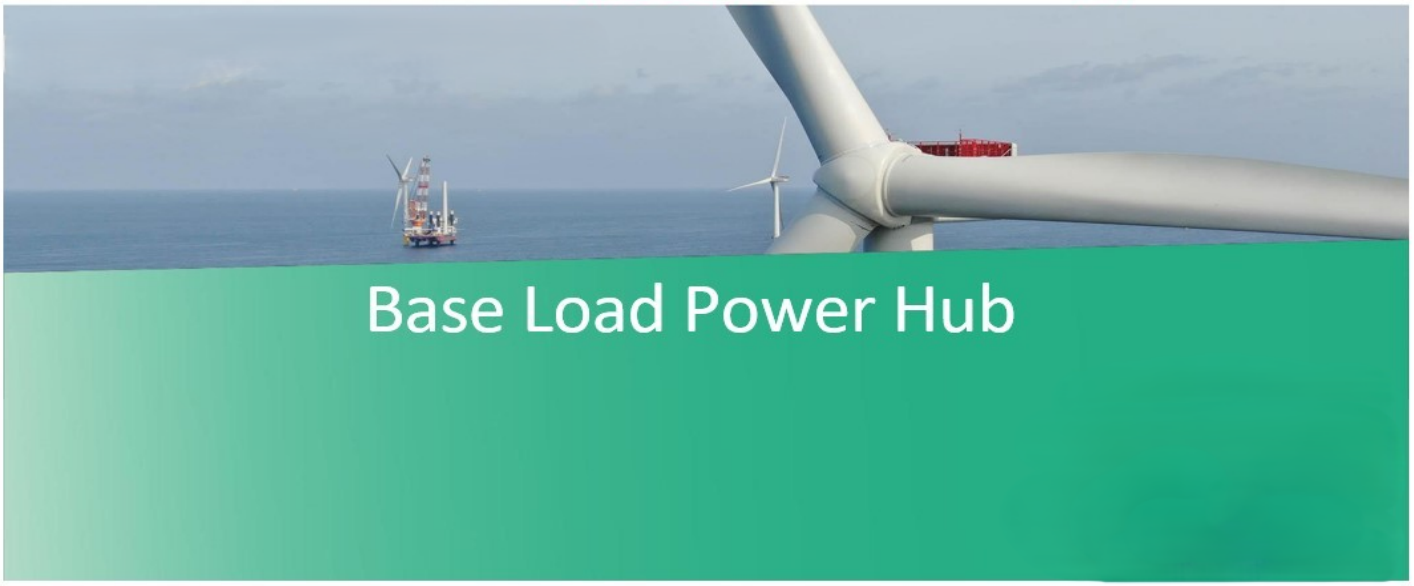
CROSSWIND

ROSETTI MARINO

PROVERUS

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



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM

79
Emergency Shutdown systems

SUBSYSTEM

79-11

Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

ROSETTI MARINO

Sub System N°:	79-11	**Tick as appropriate**	ONSHORE	OK
Description:	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)		OFFSHORE	

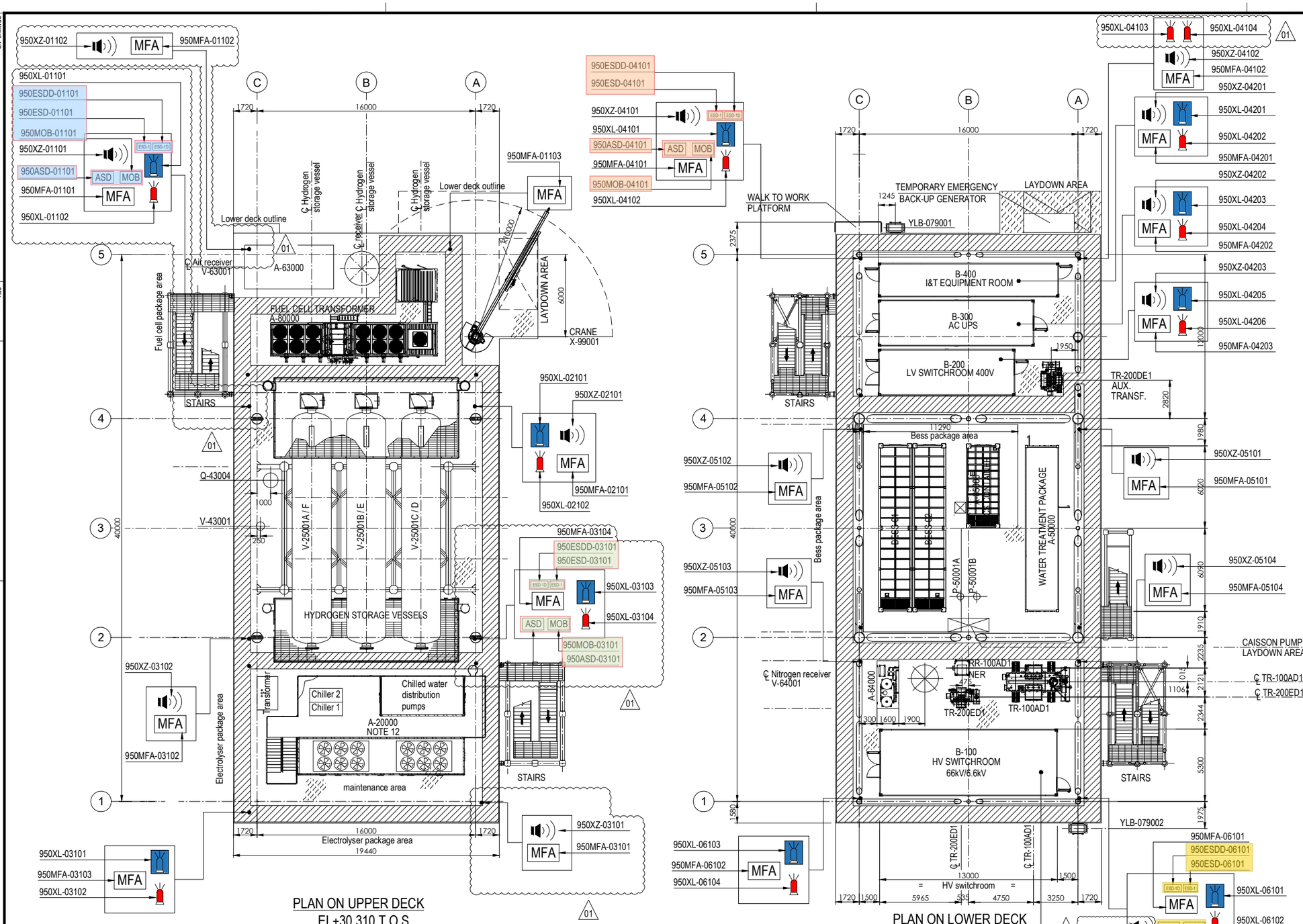
1. *SUB-SYSTEM DEFINITION*	OK
1.1 Sub-System Description / Boundary Limit Drawings	
2. *READY FOR OPERATION CERTIFICATE*	OK
2.1 Achievement Of Ready for Operation Certificate (RFO)	
2.2 Exception Punch Lists (per discipline)	
2.3 “As-Commissioned” P&ID’s / SLD’s / D&ID’s / C&E’s	
3. *CONSOLIDATED PUNCH 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	2025-04-22	2025-04-23
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-22T15:06:46.288Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-23T06:20:11.245Z

Section 1 SUB-SYSTEM DEFINITION

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

REV. 01



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

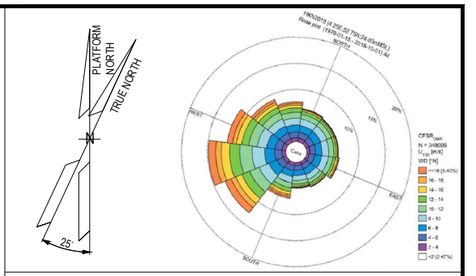
PLAN ON LOWER DECK
EL+23.310 T.O.S.

