour

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.

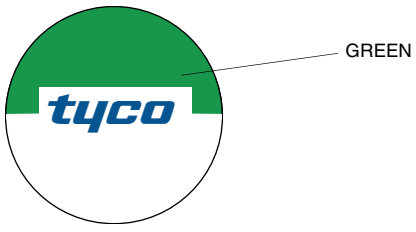


Fig. 9 Detector identification

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

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

ROSETTI MARINO | CROSSWIND

ITEM	Tag	950-SDZ-04201	: Smoke Detector - FZ-04 B-400 HVAC Air Intake	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400_Ext		
TASK	code	C10003072	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ04S	Smoke Detection

LOOP DATA

Loop TAG	950-SDZ-04201			TSLD	123A90-DDL-IN-DG-40014 SHEET 269 REV. 1_A		
IO Type	Input Yes	Output Yes		Energy by transmitter	NA	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal 01A-01B		Slot 01	Rack 01	Chanel 01	

LOOP TEST

1	Check earth isolation of the loop			OK
2	Connect loop to terminal			OK
3	Confirm Process Scale	Unit %	Min 0 % / Max 34 %	OK

LOOP RANGE		0%	25%	50%	75%	100%	
4	Physical value applied for test	Unit					
5	Control System Display	Unit					

LOOP SERVICE

		Value	Trip	Gen Alarm	DCS Alarm	SOE	DCS display	
6	Threshold 1	34 %	NA	Yes	Yes	NA	OK	OK
7	Threshold 2							
8	Threshold 3							
9	Threshold 4							
10	Checking of line monitoring		Yes	Yes	Yes	NA	OK	OK
11	Checking of Maintenance Inhibition		No	No	No	No	OK	OK
12	Associated safety Level / bar		ESD-1D					OK
13	Associated outputs							

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
ELECTRIC CALIBRATOR FLUKE 725	4498694	7717/24	10/07/2025
SOLO A10S SMOKE AEROSOL	SOLO A10S-001		

LOOP DOCUMENTATION

14	Loop diagram is marked up and attached to this test sheet	OK
15	Cause and effect chart is highlighted accordingly	
16	Any defect is recorded for punch list issuance	OK

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	
Name	Mohammed Barghouti	Giandonato Delmissier	John Mackillop
Date	2025-01-22	2025-01-22	2025-01-28
Signature	Digitaly signed by Mohammed Barghouti 2025-01-22T06:08:19.647Z	Digitaly signed by Giandonato Delmissier 2025-01-22T07:32:28.819Z	Digitaly signed by John Mackillop 2025-01-28T19:47:48.081Z

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

TAG: 950-SDZ-04201

TS-1

L1 WH
L BK

C-950-SDZ-04201/B400-FGS-003
~~C-950-SDZ-04201/B400-FGS-002~~

1x2x0.75 mm2

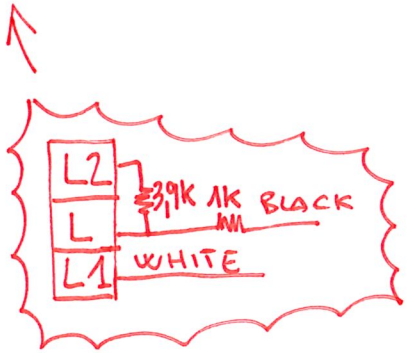
TB-B400-FGS-002-2

1WH 01
1BK 02
DS
Shield Bar

TB CAB. : B400-FGS-003		
LOCATION : B-400		
FTA NAME : TB-01-01		
TERM. N°	DESCR.	IN
01A	24V	01
01B	COM	
TB : HiCTB16		
BARRIER: HiC2025		

TAG : 950-SDZ-04201		
FGS CAB. : B400-FGS-001		
I/O MODULARITY : 16		
RACK : 01		AI
SLOT : 01		
CHANNEL : 01		
IOM TYPE : SAI143		

950
SDZ
04201



15/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
950-SDZ-04201
FZ-04 SMOKE DETECT. IN B-400 HVAC AIR INTAKE

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 269	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01



solo™
detectortesters

*A **single** testing system.*
*A **complete** range of testing tools.*





detectortesters
testing technology from No Climb

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.

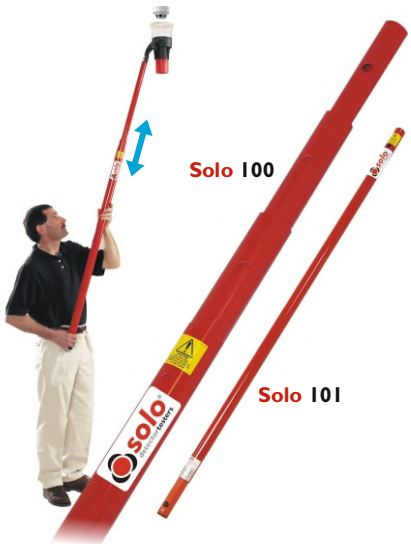


Ordering information	Product Code:
Solo A10S 250ml	SOLO A10S-001
Sold in multiples of 12	

detectortesters

www.solo-tester.com

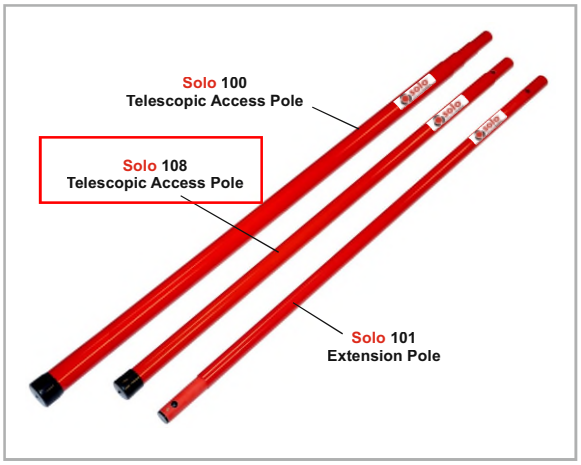
TELESCOPIC ACCESS POLES



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.

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.

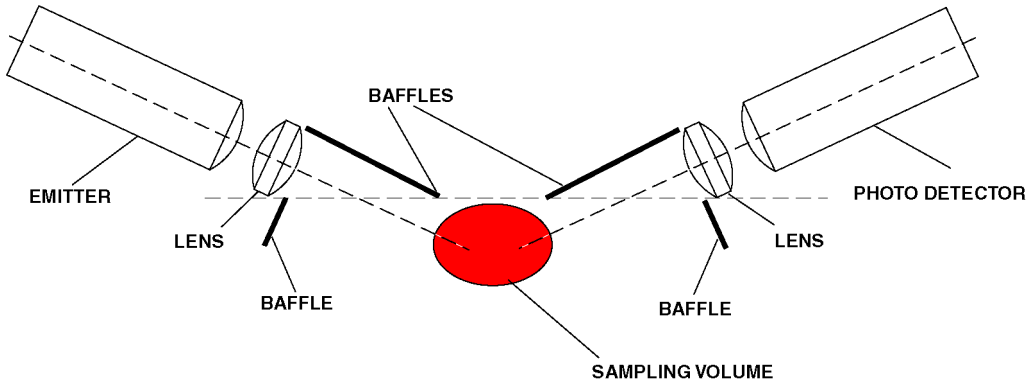


Fig. 1 Optical System Schematic

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

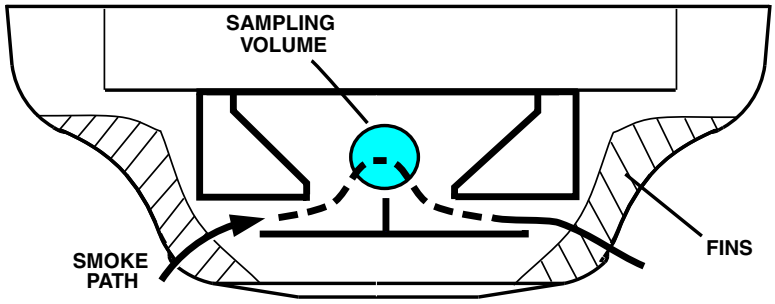


Fig. 2 Measuring Chamber Showing Smoke Flow Path

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.

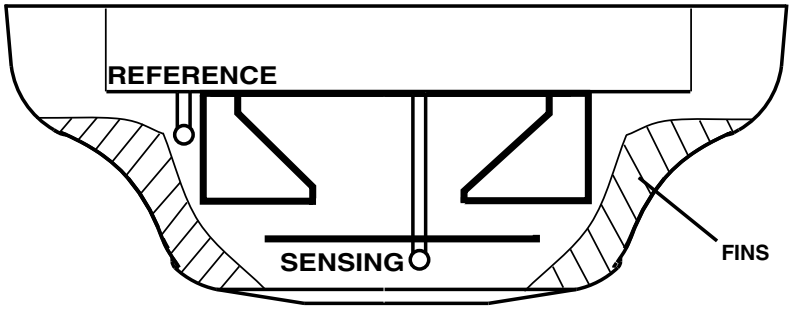


Fig. 3 Thermal Measuring System

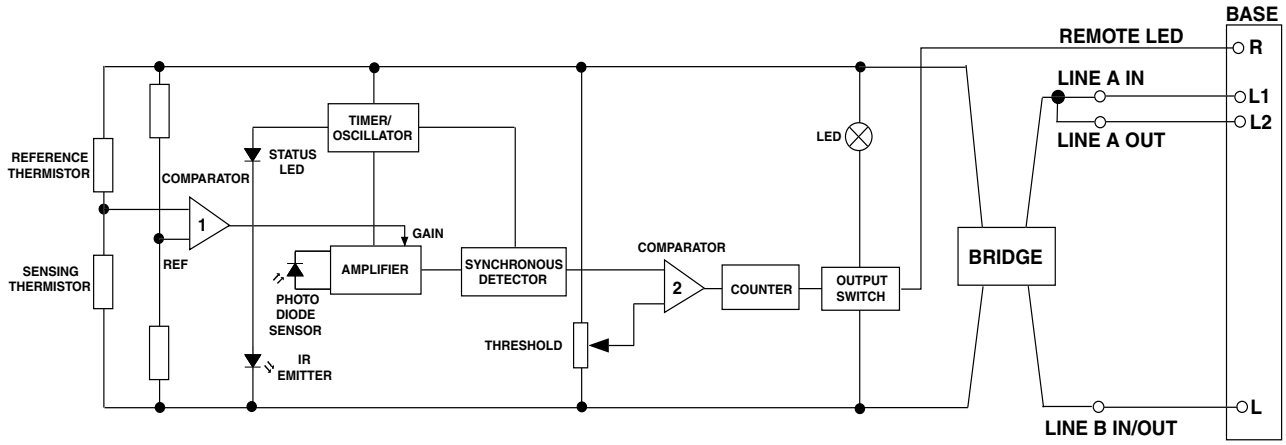


Fig. 4 Block Schematic of Detector

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.

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

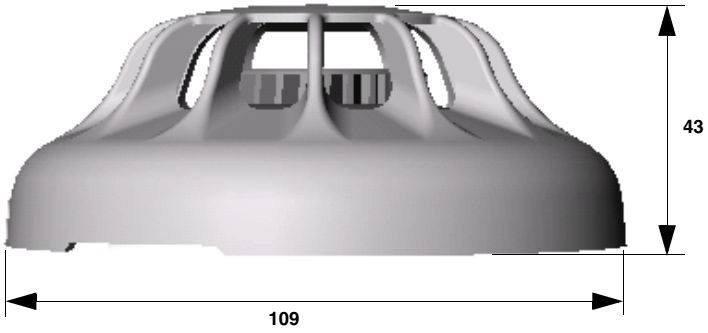


Fig. 5 Overall Dimensions of MR601TEx

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

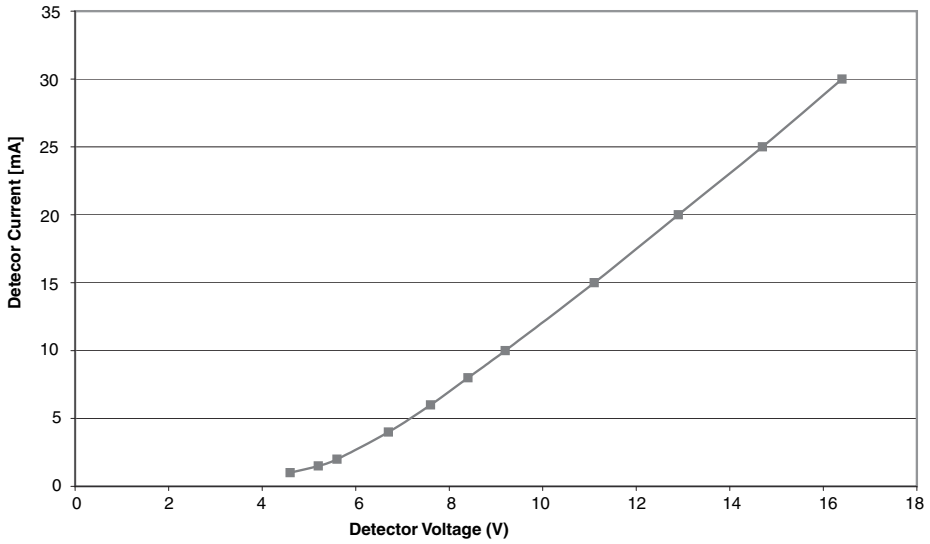


Fig. 7 Alarm Load Presented to the Controller

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).

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

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.