EQUIPMENT LIST

TAG NUMBER	DESCRIPTION	TAG NUMBER	DESCRIPTION
A-20000	ELECTROLYSER	TR-100AD1	TRANSFORMER MAIN 66kV/6.6kV
A-63000	INSTRUMENT AIR PACKAGE	TR-200DE1	TRANSFORMER AUX. 6.6kV/0.4kV
A-80000	FUEL CELL	TR-200ED1	SOLAR TRANSFORMER PV FARM EQUIPMENT
A-85000	BESS	RR-100AD1-NER	NEUTRAL EARTHING RESISTOR
A-50000	WATER TREATMENT PACKAGE	V-63001	AIR RECEIVER
P-50001A/B	SEAWATER LIFT PUMPS	V-64001	NITROGEN RECEIVER
Q-43004	HYDROGEN VENT	X-99001	CRANE
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		

79-11 - Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)
79-12 - Emergency Shutdown Systems (SIS) - Devices FZ-03 (Electrolyser Area)
79-13 - Emergency Shutdown Systems (SIS) - Devices FZ-04 (B-400 I&T Equipment Room External)
79-14 - Emergency Shutdown Systems (SIS) - Devices FZ-06 (B-100 HV/MV Switchroom Area)

SYMBOL	DESCRIPTION	QTY.	SYMBOL	DESCRIPTION	QTY.
	SOUNDER (XZ)	11		FIRE BEACON (XL)	8
MOB	MAN OVER BOARD (MOB)	4		FLAMMABLE GAS RELEASE BEACON (XL)	8
ASD	ABANDON SHUTDOWN (ASD)	4	ESD-1	ESD-1 PUSH BUTTON (ESD)	4
MFA	MANUAL FIRE ALARM (MFA)	16	ESD-1D	ESD-1D PUSH BUTTON (ESDD)	4



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.
01. 5. DETAIL LOCATION IS SHOWN IN THE 3D MODEL.

ELEVATION
1. ALL BUTTONS ARE 1.5M TOP
2. SOUNDERS AND BEACON ARE 2.4/2.5M

HOLDS

REFERENCE DOCUMENTS

	123A90-DDL-PP-DS-70070	PLOT PLAN - LOWER & UPPER DECK
	123A90-DDL-PP-DS-70071	PLOT PLAN - BELOW LOWER DECK
01	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 002	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:	79	/	Emergency Shutdown systems		
SubSystem:	79-11	/	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)		

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 '0

REMARKS:

	CONTRACTOR Commissioning Manager	**COMPANY** Commissioning Lead
Name	Anthony Iveson	Martin Taylor
Date	2025-04-08	2025-04-20
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-08T12:01:00.369Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-20T08:04:44.646Z

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 79-11 & process: COMM

Instrumental	79-11 Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
950-ASD-01101	FZ-01 Abandon Shutdown Activation	ONSHORE	C10004396	FJ04PB_SIS	100	2025-01-16	RFO 1
950-ESD-01101	FZ-01 ESD-1 Push Button Activation	ONSHORE	C10004406	FJ04PB_SIS	100	2025-01-16	RFO 1
950-ESDD-01101	FZ-01 ESD-1D Push Button Activation	ONSHORE	C10004401	FJ04PB_SIS	100	2025-01-16	RFO 1
950-MOB-01101	FZ-01 Man Over Board Activation	ONSHORE	C10004423	FJ04PB_SIS	100	2025-01-16	RFO 1

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	79	Emergency Shutdown systems
SUBSYSTEM	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)

ATEX

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30002314	B	950-ESDD-01101 C10000964	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07
C30002316	B	950-ESD-01101 C10000959	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07
C30002318	B	950-MOB-01101 C10001073	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07
C30002321	B	950-ASD-01101 C10000954	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	79	Emergency Shutdown systems
SUBSYSTEM	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30002315	B	C-950-ESDD-01101/00-JE-22001	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30002317	B	C-950-ESD-01101/00-JE-22001C10000148	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30002319	B	C-950-MOB-01101/00-JE-22001C10000147	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30002320	B	C-950-ASD-01101/00-JE-22001C10000146	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20

Section 2.2 Exception Punch Lists (per discipline)

Project CROSSWIND

PUNCH LIST REPORT

NO DATA AVAILABLE

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 79 Emergency Shutdown systems

SUBSYSTEM 79-11 Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)

ATEX

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30002314	B	950-ESDD-01101 C10000964	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07
C30002316	B	950-ESD-01101 C10000959	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07
C30002318	B	950-MOB-01101 C10001073	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07
C30002321	B	950-ASD-01101 C10000954	The support is not well secured against vibration	.		AAndreani 2025-01-02	2025-03-07	Gtangianu 2025-03-07	2025-03-07

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	79	Emergency Shutdown systems
SUBSYSTEM	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30002315	B	C-950-ESDD-01101/00-JE-22001	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30002317	B	C-950-ESD-01101/00-JE-22001C10000148	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30002319	B	C-950-MOB-01101/00-JE-22001C10000147	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20
C30002320	B	C-950-ASD-01101/00-JE-22001C10000146	Core tag is missing for cable on JB side	.		AAndreani 2025-01-02	2025-02-20	JKrizanic 2025-02-20	2025-02-20

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002314

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000964	1.4 Discipline	ATEX
1.2 Item	950-ESDD-01101	FZ-01 ESD-1D Push Button Activation	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

The support is not well secured against vibration

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installation carried out as per typical 123A90-DDL-EL-DD-20091 and 123A90-DDL-IN-DD-40017 drawing. Eng states that no additional support is needed.

Name: Giovanni Tangianu

Date: 2025-03-07

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002315

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000149	1.4 Discipline	Instrumental
1.2 Item	C-950-ESDD-01101/00-JE-22001	PUSH BUTTON / MARSHALLING PCS	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

Core tag is missing for cable on JB side

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-02-20

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002316

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000959	1.4 Discipline	ATEX
1.2 Item	950-ESD-01101	FZ-01 ESD-1 Push Button Activation	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

The support is not well secured against vibration

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installation carried out as per typical 123A90-DDL-EL-DD-20091 and 123A90-DDL-IN-DD-40017 drawing. Eng states that no additional support is needed.

Name: Giovanni Tangianu

Date: 2025-03-07

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002317

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000148	1.4 Discipline	Instrumental
1.2 Item	C-950-ESD-01101/00-JE-22001	PUSH BUTTON / MARSHALLING PCS	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

Core tag is missing for cable on JB side

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-02-20

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002318

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001073	1.4 Discipline	ATEX
1.2 Item	950-MOB-01101	FZ-01 Man Over Board Activation	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

The support is not well secured against vibration

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installation carried out as per typical 123A90-DDL-EL-DD-20091 and 123A90-DDL-IN-DD-40017 drawing. Eng states that no additional support is needed.

Name: Giovanni Tangianu

Date: 2025-03-07

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002319

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000147	1.4 Discipline	Instrumental
1.2 Item	C-950-MOB-01101/00-JE-22001	PUSH BUTTON / MARSHALLING PCS	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

Core tag is missing for cable on JB side

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-02-20

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002320

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000146	1.4 Discipline	Instrumental
1.2 Item	C-950-ASD-01101/00-JE-22001	PUSH BUTTON / MARSHALLING PCS	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

Core tag is missing for cable on JB side

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-02-20

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30002321

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000954	1.4 Discipline	ATEX
1.2 Item	950-ASD-01101	FZ-01 Abandon Shutdown Activation	
1.3 Subsystem	79-11	Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	

2 - OBSERVATION

The support is not well secured against vibration

Name: Andrea Andreani

Date: 2025-01-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Andrea Andreani
3.4 Activity code	MC Mechanical Completion	Date	2025-01-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installation carried out as per typical 123A90-DDL-EL-DD-20091 and 123A90-DDL-IN-DD-40017 drawing. Eng states that no additional support is needed.

Name: Giovanni Tangianu

Date: 2025-03-07

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: 79-11 & discipline : I

Instrumental	79-11 Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
950-ASD-01101	FZ-01 Abandon Shutdown Activation	ONSHORE	C10004396	FJ04PB_SIS	100	2025-01-16	RFO 1
950-ESD-01101	FZ-01 ESD-1 Push Button Activation	ONSHORE	C10004406	FJ04PB_SIS	100	2025-01-16	RFO 1
950-ESDD-01101	FZ-01 ESD-1D Push Button Activation	ONSHORE	C10004401	FJ04PB_SIS	100	2025-01-16	RFO 1
950-MOB-01101	FZ-01 Man Over Board Activation	ONSHORE	C10004423	FJ04PB_SIS	100	2025-01-16	RFO 1

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-ASD-01101	: FZ-01 Abandon Shutdown Activation	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	79-11	: Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	Module	UD		
TASK	code	C10004396	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form	FJ04PB_SIS Push Button SIS

LOOP DATA

Loop TAG	950-ASD-01101			TSLD	123A90-FDL-IN-DG-40014 rev 1_A		
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system Yes
Marshalling	B400-SIS-001	Terminal	13A-13B	Slot	03	Rack 01	Chanel 13

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	Yes	Closed	NA	OK

LOOP SERVICE

		Action Shutdown		**Alarm / Control** SIS		**Display** PCS	
6	Loop energized	Yes		Yes		OK	OK
7	Loop not energized	No		No		OK	OK
8	Checking of line monitoring	Yes		Yes		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	NA
10	Associated safety Level / bar	ASD-1					OK
11	Associated outputs						

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	Marco Di Maria	Giandonato Delmissier	John Mackillop
Date	2025-01-15	2025-01-15	2025-01-16
Signature	PROVERLIS Digitaly signed by Marco Di Maria 2025-01-15T12:19:24.388Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-15T16:18:55.080Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-16T06:57:59.528Z

SM87BG & SM87PB manual call point range

Ex d, Ex ia, weatherproof



Overview

These manual fire alarm, emergency shutdown break-glass and pushbutton units have been designed for the most arduous environmental conditions.

The units are both easy to install and maintain. Intrinsically safe Ex ia and flameproof Ex d versions of each model are available.

A choice of either stainless steel or alloy makes the range suitable for either the offshore or onshore industries. Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 0, Zone 1 and Zone 2 use*
- ATEX certified
- UL listed for USA and Canada (SM87PBL only). Class I, Div 1, Groups C & D
- ULC certified (SM87PBL only) for Class I, Zone 1 Groups C & D
- CSA certified
- IECEx certified
- Brazilian (INMETRO) certified
- Russian Fire certified
- PESO certified (Ex d only)
- SIL 2 certified (SM87PB only)
- IP66 and IP67
- DNV type approval (IEC 60945) (SM87PB only)
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Robust yet lightweight
- Easy to maintain

*Model dependent

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March 2024

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Powering Business Worldwide

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No liability is accepted for any consequence of use.

Certifications

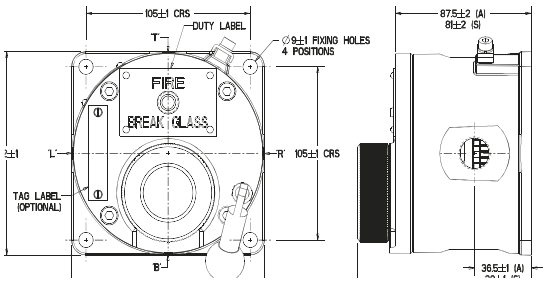
ATEX Ex d	Cert. no. Baseefa03ATEX0075. ATEX Approved Ex II 2GD Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db. IP66/IP67
ATEX Ex ia	Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1GD Certified to: EN60079-0, EN60079-11 Ex ia IIC T4 Ga, Ex ia IIIC T135°C 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

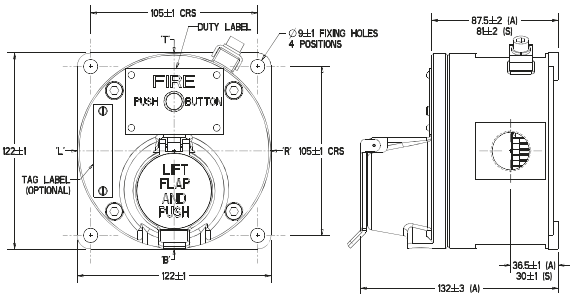
Material	Grade 316 ANC4B stainless steel or LM 25 TF marine grade alloy
Finish	Paint finish as standard or to customer specification
Voltage	Ex d 24V a.c./d.c. Ex ia 28V
Rating	2A
Switches	2 pole c/o, wired to terminals Optional up to 4 pole (UL version 2 pole only)
Optional indicator	A red high intensity 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	Y

Material*	Code
Stainless steel	S
Alloy	A

*UL version only available in alloy

Model*	Code
Breakglass latching	BGL
Lift flap breakglass latching	LBGL
Push button latching key reset	PBL
Push button only momentary action	PBM

*UL and ULC versions only available in PBL model

Certification	Code
Ex ia	I
Ex d	D
IECEx - Ex ia	IJ
IECEx - Ex d	DJ
UL	UL
ULC	UC
CSA - Intrinsically Safe	IC
CSA - Ex proof	DC
INMETRO - Ex d	DM
CCC	DQ

Entries	Code
M20	1
M25	2
½" NPT	3
¾" NPT	4
Other	5
Position	
Top	*T
Bottom	*B
RHS	*R
LHS	*L

*Prefix position with size code i.e. 1T1B = M20 Top and Bottom

Duty label	Code
Fire breakglass	1
Push button	2
Fire push button	3
ESDO abandon	4
Burning house logo	5
Fire/FEU	6†
Other	O*
None	N

*Please specify
†This option must be used when ordering a red callpoint for ULC Fire Alarm applications

Tag label	Code
Required	Y*
Not required	N

*Please specify

Options	Code
Not required	N
LED	A
Resistor series	G*
Resistor EOL	H*
Diode	D*
3 pole c/o switch	T
4 pole c/o switch	F

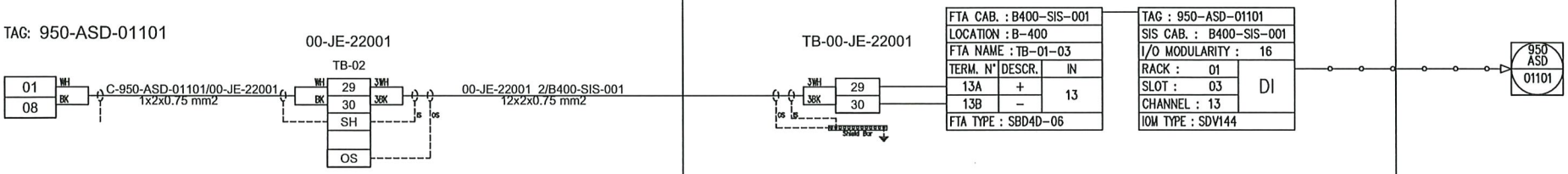
*Please specify

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/black stripes	X
Special	S*

*Please specify

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

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	SAFETY INSTRUMENTED SYSTEM	OPERATOR CONSOLE



NO MARK UP
Howgam
13/01/25

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-ASD-01101
FZ-01 ABANDON SHUTDOWN (ASD)