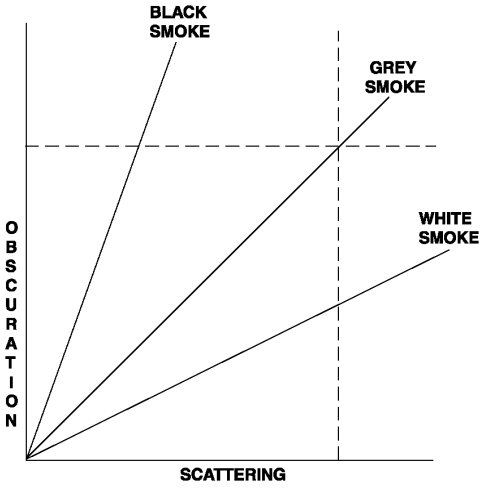


Fig. 8 Response Threshold vs Smoke Colour

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.

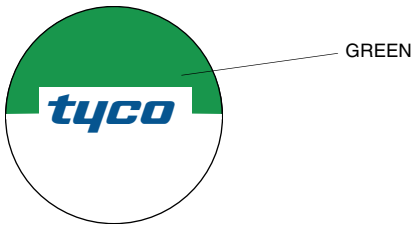


Fig. 9 Detector identification

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

© 2010 Tyco Safety Products

Registered Company: Thorn Security Ltd. Registered Office: Dunhams Lane Letchworth Garden City Hertfordshire SG6 1BE

ITEM	Tag	950-GDZ-04206	: H2 GD FZ-04 B-400 Ambient		Dwg	123A90-DDL-SAF-DL-30027	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module	LD_B-400	
TASK	code	C10003097	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ04G	Gas Detection

Loop Tag: 950-GDZ-04206 TDSL rev.: 123A90-FDL-IN-DG-40014 rev 1_A

Cabinet: B400-FGS-001 Rack: 05 Slot: 01 Channel: 12

Gas Detection Type: TEXS GTL (Infrared open path gas transmitter): GT (gas transmitter): XTR 0510

Thresholds: Gas Alarm - H 5% Gas Confirmed - HH 10%

Scale and Unit: 0-100 % LEL

Calibration checking (following bottle at disposal):

Physical value on transmitter:	0 %	5 %	10 %
ICSS Display:	0 %	5 %	10 %

Checking of Dirty Optical ●

Checking of Invalidity ●

Checking of Maintenance Inhibition ●

Comments:

	Performed by	● WITNESS ☐ REVIEW	● WITNESS ☐ REVIEW
Company	RM	RM.COMM	CW
Name	Alejandro Sasia	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Alejandro Sasia 2025-01-13T08:19:37.154Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-13T10:37:00.412Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-13T15:46:36.121Z

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

HART® is a registered trademark of the HART Communication Foundation.
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.

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..

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

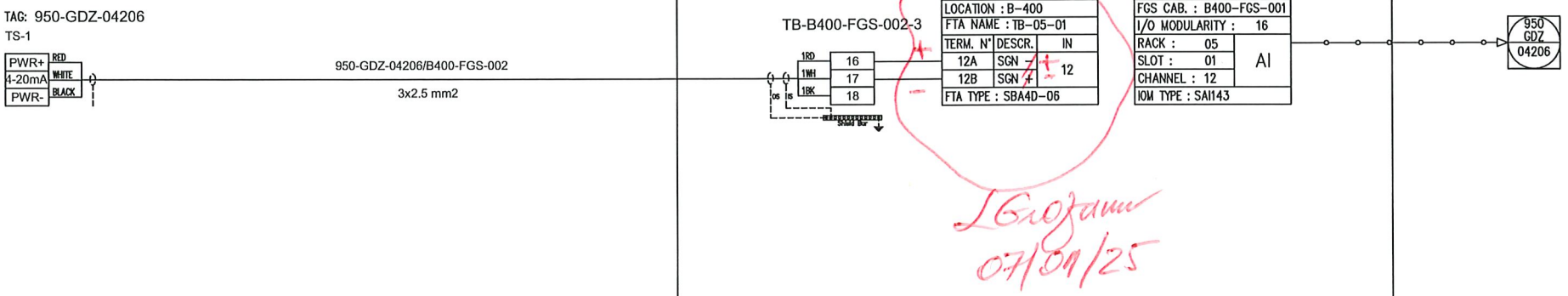
PO# : 123A90

Signed by: .....

DRÄGER MARINE & OFFSHORE
SIGNED BY:
K. VAN DISSEL

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



G.Grozdanov
07/04/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-GDZ-04206
FZ-04 H2 DETECT. IN B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024
A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 241	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | CROSSWIND

ITEM	Tag	950-GDZ-04205	: H2 GD FZ-04 B-400 Ambient		Dwg	123A90-DDL-SAF-DL-30027	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module	LD_B-400	
TASK	code	C10003098	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Instrumental	Form	FJ04G	Gas Detection

Loop Tag: 950-GDZ-04205 TDSL rev.: 123A90-FDL-IN-DG-40014 rev 1_A

Cabinet: B400-FGS-001 Rack: 04 Slot: 03 Channel: 12

Gas Detection Type: TEXS GTL (Infrared open path gas transmitter): GT (gas transmitter): XTR 0510

Thresholds: Gas Alarm - H 5% Gas Confirmed - HH 10%

Scale and Unit: 0-100 % LEL

Calibration checking (following bottle at disposal):

Physical value on transmitter:	0 %	5 %	10 %
ICSS Display:	0 %	5 %	10 %

Checking of Dirty Optical ●

Checking of Invalidity ●

Checking of Maintenance Inhibition ●

Comments:

Page 1/1	Performed by	● WITNESS ☐ REVIEW	● WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Alejandro Sasia	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	Digitaly signed by Alejandro Sasia 2025-01-13T08:27:22.918Z	Digitaly signed by Giandonato Delmissier 2025-01-13T10:37:21.270Z	Digitaly signed by John Mackillop 2025-01-13T15:46:49.453Z

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

HART® is a registered trademark of the HART Communication Foundation.
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.

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..

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

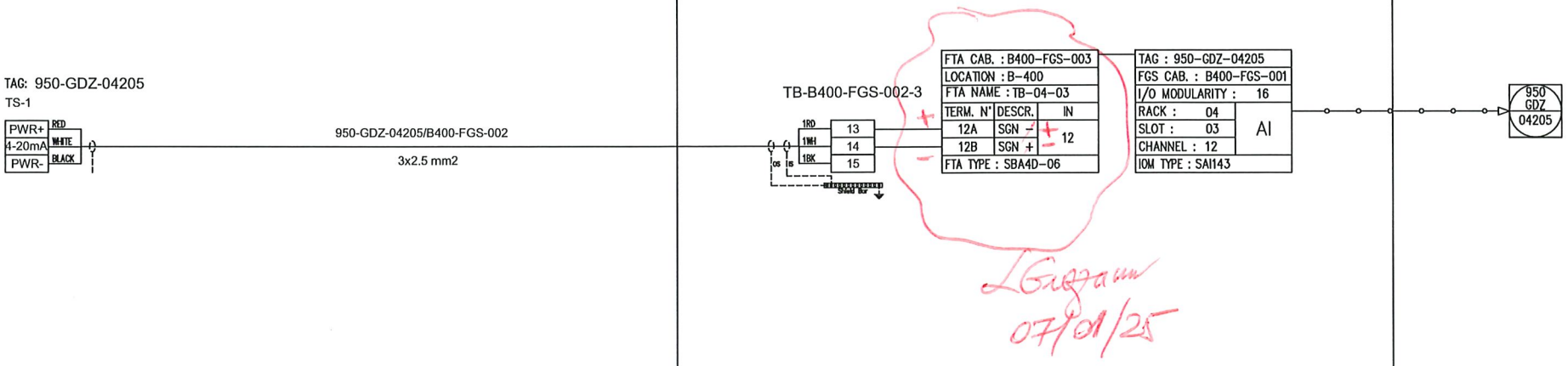
DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN DISSEL

PO# : 123A90

Signed by: .....

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



L Gattani
07/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-GDZ-04205
FZ-04 H2 DETECT. IN B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO. | SCALE 1:1
DRAWN: VBA | CHECKED: LCA | APPROVED: DLO | DATE 23/10/2024

A3 | DRAWING NO. 123A90-DDL-IN-DG-40014 | SHEET 240 | REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ITEM	Tag	950-GDZ-04204	: H2 GD FZ-04 B-400 Ambient			Dwg	123A90-DDL-SAF-DL-30027
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)			Module	LD_B-400
TASK	code	C10003099		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form	FJ04G Gas Detection

Loop Tag: 950-GDZ-04204 TDSL rev.: 123A90-FDL-IN-DG-40014 rev 1_A

Cabinet: B400-FGS-001 Rack: 04 Slot: 01 Channel: 12

Gas Detection Type: TEXS GTL (Infrared open path gas transmitter): GT (gas transmitter): XTR 0510

Thresholds: Gas Alarm - H 5 % Gas Confirmed - HH 10%

Scale and Unit: 0-100 % LEL

Calibration checking (following bottle at disposal):

Physical value on transmitter:	0 %	5 %	10 %
ICSS Display:	0 %	5 %	10 %

Checking of Dirty Optical ●

Checking of Invalidity ●

Checking of Maintenance Inhibition ●

Comments:

Page 1/1	Performed by	● WITNESS ☐ REVIEW	● WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Alejandro Sasia	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Alejandro Sasia 2025-01-13T09:55:29.516Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-13T10:37:41.413Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-13T15:47:01.524Z

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

HART® is a registered trademark of the HART Communication Foundation.
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.

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..

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

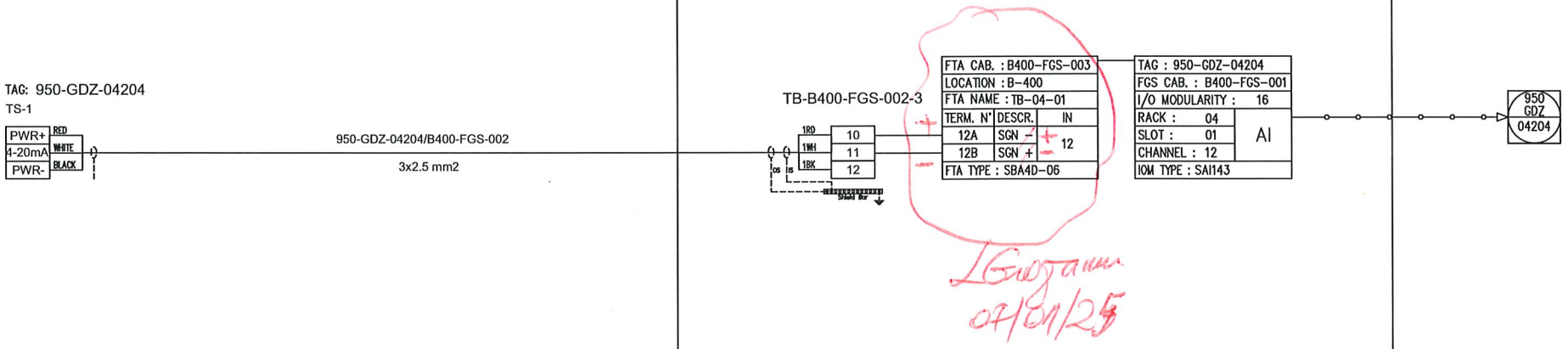
DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN UDISSEL

PO# : 123A90

Signed by: .....

DRAWING NR. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



I Giudicanni
07/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-GDZ-04204
FZ-04 H2 DETECT. IN B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 239	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-GDZ-04203	: H2 GD FZ-04 B-400 HVAC Air Intake	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400_Ext		
TASK	code	C10003100	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ04G	Gas Detection

Loop Tag: 950-GDZ-04203 TDSL rev.: 123A90-FDL-IN-DG-40014 rev 1_A

Cabinet: B400-FGS-001 Rack: 05 Slot: 01 Channel: 11

Gas Detection Type: TEXS GTL (Infrared open path gas transmitter): GT (gas transmitter): XTR 0510

Thresholds: Gas Alarm - H 5% Gas Confirmed - HH 10%

Scale and Unit: 0-100 % LEL

Calibration checking (following bottle at disposal):

Physical value on transmitter:	0 %	5 %	10 %
ICSS Display:	0 %	5 %	10 %

Checking of Dirty Optical ●

Checking of Invalidity ●

Checking of Maintenance Inhibition ●

Comments:

	Performed by	● WITNESS ☐ REVIEW	● WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Alejandro Sasia	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Alejandro Sasia 2025-01-13T08:53:28.424Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-13T10:38:03.288Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-13T15:47:12.206Z

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

HART® is a registered trademark of the HART Communication Foundation.
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.

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..

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

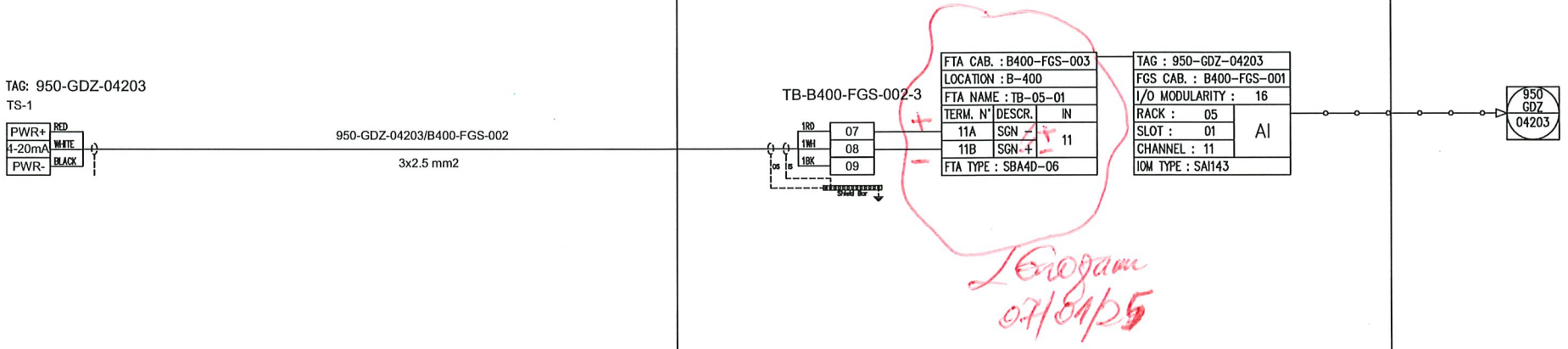
PO# : 123A90

Signed by: .....