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 106 | REV. 01

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

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-ESDD-01101	: FZ-01 ESD-1D Push Button Activation		Dwg	123A90-DDL-SAF-DL-30027	
	S/Sys	79-11	: Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)		Module	UD	
TASK	code	C10004401	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline Instrumental	Form	FJ04PB_SIS	Push Button SIS

LOOP DATA

Loop TAG	950-ESDD-01101			TSLD	123A90-DDL-IN-DG-40014		
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-SIS-001	Terminal	03A-03B	Slot	01	Rack	02	Chanel	03

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	Yes	Closed	NA	OK

LOOP SERVICE

		Action Shutdown		**Alarm / Control** SIS		**Display** PCS	
6	Loop energized	Yes		Yes		OK	OK
7	Loop not energized	No		No		OK	OK
8	Checking of line monitoring	Yes		Yes		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	NA
10	Associated safety Level / bar	ESD-1					OK
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	Marco Di Maria	Giandonato Delmissier	John Mackillop
Date	2025-01-15	2025-01-15	2025-01-16
Signature	PROVERLIS Digitaly signed by Marco Di Maria 2025-01-15T12:42:55.360Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-15T16:20:55.934Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-16T06:58:52.274Z

SM87BG & SM87PB manual call point range

Ex d, Ex ia, weatherproof



Overview

These manual fire alarm, emergency shutdown break-glass and pushbutton units have been designed for the most arduous environmental conditions.

The units are both easy to install and maintain. Intrinsically safe Ex ia and flameproof Ex d versions of each model are available.

A choice of either stainless steel or alloy makes the range suitable for either the offshore or onshore industries. Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 0, Zone 1 and Zone 2 use*
- ATEX certified
- UL listed for USA and Canada (SM87PBL only). Class I, Div 1, Groups C & D
- ULC certified (SM87PBL only) for Class I, Zone 1 Groups C & D
- CSA certified
- IECEx certified
- Brazilian (INMETRO) certified
- Russian Fire certified
- PESO certified (Ex d only)
- SIL 2 certified (SM87PB only)
- IP66 and IP67
- DNV type approval (IEC 60945) (SM87PB only)
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Robust yet lightweight
- Easy to maintain

*Model dependent

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Oddicroft Lane
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March 2024

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Powering Business Worldwide

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Certifications

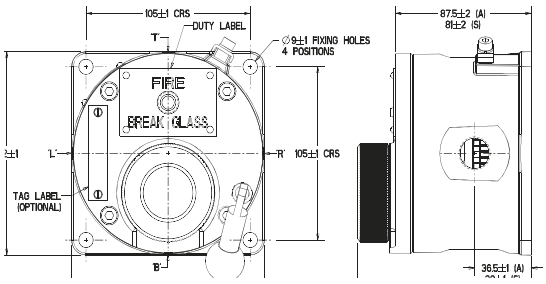
ATEX Ex d	Cert. no. Baseefa03ATEX0075. ATEX Approved Ex II 2GD Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db. IP66/IP67
ATEX Ex ia	Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1GD Certified to: EN60079-0, EN60079-11 Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da
IECEx Ex d	Cert. no. IECEx BAS 09.0060 Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°/T100°C Db. IP66/IP67
IECEx Ex ia	Cert. no. IECEx BAS 10.0033X Certified to: IEC60079-0, IEC60079-11, Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da
UL	Listing no. E186629 UL listed to Class 1, Div 1. Groups C & D. (SM87PBL)
ULC	Cert. no. 20091023-E320282 ULC certified for Class I, Zone 1 Groups C & D (SM87PBL)
CSA Explosion proof	Class 1, Div 1 & 2. Group D Ex d IIC T5/T6 Gb
CSA Intrinsically safe	Class 1, Div 1 & 2. Groups A-D
INMETRO Ex d	Ex db IIC T5/T6 Gb
Type Approvals	DNV (IEC 60945) (Stainless Steel SM87PB only)
SIL	SM87PB only - SIL2 Certification to IEC61508. Cert no. 20151118-4786827453
CCC	Ex d IIC T5/T6 Gb, Ex tD A21 IP66/IP67 T85°C/T100°C

Specifications

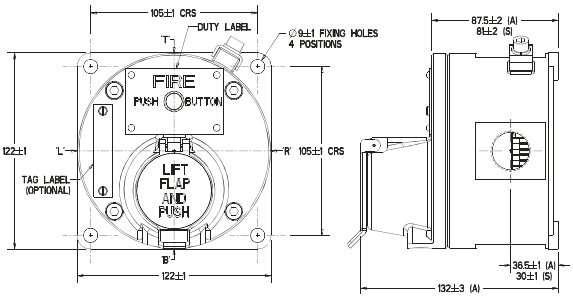
Material	Grade 316 ANC4B stainless steel or LM 25 TF marine grade alloy
Finish	Paint finish as standard or to customer specification
Voltage	Ex d 24V a.c./d.c. Ex ia 28V
Rating	2A
Switches	2 pole c/o, wired to terminals Optional up to 4 pole (UL version 2 pole only)
Optional indicator	A red high intensity LED can be fitted for alarm indication As standard the LED is not provided with over current protection. The forward current (If) should be limited to 20mA
Certified temp	Ex d* –55°C to +70°C. Ex ia* –55°C to +60°C –20°C to +55°C (LED version only) UL –40°C to +70°C, –20°C to +55°C (LED version only) CSA Explosion proof - Class 1, Div 1 & 2. –50°C to +55°C CSA - Ex d IIC –55°C to +70°C CSA Intrinsically safe - Class 1, Div 1 & 2 –50°C to +40°C *Note: includes ATEX, IECEx & INMETRO versions
Weight	3·8 kg. steel (approx.) or 2.5 kg. alloy (approx)
Ingress protection	IP66 & IP67. SM87PB IP68 (35m for 40 hours)
Entries	Up to 4 x M20 or M25 ISO Ex d/Ex ia Up to 4 x ½" or ¾" NPT UL Stainless steel version comes with two entries as standard. Units ordered with a single entry ordering code are supplied with 2x entries inc. plug on the opposite side
Terminals	Will accept up to 1·5mm² cable
Resistor values	470R minimum (d.c. & I.S. units only)

General arrangement drawing (all dimensions in mm)

Break glass



Push button



Both the Ex ia units and the Ex d units have the same external appearance. Also the internal components are identical throughout the range. Each unit can be wired for either NO, NC or CO contacts to customer specification

Ordering requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box

Unit	Model	Material	Certification	Entries	Duty label	Tag label	Options	Finish
SM87	PBL	S	D	1B1R	O	Y	HD	Y

Material*	Code
Stainless steel	S
Alloy	A

*UL version only available in alloy

Model*	Code
Breakglass latching	BGL
Lift flap breakglass latching	LBGL
Push button latching key reset	PBL
Push button only momentary action	PBM

*UL and ULC versions only available in PBL model

Certification	Code
Ex ia	I
Ex d	D
IECEx - Ex ia	IJ
IECEx - Ex d	DJ
UL	UL
ULC	UC
CSA - Intrinsically Safe	IC
CSA - Ex proof	DC
INMETRO - Ex d	DM
CCC	DQ

Entries	Code
M20	1
M25	2
½" NPT	3
¾" NPT	4
Other	5
Position	
Top	*T
Bottom	*B
RHS	*R
LHS	*L

*Prefix position with size code i.e. 1T1B = M20 Top and Bottom

Duty label	Code
Fire breakglass	1
Push button	2
Fire push button	3
ESDO abandon	4
Burning house logo	5
Fire/FEU	6†
Other	O*
None	N

*Please specify
†This option must be used when ordering a red callpoint for ULC Fire Alarm applications

Tag label	Code
Required	Y*
Not required	N

*Please specify

Options	Code
Not required	N
LED	A
Resistor series	G*
Resistor EOL	H*
Diode	D*
3 pole c/o switch	T
4 pole c/o switch	F

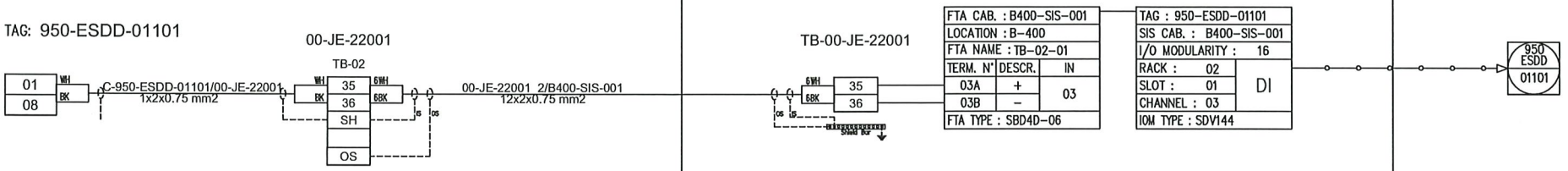
*Please specify

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/black stripes	X
Special	S*

*Please specify

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

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	SAFETY INSTRUMENTED SYSTEM	OPERATOR CONSOLE



NO MARK UP

LGuzman

13/01/25

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-ESDD-01101
FZ-01 DEPRESS. EMERGENCY SHUT DOWN (ESDD)

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 116	REV. 01

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

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	950-ESD-01101	: FZ-01 ESD-1 Push Button Activation	Dwg	123A90-DDL-SAF-DL-30027		
	S/Sys	79-11	: Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)	Module	UD		
TASK	code	C10004406	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form	FJ04PB_SIS Push Button SIS

LOOP DATA

Loop TAG	950-ESD-01101				TSLD	123A90-FDL-IN-DG-40014 rev.1_A			
IO Type	Input	Yes	Output	No	Energy by transmitter	No		Energy by system	Yes
Marshalling	B400-SIS-001	Terminal	02A/02B		Slot	01	Rack 02	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	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	Yes	Closed	NA	OK

LOOP SERVICE

		Action Shutdown		**Alarm / Control** SIS		**Display** PCS	
6	Loop energized	Yes		Yes		OK	OK
7	Loop not energized	No		No		OK	OK
8	Checking of line monitoring	Yes		Yes		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	NA
10	Associated safety Level / bar	ESD-1					OK
11	Associated outputs						

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	Marco Di Maria	Giandonato Delmissier	John Mackillop
Date	2025-01-15	2025-01-15	2025-01-16
Signature	PROVERLIS Digitaly signed by Marco Di Maria 2025-01-15T12:21:34.814Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-15T16:23:54.648Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-16T06:59:40.134Z

SM87BG & SM87PB manual call point range

Ex d, Ex ia, weatherproof



Overview

These manual fire alarm, emergency shutdown break-glass and pushbutton units have been designed for the most arduous environmental conditions.

The units are both easy to install and maintain. Intrinsically safe Ex ia and flameproof Ex d versions of each model are available.

A choice of either stainless steel or alloy makes the range suitable for either the offshore or onshore industries. Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 0, Zone 1 and Zone 2 use*
- ATEX certified
- UL listed for USA and Canada (SM87PBL only). Class I, Div 1, Groups C & D
- ULC certified (SM87PBL only) for Class I, Zone 1 Groups C & D
- CSA certified
- IECEx certified
- Brazilian (INMETRO) certified
- Russian Fire certified
- PESO certified (Ex d only)
- SIL 2 certified (SM87PB only)
- IP66 and IP67
- DNV type approval (IEC 60945) (SM87PB only)
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Robust yet lightweight
- Easy to maintain

*Model dependent

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Publication
No.DSMC0005/H
March 2024

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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

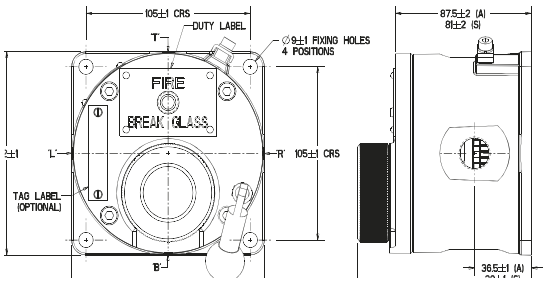
ATEX Ex d	Cert. no. Baseefa03ATEX0075. ATEX Approved Ex II 2GD Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db. IP66/IP67
ATEX Ex ia	Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1GD Certified to: EN60079-0, EN60079-11 Ex ia IIC T4 Ga, Ex ia IIIC T135°C 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

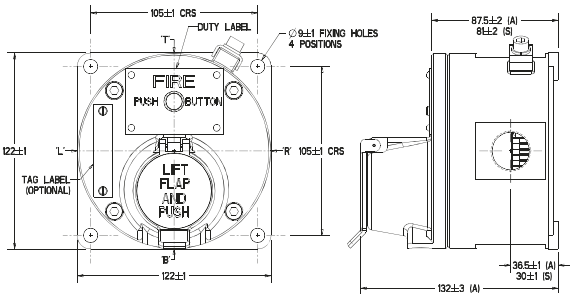
Material	Grade 316 ANC4B stainless steel or LM 25 TF marine grade alloy
Finish	Paint finish as standard or to customer specification
Voltage	Ex d 24V a.c./d.c. Ex ia 28V
Rating	2A
Switches	2 pole c/o, wired to terminals Optional up to 4 pole (UL version 2 pole only)
Optional indicator	A red high intensity 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	Y

Material*	Code
Stainless steel	S
Alloy	A

*UL version only available in alloy

Model*	Code
Breakglass latching	BGL
Lift flap breakglass latching	LBGL
Push button latching key reset	PBL
Push button only momentary action	PBM

*UL and ULC versions only available in PBL model

Certification	Code
Ex ia	I
Ex d	D
IECEx - Ex ia	IJ
IECEx - Ex d	DJ
UL	UL
ULC	UC
CSA - Intrinsically Safe	IC
CSA - Ex proof	DC
INMETRO - Ex d	DM
CCC	DQ

Entries	Code
M20	1
M25	2
½" NPT	3
¾" NPT	4
Other	5
Position	
Top	*T
Bottom	*B
RHS	*R
LHS	*L

*Prefix position with size code i.e. 1T1B = M20 Top and Bottom

Duty label	Code
Fire breakglass	1
Push button	2
Fire push button	3
ESDO abandon	4
Burning house logo	5
Fire/FEU	6†
Other	O*
None	N

*Please specify
†This option must be used when ordering a red callpoint for ULC Fire Alarm applications

Tag label	Code
Required	Y*
Not required	N

*Please specify

Options	Code
Not required	N
LED	A
Resistor series	G*
Resistor EOL	H*
Diode	D*
3 pole c/o switch	T
4 pole c/o switch	F

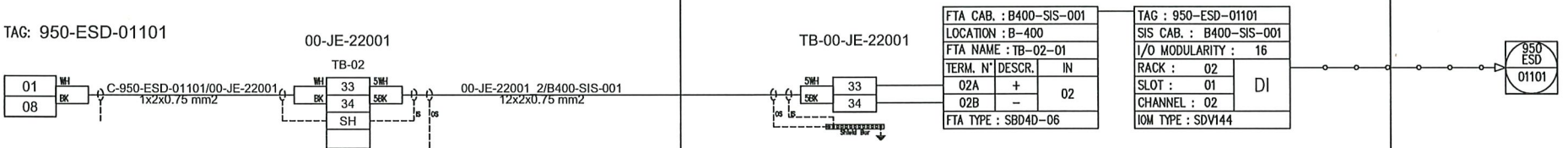
*Please specify

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/black stripes	X
Special	S*

*Please specify

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

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	SAFETY INSTRUMENTED SYSTEM	OPERATOR CONSOLE



NO MARK UP
Longhi
13/01/25

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-ESD-01101
FZ-01 EMERGENCY SHUT DOWN (ESD)