DRÄGER MARINE & OFFSHORE
SIGNED BY: K. VAN DISSEL

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-GDZ-04203
FZ-04 H2 DETECT. IN B-400 HVAC AIR INTAKE

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 238	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-GDZ-04202	: H2 GD FZ-04 B-400 HVAC Air Intake	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400_Ext		
TASK	code	C10003101	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ04G	Gas Detection

Loop Tag: 950-GDZ-04202 TDSL rev.: 123A90-FDL-IN-DG-40014 rev 1_A

Cabinet: B400-FGS-001 Rack: 04 Slot: 03 Channel: 11

Gas Detection Type: TEXS GTL (Infrared open path gas transmitter): GT (gas transmitter): XTR 0510

Thresholds: Gas Alarm - H 5% Gas Confirmed - HH 10%

Scale and Unit: 0-100 % LEL

Calibration checking (following bottle at disposal):

Physical value on transmitter:	0 %	5 %	10 %
ICSS Display:	0 %	5 %	10 %

Checking of Dirty Optical ●

Checking of Invalidity ●

Checking of Maintenance Inhibition ●

Comments:

	Performed by	● WITNESS ☐ REVIEW	● WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Alejandro Sasia	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Alejandro Sasia 2025-01-13T09:02:05.393Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-13T10:38:22.923Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-13T15:47:26.160Z

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

HART® is a registered trademark of the HART Communication Foundation.
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.

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..

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

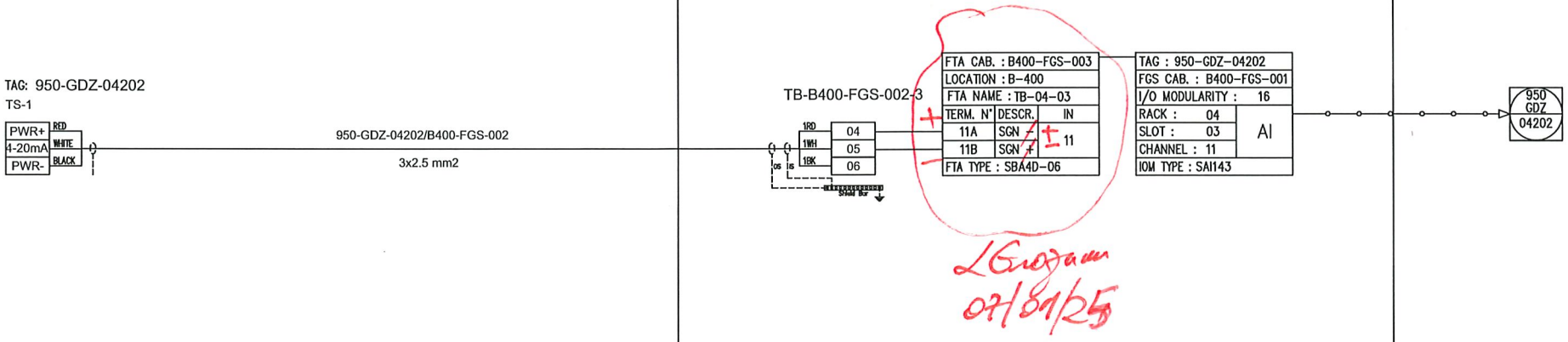
PO# : 123A90

Signed by: .....

DRÄGER MARINE & OFFSHORE
SIGNED BY:
K. VAN DISSEL

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



L Giordano
07/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-GDZ-04202
FZ-04 H2 DETECT. IN B-400 HVAC AIR INTAKE

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 237	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-GDZ-04201	: H2 GD FZ-04 B-400 HVAC Air Intake		Dwg	123A90-DDL-SAF-DL-30027	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module	LD_B-400_Ext	
TASK	code	C10003102	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ04G	Gas Detection

Loop Tag: 950-GDZ-04201 TDSL rev.: 123A90-FDL-IN-DG-40014 rev 1_A

Cabinet: B400-FGS-001 Rack: 04 Slot: 01 Channel: 11

Gas Detection Type: TEXS GTL (Infrared open path gas transmitter): GT (gas transmitter): XTR 0510

Thresholds: Gas Alarm - H 5% Gas Confirmed - HH 10%

Scale and Unit: 0-100 % LEL

Calibration checking (following bottle at disposal):

Physical value on transmitter:	0 %	5 %	10 %
ICSS Display:	0 %	5 %	10 %

Checking of Dirty Optical ●

Checking of Invalidity ●

Checking of Maintenance Inhibition ●

Comments:

	Performed by	● WITNESS ☐ REVIEW	● WITNESS ☐ REVIEW
Company	RM	RM COMM	CW
Name	Alejandro Sasia	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Alejandro Sasia 2025-01-13T09:29:25.617Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-13T10:38:47.786Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-13T15:47:44.884Z

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

HART® is a registered trademark of the HART Communication Foundation.
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.

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..

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

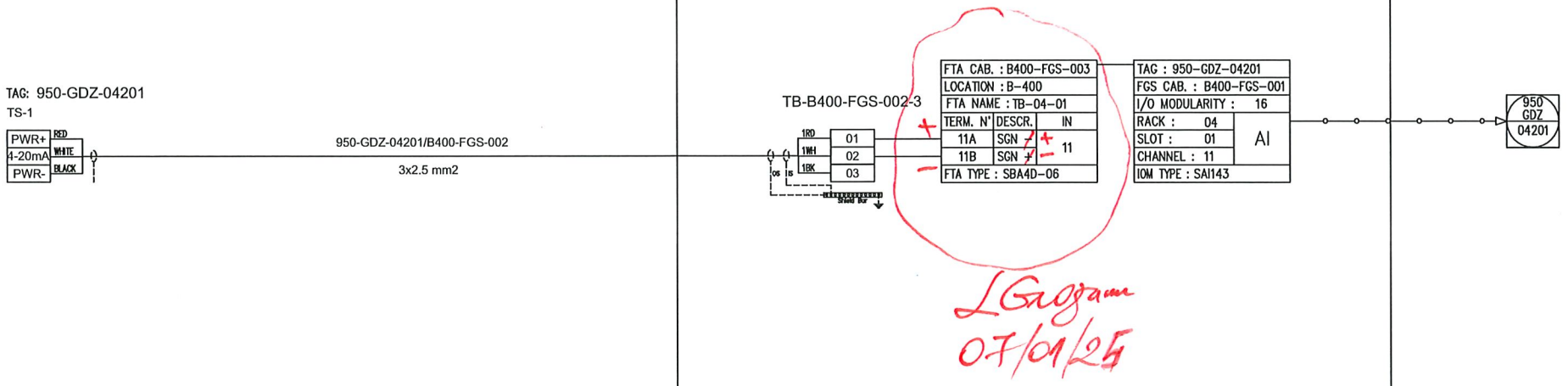
PO# : 123A90

Signed by: .....

DRAWING NO. 123A90-DDL-IN-DG-40014

REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



LGaggini
07/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-GDZ-04201
FZ-04 H2 DETECT. IN B-400 HVAC AIR INTAKE

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 236	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-HY-012	: B-400 Fire Damper AHU7 Inlet Air		Dwg	123A90-DDL-IN-LIS-40089	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module		
TASK	code	C10003792	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-HY-012			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	No	Output	Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	04A/04B	Slot	05	Rack	06	Chanel	04

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	Yes	Yes	Yes	Yes	OK	OK
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:35:14.640Z

PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:18:06.258Z

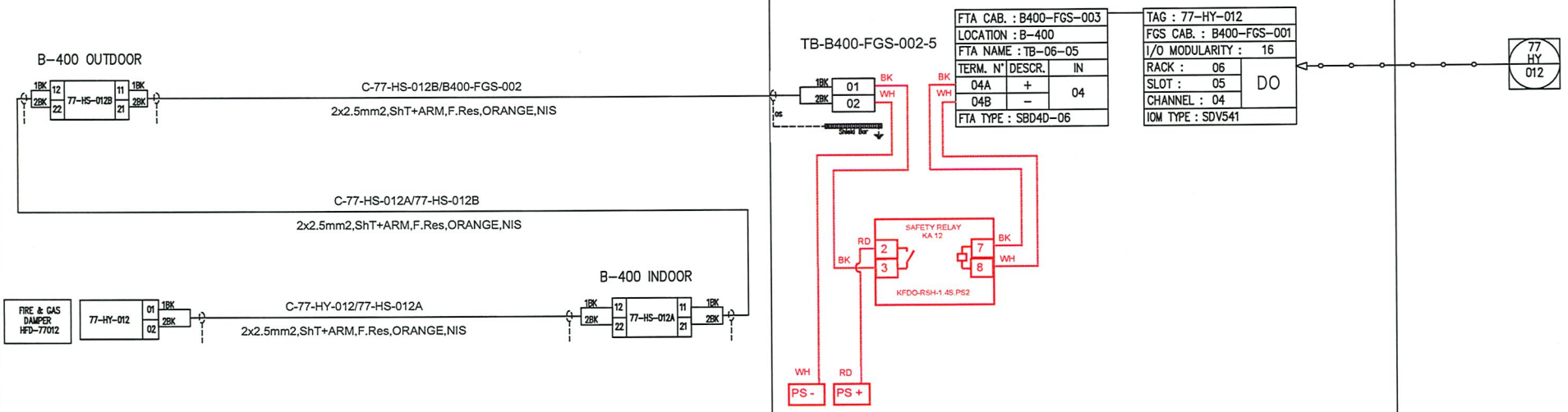
PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:33:17.034Z

Signature			

DRAWING NO. 123A90-DDL-IN-DG-40014

REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



AS BUILT
22/02/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77–HY–012
B–400 FIRE DAMPER AHU7 INLET AIR

CONTRACT NO./TITLE CONTRACT_NO. | SCALE 1:1

DRAWN: VBA | CHECKED: LCA | APPROVED: DLO | DATE 23/10/2024

A3 | DRAWING NO. 123A90–DDL–IN–DG–40014 | SHEET 367 | REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV01

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



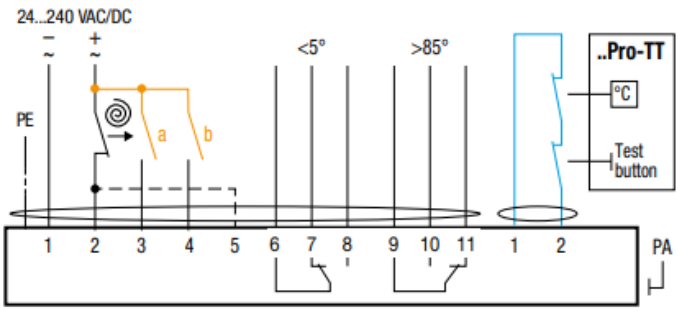
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-ZSL-012	: B-400 Fire Damper AHU7 Inlet Air		Dwg	123A90-DDL-IN-LIS-40089	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module		
TASK	code	C10003793	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-ZSL-012			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	04A/04B	Slot	07	Rack	06	Chanel	04

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	NA
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

	Performed by	WITNESS ☐ REVIEW	WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:57:04.428Z

PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:18:45.842Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:34:59.153Z

Signature			

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



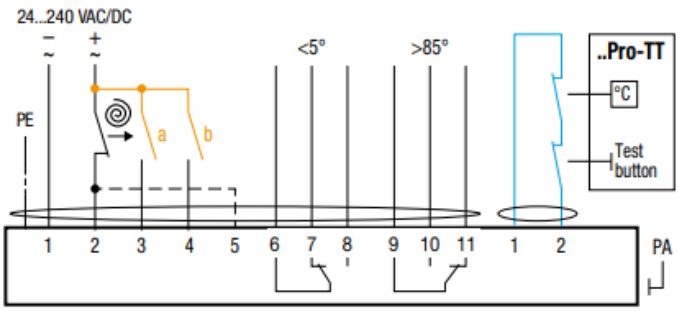
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

B400 - HSB - 001

TAG: 77-ZSL-012

FIRE & GAS DAMPER HFD-77012

(Note1) XFD/S

(Note1) 1WH

(Note1) 1BK

C-77-ZSL-012/B400-FGS-003
~~C-77-ZSL-012/B400-FGS-002~~

1x2x0.75 mm2

800 WH
801 BK

12/02/25

TB-B400-HSB-001

1WH 01
1BK 02

FTA CAB. : B400-FGS-003		
LOCATION : B-400		
FTA NAME : TB-06-07		
TERM. N°	DESCR.	IN
04A	+	04
04B	–	
FTA TYPE : SBD4D-06		

TAG : 77-ZSL-012	
FGS CAB. : B400-FGS-001	
I/O MODULARITY : 16	
RACK : 06	DI
SLOT : 07	
CHANNEL : 04	
IOM TYPE : SDV144	

77 ZSL 012

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77-ZSL-012
B-400 FIRE DAMPER AHU7 INLET AIR

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-IN-DG-40014	318	01

File Name : 123A90-DDL-IN-DG-40014_REV.01

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-HY-013	: B-400 Fire Damper AHU7 Return Air	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module			
TASK	code	C10003802	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-HY-013			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	No	Output	Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	05A/05B	Slot	05	Rack	06	Chanel	05

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	NA	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	NA	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	Yes	Yes	Yes	Yes	OK	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

Page 1/1

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:35:02.742Z

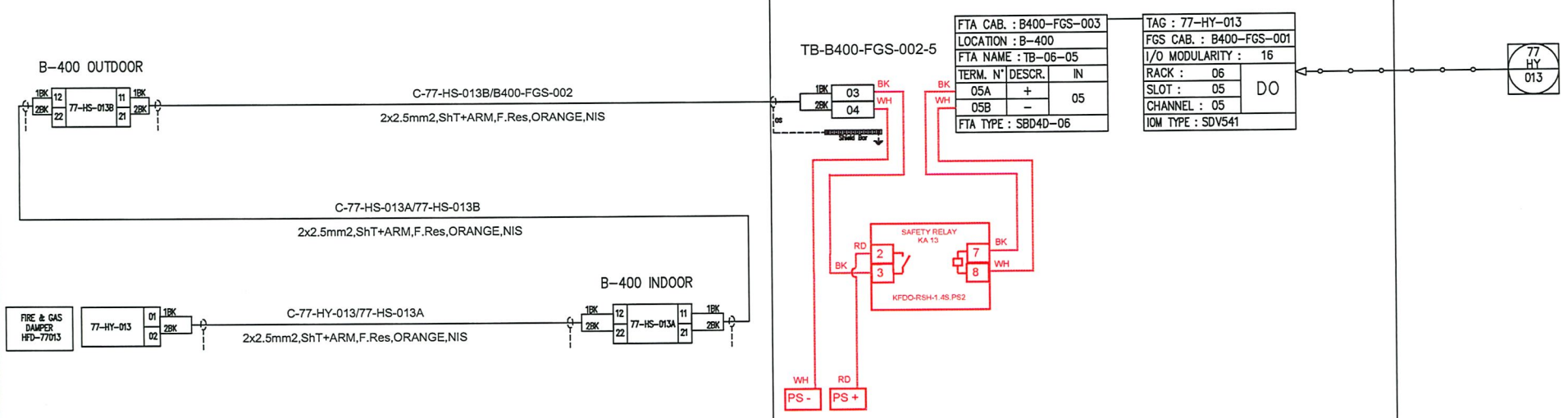
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:36:58.906Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:41:25.839Z

Signature			

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



AS BUILT
22/02/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A DATE: 20/12/24 SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77–HY–013
B–400 FIRE DAMPER AHU7 RETURN AIR

CONTRACT NO./TITLE CONTRACT_NO. | SCALE 1:1
DRAWN: VBA | CHECKED: LCA | APPROVED: DLO | DATE 23/10/2024

A3 | DRAWING NO. 123A90–DDL–IN–DG–40014 | SHEET 368 | REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



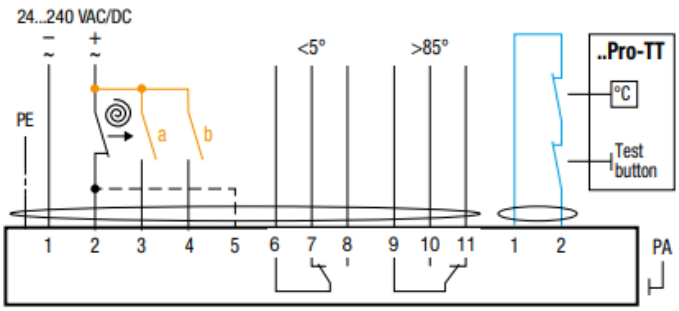
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-ZSL-013	: B-400 Fire Damper AHU7 Return Air	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module			
TASK	code	C10003803	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-ZSL-013			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	05A/05B	Slot	07	Rack	06	Chanel	05

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	No	Closed	No	OK

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	NA
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

	Performed by	WITNESS ☐ REVIEW	WITNESS ☐ REVIEW
Company	RM	RM COMM	CW COM
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:56:56.028Z

PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:37:18.397Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:42:24.129Z

Signature			

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



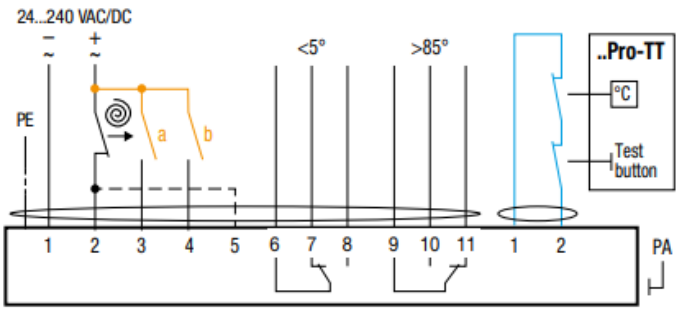
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

B400-HSB-001

TAG: 77-ZSL-013

FIRE & GAS DAMPER HFD-77013

(Note1) 1WH

(Note1) 1BK

~~C-77-ZSL-013/B400-FGS-003~~
~~C-77-ZSL-013/B400-FGS-002~~

1x2x0.75 mm2

XFD/S

804 WH
805 BK

12/02/25

TB-B400-HSB-001

1WH 03
1BK 04

SHIELD

FTA CAB. : B400-FGS-003		
LOCATION : B-400		
FTA NAME : TB-06-07		
TERM. N°	DESCR.	IN
05A	+	05
05B	–	
FTA TYPE : SBD4D-06		

TAG : 77-ZSL-013		
FGS CAB. : B400-FGS-001		
I/O MODULARITY : 16		
RACK : 06	SLOT : 07	DI
CHANNEL : 05		
IOM TYPE : SDV144		

77 ZSL 013

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77-ZSL-013
B-400 FIRE DAMPER AHU7 RETURN AIR

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 319	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-HY-014	: B-400 Fire Damper AHU8 Inlet Air	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module			
TASK	code	C10003804	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-HY-014			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	No	Output	Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	06A/06B	Slot	05	Rack	06	Chanel	06

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	NA	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	NA	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	Yes	Yes	Yes	Yes	OK	OK
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW Ops
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:34:47.262Z

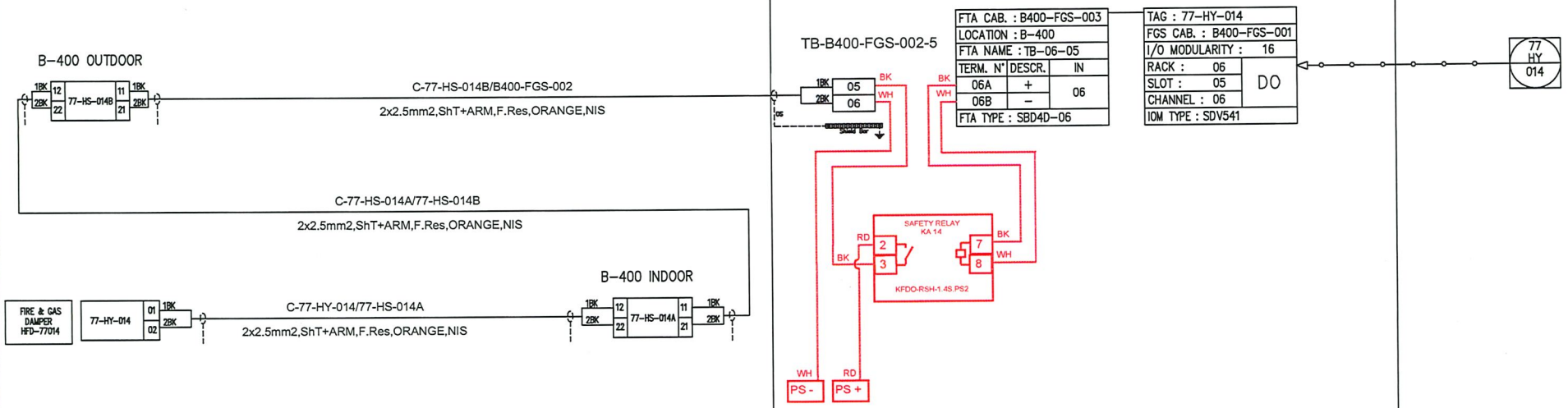
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:37:43.237Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:43:47.230Z

Signature			

DRAWING No. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



AS BUILT
22/02/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77–HY–014
B–400 FIRE DAMPER AHU8 INLET AIR

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90–DDL–IN–DG–40014	SHEET 369	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



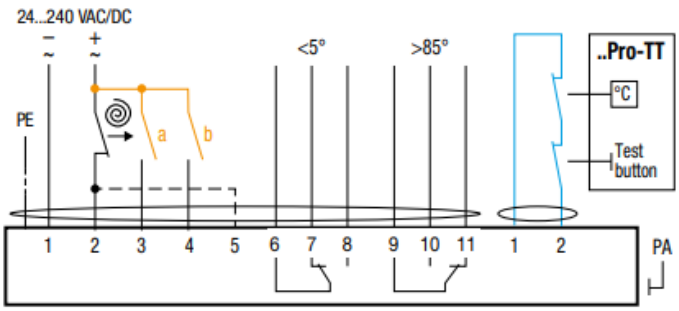
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-ZSL-014	: B-400 Fire Damper AHU8 Inlet Air	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module			
TASK	code	C10003805	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline	Instrumental	Form FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-ZSL-014			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input Yes	Output No		Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal 06A/06B		Slot 07	Rack 05	Chanel 06	

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	NA
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

Page 1/1

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:56:47.451Z

PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:38:03.108Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:44:36.855Z

Signature			

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



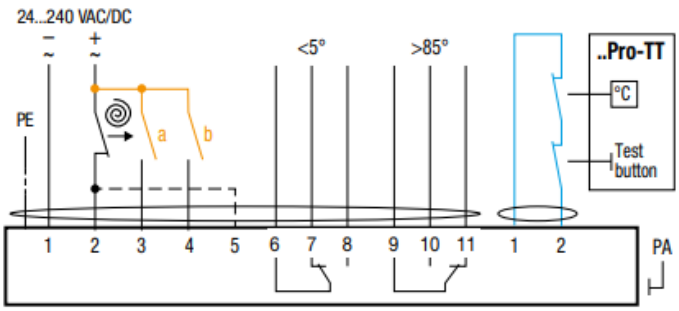
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

B400 - HSB - 001

TAG: 77-ZSL-014

FIRE & GAS DAMPER HFD-77014

(Note1) (Note1) (Note1)

1WH 1BK

C-77-ZSL-014/B400-FGS-003
~~C 77 ZSL 014/B400 FGS 002~~

1x2x0.75 mm2

XFDS

808 WH
809 BK

12/02/25

TB-B400-HSB-001

1WH 05
1BK 06

Shield bar

FTA CAB. : B400-FGS-003		
LOCATION : B-400		
FTA NAME : TB-06-07		
TERM. N°	DESCR.	IN
06A	+	06
06B	–	
FTA TYPE : SBD4D-06		

TAG : 77-ZSL-014		
FGS CAB. : B400-FGS-001		
I/O MODULARITY : 16		
RACK : 05		DI
SLOT : 07		
CHANNEL : 06		
IOM TYPE : SDV144		

77 ZSL 014

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77-ZSL-014
B-400 FIRE DAMPER AHU8 INLET AIR

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 320	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-HY-015	: B-400 Fire Damper AHU8 Return Air	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module			
TASK	code	C10003807	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-HY-015			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	No	Output	Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	07A/07B	Slot	05	Rack	06	Chanel	07

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	Yes	Yes	Yes	Yes	OK	OK
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:34:11.923Z

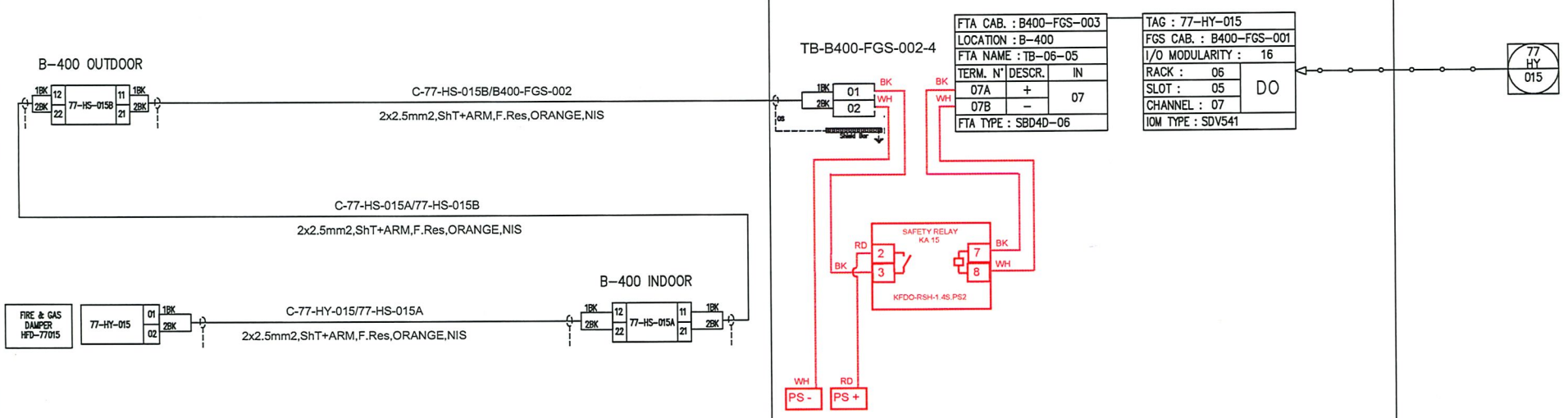
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:38:26.998Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:45:08.311Z