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 111	REV. 01

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

ROSETTI MARINO — PROVERLIS — CROSSWIND

ITEM	Tag	950-MOB-01101	: FZ-01 Man Over Board Activation		Dwg	123A90-DDL-SAF-DL-30027	
	S/Sys	79-11	: Emergency Shutdown Systems (SIS) - Devices FZ-01 (Fuel Cell Area)		Module	UD	
TASK	code	C10004423	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline Instrumental	Form	FJ04PB_SIS	Push Button SIS

LOOP DATA

Loop TAG	950-MOB-01101				TSLD	123A90-FDL-IN-DG-40014 rev.1_A			
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes	
Marshalling	B400-SIS-001	Terminal	01A/01B		Slot	01	Rack	02	Chanel 01

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	Yes	Closed	NA	OK

LOOP SERVICE

		Action Shutdown		**Alarm / Control** SIS		**Display** PCS	
6	Loop energized	Yes		Yes		OK	OK
7	Loop not energized	No		No		OK	OK
8	Checking of line monitoring	Yes		Yes		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	NA
10	Associated safety Level / bar	MOB-1					OK
11	Associated outputs						

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:

	Performed by	☑ WITNESS ☐ REVIEW	☑ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Laurentiu Grozavu	Giandonato Delmissier	John Mackillop
Date	2025-01-15	2025-01-15	2025-01-16
Signature	PROVERLIS Digitaly signed by Laurentiu Grozavu 2025-01-15T12:34:21.578Z	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-15T16:52:59.173Z	PROVERLIS Digitaly signed by John Mackillop 2025-01-16T07:10:44.614Z

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
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- IECEx certified
- Brazilian (INMETRO) certified
- Russian Fire certified
- PESO certified (Ex d only)
- SIL 2 certified (SM87PB only)
- IP66 and IP67
- DNV type approval (IEC 60945) (SM87PB only)
- Certified temperature: –55°C to +70°C*
- Stainless steel or marine grade alloy
- Robust yet lightweight
- Easy to maintain

*Model dependent

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March 2024

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Powering Business Worldwide

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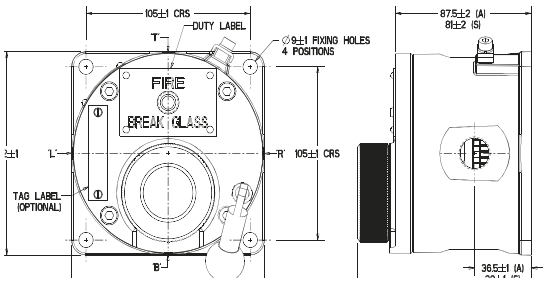
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ATEX Ex ia	Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1GD Certified to: EN60079-0, EN60079-11 Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da
IECEx Ex d	Cert. no. IECEx BAS 09.0060 Certified to: EN60079-0, EN60079-1, EN60079-31 Ex d IIC T5/T6 Gb, Ex tb IIIC T85°/T100°C Db. IP66/IP67
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Specifications

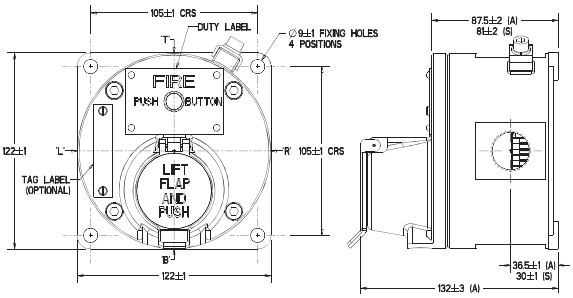
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Terminals	Will accept up to 1·5mm² cable
Resistor values	470R minimum (d.c. & I.S. units only)

General arrangement drawing (all dimensions in mm)

Break glass



Push button



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SM87	PBL	S	D	1B1R	O	Y	HD	Y

Material*	Code
Stainless steel	S
Alloy	A

*UL version only available in alloy

Model*	Code
Breakglass latching	BGL
Lift flap breakglass latching	LBGL
Push button latching key reset	PBL
Push button only momentary action	PBM

*UL and ULC versions only available in PBL model

Certification	Code
Ex ia	I
Ex d	D
IECEx - Ex ia	IJ
IECEx - Ex d	DJ
UL	UL
ULC	UC
CSA - Intrinsically Safe	IC
CSA - Ex proof	DC
INMETRO - Ex d	DM
CCC	DQ

Entries	Code
M20	1
M25	2
½" NPT	3
¾" NPT	4
Other	5
Position	
Top	*T
Bottom	*B
RHS	*R
LHS	*L

*Prefix position with size code i.e. 1T1B = M20 Top and Bottom

Duty label	Code
Fire breakglass	1
Push button	2
Fire push button	3
ESDO abandon	4
Burning house logo	5
Fire/FEU	6†
Other	O*
None	N

*Please specify
†This option must be used when ordering a red callpoint for ULC Fire Alarm applications

Tag label	Code
Required	Y*
Not required	N

*Please specify

Options	Code
Not required	N
LED	A
Resistor series	G*
Resistor EOL	H*
Diode	D*
3 pole c/o switch	T
4 pole c/o switch	F

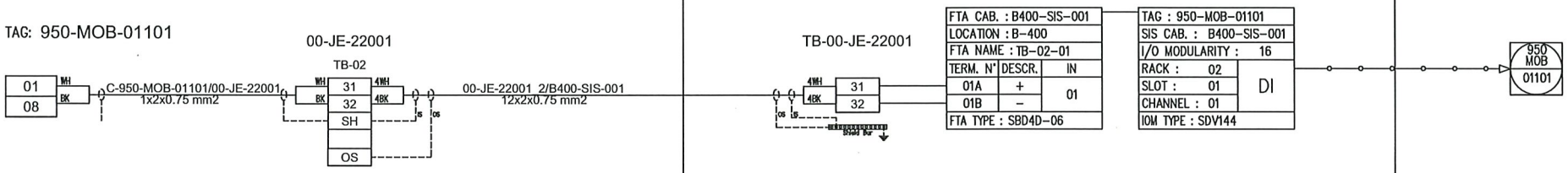
*Please specify

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/black stripes	X
Special	S*

*Please specify

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

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	SAFETY INSTRUMENTED SYSTEM	OPERATOR CONSOLE



NO MARK UP

13/01/25

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-MOB-01101
FZ-01 MAN OVER BOARD (MOB)

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 121	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

CAUSE AND EFFECT CHARTS

ASD

CAUSE

EFFECT

ESD Level	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO.	NOTE	TAG. NO.	ACTION	ESD LEVEL	DESCRIPTION	P&ID	To sheet
										ALARM / INTERFACE		
										BATTERIES DISCONNECTED		
										PROCESS/POWER PACKAGES		
										INCOMING CIRCUIT BREAKERS POWER GENERATION		
										HVAC SYSTEM		
										ELECTRICAL ISOLATION UPS POWERS		
ASD	ASD ACTIVATION FROM FGS SYSTEM	70-XA-001				4				OPERATOR WORKSTATION DISPLAY - EVENT/ALARM		
ASD	FZ-01 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-01101		X		3				ALARM ON CAP ONSHORE		
ASD	FZ-03 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-03101		X		3				ESD-1D ACTIVATION		6
ASD	FZ-04 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-04101		X		3				ASD ACTIVATION TO FGS SYSTEM		NOTE 4
ASD	FZ-06 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-06101		X		3				DISCONNECT AC UPS UP-200F3 BATTERIES A/B (B-300 CONTAINER)		
ASD	FZ-07 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-07101		X		3				DISCONNECT AC UPS UP-200F4 BATTERIES A/B (B-300 CONTAINER)		
										DISCONNECT DC UPS (B-100 CONTAINER)		
										SHUTDOWN ELECTROLYZER PACKAGE A-20000	80011	
										SHUTDOWN BESS PACKAGE A-85000		
										SHUTDOWN SOLAR FARM PACKAGE (NOTE 1)		
										SHUTDOWN FUEL CELL PACKAGE A-80000	80012	
										SHUTDOWN WATER TREATMENT PACKAGE A-50000	80022/23	
										SHUTDOWN INSTRUMENT AIR PACKAGE A-63000	80027	
										SHUTDOWN NITROGEN PACKAGE A-84000	80027	
										OPEN BESS A-85000 INCOMING CIRCUIT BREAKERS		
										OPEN FUEL CELL A-80000 INCOMING CIRCUIT BREAKERS		
										OPEN SOLAR INCOMING CIRCUIT BREAKERS		
										OPEN WIND FARM INCOMING CIRCUIT BREAKERS		
										SHUTDOWN HVAC SYSTEM OF B-100 (HV CONTAINER)		
										SHUTDOWN HVAC SYSTEM OF B-200 (LV CONTAINER)		
										SHUTDOWN HVAC SYSTEM OF B-300 (UPS CONTAINER)		
										SHUTDOWN HVAC SYSTEM OF B-400 (ITER CONTAINER)		
										ELECT. ISOLATION UPS POWER UCP (WATER TREAT. A-50000)		
										ELECT. ISOLATION UPS POWER UCP (INSTRUMENT AIR A-63000)		
										ELECT. ISOLATION UPS POWER UCP (NITROGEN A-84000)		
										ELECT. ISOLATION UPS POWER UCP HVAC B-100		
										ELECT. ISOLATION UPS POWER UCP HVAC B-200		
							79-XS-001		7			
							84-XS-007A/B	ISOLATE	9			
							84-XS-008A/B	ISOLATE	11			
							84-XS-006	ISOLATE	13			
							20-XS-001		15			
							85-XS-001		17			
							83-XS-001		19			
							80-XS-001		21			
							50-XS-001		23			
							63-XS-001		25			
							64-XS-001		27			
							82-XS-002		29			
							82-XS-003		31			
							82-XS-001		33			
							81-XS-001		35			
							77-XS-001		37			
							77-XS-002		39			
							77-XS-003		41			
							77-XS-004		43			
							84-XS-001		45			
							84-XS-003		47			
							84-XS-002		49			
							84-XS-004		51			
							84-XS-005		53			

NOTES

1. SERIAL SIGNALS THROUGH FIBER OPTIC CABLE.
2. T4= 1 sec. (PROPOSED delay time).
3. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ASD PUSH BUTTONS ACTIVATION.
4. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetVIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

TEST COMPLETED
GRASSOWIND 19.03.2025
R.H.
PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO RESOLVE. ALL OTHER TESTING ACKNOWLEDGED BY GRASSOWIND
MARTIN TAYLOR

HOLDS

GRASSOWIND 15/04/25

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

ASD: ABANDON

Document Reference: 123A90-DDL-IN-CE-40000
Rev. 04 | Status: AFC
Contract No. CW-I-WP4-2023-05
Sheet 5 of 9

CAUSE AND EFFECT CHARTS

ESD-1D

CAUSE / EFFECT

ESD Level	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO.	NOTE
ASD	ESD-1D ACTIVATION IN CASCADE FROM ASD					
ESD-1D	LOW LOW PRESSURE ON NITROGEN MANIFOLD	64-PT-002	LO_LO	X	80027	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001A	25-PT-004	HI_HI	X	80015	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001B	25-PT-006	HI_HI	X	80016	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001C	25-PT-008	HI_HI	X	80017	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001D	25-PT-009	HI_HI	X	80018	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001E	25-PT-011	HI_HI	X	80019	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001F	25-PT-012	HI_HI	X	80020	
ESD-1D	ESD-1D ACTIVATION FROM FGS SYSTEM	70-XA-002				3
ESD-1D	HYDROGEN CONFIRMED IN OPEN AREA FROM F&G SYSTEM (ISOLATE EQUIP. NOT SUITABLE FOR ZONE 1)	70-XA-005				3
ESD-1D	INHIBIT BATTERY CHARGING B-100	70-XA-008				3
ESD-1D	INHIBIT BATTERY CHARGING B-300	70-XA-004				3
ESD-1D	FZ-01 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-01101		X		2
ESD-1D	FZ-03 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-03101		X		2
ESD-1D	FZ-04 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-04101		X		2
ESD-1D	FZ-06 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-06101		X		2
ESD-1D	FZ-07 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-07101		X		2
ESD-1D	ESD-1D PUSH BUTTONS ONSHORE	950-ESDD-00001		X		2
ESD-1D	H2/SMOKE INSIDE B-100 (ELECT. ISOLATION) FROM FGS SYSTEM	70-XA-006				3
ESD-1D	H2/SMOKE INSIDE B-200 (ELECT. ISOLATION) FROM FGS SYSTEM	70-XA-007				3
ESD-1D	H2/SMOKE IN WATER TREATM. PKG (ELECT. ISOLATION) FROM FGS SYSTEM	70-XA-010				3
ESD-1D	LOSS OF ON-SHORE COMMUNICATION	79-XS-005				
ESD-1	LOW LOW PRESSURE ON INSTRUMENT AIR MANIFOLD	63-PT-004	LO_LO	X	80027	
	H2/SMOKE INTAKE B-100 FROM FGS SYTEM	70-XA-015				3
	H2/SMOKE INTAKE B-200 FROM FGS SYSTEM	70-XA-016				3
	H2/SMOKE INTAKE B-300 FROM FGS SYSTEM	70-XA-017				3
	H2/SMOKE INTAKE B-400 FROM FGS SYSTEM	70-XA-018				3

TAG. NO.	ACTION	ESD LEVEL	DESCRIPTION	P&ID	To sheet
			ALARM / INTERFACE		
			WORKSTATION HMIs - EVENT/ALARM		
			ALARM ON CAP ONSHORE		
			ESD-1 ACTIVATION		7
79-XS-002			ESD-1D ACTIVATION TO FGS SYSTEM		NOTE 3
			DEPRESSURIZATION		
25-BDV-005		ESD-1D	OPEN 25-BDV-005 ON H2 STORAGE TANKS V-25001A	80015	
25-BDV-007		ESD-1D	OPEN 25-BDV-007 ON H2 STORAGE TANKS V-25001B	80016	
25-BDV-010		ESD-1D	OPEN 25-BDV-010 ON H2 STORAGE TANKS V-25001C	80017	
25-BDV-013		ESD-1D	OPEN 25-BDV-013 ON H2 STORAGE TANKS V-25001D	80018	
25-BDV-016		ESD-1D	OPEN 25-BDV-016 ON H2 STORAGE TANKS V-25001E	80019	
25-BDV-019		ESD-1D	OPEN 25-BDV-019 ON H2 STORAGE TANKS V-25001F	80020	
25-BDV-022		ESD-1D	OPEN 25-BDV-022 ON OUTLET H2 HEADER TO FUEL CELL PGK	80014	
			HVAC SYSTEM		
77-XS-001		ESD-1D	SHUTDOWN HVAC SYSTEM OF B-100 (HV CONTAINER)		
77-XS-003			SHUTDOWN HVAC SYSTEM OF B-300 (UPS CONTAINER)		
77-XS-002		ESD-1D	SHUTDOWN HVAC SYSTEM OF B-200 (LV CONTAINER)		
77-XS-004			SHUTDOWN HVAC SYSTEM OF B-400 (ITER CONTAINER)		
			BATTERY INHIBITION (B-100 AND B-300)		
84-XS-009			INHIBIT. BATTERY CHARGING B-100		
84-XS-010			INHIBIT. BATTERY CHARGING B-300 AC UPS UP-200F3 BATTERIES		
84-XS-011			INHIBIT. BATTERY CHARGING B-300 AC UPS UP-200F4 BATTERIES		
79-XS-010			ELECT. ISOLATION SOFT. CABLES COMMUNICATION CAT 6A		4
84-XS-004			ELECT. ISOLATION UPS POWER UCP HVAC B-100		
84-XS-005			ELECT. ISOLATION UPS POWER UCP HVAC B-200		
84-XS-003			ELECT. ISOLATION UPS POWER UCP (INSTRUMENT AIR A-63000)		
84-XS-002			ELECT. ISOLATION UPS POWER UCP (NITROGEN A-64000)		
84-XS-001			ELECT. ISOLATION UPS POWER UCP (WATER TREAT. A-50000)		
84-XS-006	ISOLATE		DISCONNECT DC UPS (B-100 CONTAINER)		
			PROCESS/POWER PACKAGES		
20-XS-001			SHUTDOWN ELECTROLYZER PACKAGE A-20000	80011	
85-XS-001		1	SHUTDOWN BESS PACKAGE A-85000		
83-XS-001		1	SHUTDOWN SOLAR FARM PACKAGE		
80-XS-001		1	SHUTDOWN FUEL CELL PACKAGE A-80000	80012	
50-XS-001		1	SHUTDOWN WATER TREATMENT PACKAGE A-50000	80022/23	
63-XS-001		1	SHUTDOWN INSTRUMENT AIR PACKAGE A-63000	80027	
64-XS-001		1	SHUTDOWN NITROGEN PACKAGE A-64000	80027	
			INCOMING CIRCUIT BREAKERS POWER GENERATION		
82-XS-002			OPEN BESS A-85000 INCOMING CIRCUIT BREAKERS		
82-XS-003			OPEN FUEL CELL A-80000 INCOMING CIRCUIT BREAKERS		
82-XS-001			OPEN SOLAR INCOMING CIRCUIT BREAKERS		
81-XS-001			OPEN WIND FARM INCOMING CIRCUIT BREAKERS		

NOTES

1. SERIAL SIGNALS THROUGH FIBER OPTIC CABLE.
2. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ESD-1D PUSH BUTTONS ACTIVATION.
3. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VneVIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.
4. INTERNAL WIRING ISOLATION BETWEEN SIS AND NETWORK CABINETS.

TEST COMPLETED
GIVEN OVER TO CROSSWIND 19-03-2025
R.H.
PUNCH LST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO RESOLVE. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND
MARTIN TAYLOR

HOLDS
CROSSWIND 15/04/25

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
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02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

ESD-1D: EMERGENCY SHUT DOWN WITH DEPRESSURIZATION

Document Reference: 123A90-DDL-IN-CE-40000
Rev: 04 Status: AFC
Contract No. CW4-WP4-2023-05
Sheet 6 of 9

CAUSE AND EFFECT CHARTS

ESD-1

EFFECT

No.	TAG. NO.	ACTION	ESD LEVEL	DESCRIPTION	P&ID	To sheet
ALARM / INTERFACE						
1			1	WORKSTATION HMIs - EVENT/ALARM		
				ALARM ON CAP ONSHORE		
3			PSD	PSD ACTIVATION		8
5	79-XS-003		1	ESD-1 ACTIVATION TO FGS SYSTEM		NOTE 2
PROCESS/POWER PACKAGES						
7	20-XS-001			SHUTDOWN ELECTROLYZER PACKAGE A-20000	80011	
13	80-XS-001		1	SHUTDOWN FUEL CELL PACKAGE A-80000	80012	
15	50-XS-001		1	SHUTDOWN WATER TREATMENT PACKAGE A-50000	80022/23/2	
SHUT-DOWN VALVES						
21	64-SDY-001		1	CLOSE 64-SDV-001 NITROGEN TO H2 STORAGE TANKS	80027	
23	25-SDY-023			CLOSE 25-SDV-023 ON OUTLET H2 HEADER TO FUEL CELL PKG	80014	
25	25-SDY-001			CLOSE 25-SDV-001 ON H2 HEADER TO STORAGE TANKS	80013	

CAUSE

ESD Level	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO 123A90-DDL-PR-PID-.	NOTE		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
							1																											
ESD-1D	ESD-1 ACTIVATION IN CASCADE FROM ESD-1D						2					X																		X		X		X
							3																											
							4																											
							5																											
							6																											
							7																											
							8																											
							9																											
ESD-1	FZ-01 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-01101		X		1	10	X		F		X		X		X						X		X								X		X
							11																											
ESD-1	FZ-03 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-03101		X		1	12	X		F		X		X		X						X		X								X		X
							13																											
ESD-1	FZ-04 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-04101		X		1	14	X		F		X		X		X						X		X								X		X
							15																											
ESD-1	FZ-06 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-06101		X		1	16	X		F		X		X		X						X		X								X		X
							17																											
ESD-1	FZ-07 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-07101		X		1	18	X		F		X		X		X						X		X								X		X
							19																											
ESD-1	ESD-1 PUSH BUTTONS ONSHORE	950-ESD-00001				1	20	X		F		X		X		X						X		X								X		X
							21																											
ESD-1	BESS ALARM THERMAL RUN AWAY	85-XA-004					22	X		F		X		X		X						X		X								X		X

NOTES

1. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ESD-1 PUSH BUTTONS ACTIVATION.

2. 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.

TEST COMPLETED
GIANDOVATO 19-03-2025
[signature] R.M.

PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO BE RESOLVED. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND.
[signature] MARTIN TAYLOR

HOLDS

15/04/25

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

ESD-1: EMERGENCY SHUT DOWN WITHOUT DEPRESSURIZATION

Document Reference: 123A90-DDL-IN-CE-40000
Rev: 04 Status: AFC
Contract No. CW-I-WP4-2023-05
Sheet 7 of 9

CAUSE AND EFFECT CHARTS

MOB PUSH BUTTONS

CAUSE / EFFECT

PSD	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO 123A90-DDL-PR-PID-.	NOTE
	FZ-01 MAN OVER BOARD ACTIVATION	950-MOB-01101		X		1
	FZ-03 MAN OVER BOARD ACTIVATION	950-MOB-03101		X		1
	FZ-04 MAN OVER BOARD ACTIVATION	950-MOB-04101		X		1
	FZ-06 MAN OVER BOARD ACTIVATION	950-MOB-06101		X		1
	FZ-07 MAN OVER BOARD ACTIVATION	950-MOB-07101		X		1

	1	2	3	4	5	6	7	8	9	10	11	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	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
TAG. NO.					79-XS-004																																																																																								
ACTION					ALARM																																																																																																					
DESCRIPTION	WORKSTATION HMIs - EVENT/ALARM		ALARM ON CAP ONSHORE		MOB PUSH BUTTONS ALARM ACTIVATION TO FGS SYSTEM																																																																																																					
P&ID																																																																																																									
To sheet					NOTE 2																																																																																																					

NOTES

1. The Flahing Alarm on CAP onshore is a cumulative of all Man Onverboard (MOB) push buttons activation.

2. 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.

TEST COMPLETED
14-03-2025 GIANDONATO
R.M.

GERRY McCANN
CROSSWIND
14/3/25

HOLDS

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

MOB PUSH BUTTONS

Document Reference: 123A90-DDL-IN-CE-40008

Rev. 04 Status: AFC

Contract No. CW4-WP4-2023-05

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	
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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