Signature			

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



AS BUILT
22/02/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77–HY–015
B–400 FIRE DAMPER AHU8 RETURN AIR

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90–DDL–IN–DG–40014	SHEET 370	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



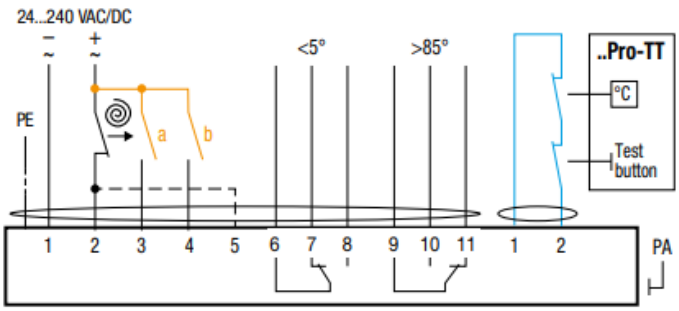
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-ZSL-015	: B-400 Fire Damper AHU8 Return Air	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module			
TASK	code	C10003808	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-ZSL-015			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	07A/07B	Slot	07	Rack	05	Chanel	07

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	NA
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:56:39.963Z

PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:41:22.140Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:46:48.712Z

Signature			

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



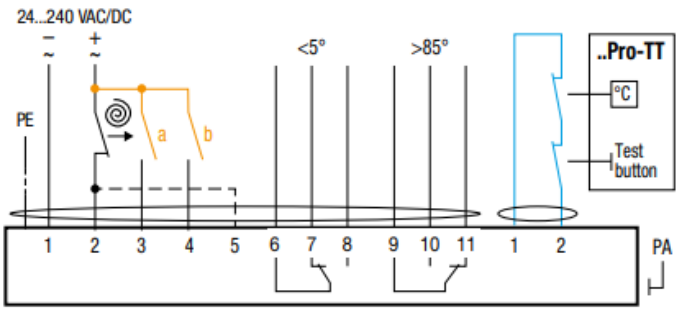
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

B400 - HSB - 001

TAG: 77-ZSL-015

XFD/S

FIRE & GAS DAMPER HFD-77015

(Note1) (Note1) (Note1) 1WH 1BK

C-77-ZSL-015/B400-FGS-003
~~C-77-ZSL-015/B400-FGS-002~~

1x2x0.75 mm2

812 WH
813 BK

12/02/25

TB-B400-HSB-001

1WH 1BK 07 08

FTA CAB. : B400-FGS-003			
LOCATION : B-400			
FTA NAME : TB-06-07			
TERM. N°	DESCR.	IN	
07A	+	07	
07B	–		
FTA TYPE : SBD4D-06			

TAG : 77-ZSL-015		
FGS CAB. : B400-FGS-001		
I/O MODULARITY : 16		
RACK : 05	SLOT : 07	DI
CHANNEL : 07		
IOM TYPE : SDV144		

77 ZSL 015

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A DATE: 20/12/24 SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77-ZSL-015
B-400 FIRE DAMPER AHU8 RETURN AIR

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 321	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-HY-016	: B-400 Fire Damper Exhaust Air		Dwg	123A90-DDL-IN-LIS-40089	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module		
TASK	code	C10003809	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-HY-016			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input	No	Output	Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	08A/08B	Slot	05	Rack	06	Chanel	08

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	Yes	Yes	Yes	Yes	OK	OK
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:33:49.694Z

PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:41:44.780Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:48:01.621Z

Signature			

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



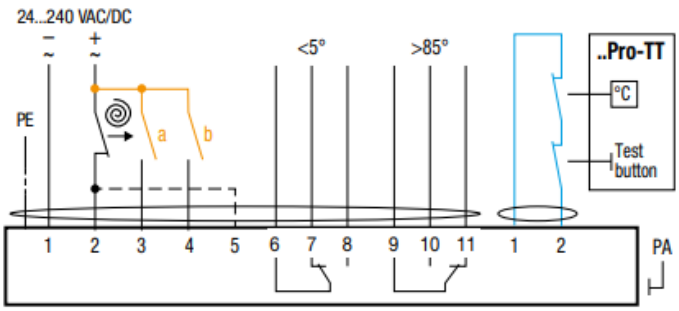
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

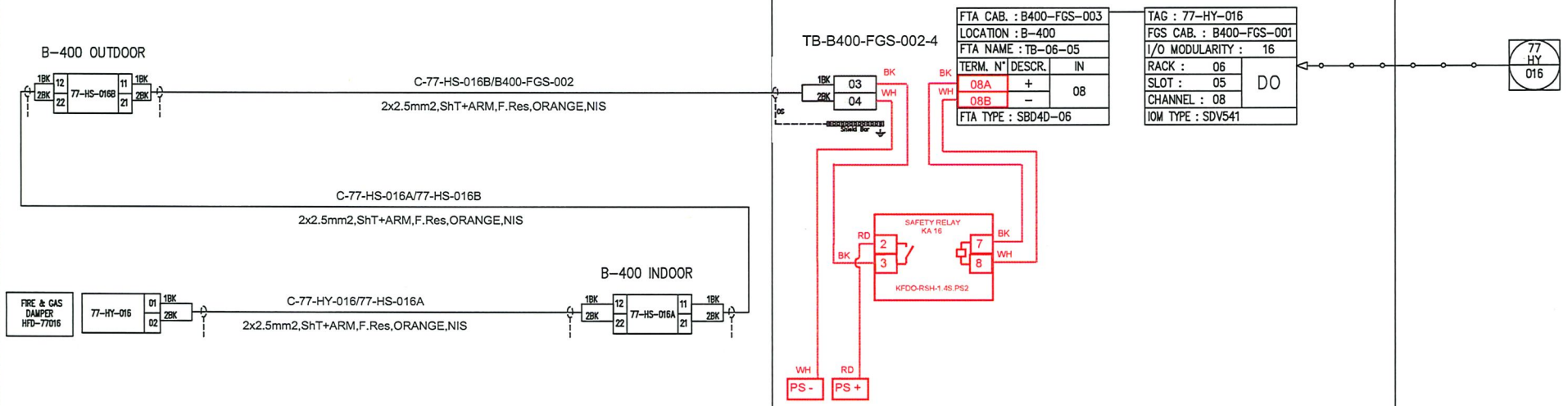
For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



AS BUILT
22/02/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77–HY–016
B–400 FIRE DAMPER EXHAUST AIR

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90–DDL–IN–DG–40014	SHEET 371	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV01

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	77-ZSL-016	: B-400 Fire Damper Exhaust Air		Dwg	123A90-DDL-IN-LIS-40089	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module		
TASK	code	C10003810	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	77-ZSL-016			TSLD	123A90-FDL-IN-DG-40014		
IO Type	Input Yes	Output No		Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal 08A/08B		Slot 07	Rack 06	Chanel 08	

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	Yes	Yes	Yes	OK	OK
7	Loop not energized	No	Yes	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	NA
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/08/2025

Comments:

	Performed by	WITNESS ☐ REVIEW	WITNESS ☐ REVIEW
Company	RM	RM COMM	CW OPS
Name	Emerik Copkovic	Giandonato Delmissier	Jamie McAllister
Date	2025-02-24	2025-02-24	2025-02-24

PROVERLIS Digitaly signed by Emerik Copkovic 2025-02-24T07:56:30.931Z

PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-24T13:42:05.460Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-02-24T15:49:29.261Z

Signature			

Electrical actuator
SCHISCHEK

Description		On-off 3-pos., spring-return, 2 micro switches, IP66
Torque		15Nm
Power		24...240VAC/DC (at rest 5W)
Angle of rotation		95°
Running time	M	3s / 15s / 30s / 60s / 120s
		3s / 10s
Dimensions (LxWxH)		210x95x80mm
Shaft		square 12x12mm

..Pro-TT



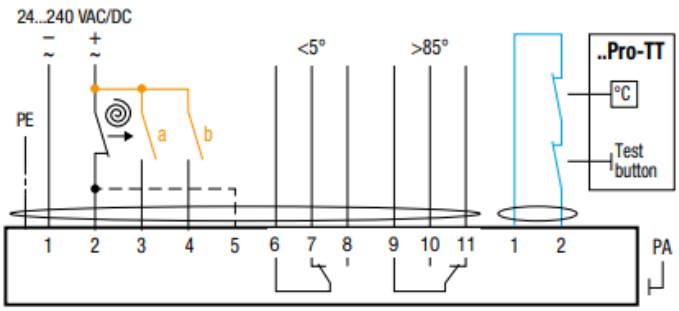
Safety temperature trigger
Thermal fuse
(Available for 72-95°C)

Model	InMax 15-BF	RedMax 15-BF	ExMax 15-BF
			
Zone	SAFE AREA	ATEX AREA ZONE 2, 22 GAS + DUST	ATEX AREA ZONE 1, 2, 21, 22 GAS + DUST

ELECTRICAL INSTALLATION

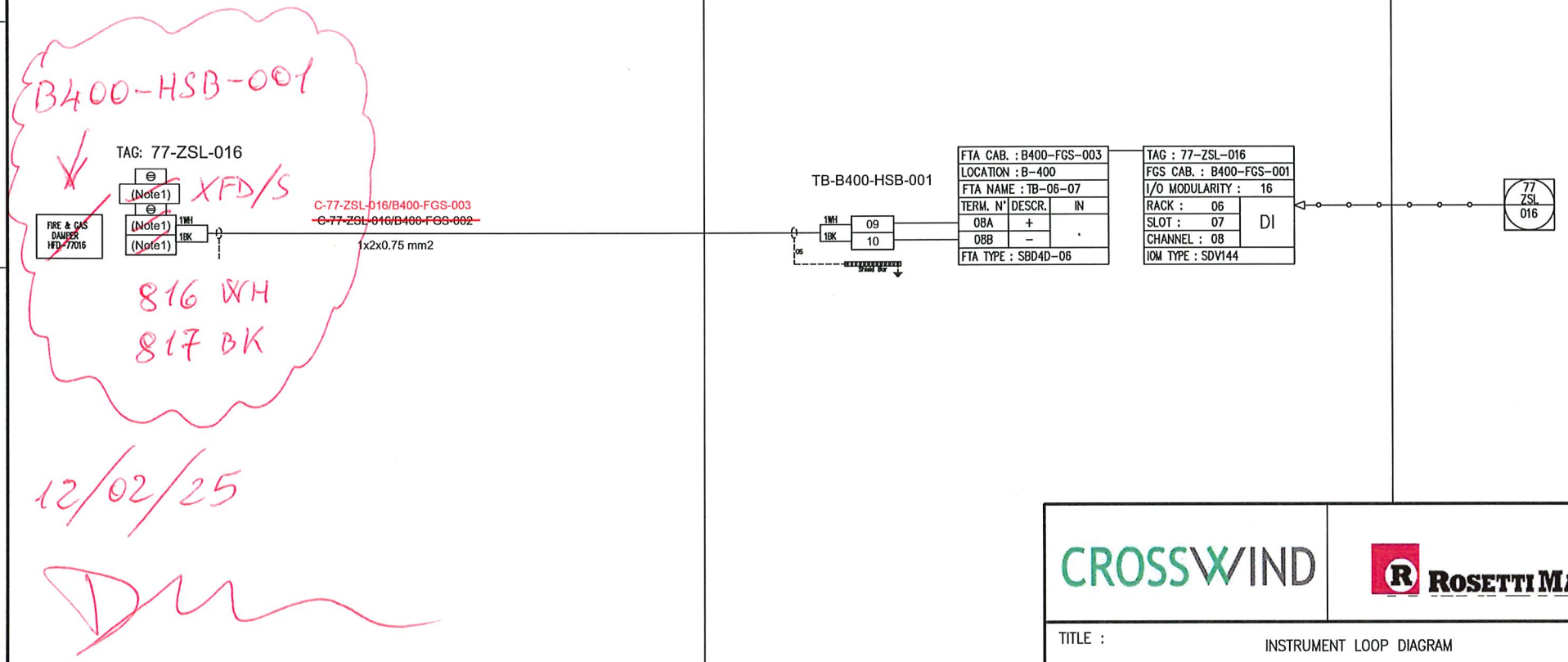
For 3-pos variation: add orange connection (a and b on 3 and 4)
For standard wiring: Spring return in 10s
For additional wiring on terminal 5: Spring return in 3s

On-off / 3 pos. - spring return + tripping circuit



DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
77-ZSL-016
B-400 FIRE DAMPER EXHAUST AIR

CONTRACT NO./TITLE CONTRACT_NO. | SCALE 1:1

DRAWN: VBA | CHECKED: LCA | APPROVED: DLO | DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 322	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-MFA-04201	: FZ-04 MFA Activation - B-400 Indoor	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400		
TASK	code	C10004421	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form	FJ04PB_FGS	Push Button Fire&Gas

LOOP DATA

Loop TAG	950-MFA-04201			TSLD	123A90-FDL-IN DG 40014 rev. o_A		
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-FGS-001	Terminal	02A/02B	Slot	05	Rack	04	Chanel	02

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	Yes	OK
4	De-Energise Loop (open loop) and record status	Normal	NA	Alarm/trip	NA	NA
5	Record Fail Safe position	Open	Yes	Closed	NA	OK

LOOP SERVICE

		Action Fire alarm		**Alarm / Control** FGS		**Display** PCS	
6	Loop energized	Yes		Yes		OK	OK
7	Loop not energized	NA		NA		NA	NA
8	Checking of line monitoring	Yes		Yes		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	OK

Comments:

Page 1/1	Performed by	☒ WITNESS ☐ REVIEW	☒ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Laurentiu Grozavu	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Laurentiu Grozavu 2025-01-13T06:58:44.369Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-13T08:31:23.630Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-13T15:52:48.051Z

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

Eaton
Unit B, Sutton Parkway
Oddicroft Lane
Sutton in Ashfield
United Kingdom
NG17 5FB

T: +44 (0) 1623 444 400
www.crouse-hinds.com/hac
MEDCSales@Eaton.com

© 2024 Eaton
All Rights Reserved
Printed in UK
Publication
No.DSMC0005/H
March 2024

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Powering Business Worldwide

All specifications, dimensions, weights and tolerances are nominal (typical) and Eaton reserve the right to vary all data without prior notice.
No liability is accepted for any consequence of use.

Certifications

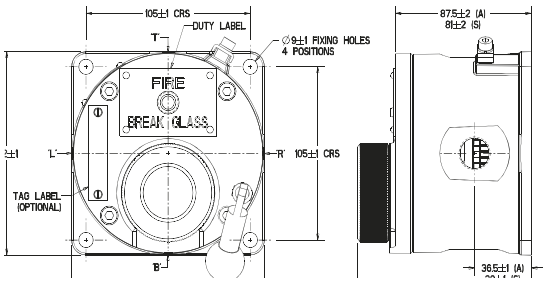
ATEX Ex d	Cert. no. Baseefa03ATEX0075. ATEX Approved Ex II 2GD Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db. IP66/IP67
ATEX Ex ia	Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1GD Certified to: EN60079-0, EN60079-11 Ex ia IIC T4 Ga, Ex ia IIIC T135°C 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

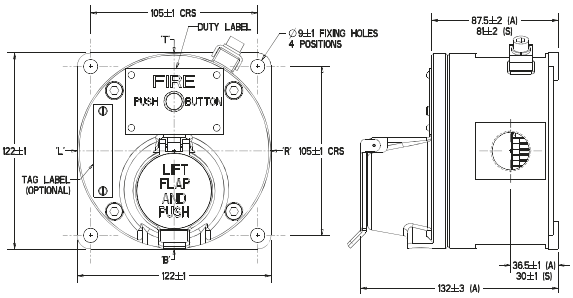
Material	Grade 316 ANC4B stainless steel or LM 25 TF marine grade alloy
Finish	Paint finish as standard or to customer specification
Voltage	Ex d 24V a.c./d.c. Ex ia 28V
Rating	2A
Switches	2 pole c/o, wired to terminals Optional up to 4 pole (UL version 2 pole only)
Optional indicator	A red high intensity 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

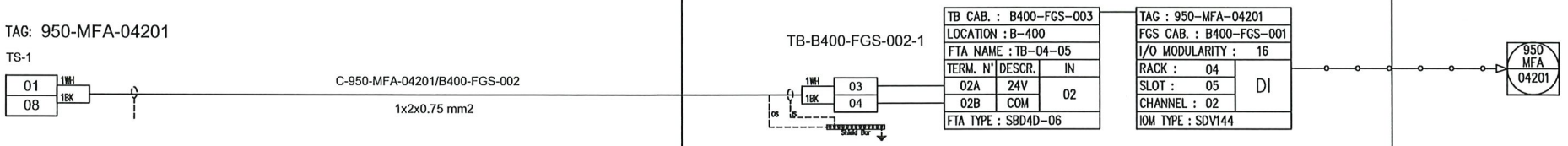
*Please specify

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/black stripes	X
Special	S*

*Please specify

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



NO MARK UP
L Grogann
07/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-MFA-04201
FZ-04 MANUAL FIRE ALARM (MFA)

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 336	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-XL-04201	: FZ-04 Gas Beacon Act. - B-400 Indoor	Dwg	123A90-DDL-SAF-DL-30027
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400
TASK	code	C10004448	Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Instrumental	Form FJ04FB		Flashing Beacon

LOOP DATA

Loop TAG	950-XL-04201			TSLD	123A90-FDL-IN DG 40014 rev. o_A				
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes	
Marshalling	B400-FGS-001	Terminal	05A/05B	Slot	03	Rack	06	Chanel	05

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	Yes	OK
4	De-Energise Loop (open loop) and record status	Normal	NA	Alarm/trip	NA	NA
5	Record Fail Safe position	Open	Yes	Closed	NA	OK

LOOP SERVICE

		Action Fire alarm	Action Gas alarm	Alarm/Control FGS		Display PCS	
6	Loop energized	NA	Yes	Yes		OK	OK
7	Loop not energized	NA	NA	NA		NA	NA
8	Checking of line monitoring	NA	Yes	Yes		OK	OK
9	Checking of Maintenance Inhibition	NA	NA	NA		NA	NA
10	Associated safety Level / bar						
11	Associated outputs						NA
12	Flash beacon	RED		AMBER			

LOOP DOCUMENTATION

13	Loop diagram is marked up and attached to this test sheet	OK
14	Cause and effect chart is highlighted accordingly	OK
15	Any defect is recorded for punch list issuance	OK

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Laurentiu Grozavu	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	Digitaly signed by Laurentiu Grozavu 2025-01-13T07:20:03.992Z	Digitaly signed by Giandonato Delmissier 2025-01-13T08:33:29.857Z	Digitaly signed by John Mackillop 2025-01-13T15:54:48.962Z

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

Eaton
Unit B, Sutton Parkway
Oddicroft Lane
Sutton in Ashfield
United Kingdom
NG17 5FB

T: +44 (0) 1623 444 400
www.crouse-hinds.com/hac
MEDCSales@Eaton.com

© 2024 Eaton
All Rights Reserved
Printed in UK
Publication
No.DSMC0041/F
March 2024

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

All specifications, dimensions, weights and tolerances are nominal (typical) and Eaton reserve the right to vary all data without prior notice. No liability is accepted for any consequence of use.

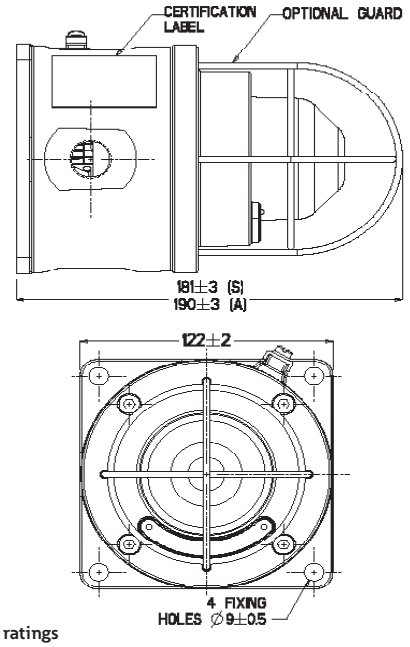
Certifications

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

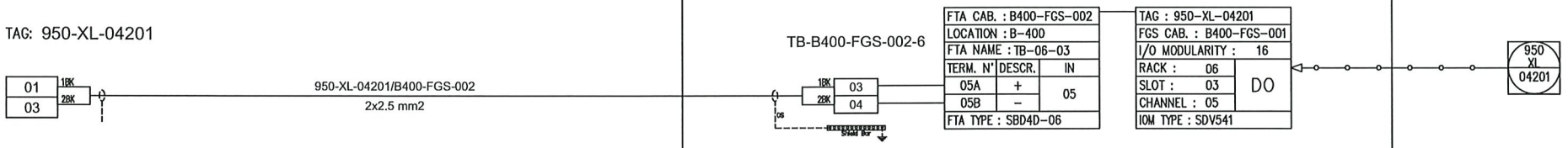
Finish

Colour	Code
Red	R
Blue	B
Yellow	Y
Yellow/ black stripe	X
Grey	G
White	W
Special	S*

*Please specify

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



NO MARK UP
Logram
07/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-XL-04201
FZ-04 OPTICAL EXP GAS ALARM B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 387	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-XL-04202	: FZ-04 Fire Beacon Act. - B-400 Indoor	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)	Module	LD_B-400		
TASK	code	C10004449	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline	Instrumental	Form FJ04FB	Flashing Beacon

LOOP DATA

Loop TAG	950-XL-04202			TSLD	123A90-FDL-IN DG 40014 rev. o_A				
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes	
Marshalling	B400-FGS-001	Terminal	06A/06B	Slot	03	Rack	06	Chanel	06

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	Yes	OK
4	De-Energise Loop (open loop) and record status	Normal	NA	Alarm/trip	NA	NA
5	Record Fail Safe position	Open	Yes	Closed	NA	OK

LOOP SERVICE

		Action Fire alarm	Action Gas alarm	Alarm/Control FGS		Display PCS	
6	Loop energized	Yes	NA	Yes		OK	OK
7	Loop not energized	NA	NA	NA		NA	NA
8	Checking of line monitoring	Yes	NA	Yes		OK	OK
9	Checking of Maintenance Inhibition	NA	NA	NA		NA	NA
10	Associated safety Level / bar						
11	Associated outputs						NA
12	Flash beacon	RED	●		AMBER		

LOOP DOCUMENTATION

13	Loop diagram is marked up and attached to this test sheet	OK
14	Cause and effect chart is highlighted accordingly	OK
15	Any defect is recorded for punch list issuance	OK

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Laurentiu Grozavu	Giandonato Delmissier	John Mackillop
Date	2025-01-13	2025-01-13	2025-01-13
Signature	Digitaly signed by Laurentiu Grozavu 2025-01-13T11:48:16.780Z	Digitaly signed by Giandonato Delmissier 2025-01-13T12:24:45.012Z	Digitaly signed by John Mackillop 2025-01-13T15:55:01.070Z

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

Eaton
Unit B, Sutton Parkway
Oddicroft Lane
Sutton in Ashfield
United Kingdom
NG17 5FB

T: +44 (0) 1623 444 400
www.crouse-hinds.com/hac
MEDCSales@Eaton.com

© 2024 Eaton
All Rights Reserved
Printed in UK
Publication
No.DSMC0041/F
March 2024

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Powering Business Worldwide

All specifications, dimensions, weights and tolerances are nominal (typical) and Eaton reserve the right to vary all data without prior notice.
No liability is accepted for any consequence of use.

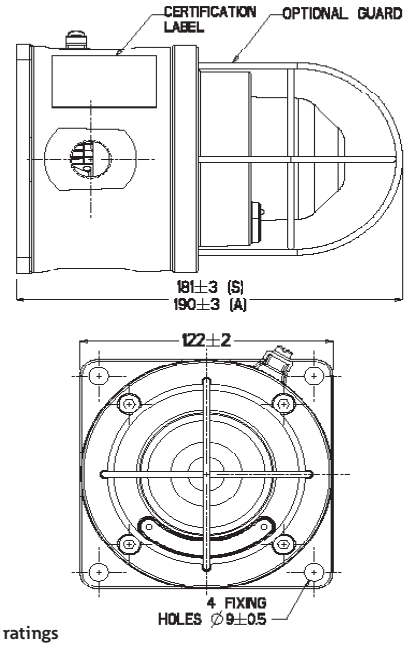
Certifications

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

Voltage	Code
Xenon (stainless steel)	SM87HXBS
Xenon (alloy)	SM87HXBA
LED Exd (stainless steel)	SM87LEDS
LED Exd (alloy)	SM87LEDA

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

Guard	Code
None	N
Yes	Y

Label	Code
None	N
Yes	Y*

* Please specify wording (Note: 15 characters maximum)

Colour	Code
Red	R
Blue	B
Yellow	Y
Yellow/ black stripe	X
Grey	G
White	W
Special	S*

*Please specify

Certification	Code
ATEX	B
IECEx	J
UL	UL†
CSA	C‡
Chinese(CQST)	Q
INMETRO	DM

† Only SM87HXBA is available UL certified
‡ Only SM87HXB

Colour	Code
Clear	C
Red	R
Blue	B
Green	G
Amber	A
Yellow (not LED)	Y

Entries	Code
M20	1
M25	2
1/2" NPT	3
3/4" NPT	4
Top	*T
Bottom	*B
RHS	*R
LHS	*L

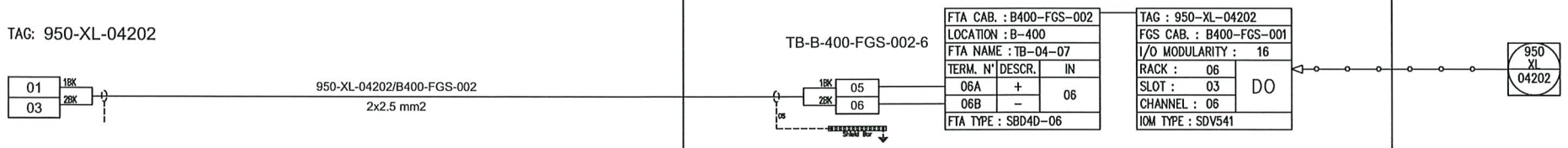
* Prefix position with entry size code
e.g. 1T1B=M20 Top and Bottom entries

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

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE



NO MARK UP
L Crogiamo
07/01/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
950-XL-04202
FZ-04 OPTICAL FIRE ALARM B-400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 388	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV.00

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-XZ-04201	: FZ-04 Sounder Act. - B-400 Indoor		Dwg	123A90-DDL-SAF-DL-30027	
	S/Sys	70-15	: F&G Devices FZ-04 (B-400 I&T Equipment Room)		Module	LD_B-400	
TASK	code	C10004467	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Instrumental	Form	FJ04MS	Monotone Sounder

LOOP DATA

Loop TAG	950-XZ-04201			TSLD	123A90-DDL-IN-DG-40014 rev. 1_A				
IO Type	Input	No	Output	Yes	Energy by transmitter	No	Energy by system	Yes	
Marshalling	B400-FGS-001	Terminal	04A/04B	Slot	03	Rack	06	Chanel	04

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	No	Alarm/trip	Yes	OK
4	De-Energise Loop (open loop) and record status	Normal	Yes	Alarm/trip	No	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action Fire&Gas alarm		Alarm / Control FGS		Display PCS	
6	Loop energized	Yes		Yes		NA	OK
7	Loop not energized	No		Yes		NA	OK
8	Checking of line monitoring	Yes		Yes		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

Comments:

Page 1/1	Performed by	☒ WITNESS ☐ REVIEW	☒ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Marco Di Maria	Giandonato Delmissier	John Mackillop
Date	2025-02-08	2025-02-08	2025-02-11
Signature	PROVERLIS Digitaly signed by Marco Di Maria 2025-02-08T11:15:38.767Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-08T22:28:58.646Z	PROVERLIS Digitaly signed by John Mackillop 2025-02-11T05:35:11.774Z

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

Eaton
Unit B, Sutton Parkway
Oddicroft Lane
Sutton in Ashfield
United Kingdom
NG17 5FB

T: +44 (0) 1623 444 400
www.crouse-hinds.com/hac
MEDCSales@Eaton.com

Powering Business Worldwide

© 2022 Eaton
All Rights Reserved
Printed in UK
Publication
No.DSMC0032/B
March 2022

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

All specifications, dimensions, weights and tolerances are nominal (typical) and Eaton reserve the right to vary all data without prior notice.
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

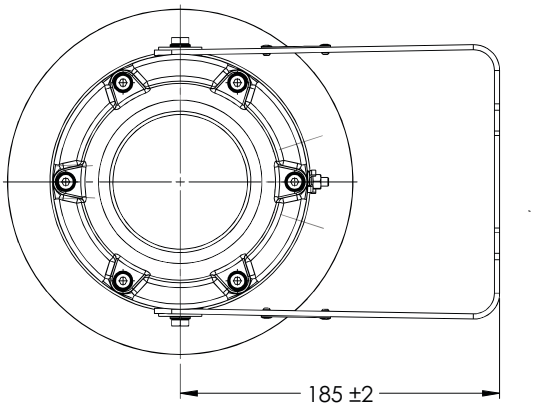
	Ex d/UL min	Max
Certified temperature	-60°C	+85°C

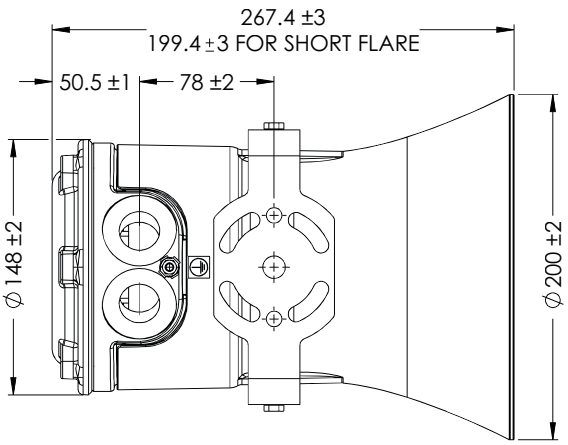
Operating temperature at launch (DC Only): -40 °C min +85 °C max
-55 °C as standard to follow. Please contact MEDC for low temperature options

	Short Flare	Long Flare
Max output (dB) 1400Hz @ 1m	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)

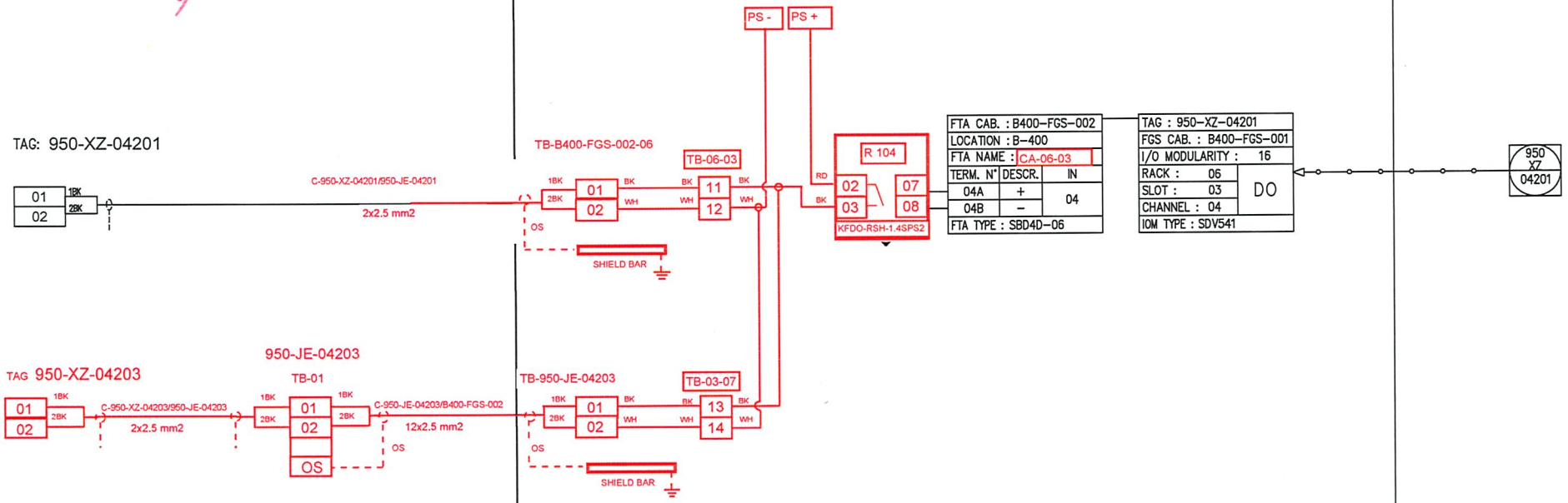
Finish	Code
Natural black	N
Natural red	R
Yellow	Y
Grey	G
Blue	B
Special	S*

*Please specify

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	FIRE AND GAS SYSTEM	OPERATOR CONSOLE

AS BUILT
05/02/25



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
950–XZ–04201
FZ–04 ACOUSTIC FIRE&GAS ALARM B–400 I&T EQUIP. ROOM

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90–DDL–IN–DG–40014	SHEET 413	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

Section 4.4 Instrumentation “As-Commissioned” interconnection diagrams

NOT APPLICABLE

Section 4.5 Telecommunication functional test sheets index

NOT APPLICABLE

Section 4.6 Telecommunication
“As-Commissioned” I.C.D. / TSLD's

NOT APPLICABLE

Section 5 SITE / OPERATIONAL

Section 5.1 Operational Test Procedure

CROSSWIND	**123A90 - HOLLANDSE KUST NOORD WIND PARK BLPH Project** **COMMISSIONING DOSSIER INDEX**	ROSETTI MARINO

Main reference document **123A90-PML-COM-PRO-03054 _ OTP – F&G and ESD C&E Logics** has been uploaded in the Subsystem 70-00 Commissioning Dossier Sect. 5.1

FIRE ZONE 04
B-400 (ITER CONTAINER)

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

CAUSE

TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK	No.
950-GDZ-04204 950-GDZ-04205 950-GDZ-04206	H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		1
	H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		2
	H2 GAS HIGH CONFIRMED (ELECTR. POINT 10% LFL)	2oo3			3
					4
950-GDZ-04201 950-GDZ-04202 950-GDZ-04203	AIR INTAKE-H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		5
	AIR INTAKE -H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		6
	AIR INTAKE -H2 GAS HIGH CONFIRMED (ELECT. POINT 10% LFL)	2oo3			7
					8
					9
950-SDZ-04204 950-SDZ-04205 950-SDZ-04206	SMOKE DETECTION SINGLE	1oo3	X		10
	SMOKE DETECTION CONFIRMED	2oo3			11
					12
					13
950-SDZ-04201 950-SDZ-04202 950-SDZ-04203	AIR INTAKE - SMOKE DETECTION SINGLE	1oo3	X		14
	AIR INTAKE - SMOKE DETECTION CONFIRMED	2oo3			15
					16
79-XA-001	ASD PUSH BUTTON ACTIVATION FROM SIS SYSTEM			NOTE 1	17
					18
					19
					20
					21
					22
					23
					24
					25
					26
					27
					28
					29
					30
					31
					32
					33
					34
					35
					36
					37
					38
					39
					40
					41

EFFECT — AUDIO / VISUAL ALERT

SYS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NOTES					TO SHEET 17		TO SHEET 17		TO SHEET 17							
DESCRIPTION	OPERATOR WORKSTATION DISPLAY - EVENT/ALARM		F&G ALARM ON CAP ONSHORE		GAS BEACON ACTIVATION - AMBER		FIRE BEACON ACTIVATION - RED		SOUNDER ACTIVATION		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS					
TAG No.											72-XS-001					
1	X		F													
2	X		F													
3	X		F		X				X		X					
5	X		F													
6	X		F													
7	X		F		X				X		X					
10	X		F													
11	X		F				X		X		X					
14	X		F													
15	X		F				X		X		X					

EFFECT — SIS SYSTEM / ELECTRIC ISOLATION

SYS	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
NOTES	1		1		1											
DESCRIPTION	ASD TO SIS SYTEM		ESD-1D TO SIS SYTEM		H2/SMOKE INTAKE B-400 TO SIS SYTEM											
TAG No.	70-XS-001		70-XS-002		70-XS-018											
3	X															
7			X		X											
11	X															
15			X		X											

EFFECT — OTHER

SYS	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
DESCRIPTION			CLOSE F&G DAMPER 77-HFD-012 B-400 (ITER CONTAINER)	CLOSE F&G DAMPER 77-HFD-013 B-400 (ITER CONTAINER)	CLOSE F&G DAMPER 77-HFD-014 B-400 (ITER CONTAINER)	CLOSE F&G DAMPER 77-HFD-015 B-400 (ITER CONTAINER)	CLOSE F&G DAMPER 77-HFD-016 B-400 (ITER CONTAINER)														
TAG No.			77-HY-012	77-HY-013	77-HY-014	77-HY-015	77-HY-016														
3			X	X	X	X	X														
7			X	X	X	X	X														
11			X	X	X	X	X														
15			X	X	X	X	X														
17			X	X	X	X	X														

NOTES:

1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

[signature]
GERRY MCCANN
15/3/25
CROSSWIND

TEST COMPLETED
GIANDONATO R.M.
15-03-2025
[signature]

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: B-400 (ITER CONTAINER) — DATE 11/02/2025

HOLLANDSE KUST NOORD WIND PARK Project
Contract No. CW-I-WP4-2023-05 — Sheet. 8 of 17 — 03

FIRE ZONE 01/02/03/04/05/06
FIRE OPEN AREA

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

SYS	Col.	NOTES	DESCRIPTION	TAG No.
AUDIO / VISUAL ALERT	1		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
	2			
	3		F&G ALARM ON CAP ONSHORE	
	4			
	5	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
	6			
	7	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
	8			
	9	TO SHEET 17	SOUNDER ACTIVATION	
	10			
	11		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
	12–16			
SIS SYSTEM	17	1	ESD-1D TO SIS SYTEM	70-XS-002
	18–26			
ELECTRIC ISOLATION	27–32			
OTHER	33–53			

CAUSE

TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
950-FDZ-01101 950-FDZ-01102 950-FDZ-01103 950-FDZ-01104	FZ-01 - FLAME (UV/IR)	1oo4	X		1	X		F														
	FZ-01 - FLAME CONFIRMED (UV/IR)	2oo4			2	X		F				X		X		X						X
					3																	
950-FDZ-02101 950-FDZ-02102 950-FDZ-02103 950-FDZ-02104	FZ-02 - FLAME (UV/IR)	1oo4	X		4	X		F														
	FZ-02 - FLAME CONFIRMED (UV/IR)	2oo4			5	X		F				X		X		X						X
					6																	
950-FDZ-03101 950-FDZ-03102 950-FDZ-03103 950-FDZ-03104	FZ-03 (ELECTROLYZER AREA) - FLAME (UV/IR)	1oo4	X		7	X		F														
	FZ-03 (ELECTROLYZER AREA) - FLAME CONFIRMED (UV/IR)	2oo4			8	X		F				X		X		X						X
					9																	
950-FDZ-04101 950-FDZ-04102 950-FDZ-04103 950-FDZ-04104	FZ-04 - FLAME (UV/IR)	1oo4	X		10	X		F														
	FZ-04 - FLAME CONFIRMED (UV/IR)	2oo4			11	X		F				X		X		X						X
					12																	
950-FDZ-05101 950-FDZ-05102 950-FDZ-05103 950-FDZ-05104	FZ-05 - FLAME (UV/IR)	1oo4	X		13	X		F														
	FZ-05 - FLAME CONFIRMED (UV/IR)	2oo4			14	X		F				X		X		X						X
					15																	
950-FDZ-06101 950-FDZ-06102	FZ-06 - FLAME (UV/IR)	1oo2			16	X		F														
	FZ-06 - FLAME CONFIRMED (UV/IR)	2oo2			17	X		F				X		X		X						X

Rows 18–41: empty. Columns 18–53: empty.

NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

TEST COMPLETED
GIANDONATO R.M.
14-03-2025
[signature]

[signature]
GERRY McCANN
CROSSWIND
14/3/25

REFERENCE DOCUMENTS	
TITLE	**NUMBER**
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: FIRE OPEN AREA

DATE 11/02/2025

HOLLANDSE KUST NOORD WIND PARK Project
Contract No. CW-I-WP4-2023-05

 03

FIRE ZONE 01/02/03/04/05/06/7
MFA PUSH BUTTONS

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT — AUDIO / VISUAL ALERT | SIS SYSTEM | ELECTRIC ISOLATION | OTHER

TAG Nos	CAUSE – DESCRIPTION	VOTING	INHIBITION	REMARK	TAG No.	1 OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	2	3 F&G ALARM ON CAP ONSHORE	4	5 GAS BEACON ACTIVATION - AMBER (TO SHEET 17)	6	7 FIRE BEACON ACTIVATION - RED (TO SHEET 17)	8	9 SOUNDER ACTIVATION (TO SHEET 17)
					1									
950-MFA-01101	FZ-01 MFA ACTIVATION		X	1	2	X		F				X		X
950-MFA-01102	FZ-01 MFA ACTIVATION		X	1	3	X		F				X		X
950-MFA-01103	FZ-01 MFA ACTIVATION		X	1	4	X		F				X		X
					5									
950-MFA-02101	FZ-02 MFA ACTIVATION		X	1	6	X		F				X		X
					7									
950-MFA-03101	FZ-03 MFA ACTIVATION		X	1	8	X		F				X		X
950-MFA-03102	FZ-03 MFA ACTIVATION		X	1	9	X		F				X		X
950-MFA-03103	FZ-03 MFA ACTIVATION		X	1	10	X		F				X		X
950-MFA-03104	FZ-03 MFA ACTIVATION		X	1	11	X		F				X		X
					12									
950-MFA-04101	FZ-04 MFA ACTIVATION		X	1	13	X		F				X		X
950-MFA-04102	FZ-04 MFA ACTIVATION		X	1	14	X		F				X		X
					15									
950-MFA-04201	FZ-04 MFA ACTIVATION - B-400 INDOOR		X	1	16	X		F				X		X
950-MFA-04202	FZ-04 MFA ACTIVATION - B-400 INDOOR		X	1	17	X		F				X		X
950-MFA-04203	FZ-04 MFA ACTIVATION - B-400 INDOOR		X	1	18	X		F				X		X
					19									
950-MFA-05101	FZ-05 MFA ACTIVATION		X	1	20	X		F				X		X
950-MFA-05102	FZ-05 MFA ACTIVATION		X	1	21	X		F				X		X
950-MFA-05103	FZ-05 MFA ACTIVATION		X	1	22	X		F				X		X
950-MFA-05104	FZ-05 MFA ACTIVATION		X	1	23	X		F				X		X
					24									
950-MFA-05201	FZ-05 MFA ACT. - WATER TREAT. PK INDOOR		X	1	25	X		F				X		X
					26									
950-MFA-06101	FZ-06 MFA ACTIVATION		X	1	27	X		F				X		X
950-MFA-06102	FZ-06 MFA ACTIVATION		X	1	28	X		F				X		X
					29									
950-MFA-06201	FZ-06 MFA ACTIVATION - B-100 INDOOR		X	1	30	X		F				X		X
					31									
950-MFA-07101	FZ-07 MFA ACTIVATION		X	1	32	X		F				X		X
					33									
					34									
					35									
					36									
					37									
					38									
					39									
					40									
					41									

NOTES:
1. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ASD PUSH BUTTONS ACTIVATION.

LEGEND

GERRY MCCANN
CROSSWIND
12/3/2025

TEST COMPLETED
12-03-2025
GIANDONATO R.U.

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: MFA PUSH BUTTONS — DATE 11/02/2025

HOLLANDSE KUST NOORD WIND PARK Project
Contract No. CW-4-WP4-2023-05

Sheet 16 of 17 — 03

FIRE ZONE 01/02/03/04/05/06/7
SOUNDERS AND BEACONS

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

CAUSE

TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK	No.
	GAS CONFIRMED IN B-100 (HV CONTAINER)			From sheet 5	1
	GAS CONFIRMED B-200 IN (LV CONTAINER)			From sheet 6	2
	GAS CONFIRMED IN B-300 (UPS CONTAINER)			From sheet 7	3
	GAS CONFIRMED IN B-400 (ITER CONTAINER)			From sheet 8	4
	GAS CONFIRMED IN FUEL CELL			From sheet 9	5
	GAS CONFIRMED IN BESS			From sheet 10	6
	GAS CONFIRMED IN ELECTROLYZER			From sheet 11	7
	GAS CONFIRMED IN WATER TREAT. PKG			From sheet 12	8
	HYDROGEN OPEN AREA			From sheet 13	9
					10
	SMOKE CONFIRMED IN B-100 (HV CONTAINER)			From sheet 5	11
	SMOKE CONFIRMED B-200 IN (LV CONTAINER)			From sheet 6	12
	SMOKE CONF. IN B-300 (UPS CONTAINER)			From sheet 7	13
	SMOKE CONF. IN B-400 (ITER CONTAINER)			From sheet 8	14
	SMOKE CONFIRMED IN FUEL CELL			From sheet 9	15
	SMOKE CONFIRMED IN BESS			From sheet 10	16
	SMOKE CONFIRMED IN ELECTROLYZER			From sheet 11	17
	SMOKE CONFIRMED IN WATER TREAT. PKG			From sheet 12	18
	FIRE OPEN AREA			From sheet 15	19
					20
	O2 GAS HIGH CONFIRMED			From sheet 14	21
					22
	MFA PUSH BUTTONS ACTIVATION FZ 01/02/03/04/05/06/7			From sheet 16	23
					24
79-XA-001	ASD ACTIVATION FROM SIS SYSTEM			NOTE 1	25
79-XA-002	ESD-1D ACTIVATION FROM SIS SYSTEM			NOTE 1	26
79-XA-003	ESD-1 ACTIVATION FROM SIS SYSTEM			NOTE 1	27
					28
79-XA-004	MOB PUSH BUTTONS ACTIVATION FROM SIS SYSTEM			NOTE 1	29
					30
					31
					32
					33
					34
					35
					36
					37
					38
					39
					40
					41

EFFECT — GAS VISUAL ALERT BEACONS (AMBER)

No.	1	2 950-XL-01101 FZ-01 GAS BEACON ACTIVATION	3 950-XL-02101 FZ-02 GAS BEACON ACTIVATION	4 950-XL-03101 FZ-03 GAS BEACON ACTIVATION	5 950-XL-03103 FZ-03 GAS BEACON ACTIVATION	6 950-XL-04101 FZ-04 GAS BEACON ACTIVATION	7 950-XL-04103 FZ-04 GAS BEACON ACTIVATION	8 950-XL-04201 FZ-04 GAS BEACON ACT. - B-400 INDOOR	9 950-XL-04203 FZ-04 GAS BEACON ACT. - B-300 INDOOR	10 950-XL-04205 FZ-04 GAS BEACON ACT. - B-200 INDOOR	11 950-XL-05201 FZ-05 GAS BEACON ACT. - WATER T. INDOOR	12 950-XL-06101 FZ-06 GAS BEACON ACTIVATION	13 950-XL-06103 FZ-06 GAS BEACON ACTIVATION	14 950-XL-06201 FZ-06 GAS BEACON ACT. - B-100 INDOOR	15 950-XL-07101 FZ-07 GAS BEACON ACTIVATION	16
1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
8		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
9		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
22																
23																
24																
25		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
26		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
27		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
28																
29		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
30																
31																
32																
33																
34																
35																
36																
37																
38																
39																
40																
41																

EFFECT — FIRE VISUAL ALERT BEACONS (RED)

No.	17	18 950-XL-01102 FZ-01 FIRE BEACON ACTIVATION	19 950-XL-02102 FZ-02 FIRE BEACON ACTIVATION	20 950-XL-03102 FZ-03 FIRE BEACON ACTIVATION	21 950-XL-03104 FZ-03 FIRE BEACON ACTIVATION	22 950-XL-04102 FZ-04 FIRE BEACON ACTIVATION	23 950-XL-04104 FZ-04 FIRE BEACON ACTIVATION	24 950-XL-04202 FZ-04 FIRE BEACON ACT. - B-400 INDOOR	25 950-XL-04204 FZ-04 FIRE BEACON ACT. - B-300 INDOOR	26 950-XL-04206 FZ-04 FIRE BEACON ACT. - B-200 INDOOR	27 950-XL-05202 FZ-05 FIRE BEACON ACT. - WATER T. INDOOR	28 950-XL-06102 FZ-06 FIRE BEACON ACTIVATION	29 950-XL-06104 FZ-06 FIRE BEACON ACTIVATION	30 950-XL-06202 FZ-06 FIRE BEACON ACT. - B-100 INDOOR	31 950-XL-07102 FZ-07 FIRE BEACON ACTIVATION	32
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
20																
21																
22																
23		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
24																
25		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
26		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
27		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
28																
29		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
30																
31																
32																
33																
34																
35																
36																
37																
38																
39																
40																
41																

EFFECT — AUDIO ALERT SOUNDERS

No.	33	34 950-XZ-01101 FZ-01 SOUNDER ACTIVATION	35 950-XZ-01102 FZ-01 SOUNDER ACTIVATION	36 950-XZ-02101 FZ-02 SOUNDER ACTIVATION	37 950-XZ-03101 FZ-03 SOUNDER ACTIVATION	38 950-XZ-03102 FZ-03 SOUNDER ACTIVATION	39 950-XZ-04101 FZ-04 SOUNDER ACTIVATION	40 950-XZ-04102 FZ-04 SOUNDER ACTIVATION	41 950-XZ-04201 FZ-04 SOUNDER ACT. - B-400 INDOOR	42 950-XZ-04202 FZ-04 SOUNDER ACT. - B-300 INDOOR	43 950-XZ-04203 FZ-04 SOUNDER ACT. - B-200 INDOOR	44 950-XZ-05101 FZ-05 SOUNDER ACTIVATION	45 950-XZ-05102 FZ-05 SOUNDER ACTIVATION	46 950-XZ-05103 FZ-05 SOUNDER ACTIVATION	47 950-XZ-05104 FZ-05 SOUNDER ACTIVATION	48 950-XZ-05201 FZ-05 SOUNDER ACTIVATION - WTER T. INDOOR	49 950-XZ-06101 FZ-06 SOUNDER ACTIVATION	50 950-XZ-06201 FZ-06 SOUNDER ACT. - B-100 INDOOR (NOTES: 2)	51 950-XZ-07101 FZ-07 SOUNDER ACTIVATION	52	53 72-XS-001 WAVE-OFF LIGHT ACTIVATION TO NAVAIDS
1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
10																					
11		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
17		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
18		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
19		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
20																					
21		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
22																					
23		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
24																					
25		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
26		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
27		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
28																					
29		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
30																					
31																					
32																					
33																					
34																					
35																					
36																					
37																					
38																					
39																					
40																					
41																					

NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP
2. It will be possible to deactivate the sounder 950-XZ-07101 (installed in Master Area) from CAP onshore.

LEGEND

TEST COMPLETED
GIANDONATO R.M.
19-03-2025

WITNESSED

PAUL WILLIAMSON
CROSSWIND
19-MAR-2025

REFERENCE DOCUMENTS	
TITLE	**NUMBER**
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND | ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: SOUNDERS AND BEACONS

DATE 11/02/2025

HOLLANDSE KUST NOORD WIND PARK Project
Contract No. CW-I-WP4-2023-05

Sheet 17 of 17 | 03

Section 5.2 Operational Test Certificates

NOT APPLICABLE

Section 6 PIPING AND VESSEL PREPARATION

Section 6.1 Final Mechanical / Vessel Inspection Checks Index

NOT APPLICABLE

Section 6.2 Leak Test / Drying / Inerting Test Sheets Index

NOT APPLICABLE

Section 6.3 Chemical Loading & First Fill records Index

NOT APPLICABLE

Section 6.4 Chemical Cleaning Reports and Records Index

NOT APPLICABLE

Section 6.5 Lubrication Schedule

NOT APPLICABLE

Section 7 VENDOR

Section 7.1 Vendor Package Summary Index

NOT APPLICABLE

Section 7.2 SAT Procedure with associated punch list and reference (Front Page)

NOT APPLICABLE

Section 7.3 Vendor Spares & Special Tools lists references

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

3 Manufacturer model/type no.

4 Manufacturer serial no.

5 No. of units

6 Quantity of parts FITTED / INSTALLED per unit/component

Supplier: FORES ENGINEERING srl
Address: VIA SECONDO CASADEI 12
47122 Forlì
ITALY

PO Number: 1721002632

PO description: FIRE AND GAS FIELD EQUIPMENT
Supplier telephone no: +39.0543.813811
E-mail: Fores@fores.it

Contact name: MRS MATTEO OSSANI
Contact mobile no:
WEBSITE http://www.fores.it/

General Information:

Item Number	Total number of identical spares installed	MATERIALS DATA: Description of recommended spare parts	Parts/drawing ref.: Project Datasheet no.	Parts/drawing ref.: Project Detail dwg. no.	Parts/drawing ref.: Item ref.	Material	Certicate Type (if applicable)	Certicate 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.	Manufacturename	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
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	
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						

Section 7.4 Vendor Data / Operations / Maintenance Manuals References

NOT APPLICABLE

Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE