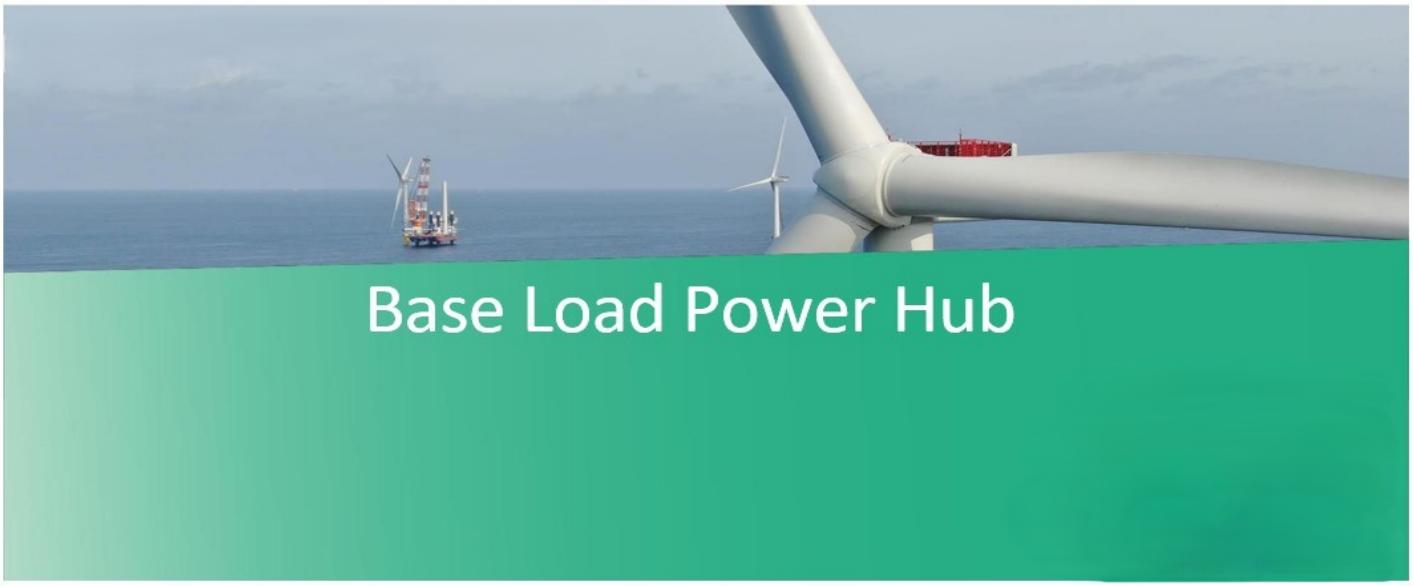
CROSSWIND

ROSETTI MARINO

PROVERLIS

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



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM	84 Battery & No-Break System
SUBSYSTEM	84-00 DC 10 kVA UPS System (UP-200F1)

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

ROSETTI MARINO

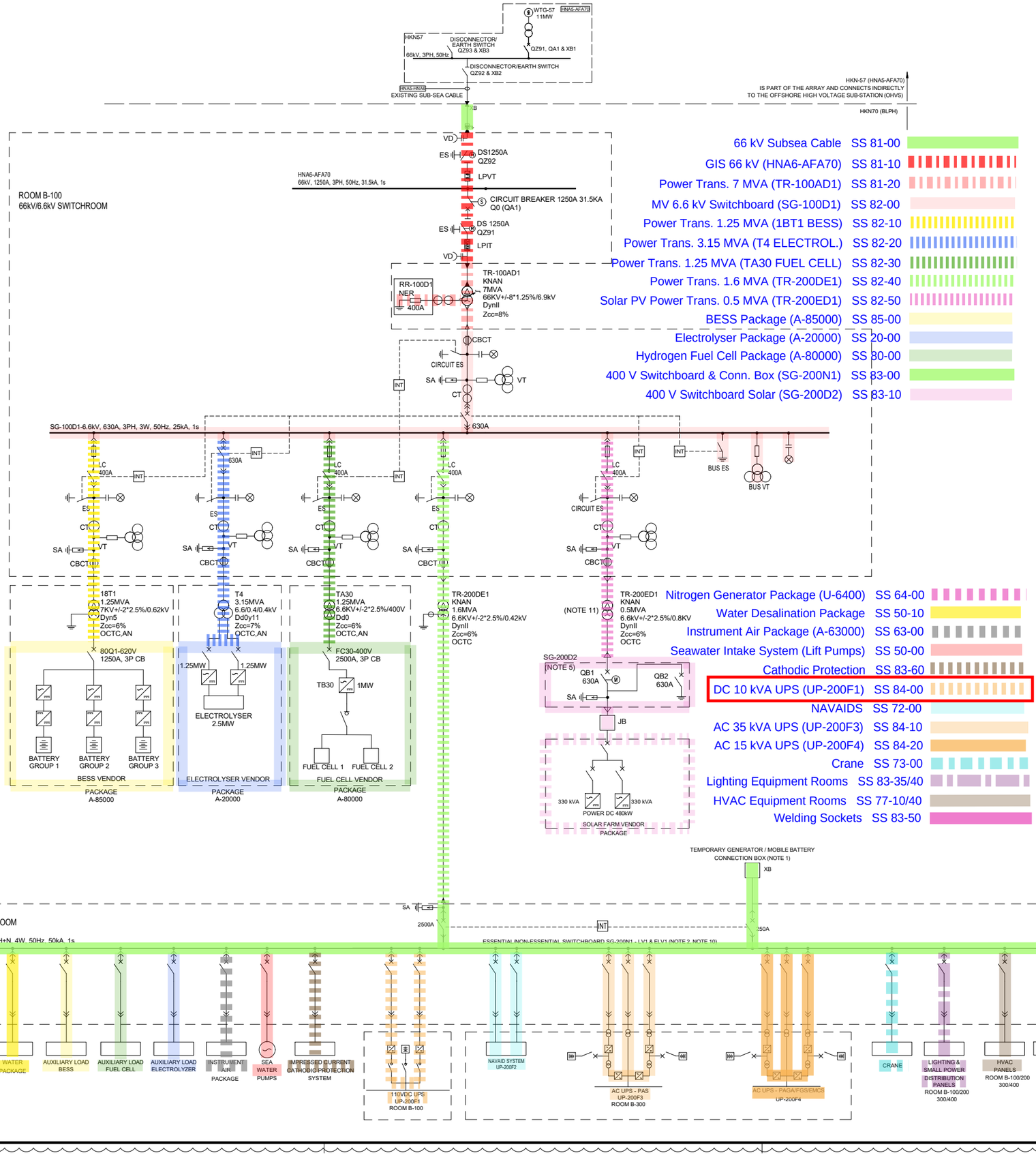
Sub System N°:	84-00	**Tick as appropriate**	ONSHORE	OK
Description:	DC 10 kVA UPS System (UP-200F1)		OFFSHORE	

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	2025-04-26	2025-04-27
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-26T07:34:40.614Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-27T15:53:18.721Z

Section 1 SUB-SYSTEM DEFINITION

DRAWING NO. 123A90-DDL-EL-DG-20158 REV. 01



SYMBOL LEGEND:

- VOLTAGE DETECTOR
- EARTHING SWITCH DISCONNECTOR
- MOTORIZED EARTHING SWITCH
- CIRCUIT BREAKER
- FUSE
- CONTACTOR
- THREE-PHASE TRANSFORMER WITH TAP CHANGER
- THREE-PHASE TRANSFORMER
- CURRENT TRANSFORMER
- THREE-PHASE TRANSFORMER, WITH THREE WINDINGS
- NEUTRAL EARTHING RESISTOR
- SURGE ARRESTER
- CORE BALANCE CURRENT TRANSFORMER
- SURGE ARRESTOR FOR T-CONNECTOR (N.1 FOR EACH PHASE)
- VOLTAGE & CURRENT TRANSFORMER (3Ø X 2) (LPIT TYPE)
- VOLTAGE TRANSFORMER (3Ø X 2) (LPVT TYPE)
- VOLTAGE TRANSFORMER
- CABLE BOX
- T-CONNECTOR CABLE TERMINATION
- CABLE AIR TERMINATION

OLTC	= ON LOAD TAP CHANGER
OCTC	= OPEN CIRCUIT TAP CHANGER
KNAN	= NON-MINERAL OIL NATURAL AIR COOLED
AN	= AIR NATURAL
XB	= CABLE BOX
QZ	= DISCONNECT SWITCH & EARTH SWITCH
QA	= CIRCUIT BREAKER
LC	= LATCHED FUSED CONTACTOR (400A)
INT	= INTERLOCK SYSTEM
SA	= SURGE ARRESTER
CBCT	= CORE BALANCE CURRENT TRANSFORMER
ES	=EARTHING SWITCH
VD	=VOLTAGE DETECTOR
LCP	=LOCAL CONTROL PANEL
LPVT	=LOW POWER VOLTAGE TRANSFORMER
LPCT	=LOW POWER CURRENT TRANSFORMER
LPIT	=LOW POWER INSTRUMENT TRANSFORMER
JB	=JUNCTION BOX

NOTES:

1. TEMPORARY POWER SUPPLY CONNECTION BOX LOCATED ON OUTSIDE WALL OF LV SWITCHROOM / CONTAINER.
2. LOAD DEFINITION 'ESSENTIAL' / 'NON-ESSENTIAL' IS SHOWN IN THE LOAD LIST. THE CCS, EMCS AND 'SMART' SWITCHGEAR WILL OPEN / CLOSE CIRCUIT BREAKERS AS REQUIRED.
3. A COMBINED CCS/EMCS SYSTEM COMPRISES A MICROPROCESSOR BASED SYSTEM, ASSOCIATED SOFTWARE AND REQUIRED PERIPHERALS FOR MONITORING AND CONTROLLING OF ELECTRICAL POWER NETWORK. ALL ELECTRICAL EQUIPMENT AND PACKAGE UNITS SHALL BE CONNECTED TO THE CENTRAL CONTROL SYSTEM .
4. IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM SUPPLIED BY COMPANY.
5. THE SOLAR FARM IN-FEED POWER CIRCUIT BREAKERS PANEL IS LOCATED INSIDE THE LV SWITCHGEAR ROOM B-200.
6. DELETED.
7. DELETED.
8. DELETED.
9. CROSSWIND SHALL BE ABLE TO CONTROL THE BLPH 66KV MOTORISED CIRCUIT BREAKER Q0 (QA1) & MOTORISED ELECTRICAL DISCONNECTOR / EARTH SWITCH (QZ92, TYPE B) USING THEIR 'HV-SCADA' SYSTEM. THIS BACK-UP / REDUNDANT CONTROL SHALL BE ADDITIONAL TO THAT PROVIDED BY THE CCS AND BE OF HIGHER PRIORITY OVER A SEPARATE FIBRE OPTIC CABLE (FOC). THE CCS OPERATOR AND 'HV-SCADA' SHALL BOTH BE KEPT FULLY AWARE OF EQUIPMENT STATUS AT ALL TIMES. INTERTRIPPING, INHIBITS & INTERLOCKING FOR BLPH 66KV EQUIPMENT SHALL BE AS PER THE WIND FARM.
10. THE LOADS IN THE LOW VOLTAGE SWITCHGEAR AND THE CURRENT VALUES OF THE CIRCUIT BREAKERS ARE ONLY INDICATIVE.
11. NEUTRAL POINT OF TR-200ED1 SHALL NOT BE GROUNDED AS REQUIRED BY SOLAR FARM SUPPLIER IN 123A90-PML-PM-TQ-00040.

REFERENCES:

1. 123A90-DDL-EL-DG-20014 ELECTRICAL CONTROL, PROTECTION AND METERING DIAGRAMS
2. 123A90-DDL-EL-DG-20015 ELECTRICAL SINGLE LINE DIAGRAM 6.6kV SYSTEMS
3. 123A90-DDL-EL-DG-20159 ELECTRICAL SINGLE LINE DIAGRAMS LV SYSTEM
4. 123A90-DDL-EL-DG-20160 ELECTRICAL SINGLE LINE DIAGRAMS AC UPS SYSTEMS
5. 123A90-DDL-EL-DG-20161 ELECTRICAL SINGLE LINE DIAGRAMS DC UPS SYSTEMS
6. 123A90-DDL-EL-DG-20185 ELECTRICAL SINGLE LINE DIAGRAM HV SYSTEMS
7. 123A90-DDL-EL-DL-20104 ELECTRICAL EQUIPMENT LAYOUT - HV SWITCHROOM
8. 123A90-DDL-EL-DL-20105 ELECTRICAL EQUIPMENT LAYOUT - LV SWITCHROOM
9. 123A90-DDL-EL-LIS-20016 ELECTRICAL LOAD LIST and BALANCE -CCS MODE CHARGING-
10. 123A90-DDL-EL-RE-20152 ELECTRICAL EQUIPMENT SIZING CCALCULATION REPORT
11. 123A90-DDL-EL-RE-20170 ELECTRICAL SYSTEM STUDY REPORT - LOAD FLOW
12. 123A90-DDL-EL-RE-20171 ELECTRICAL SYSTEM STUDY REPORT - SHORT CIRCUIT
13. 123A90-DDL-EL-RE-20172 ELECTRICAL SYSTEM STUDY REPORT - ARC FLASH ENERGY CALCULATION
14. 123A90-DDL-EL-RE-20173 ELECTRICAL SYSTEM STUDY REPORT - HARMONICS

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	02/11/2023	DSF	CB/AMA	OYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

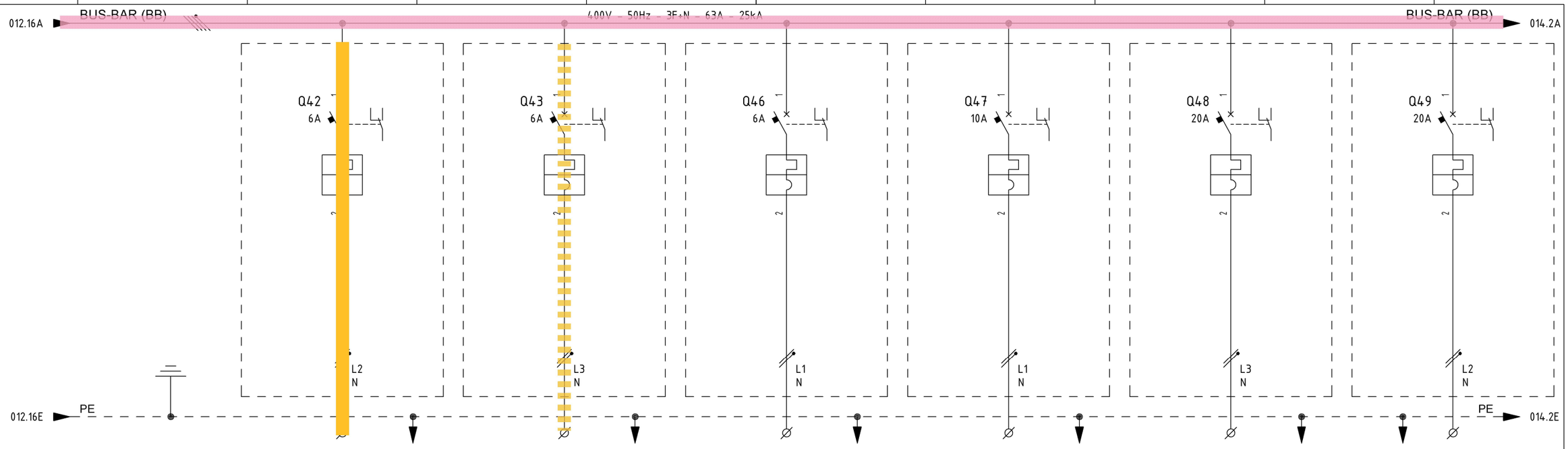
TITLE :

OVERALL/KEY SINGLE LINE DIAGRAM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE N/A
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 26/03/2023
A1	DRAWING NO. 123A90-DDL-EL-DG-20158	SHEET 001	REV. 01

01

File Name : 123A90-DDL-EL-DG-20158_REV01.dwg



ITEM				1	UP-200F4	UP-200F1	-	-	-	-
UTILITY				2	AC UPS F&G AUXILIARY	DC BATTERY SYSTEM AUXILIARY	INS CABINET - SPARE AUXILIARY	SPARE	SPARE	SPARE
CUBICLE				3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT				4/5	0.2 KW | 0.82 A	0.2 KW | 0.82 A	0.5 KW | 2.72 A	1 KW | 5.43 A	3 KW | 16.3 A	3 KW | 16.3 A
TYPICAL FUNCTIONAL				6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE			7	S302P-C6	S302P-C6	S302P-C6	S302P-C10	S302P-C20	S302P-C20
	VERSION			8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS			9	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=10A - Curve C	In=20A - Curve C	In=20A - Curve C
	Icu		KA	10	25kA	25kA	25kA	25kA	25kA	25kA
OVERLOAD	L	Range	A	11	-	-	-	-	-	-
		Range	t	12	-	-	-	-	-	-
SEL. SHORT-CIRCUIT	S	Range	A	13	-	-	-	-	-	-
		Range	t	14	-	-	-	-	-	-
INST. SHORT-CIRCUIT	I	Range	A	15	-	-	-	-	-	-
		Range	t	16	-	-	-	-	-	-
EARTH FAULT PROTECTION	G	Range	A	17	-	-	-	-	-	-
		Range	t	18	-	-	-	-	-	-
CONTACTOR (ABB)				19	-	-	-	-	-	-
THERMAL OVERLOAD RELAY (ABB)				20	-	-	-	-	-	-
SURGE ARRESTERS (DHENN)				21	-	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)				22	-	-	-	-	-	-
FUSE HOLDER (ABB)				23	-	-	-	-	-	-
TWILIGHT SWITCH (ABB)				24	-	-	-	-	-	-
VOLTMETER (FRER)				25	-	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE			26	-	-	-	-	-	-
	PERFORMANCE/CLASS			27	-	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE			28	-	-	-	-	-	-
	PERFORMANCE/CLASS			29	-	-	-	-	-	-
POWER TERM. BLOCK (CABUR)			Type/mm²	30	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 6	SCREW / 6
POWER CONDUCTOR			mm²	31	3G2.5	3G2.5	3G2.5	-	-	-

SUBSYSTEM 84-20

SUBSYSTEM 84-00

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DWG n° : 231298/SD/13

Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
2	24/04/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	15/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	08/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "DP-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

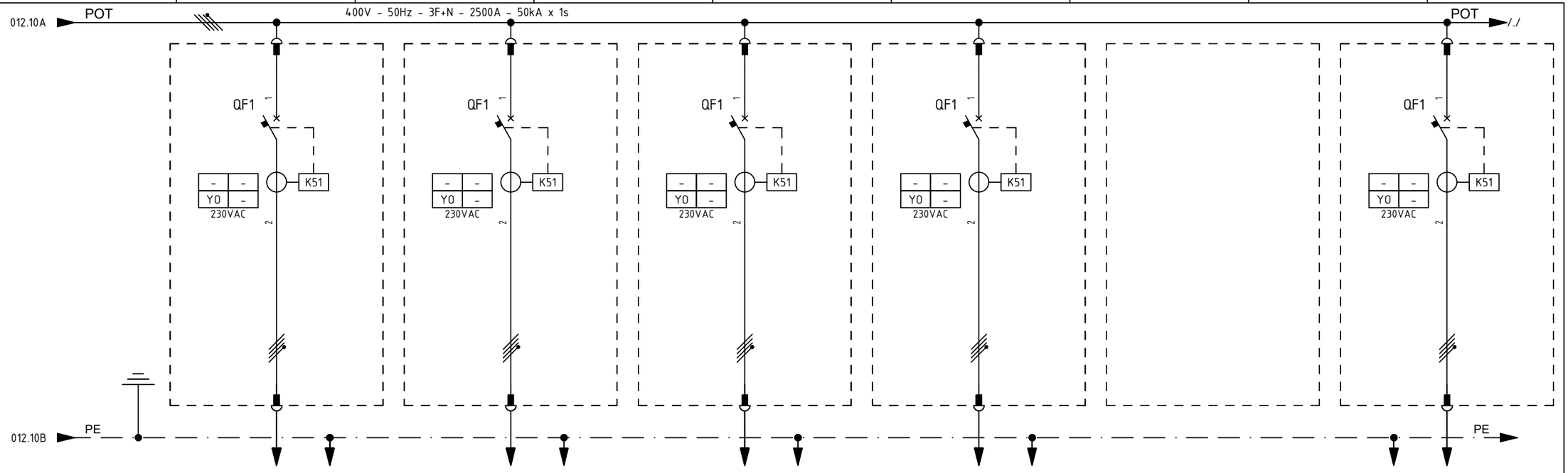
DRAWING NO. 1723002197-EL-DG-00013

SHEET 013

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00013 Rev. 03



ITEM			1	UP-200F1	UP-200F1	UP-200F2	UP-200F2		ESW-200N2
UTILITY			2	DC BATTERY SYSTEM SWTG CONTROL - FEEDER A	DC BATTERY SYSTEM SWTG CONTROL - FEEDER B	NAVAID SYSTEM FEEDER A	NAVAID SYSTEM FEEDER B		WELDING SOCKETS (LOWER DECK)
COLUMN/CUBICLE			3	A7 / +03	A7 / +04	A7 / +05	A7 / +06		A7 / +08
RATED POWER | RATED CURRENT			4/5	10 kW | 16 A	10 kW | 16 A	1.6 kVA | 7 A	1.6 kVA | 7 A		69.84 kW | 126.15 A
TYPICAL FUNCTIONAL			6	L1-63	L1-63	L1-10	L1-10		L2-160
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160		XT4S - 250
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED		4P - FIXED
	TRIP UNITS		9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)		EKIP DIP LSIG (In = 160A)
	Icu KA		10	50kA	50kA	50kA	50kA		50kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In		(0.4 - 1) x In
		Range t	12	k/I^2	k/I^2	k/I^2	k/I^2		k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In
		Range t	14	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2		0.05 - 0.4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In
		Range t	16	<= 0.02 sec	<= 0.02 sec	<= 0.02 sec	<= 0.02 sec		<= 0.02 sec
EARTH FAULT PROTECTION	G	Range A	17	(0.2 - 1) x In	(0.2 - 1) x In	(0.2 - 1) x In	(0.2 - 1) x In		(0.2 - 1) x In
		Range t	18	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec		0.1 - 0.8 sec
CONTACTOR (ABB)			19	-	-	-	-		-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-		-
SURGE ARRESTER (DEHN)			21	-	-	-	-		-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-		-
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 84.00	SUBSISTEM 84.00	SUBSISTEM 72.00	SUBSISTEM 72.00		SUBSISTEM 83.50
INDIRECT PROTECTION (ABB)			24						
VOLTMETER			25						
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-		-
	PERFORMANCE/CLASS		27	-	-	-	-		-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-		-
	PERFORMANCE/CLASS		29	-	-	-	-		-
LOCK-OUT RELAY (-)			30	-	-	-	-		-
POWER CONDUCTOR mmq			31	4G16	4G16	3G16	3G16		5G50

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DWG n° : 231298/SD/11

Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
2	03/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	28/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	15/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 013

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00011 Rev. 03

AEGPS_DOC_REV01
CAE EPLAN Electric P8
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+REC1
UP-200F1 A

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

SS:8400

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;L3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-A320
INTERFACE

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

-R3
100mV
130A

-Q3
160A

BATTERY
110Vdc
-X3
+/-
70 mm²

Battery
symmetry
-X31
+/-
4 mm²

-A10
BATTERY SIMMETRY
FAULT

-L+/-
2P 125A
BUS BAR
110 VDC

+BP
BATTERY PROTECTION

+BAT

2 (1x25) mm2

-F100
Plastic
box 80*80

-SD1

-SD2

-Q10
50A-C
-X2 1+/1-
16 mm²
3G16 mm2
amoured cable
SS 8110
(+REC1-A1 /1.4) / SD1

CP-100F1
DC CONTROL 66kV G/S
LINE A-5.2KW

-Q11
20A-C
-X2 2+/2-
16 mm²
3G16 mm2
amoured cable
SS 8110
(+REC2-A1 /1.4) / SD2

CP-100F1
DC CONTROL 66kV G/S
LINE B-2KW

-Q12
16A-C
-X2 3+/3-
16 mm²
3G16 mm2
amoured cable
SS 8200

SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE A-1KW

-Q13
16A-C
-X2 4+/4-
16 mm²
3G16 mm2
amoured cable
SS 8200

SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE B-1KW

-Q14
50A-C
-X2 5+/5-
16 mm²
SPARE 5,5KW

-Q15
20A-C
-X2 6+/6-
16 mm²
SPARE 2KW

-Q16
16A-C
-X2 7+/7-
16 mm²
SPARE 1KW

-F10/F11
DEHNguard

-A21
EARTH +/-

-A1
GCAU
CONTROL UNIT

-A5.1
Relays

-CR1-X5

-A71

-A300
DISPLAY

-A310
KEY PAD

-A73
MODBUS-TCP/IP

-A8
Isolated

-KF
PSR-SCP- 24DC / SIL3

SD1 / (+BAT-SD1 /1.8)

-Z2
400V

-Q6
02A-C

-H3

-Q7
02A-C

-THF4
0/60ºC

-E50
100W

AUXILIARY SUPPLY
230Vac-50Hz

-X7
L/N
6 mm²
3G2.5 mm2
unamoured cable

-X8
4 mm²
CHARGERS
INTERCONNECTION

2,5 mm²

INTERCONNECTION
50 mm²
-X6
PH4 35 mm²

-A8
(+REC1-CR1-J13:1 /1.4)

+REC2
UP-200F1 B
-M1/2
220-240 Vca
50-60Hz
FAN
-PR2-TH1
THERMOSTAT 100º
-PR2-TH2
THERMOSTAT 90º
-PR1-TH1
THERMOSTAT 100º
-PR1-TH2
THERMOSTAT 90º
Charger
100A 12Pulses
-Z1
0/450V
-X1
L1
70 mm²
4G16 mm2
unamoured cable
MAINS
3x400Vac 50Hz -50kA
L1;L2;L3;PE
-Q1
50A
-T1
110V/100A
019.6KVA
-PR2
TPC
-PR1
TPC
-A320
INTERFACE
-R2
100mV
130A
-C1
3x6800µF
160V
Filtering 1%
-F1
NH00
125A
-V21
100A
-Q2
160A
-A1
GCAU
CONTROL UNIT
-A5.1
Relays
-CR1-X5
-A71
-A300
DISPLAY
-A310
KEY PAD
-A73
MODBUS-TCP/IP
-A8
Isolated
-KF
PSR-SCP- 24DC / SIL3
SD2 / (+BAT-SD2 /1.8)
-Z2
400V
-Q6
02A-C
-H3
-Q7
02A-C
-THF4
0/60ºC
-E50
100W
AUXILIARY SUPPLY
230Vac-50Hz
-X7
L/N
6 mm²
-X8
4 mm²
CHARGERS
INTERCONNECTION
2,5 mm²
INTERCONNECTION
-X6
50 mm²
-A8
(+REC2-X8 /1.4)
A8 / (+REC2-X8 /1.4)
-A10
BATTERY SIMMETRY
FAULT
Battery
symmetry
-X31
+/-
4 mm²

ES521464

				Date	21/03/2024	3W POWER S.P.A.	AEG POWER SOLUTIONS	Single-line	1724000372-EL-DG-00006	= System
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm				+ 8 / 47
				Checked	JOP			System		& EFA A3 Sheet 1
Stat	Alteration	Date	Name	Standard					ES521464 en	Sheets 1

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:	3		Issued on:	2025-04-23	

System:	84	/	Battery & No-Break System
SubSystem:	84-00	/	DC 10 kVA UPS System (UP-200F1)

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	2025-04-24	2025-04-25
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-24T08:44:57.039Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-25T13:55:15.317Z

CROSSWIND

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Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00 & process: COMM

Electrical	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A7/+03-QF1	DRAWER INCOMER A UPS - A7/+03-QF1	ONSHORE	C10002782	FP00	100	2024-11-08	RFO 3
		ONSHORE	C10002783	FTR-2	100	2024-09-20	RFO 3
		ONSHORE	C10002784	FTR-6	100	2024-10-02	RFO 3
		ONSHORE	C10003004	FTR-5	100	2025-04-22	RFO 3
A7/+04-QF1	DRAWER INCOMER B UPS - A7/+04-QF1	ONSHORE	C10002785	FP00	100	2024-11-08	RFO 3
		ONSHORE	C10002786	FTR-2	100	2024-09-20	RFO 3
		ONSHORE	C10002787	FTR-6	100	2024-10-02	RFO 3
		ONSHORE	C10003005	FTR-5	100	2025-04-22	RFO 3
BA-200F1	Battery Bank for DC UPS 10 kVA	ONSHORE	C10002794	FTR-3	100	2024-11-18	RFO 3
BA-200F1-C	UPS DC - BA-200F1-C	ONSHORE	C10002792	FTR-4	100	2024-11-12	RFO 3
BA-200F1-D	UPS DC - BA-200F1-D	ONSHORE	C10002793	FTR-4	100	2024-11-12	RFO 3
CB-200F1-QB	BATTERY CUTOFF UPS DC - CB-200F1-QB	ONSHORE	C10002788	FTR-2	100	2024-11-08	RFO 3
DP-200N1-Q43	BREAKER AUX UPS DC - DP-200N1-Q43	ONSHORE	C10002789	FTR-2	100	2024-10-28	RFO 3
UP-200F1	DC UPS 10 kVA Redundant System	ONSHORE	C10002790	FP16B	100	2025-03-12	RFO 3
		ONSHORE	C10002791	FTR-6	100	2025-03-12	RFO 3
UP-200F1-Q14	SPARE	ONSHORE	C10004595	FTR-2	100	2024-11-08	RFO 3
UP-200F1-Q15	SPARE	ONSHORE	C10004596	FTR-2	100	2024-11-08	RFO 3
UP-200F1-Q16	SPARE	ONSHORE	C10004597	FTR-2	100	2024-11-08	RFO 3

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00 & process: COMM

Instrumental	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
84-XS-006	DISCONNECT DC UPS (B-100 CONTAINER)	ONSHORE	C10003818	FJ01D	100	2025-01-28	RFO 3
84-XS-009	INHIBIT. BATTERY CHARGING B-100	ONSHORE	C10003813	FJ01D	100	2025-01-28	RFO 3

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00 & process: COMM

Miscellaneous	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03050	OTP - UPS System UP-200F1 10kVA	ONSHORE	C10004627	5300	100	2025-04-19	-
		OFFSHORE	C10004948	5300	0	-	-

CROSSWIND

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Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-00	DC 10 kVA UPS System (UP-200F1)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000915	A	C-CB-200F1/B400-SIS-001 C10000192	Missing thermoshrink on cable entry CB-200F1 side.	.		Pschintu 2024-11-25	2024-12-04	Ecarotenuto 2024-12-04	2024-12-04
C30000912	B	C-CB-200F1/B400-SIS-001 C10000192	Missing cable tag outside B-400-SIS-001 panel	.		Pschintu 2024-11-25	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30001097	B	C-UP-200F1/B400-SIS-001 C10000193	Missing core identification tag by UP-200F1 side	.		Pschintu 2024-11-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30001098	B	C-UP-200F1/B400-SIS-001 C10000193	Missing SS cable tag	.		Pschintu 2024-11-30	2025-01-07	Gtangianu 2025-01-07	2025-01-07

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-00	DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000009	B	UP-200F1	AEG has to make sure that all parts are safely protected (IP2X)		INSTALLED PROTECTION	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000010	B	UP-200F1	Hardware and configuration of alarm for external battery protection box breaker to be included		DONE_IMPLEMENTED	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000011	B	UP-200F1	Terminals of Adapter RJ45 to be screwed (new customer requirement)		INSTALLED	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000012	B	UP-200F1	Pictures of all spare parts and interconnections to be provided before shipping		PROVIDED AND DELIVERED	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000013	B	UP-200F1	As-Built drawings with all final changes to be re-submitted: 1724000372-EL-DA-00003/1724000372-EL-DG-0			SLinari 2024-07-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000252	B	83034-CEL C10000559	Cable gland to be tighten after correction of Bending radius of cable on UP-200F1	-		Gtangianu 2024-10-24	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000253	B	83034-CEL C10000559	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000254	B	83034-CEL C10000559	Missing cable tags on internal and external side of MCT	-		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000255	B	83034-CEL C10000559	Plastic cable ties to be replaced on external routing	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System
SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000256	B	83035-CEL C10000560	Missing cable tags on internal and external side of MCT	-		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000257	B	83035-CEL C10000560	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000258	B	83035-CEL C10000560	Cable gland to be tighten after correction of Bending radius of cable on UP-200F1	-		Gtangianu 2024-10-24	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000259	B	83035-CEL C10000560	Plastic cable ties to be replaced on external routing	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000267	B	83124-CEL C10002110	Plastic cable ties to be replaced on external routing	.		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000268	B	83124-CEL C10002110	Cable to be fixed with proper cable ties, after MCT installation of the panel DP-200N1	.		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000269	B	83124-CEL C10002110	Wrong core identification tag on both cable's termination	.		Gtangianu 2024-10-24	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000270	B	84111-CEL-1-P C10000658	Missing core identification tag BC-200F1 side	-		Gtangianu 2024-10-25	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000271	B	84111-CEL-1-P C10000658	Cable tag is wrong inside and outside CB-200F1	-		Gtangianu 2024-10-25	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000272	B	84111-CEL-1-P C10000658	Bending radius of the cable to be correct on cable gland ingress above BC-200F1	-		Gtangianu 2024-10-25	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000273	B	84111-CEL-1-N C10000659	Missing core identification tag BC-200F1 side	.		Gtangianu 2024-10-25	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000274	B	84111-CEL-1-N C10000659	Bending radius of the cable to be correct on cable gland ingress above BC-200F1	.		Gtangianu 2024-10-25	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000275	B	84111-CEC C10002342	Core identification tag are missing or wrong on both termination. (CB-200F1 to BC-200F1B)	.		Gtangianu 2024-10-25	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000276	B	84111-CEC C10002342	Missing identification number of terminal trip X32 inside the panel BC-200F1B (UP-200F1B)	.		Gtangianu 2024-10-25	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000277	B	84111-CEC C10002342	Missing cable tags inside and outside both panels (CB-200F1 to BC-200F1B)	.		Gtangianu 2024-10-25	2024-12-28	Gtangianu 2024-12-28	2024-12-28
C30000281	B	UP-200F1 C10000870	Cleaning is required inside the panels.	.		Gtangianu 2024-10-30	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000282	B	CB-200F1 C10000853	Missing thermo shrink on internal earthing connection	-		Gtangianu 2024-10-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000283	B	BA-200F1 C10000846	Missing tags on Battery Bank	.		Gtangianu 2024-10-30	2025-02-04	Gtangianu 2025-02-04	2025-02-04

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System
SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000284	B	BA-200F1 C10000846	Missing plastic Cover on SS jumper between cell 9 and 10. Plastic cover on SS jumper between cells 5 and6 is damaged.	.		Gtangianu 2024-10-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000285	B	84110-CEC C10002341	Missing core identification tag on spare wires inside UP-200F1B	.		Gtangianu 2024-10-30	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000286	B	84110-CEC C10002341	Missing cable tag inside BC_200F1A	.		Gtangianu 2024-10-30	2024-12-18	Gtangianu 2024-12-18	2024-12-18

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-00	DC 10 kVA UPS System (UP-200F1)

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000789	B	UP-200F1/B400 -NET-001.01 C10004368	Identification cable tag missing inside UP-200F1 connection.	.		Gtangianu 2024-11-22	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000790	B	UP-200F1/B400 -NET-001.02 C10004369	Identification tag wire missing inside UP-200F1 connection.	.		Gtangianu 2024-11-22	2024-12-18	Gtangianu 2024-12-18	2024-12-18

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

1 2 3 4 5 6 7 8 9 10

A

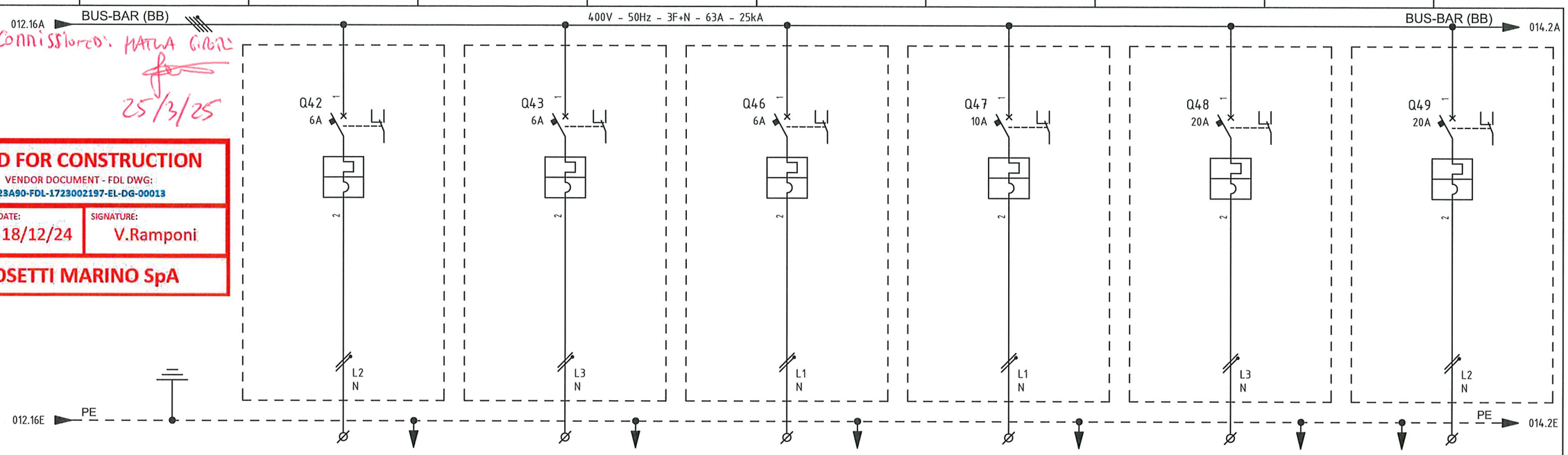
AS Commissioned. NATALIA GIBIL
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1723002197-EL-DG-00013

REV.:	DATE:	SIGNATURE:
4_A	18/12/24	V.Ramponi

ROSETTI MARINO SpA

B



C

ITEM			1	UP-200F4		UP-200F1		-		-		-		-	
UTILITY			2	AC UPS F&G AUXILIARY		DC BATTERY SYSTEM AUXILIARY		INS CABINET - SPARE AUXILIARY		SPARE		SPARE		SPARE	
CUBICLE			3	+03		+03		+03		+03		+03		+03	
RATED POWER	RATED CURRENT		4/5	0.2 KW	0.82 A	0.2 KW	0.82 A	0.5 KW	2.72 A	1 KW	5.43 A	3 KW	16.3 A	3 KW	16.3 A
TYPICAL FUNCTIONAL			6	-		-		-		-		-		-	
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6		S302P-C6		S302P-C6		S302P-C10		S302P-C20		S302P-C20	
	VERSION		8	2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE	
	TRIP UNITS		9	In=6A - Curve C		In=6A - Curve C		In=6A - Curve C		In=10A - Curve C		In=20A - Curve C		In=20A - Curve C	
	Icu	KA	10	25kA		25kA		25kA		25kA		25kA		25kA	
OVERLOAD	L	Range A	11	-		-		-		-		-		-	
		Range t	12	-		-		-		-		-		-	
SEL. SHORT-CIRCUIT	S	Range A	13	-		-		-		-		-		-	
		Range t	14	-		-		-		-		-		-	
INST. SHORT-CIRCUIT	I	Range A	15	-		-		-		-		-		-	
		Range t	16	-		-		-		-		-		-	
EARTH FAULT PROTECTION	G	Range A	17	-		-		-		-		-		-	
		Range t	18	-		-		-		-		-		-	
CONTACTOR (ABB)			19	-		-		-		-		-		-	
THERMAL OVERLOAD RELAY (ABB)			20	-		-		-		-		-		-	
SURGE ARRESTERS (DHENN)			21	-		-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-		-	
FUSE HOLDER (ABB)			23	-		-		-		-		-		-	
TWILIGHT SWITCH (ABB)			24	-		-		-		-		-		-	
VOLTMETER (FRER)			25	-		-		-		-		-		-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-		-	
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 6		SCREW / 6	
POWER CONDUCTOR		mm²	31	3G2.5		3G2.5		3G2.5		-		-		-	

D

E

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231298/SD/13
Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
4	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
3	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
2	24/04/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	15/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	08/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "DP-200N1"
SINGLE LINE DIAGRAM
Single Line Drawing

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

SCALE : NTS

A3

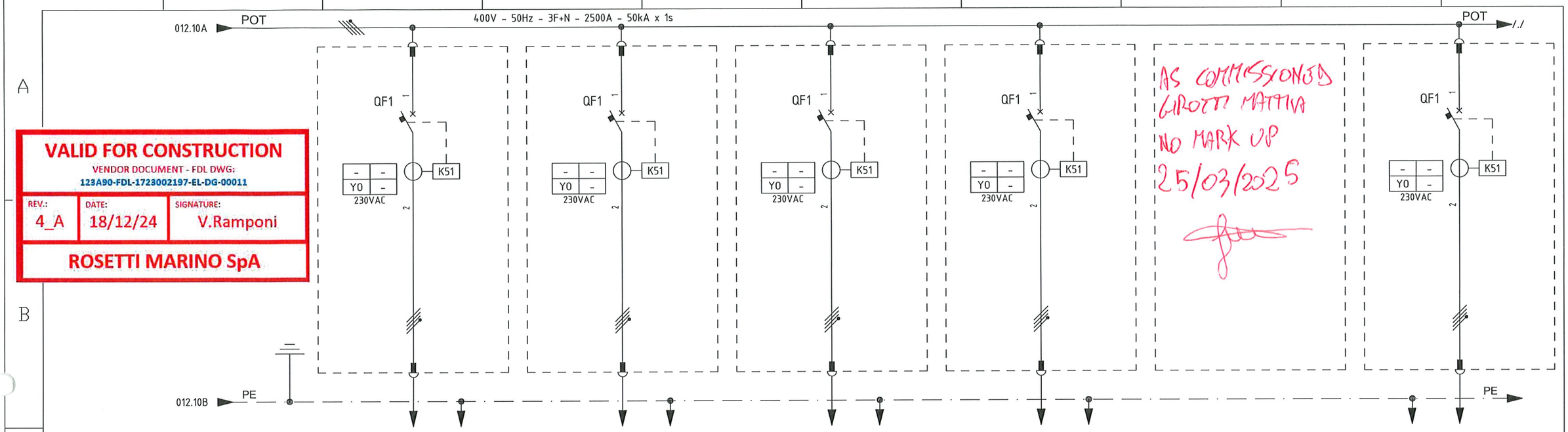
DRAWING NO. 1723002197-EL-DG-00013

SHEET 013

REV. 04

File Name : 1723002197-EL-DG-00013 Rev. 04

F.to UNI A3: 420mmx297mm



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1723002197-EL-DG-00011

REV.:	DATE:	SIGNATURE:
4_A	18/12/24	V.Ramponi

ROSETTI MARINO SpA

ITEM				1	UP-200F1	UP-200F1	UP-200F2	UP-200F2		ESW-200N2
UTILITY				2	DC BATTERY SYSTEM SWTG CONTROL - FEEDER A	DC BATTERY SYSTEM SWTG CONTROL - FEEDER B	NAVAID SYSTEM FEEDER A	NAVAID SYSTEM FEEDER B		WELDING SOCKETS (LOWER DECK)
COLUMN/CUBICLE				3	A7 / +03	A7 / +04	A7 / +05	A7 / +06		A7 / +08
RATED POWER | RATED CURRENT				4/5	10 kW | 16 A	10 kW | 16 A	1.6 kVA | 7 A	1.6 kVA | 7 A		69.84 kW | 126.15 A
TYPICAL FUNCTIONAL				6	L1-63	L1-63	L1-63	L1-63		L2-160
CIRCUIT BREAKER (ABB)	TYPE			7	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160		XT4S - 250
	VERSION			8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED		4P - FIXED
	TRIP UNITS			9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)		EKIP DIP LSIG (In = 160A)
	Icu		KA	10	50kA	50kA	50kA	50kA		50kA
OVERLOAD	L	Range	A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In		(0.4 - 1) x In
		Range	t	12	k/I^2	k/I^2	k/I^2	k/I^2		k/I^2
SEL. SHORT-CIRCUIT	S	Range	A	13	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In
		Range	t	14	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2		0.05 - 0.4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range	A	15	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In
		Range	t	16	<= 0.02 sec	<= 0.02 sec	<= 0.02 sec	<= 0.02 sec		<= 0.02 sec
EARTH FAULT PROTECTION	G	Range	A	17	(0.2 - 1) x In	(0.2 - 1) x In	(0.2 - 1) x In	(0.2 - 1) x In		(0.2 - 1) x In
		Range	t	18	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec		0.1 - 0.8 sec
CONTACTOR (ABB)				19	-	-	-	-		-
THERMAL OVERLOAD RELAY (ABB)				20	-	-	-	-		-
SURGE ARRESTER (DEHN)				21	-	-	-	-		-
TOROIDAL CURRENT TRANSFORMER (FRER)				22	-	-	-	-		-
FUSE HOLDER (ITALWEBER)				23	-	-	-	-		-
INDIRECT PROTECTION (ABB)				24	-	-	-	-		-
VOLTMETER				25	-	-	-	-		-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE			26	-	-	-	-		-
	PERFORMANCE/CLASS			27	-	-	-	-		-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE			28	-	-	-	-		-
	PERFORMANCE/CLASS			29	-	-	-	-		-
LOCK-OUT RELAY (-)				30	-	-	-	-		-
POWER CONDUCTOR			mmq	31	4G16	4G16	3G16	3G16		5G50

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/11
Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
4	28/08/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
3	08/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
2	03/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	28/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	15/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 013

REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00011 Rev. 04

AEGPS_DOC_REV01
CAE EPLAN Electric P8
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1 2 3 4 5 6 7 8

+REC1
UP-200F1 A

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1 THERMOSTAT 100º
-PR2-TH2 THERMOSTAT 90º
-PR1-TH1 THERMOSTAT 100º
-PR1-TH2 THERMOSTAT 90º

Charger
100A 12Pulses

-Z1 0/450V
-X1 L1
MAINS 3x400Vac 50Hz -50kA
70 mm²
4G16 mm2
unamoured cable
L1;L2;L3;PE
-Q1
50A
-T1
110V/100A
019.6KVA
-PR2
-PR1
-R2 100mV 130A
-C1 3x6800µF 160V Filtering 1%
-F1 NH00 125A
-V21 100A
-Q2 160A
-R3 100mV 130A
-Q3 160A

BATTERY 110Vdc
-X3 +/-
70 mm²
Battery symmetry
-X31 +/-
4 mm²

-A10 BATTERY SIMMETRY FAULT

-L+/-
2P 125A BUS BAR 110 VDC

+BP BATTERY PROTECTION
2 (1x25) mm2
-F100 Plastic box 80*80
+BAT
-SD1
-SD2

-PR2-A2 TPC
-A320 INTERFACE
-PR1-A2 TPC

SD1 / (+BAT-SD1 /1.8)

-A1 GCAU CONTROL UNIT
-A5.1 Relays
-CR1-X5
-A71
-A300 DISPLAY
-A73 MODBUS-TCP/IP
-A8 Isolated
-A310 KEY PAD
-KF PSR-SCP- 24DC / SIL3

FOR COMM. PURPOSE ONLY
DC / DC
-Z2 400V

-Q10 50A-C
-Q11 20A-C
-Q12 16A-C
-Q13 16A-C
-Q14 50A-C
-Q15 20A-C
-Q16 16A-C

-X2 1+/1 16 mm² 3G16 mm2 amoured cable (+REC1-A1 /1.4) / SD1
CP-100F1 DC CONTROL 66kV G/S LINE A-5.2KW
-X2 2+/2 16 mm² 3G16 mm2 amoured cable (+REC2-A1 /1.4) / SD2
CP-100F1 DC CONTROL 66kV G/S LINE B-2KW
-X2 3+/3 16 mm² 3G16 mm2 amoured cable
SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE A-1KW
-X2 4+/4 16 mm² 3G16 mm2 amoured cable
SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE B-1KW
-X2 5+/5 16 mm² SPARE 5,5KW
-X2 6+/6 16 mm² SPARE 2KW
-X2 7+/7 16 mm² SPARE 1KW

-F10/F11 DEHNguard
-A21 EARTH +/-

AUXILIARY SUPPLY 230Vac-50Hz
-X7 L/N
6 mm²
3G2.5 mm2
unamoured cable
-Q6 02A-C
-H3
-Q7 02A-C
-THF4 0/60ºC
-E50 100W

-X8 4 mm² CHARGERS INTERCONNECTION
2,5 mm²
INTERCONNECTION -X6 50 mm²
PH4 35 mm²

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
25/03/2025

+REC2
UP-200F1 B
-M1/2 220-240 Vca 50-60Hz FAN
-PR2-TH1 THERMOSTAT 100º
-PR2-TH2 THERMOSTAT 90º
-PR1-TH1 THERMOSTAT 100º
-PR1-TH2 THERMOSTAT 90º
Charger 100A 12Pulses
-Z1 0/450V
-X1 L1
MAINS 3x400Vac 50Hz -50kA
70 mm²
4G16 mm2
unamoured cable
L1;L2;L3;PE
-Q1 50A
-T1 110V/100A 019.6KVA
-PR2 -PR1
-R2 100mV 130A
-C1 3x6800µF 160V Filtering 1%
-F1 NH00 125A
-V21 100A
-Q2 160A
-PR2-A2 TPC
-A320 INTERFACE
-PR1-A2 TPC
SD2 / (+BAT-SD2 /1.8)
-A1 GCAU CONTROL UNIT
-A5.1 Relays
-CR1-X5
-A71
-A300 DISPLAY
-A73 MODBUS-TCP/IP
-A8 Isolated
-A310 KEY PAD
A8 / (+REC2-X8 /1.4)
AUXILIARY SUPPLY 230Vac-50Hz
-X7 L/N 6 mm²
-Q6 02A-C
-H3
-Q7 02A-C
-THF4 0/60ºC
-E50 100W
-X8 4 mm² CHARGERS INTERCONNECTION
-A8 (+REC1-CR1-J13:1 /1.4)
2,5 mm²
INTERCONNECTION -X6 50 mm²
-A10 BATTERY SIMMETRY FAULT
Battery symmetry -X31 +/- 4 mm²
-F10/F11 DEHNguard
-A21 EARTH +/-
2,5 mm²

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00008

REV.:	DATE:	SIGNATURE:
3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

ES521464

				Date	21/03/2024	3W POWER S.P.A.	
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm	
				Checked	JOP		
Stat	Alteration	Date	Name	Standard			

AEG POWER SOLUTIONS

Single-line System

1724000372-EL-DG-00006

ES521464 en

= System
+
& EFA

A3

8 / 47
Sheet 1
Sheets 1

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000915	A	C-CB-200F1/B400-SIS-001 C10000192	Missing thermoshrink on cable entry CB-200F1 side.	.		Pschintu 2024-11-25	2024-12-04	Ecarotenuto 2024-12-04	2024-12-04
C30000912	B	C-CB-200F1/B400-SIS-001 C10000192	Missing cable tag outside B-400-SIS-001 panel	.		Pschintu 2024-11-25	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30001097	B	C-UP-200F1/B400-SIS-001 C10000193	Missing core identification tag by UP-200F1 side	.		Pschintu 2024-11-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30001098	B	C-UP-200F1/B400-SIS-001 C10000193	Missing SS cable tag	.		Pschintu 2024-11-30	2025-01-07	Gtangianu 2025-01-07	2025-01-07

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000009	B	UP-200F1	AEG has to make sure that all parts are safely protected (IP2X)		INSTALLED PROTECTION	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000010	B	UP-200F1	Hardware and configuration of alarm for external battery protection box breaker to be included		DONE_IMPLEMENTED	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000011	B	UP-200F1	Terminals of Adapter RJ45 to be screwed (new customer requirement)		INSTALLED	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000012	B	UP-200F1	Pictures of all spare parts and interconnections to be provided before shipping		PROVIDED AND DELIVERED	SLinari 2024-07-30	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000013	B	UP-200F1	As-Built drawings with all final changes to be re-submitted: 1724000372-EL-DA-00003/1724000372-EL-DG-0			SLinari 2024-07-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000252	B	83034-CEL C10000559	Cable gland to be tighten after correction of Bending radius of cable on UP-200F1	-		Gtangianu 2024-10-24	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000253	B	83034-CEL C10000559	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000254	B	83034-CEL C10000559	Missing cable tags on internal and external side of MCT	-		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000255	B	83034-CEL C10000559	Plastic cable ties to be replaced on external routing	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000256	B	83035-CEL C10000560	Missing cable tags on internal and external side of MCT	-		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000257	B	83035-CEL C10000560	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000258	B	83035-CEL C10000560	Cable gland to be tighten after correction of Bending radius of cable on UP-200F1	-		Gtangianu 2024-10-24	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000259	B	83035-CEL C10000560	Plastic cable ties to be replaced on external routing	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000267	B	83124-CEL C10002110	Plastic cable ties to be replaced on external routing	.		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000268	B	83124-CEL C10002110	Cable to be fixed with proper cable ties, after MCT installation of the panel DP-200N1	.		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000269	B	83124-CEL C10002110	Wrong core identification tag on both cable's termination	.		Gtangianu 2024-10-24	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000270	B	84111-CEL-1-P C10000658	Missing core identification tag BC-200F1 side	-		Gtangianu 2024-10-25	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000271	B	84111-CEL-1-P C10000658	Cable tag is wrong inside and outside CB-200F1	-		Gtangianu 2024-10-25	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000272	B	84111-CEL-1-P C10000658	Bending radius of the cable to be correct on cable gland ingress above BC-200F1	-		Gtangianu 2024-10-25	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000273	B	84111-CEL-1-N C10000659	Missing core identification tag BC-200F1 side	.		Gtangianu 2024-10-25	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000274	B	84111-CEL-1-N C10000659	Bending radius of the cable to be correct on cable gland ingress above BC-200F1	.		Gtangianu 2024-10-25	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000275	B	84111-CEC C10002342	Core identification tag are missing or wrong on both termination. (CB-200F1 to BC-200F1B)	.		Gtangianu 2024-10-25	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000276	B	84111-CEC C10002342	Missing identification number of terminal trip X32 inside the panel BC-200F1B (UP-200F1B)	.		Gtangianu 2024-10-25	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000277	B	84111-CEC C10002342	Missing cable tags inside and outside both panels (CB-200F1 to BC-200F1B)	.		Gtangianu 2024-10-25	2024-12-28	Gtangianu 2024-12-28	2024-12-28
C30000281	B	UP-200F1 C10000870	Cleaning is required inside the panels.	.		Gtangianu 2024-10-30	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000282	B	CB-200F1 C10000853	Missing thermo shrink on internal earthing connection	-		Gtangianu 2024-10-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000283	B	BA-200F1 C10000846	Missing tags on Battery Bank	.		Gtangianu 2024-10-30	2025-02-04	Gtangianu 2025-02-04	2025-02-04

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System
SUBSYSTEM 84-00 DC 10 kVA UPS System (UP-200F1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000284	B	BA-200F1 C10000846	Missing plastic Cover on SS jumper between cell 9 and 10. Plastic cover on SS jumper between cells 5 and6 is damaged.	.		Gtangianu 2024-10-30	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000285	B	84110-CEC C10002341	Missing core identification tag on spare wires inside UP-200F1B	.		Gtangianu 2024-10-30	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000286	B	84110-CEC C10002341	Missing cable tag inside BC_200F1A	.		Gtangianu 2024-10-30	2024-12-18	Gtangianu 2024-12-18	2024-12-18

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-00	DC 10 kVA UPS System (UP-200F1)

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000789	B	UP-200F1/B400 -NET-001.01 C10004368	Identification cable tag missing inside UP-200F1 connection.	.		Gtangianu 2024-11-22	2025-03-06	JKrizanic 2025-03-06	2025-03-06
C30000790	B	UP-200F1/B400 -NET-001.02 C10004369	Identification tag wire missing inside UP-200F1 connection.	.		Gtangianu 2024-11-22	2024-12-18	Gtangianu 2024-12-18	2024-12-18

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000267

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002110	1.4 Discipline	Electrical
1.2 Item	83124-CEL		Lighting & Small Power DB BoP / DC BATTERY SYSTEM AUXILIARY
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Plastic cable ties to be replaced on external routing

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000268

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002110	1.4 Discipline	Electrical
1.2 Item	83124-CEL		Lighting & Small Power DB BoP / DC BATTERY SYSTEM AUXILIARY
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Cable to be fixed with proper cable ties, after MCT installation of the panel DP-200N1

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Fixed.

Name: Giovanni Tangianu

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000269

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002110	1.4 Discipline	Electrical
1.2 Item	83124-CEL		Lighting & Small Power DB BoP / DC BATTERY SYSTEM AUXILIARY
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Wrong core identification tag on both cable's termination

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000270

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000658	1.4 Discipline	Electrical
1.2 Item	84111-CEL-1-P		DC UPS - Charger / DC UPS - Battery Isolator
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Missing core identification tag BC-200F1 side

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000271

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000658	1.4 Discipline	Electrical
1.2 Item	84111-CEL-1-P		DC UPS - Charger / DC UPS - Battery Isolator
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Cable tag is wrong inside and outside CB-200F1

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto

Date: 2024-12-14

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000272

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000658	1.4 Discipline	Electrical
1.2 Item	84111-CEL-1-P	DC UPS - Charger / DC UPS - Battery Isolator	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Bending radius of the cable to be correct on cable gland ingress above BC-200F1

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto

Date: 2024-12-14

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000273

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000659	1.4 Discipline	Electrical
1.2 Item	84111-CEL-1-N		DC UPS - Charger / DC UPS - Battery Isolator
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Missing core identification tag BC-200F1 side

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000274

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000659	1.4 Discipline	Electrical
1.2 Item	84111-CEL-1-N	DC UPS - Charger / DC UPS - Battery Isolator	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Bending radius of the cable to be correct on cable gland ingress above BC-200F1

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto

Date: 2024-12-14

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000275

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002342	1.4 Discipline	Electrical
1.2 Item	84111-CEC		Isolation Battery Box for DC UPS 10 kVA / DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Core identification tag are missing or wrong on both termination. (CB-200F1 to BC-200F1B)

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000276

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002342	1.4 Discipline	Electrical
1.2 Item	84111-CEC	Isolation Battery Box for DC UPS 10 kVA / DC UPS 10 kVA Redundant System	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing identification number of terminal trip X32 inside the panel BC-200F1B (UP-200F1B)

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name: Josip Krizanic

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000277

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002342	1.4 Discipline	Electrical
1.2 Item	84111-CEC		Isolation Battery Box for DC UPS 10 kVA / DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Missing cable tags inside and outside both panels (CB-200F1 to BC-200F1B)

Name: Giovanni Tangianu

Date: 2024-10-25

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	2024-10-25
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:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000281

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000870	1.4 Discipline	Electrical
1.2 Item	UP-200F1	DC UPS 10 kVA Redundant System	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Cleaning is required inside the panels.

Name: Giovanni Tangianu

Date: 2024-10-30

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	2024-10-30
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done

Name: Luca Mussi

Date: 2024-11-21

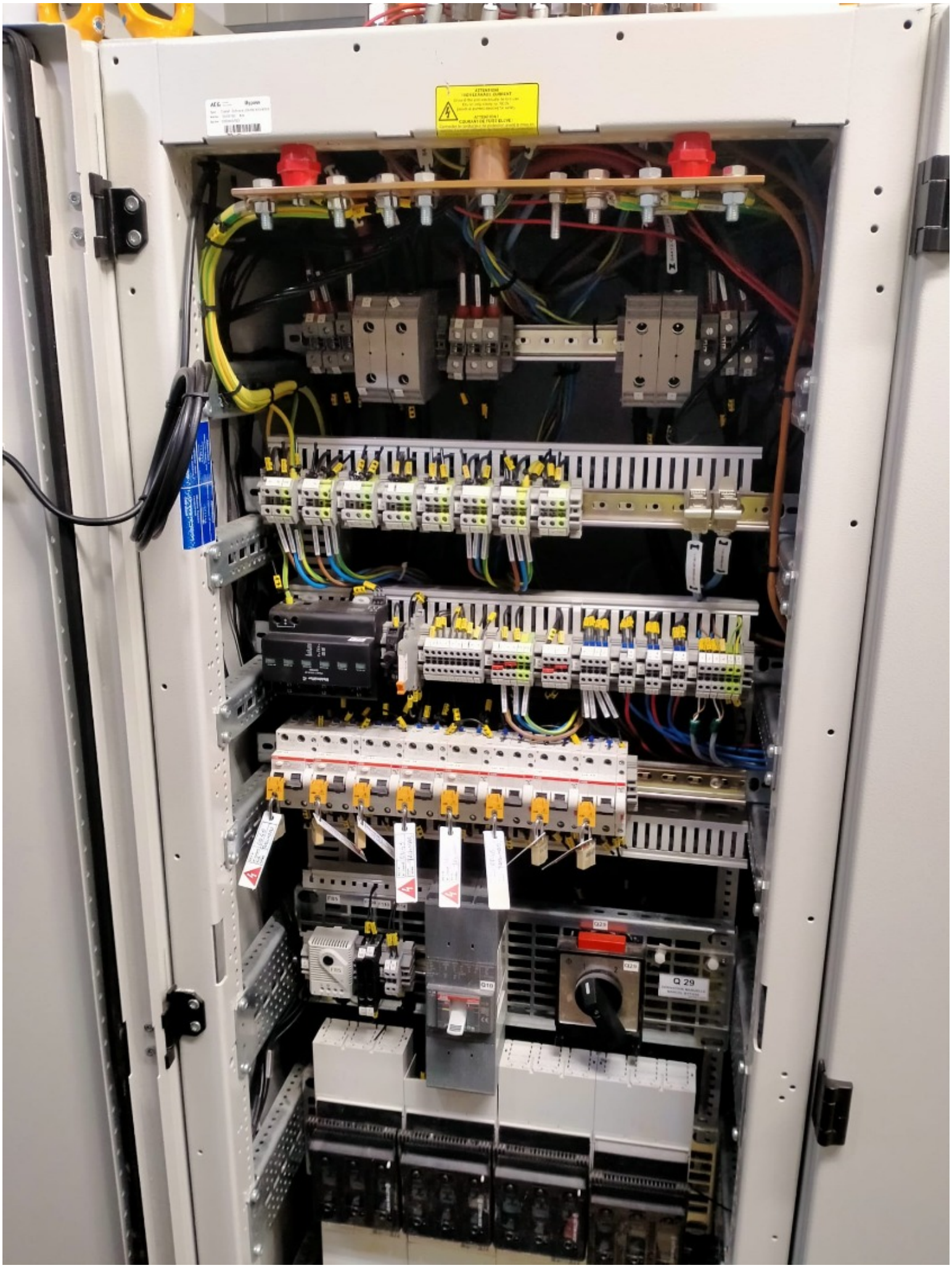
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


Q 29


Q29
Q29
Q 29
Q10
F85

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000282

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000853	1.4 Discipline	Electrical
1.2 Item	CB-200F1	Isolator Battery Box for DC UPS 10 kVA	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing thermo shrink on internal earthing connection

Name: Giovanni Tangianu

Date: 2024-10-30

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	2024-10-30
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name: Josip Krizanic

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000283

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000846	1.4 Discipline	Electrical
1.2 Item	BA-200F1	Battery Bank for DC UPS 10 kVA	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing tags on Battery Bank

Name: Giovanni Tangianu

Date: 2024-10-30

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	2024-10-30
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000284

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000846	1.4 Discipline	Electrical
1.2 Item	BA-200F1	Battery Bank for DC UPS 10 kVA	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing plastic Cover on SS jumper between cell 9 and 10.
Plastic cover on SS jumper between cells 5 and6 is damaged.

Name: Giovanni Tangianu
Date: 2024-10-30
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	2024-10-30
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name: Josip Krizanic
Date: 2025-03-06
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000285

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002341	1.4 Discipline	Electrical
1.2 Item	84110-CEC		Isolation Battery Box for DC UPS 10 kVA / DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Missing core identification tag on spare wires inside UP-200F1B

Name: Giovanni Tangianu

Date: 2024-10-30

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	2024-10-30
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000286

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002341	1.4 Discipline	Electrical
1.2 Item	84110-CEC		Isolation Battery Box for DC UPS 10 kVA / DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Missing cable tag inside BC_200F1A

Name: Giovanni Tangianu

Date: 2024-10-30

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	2024-10-30
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

installed.

Name: Giovanni Tangianu

Date: 2024-12-18

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000789

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004368	1.4 Discipline	Telecom
1.2 Item	UP-200F1/B400-NET-001.01	COMMUNICATION / EMCS SYSTEM	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Identification cable tag missing inside UP-200F1 connection.

Name: Giovanni Tangianu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name: Josip Krizanic

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000790

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004369	1.4 Discipline	Telecom
1.2 Item	UP-200F1/B400-NET-001.02	COMMUNICATION / EMCS SYSTEM	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Identification tag wire missing inside UP-200F1 connection.

Name: Giovanni Tangianu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

installed.

Name: Giovanni Tangianu

Date: 2024-12-18

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000912

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000192	1.4 Discipline	Instrumental
1.2 Item	C-CB-200F1/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing cable tag outside B-400-SIS-001 panel

Name: Paolo Schintu

Date: 2024-11-25

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Paolo Schintu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000915

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000192	1.4 Discipline	Instrumental
1.2 Item	C-CB-200F1/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing thermoshrink on cable entry CB-200F1 side.

Name: Paolo Schintu

Date: 2024-11-25

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Paolo Schintu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-25
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto

Date: 2024-12-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

C-CB-200F1/B400-SIS-001

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001097

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000193	1.4 Discipline	Instrumental
1.2 Item	C-UP-200F1/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing core identification tag by UP-200F1 side

Name: Paolo Schintu

Date: 2024-11-30

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Paolo Schintu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-30
3.5 Action by	RM Rosetti Marino Quality	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name: Josip Krizanic

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001098

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000193	1.4 Discipline	Instrumental
1.2 Item	C-UP-200F1/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-00	DC 10 kVA UPS System (UP-200F1)	

2 - OBSERVATION

Missing SS cable tag

Name: Paolo Schintu

Date: 2024-11-30

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Paolo Schintu
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

C30000009

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	UP-200F1		DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

AEG has to make sure that all parts are safely protected (IP2X)

Name

Date

Signature

3 - DEFECT ASSESSMENT

-

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	MC Mechanical Completion	Date	2024-07-30
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED PROTECTION

Name VENDOR AEG 3WPOWER

Date 2024-12-05

Signature

5 - CLEARANCE CHECK

INSTALLED PROTECTION

Name Stefano Linari

Date 2024-12-05

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


AEG

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000010

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	UP-200F1		DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Hardware and configuration of alarm for external battery protection box breaker to be included

Name

Date

Signature

3 - DEFECT ASSESSMENT

-

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-07-30
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE_IMPLEMENTED

Name VENDOR AEG 3WPOWER

Date 2024-12-05

Signature

5 - CLEARANCE CHECK

DONE_IMPLEMENTED

Name Stefano Linari

Date 2024-12-05

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

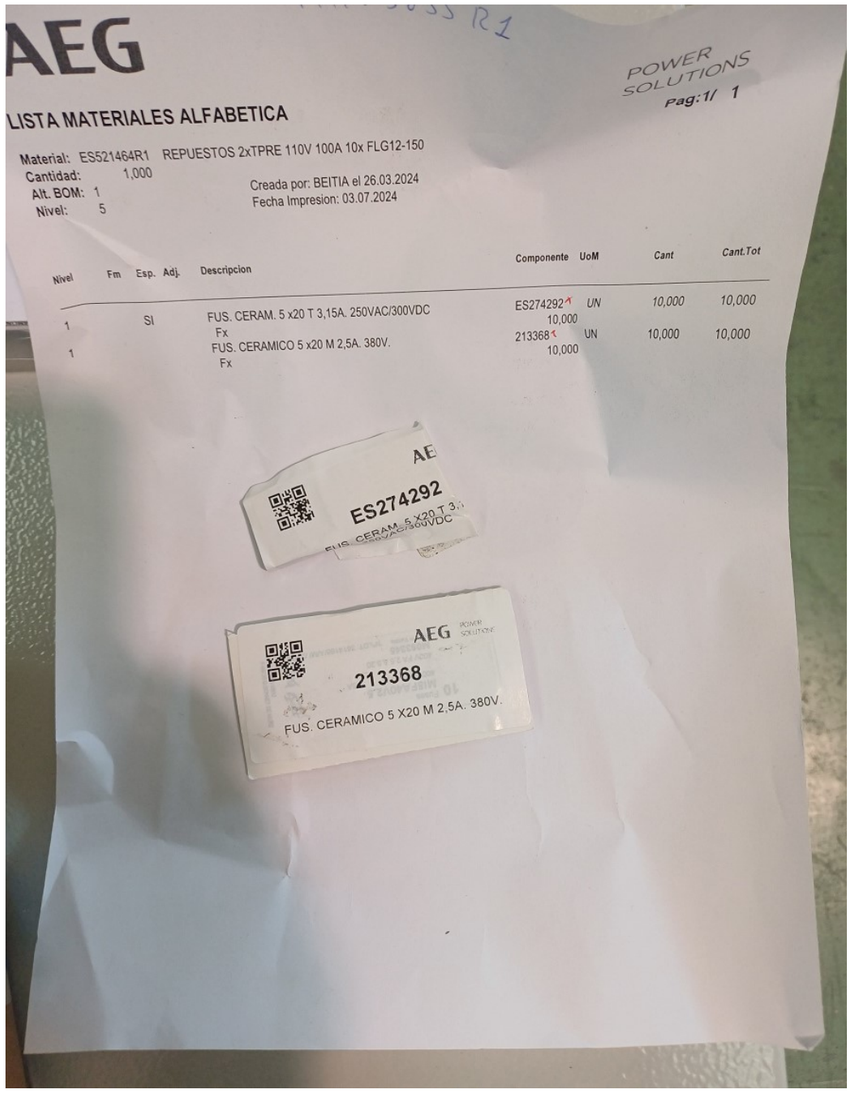
Linari Stefano (Rosetti)

Da: Dall'asta, Alberto <Alberto.Dall'asta@aegps.com>
Inviato: venerdì 26 luglio 2024 14:04
A: Pasquali Leonardo (ERM); Dell'atti, Davide; Antenori, Daniela
Cc: Rico Bonifacio (Rosetti); Lo Sterzo Davide (Rosetti); Linari Stefano (Rosetti); Madaschi Andrea (Rosetti); Bosio Lorenzo (ERM); Iveson Anthony (ERM)
Oggetto: R: 123A90 CROSSWIND – PO 1724000372 3W Power AEG - Rif. Vs. PO# 1724000372 123A90 - NI1584
Allegati: Punch_List_OV59193_20240719_rev1_signed_AEG.pdf; 1724000372-EL-DA-00003_02.pdf; 1724000372-EL-DG-00006_02.pdf; OV59193 - PL PRELIMINAR.pdf; 1724000372-EL-DG-00008_02.pdf; Rosetti-Attachment-Warning.txt

Buongiorno Leonardo -
in merito alla punch list (allegata per comodità) le confermo di aver caricato a portale i documenti elencati al punto 8.
Questi documenti sono anche allegati alla presente.
Inoltre allego la packing list preliminare (punto 6 della punch list) che verrà confermata dal collega Davide.
Ti confermo che la fabbrica ha implementato i punti 1, 3 e 4 ed i documenti sono stati aggiornati con queste modifiche.
Sotto alcune foto delle modifiche effettuate:



e delle spare parts:


AEG
POWER SOLUTIONS
Pag:1/ 1
LISTA MATERIALES ALFABETICA
Material: ES521464R1 REPUESTOS 2xTPRE 110V 100A 10x FLG12-150
Cantidad: 1,000
Alt. BOM: 1
Nivel: 5
Creada por: BEITIA el 26.03.2024
Fecha Impresion: 03.07.2024
Nivel Fm Esp. Adj. Descripcion Componente UoM Cant Cant.Tot
1 SI FUS. CERAM. 5 x20 T 3,15A. 250VAC/300VDC ES274292 UN 10,000 10,000
Fx 10,000
1 FUS. CERAMICO 5 x20 M 2,5A. 380V. 213368 UN 10,000 10,000
Fx 10,000
AE
ES274292
AEG
213368
FUS. CERAMICO 5 X20 M 2,5A. 380V.



Ciao

Alberto Dall'Asta
Managing Director
Mob: +39 348 1567 197
Desk: +39 02 0070 3376
alberto.dall_asta@aegps.com

AEG POWER SOLUTIONS

3W Power S.p.A.
Via Roma 108 I 20051 Cassina de' Pecchi (MI)
www.aegps.com

Da: Pasquali Leonardo (ERM) <Leonardo.Pasquali@rosetti.it>
Inviato: venerdì 26 luglio 2024 09:29
A: Dell'atti, Davide <davide.dell_atti@aegps.com>; Dall'asta, Alberto <Alberto.Dall'asta@aegps.com>; Antenori, Daniela <daniela.antenori@aegps.com>

Cc: Rico Bonifacio (Rosetti) <Bonifacio.Rico@rosetti.it>; Lo Sterzo Davide (Rosetti) <Davide.LoSterzo@rosetti.it>; Linari Stefano (Rosetti) <Stefano.Linari@rosetti.it>; Madaschi Andrea (Rosetti) <Andrea.Madaschi@rosetti.it>; Bosio Lorenzo (ERM) <Lorenzo.Bosio@rosetti.it>; Iveson Anthony (ERM) <Anthony.Iveson@rosetti.it>
Oggetto: RE: 123A90 CROSSWIND – PO 1724000372 3W Power AEG - Rif. Vs. PO# 1724000372 123A90 - NI1584

Buongiorno Davide,
Rimango in attesa della Packing List e possibilmente anche delle foto richieste.

Una volta che avrò ricevuto la Packing List vi manderò la relativa Release Note che vi darà il via libera per procedere con la spedizione.
Confermo, potrete spedire per quelle date.

Attendo vostro riscontro.
Grazie mille e buona giornata,
Leonardo Pasquali
Expeditor

ROSETTI MARINO SPA

Strada 1 Palazzo F7 - Milanofiori
20090 Assago (MI) – ITALY
Mob : +39 392 0469135
E-Mail : leonardo.pasquali@rosetti.it
company web site: www.rosetti.it

From: Dell'atti, Davide <davide.dell_atti@aegps.com>
Sent: giovedì 25 luglio 2024 17:32
To: Pasquali Leonardo (ERM) <Leonardo.Pasquali@rosetti.it>; Dall'asta, Alberto <Alberto.Dall'asta@aegps.com>; Antenori, Daniela <daniela.antenori@aegps.com>
Cc: Rico Bonifacio (Rosetti) <Bonifacio.Rico@rosetti.it>; Lo Sterzo Davide (Rosetti) <Davide.LoSterzo@rosetti.it>; Linari Stefano (Rosetti) <Stefano.Linari@rosetti.it>; Madaschi Andrea (Rosetti) <Andrea.Madaschi@rosetti.it>; Bosio Lorenzo (ERM) <Lorenzo.Bosio@rosetti.it>; Iveson Anthony (ERM) <Anthony.Iveson@rosetti.it>
Subject: R: 123A90 CROSSWIND – PO 1724000372 3W Power AEG - Rif. Vs. PO# 1724000372 123A90 - NI1584

Buongiorno sig. Pasquali,
le invieremo certamente la PL appena ci sarà resa disponibile quella definitiva dai colleghi spagnoli

Per quanto riguarda le foto, non credo che al momento si sia in grado di farne ma solitamente durante il FAT vengono scattate dall'ispettore che presenzia alle attività di test.
Proverò invece a farmi mandare le foto a packing completato ma non posso assicurarle di riuscirci in quanto la logistica spagnola è esternalizzata

I colleghi Dall'Asta/Antenori provvederanno invece ad inviarle il report del FAT, e nel caso fossero disponibili, anche qualche foto scattata durante il FAT.

Compreso che nella release note ci saranno gli orari di ricevimento merci, riesce cortesemente però a confermarmi fin d'ora che la merce sia ricevibile nel periodo dal 7/8 al 13/8 ? Diversamente rimanderemo tutto ai primi di settembre per via della chiusura del magazzino spagnolo.

Cordiali saluti

Davide Dell'Atti
Operations, Purchasing & Logistics Manager

Mobile: (+39) 334.6291623
davide.dell_atti@aegps.com

3W Power S.p.A. • Via Roma, 108 - Building CD1 • 20051 Cassina de' Pecchi (MI) Italy
www.aegps.com

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Da: Pasquali Leonardo (ERM) <Leonardo.Pasquali@rosetti.it>
Inviato: giovedì 25 luglio 2024 09:02
A: Dell'atti, Davide <davide.dell_atti@aegps.com>
Cc: Dall'asta, Alberto <Alberto.Dall'asta@aegps.com>; Rico Bonifacio (Rosetti) <Bonifacio.Rico@rosetti.it>; Lo Sterzo Davide (Rosetti) <Davide.LoSterzo@rosetti.it>; Linari Stefano (Rosetti) <Stefano.Linari@rosetti.it>; Madaschi Andrea (Rosetti) <Andrea.Madaschi@rosetti.it>; Bosio Lorenzo (ERM) <Lorenzo.Bosio@rosetti.it>; Iveson Anthony (ERM) <Anthony.Iveson@rosetti.it>; Antenori, Daniela <daniela.antenori@aegps.com>
Oggetto: 123A90 CROSSWIND – PO 1724000372 3W Power AEG - Rif. Vs. PO# 1724000372 123A90 - NI1584

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Buongiorno Davide,
Grazie della notifica.

Per autorizzarvi a procedere con la spedizione (con la relativa Release Note), avrei bisogno della Packing List, il Rapporto del Test della settimana scorsa e, se possibile, di qualche foto dell'UPS per nostro archivio.

L'indirizzo di spedizione completo è:
ROSETTI MARINO S.P.A.
Yard Piomboni
Via del Marchesato 37
I-48122 MARINA DI RAVENNA (RA)

Le informazioni riguardo il contatto e gli orari del magazzino saranno contenute nella Release Note che vi manderò a seguito del ricevimento dei documenti richiesti.

Grazie mille e buona giornata,
Leonardo Pasquali
Expeditor

ROSETTI MARINO SPA

Strada 1 Palazzo F7 - Milanofiori
20090 Assago (MI) – ITALY
Mob : +39 392 0469135
E-Mail : leonardo.pasquali@rosetti.it
company web site: www.rosetti.it

From: Dell'atti, Davide <davide.dell_atti@aegps.com>
Sent: mercoledì 24 luglio 2024 17:24
To: Pasquali Leonardo (ERM) <Leonardo.Pasquali@rosetti.it>
Cc: Dall'asta, Alberto <Alberto.Dall'asta@aegps.com>
Subject: Rif. Vs. PO# 1724000372 123A90 - NI1584

Buonasera sig. Pasquali
Con riferimento al Vs. ordine in oggetto ed in particolare alla pos.70 ed al relativo completamento del FAT svolto in Spagna del solo DC-UPS, saremmo in grado di spedirvelo dalla Spagna verso la fine della settimana prossima con consegna a Ravenna stimabile tra il 7/8 ed il 13/8 (da verificare per eventuale blocco circolazione mezzi pesanti)

Mi conferma Vs. disponibilità a ricevere la merce (solo il DC-UPS, escludendo quindi battery rack and isolation box) nelle date sopra indicate?

Sull'ordine, l'indirizzo di consegna riportato è:
ROSETTI MARINO SpA in Marina di Ravenna-RA (Italy)

Se la proposta è di Vs. interesse, mi servirebbe anche un Vs. riferimento da fornire all'autista per la consegna insieme ad indirizzo completo del Vs. magazzino ed agli orari di ricevimento merci.

Restiamo in attesa di suo cortese riscontro
Cordiali saluti

Davide Dell'Atti
Operations, Purchasing & Logistics Manager

Mobile: (+39) 334.6291623
davide.dell_atti@aegps.com

3W Power S.p.A. • Via Roma, 108 - Building CD1 • 20051 Cassina de' Pecchi (MI) Italy
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ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000011

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	UP-200F1		DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Terminals of Adapter RJ45 to be screwed (new customer requirement)

Name

Date

Signature

3 - DEFECT ASSESSMENT

-

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-07-30
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR AEG 3WPOWER

Date 2024-12-05

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2024-12-05

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature









ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000012

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	UP-200F1		DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Pictures of all spare parts and interconnections to be provided before shipping

Name

Date

Signature

3 - DEFECT ASSESSMENT

-

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	MC Mechanical Completion	Date	2024-07-30
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

PROVIDED AND DELIVERED

Name VENDOR AEG 3WPOWER

Date 2024-12-05

Signature

5 - CLEARANCE CHECK

PROVIDED AND DELIVERED

Name Stefano Linari

Date 2024-12-05

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

AEG

POWER SOLUTIONS

LISTA MATERIALES ALFABETICA

Material: ES521464R1 REPUESTOS 2xTPRE 110V 100A 10x FLG12-150
Cantidad: 1,000
Alt. BOM: 1
Nivel: 5

Creada por: BEITIA el 26.03.2024
Fecha Impresion: 03.07.2024

Nivel	Fm	Esp.	Adj.	Descripcion	Componente	UoM	Cant	Cant.Tot
1		SI		FUS. CERAM. 5 x20 T 3,15A. 250VAC/300VDC Fx	ES274292 10,000	UN	10,000	10,000
1				FUS. CERAMICO 5 x20 M 2,5A. 380V. Fx	213368 10,000	UN	10,000	10,000






AEG
POWER
SOLUTIONS
LISTA MATERIALES ALFABETICA
Material: ES521464R2 REP.2 AÑOS 2xTPRE 110V 100A 10xFLG12-150
Cantidad: 1,000
Alt. BOM: 1
Nivel: 5
Creada por:BEITIA el 26.03.2024
Fecha Impresion: 03.07.2024
Pag:1/ 1
Nivel Fm Esp. Adj. Descripcion Componente UoM Cant Cant.Tot
1 PCA GCAU V3 3TN20661AAAA_BARNIZADA A1 ES272500 UN 1,000 1,000
1,000
.2 SI PCA GCAU V3 BOM ES272500RD UN 1,000 1,000
1 PCA RELES (8) RCS 3AW01092AAAA05_BARNIZ 228540 UN 1,000 1,000
ES272500
PCA GCAU V3 3TN20661AAAA_BARNIZADA
Almacen: E000
Cant./Pal.: 1
Stock: 324
75 de 115
AEG

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000013

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	UP-200F1		DC UPS 10 kVA Redundant System
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

As-Built drawings with all final changes to be re-submitted: 1724000372-EL-DA-00003/1724000372-EL-DG-00006 / 1724000372-EL-DG-00008(including new setting values: 2.25 Float & 2.30 Boost)

Name

Date

Signature

3 - DEFECT ASSESSMENT

-

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-07-30
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date

Signature

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name Josip Krizanic

Date 2025-03-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000252

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000559	1.4 Discipline	Electrical
1.2 Item	83034-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder A
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Cable gland to be tighten after correction of Bending radius of cable on UP-200F1

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto

Date: 2024-12-14

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000253

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000559	1.4 Discipline	Electrical
1.2 Item	83034-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder A
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Wrong core identification tag on both cable's termination

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name: Josip Krizanic

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000254

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000559	1.4 Discipline	Electrical
1.2 Item	83034-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder A
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Missing cable tags on internal and external side of MCT

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000255

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000559	1.4 Discipline	Electrical
1.2 Item	83034-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder A
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Plastic cable ties to be replaced on external routing

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000256

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000560	1.4 Discipline	Electrical
1.2 Item	83035-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder B
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Missing cable tags on internal and external side of MCT

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000257

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000560	1.4 Discipline	Electrical
1.2 Item	83035-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder B
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Wrong core identification tag on both cable's termination

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

ACCEPTED BY ROSETTI MARINO

Name: Josip Krizanic

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000258

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000560	1.4 Discipline	Electrical
1.2 Item	83035-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder B
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Cable gland to be tighten after correction of Bending radius of cable on UP-200F1

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto

Date: 2024-12-14

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000259

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000560	1.4 Discipline	Electrical
1.2 Item	83035-CEL		LV Switchgear / DC Battery System - Switchgears Control - Feeder B
1.3 Subsystem	84-00		DC 10 kVA UPS System (UP-200F1)

2 - OBSERVATION

Plastic cable ties to be replaced on external routing

Name: Giovanni Tangianu

Date: 2024-10-24

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	2024-10-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

Section 4 FUNCTIONAL TESTS SHEETS

Section 4.1 Electrical functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00 & process: COMM & discipline : E

Electrical	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A7/+03-QF1	DRAWER INCOMER A UPS - A7/+03-QF1	ONSHORE	C10002782	FP00	100	2024-11-08	RFO 3
		ONSHORE	C10002783	FTR-2	100	2024-09-20	RFO 3
		ONSHORE	C10002784	FTR-6	100	2024-10-02	RFO 3
		ONSHORE	C10003004	FTR-5	100	2025-04-22	RFO 3
A7/+04-QF1	DRAWER INCOMER B UPS - A7/+04-QF1	ONSHORE	C10002785	FP00	100	2024-11-08	RFO 3
		ONSHORE	C10002786	FTR-2	100	2024-09-20	RFO 3
		ONSHORE	C10002787	FTR-6	100	2024-10-02	RFO 3
		ONSHORE	C10003005	FTR-5	100	2025-04-22	RFO 3
BA-200F1	Battery Bank for DC UPS 10 kVA	ONSHORE	C10002794	FTR-3	100	2024-11-18	RFO 3
BA-200F1-C	UPS DC - BA-200F1-C	ONSHORE	C10002792	FTR-4	100	2024-11-12	RFO 3
BA-200F1-D	UPS DC - BA-200F1-D	ONSHORE	C10002793	FTR-4	100	2024-11-12	RFO 3
CB-200F1-QB	BATTERY CUTOFF UPS DC - CB-200F1-QB	ONSHORE	C10002788	FTR-2	100	2024-11-08	RFO 3
DP-200N1-Q43	BREAKER AUX UPS DC - DP-200N1-Q43	ONSHORE	C10002789	FTR-2	100	2024-10-28	RFO 3
UP-200F1	DC UPS 10 kVA Redundant System	ONSHORE	C10002790	FP16B	100	2025-03-12	RFO 3
		ONSHORE	C10002791	FTR-6	100	2025-03-12	RFO 3
UP-200F1-Q14	SPARE	ONSHORE	C10004595	FTR-2	100	2024-11-08	RFO 3
UP-200F1-Q15	SPARE	ONSHORE	C10004596	FTR-2	100	2024-11-08	RFO 3
UP-200F1-Q16	SPARE	ONSHORE	C10004597	FTR-2	100	2024-11-08	RFO 3

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A7/+03-QF1	: DRAWER INCOMER A UPS - A7/+03-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10002782		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A7/+03-QF1
Breaker rating (A)	16A	Nominal current (A)	63A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	19	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	398	V	0.5 A	OK
11	Attach test procedure, if any				NA

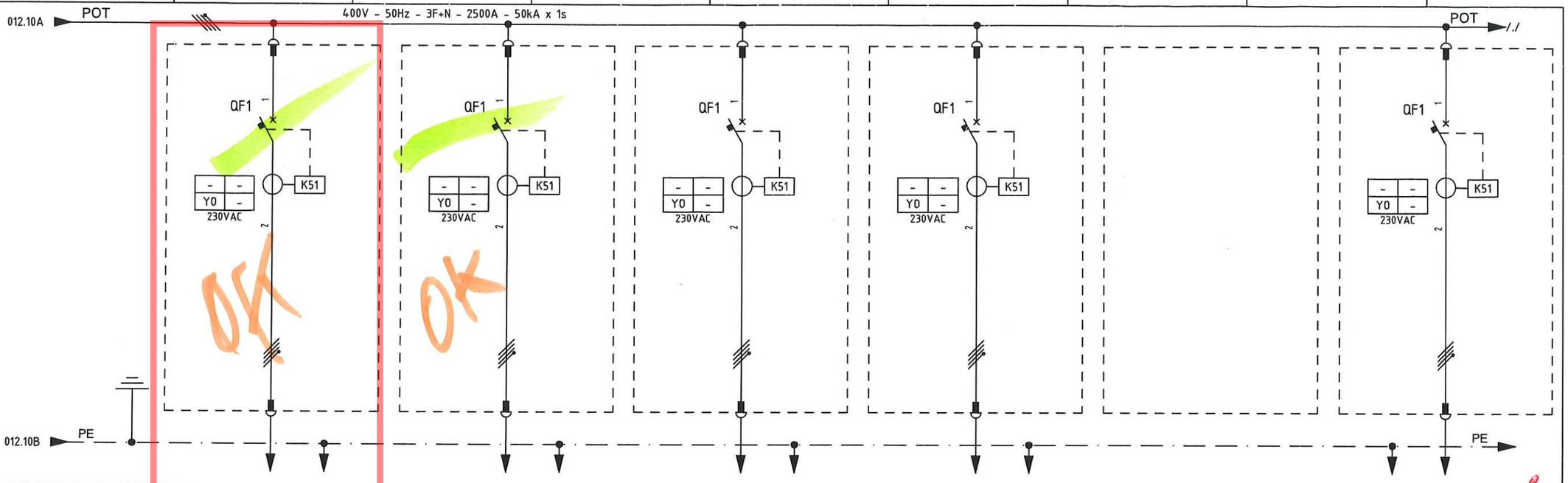
FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	CPY NOT PRESENT
Date	2024-11-06	2024-11-06	2024-11-08
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-06T14:15:34.978Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-06T15:59:18.529Z	PROVERLIS Digitaly signed by CPY NOT PRESENT 2024-11-08T16:21:26.346Z



ITEM			1	UP-200F1	UP-200F1	UP-200F2	UP-200F2		ESW-200N2
UTILITY			2	DC BATTERY SYSTEM SWTG CONTROL - FEEDER A	DC BATTERY SYSTEM SWTG CONTROL - FEEDER B	NAVAID SYSTEM FEEDER A	NAVAID SYSTEM FEEDER B		WELDING SOCKETS (LOWER DECK)
COLUMN/CUBICLE			3	A7 / +03	A7 / +04	A7 / +05	A7 / +06		A7 / +08
RATED POWER | RATED CURRENT			4/5	10 kW | 16 A	10 kW | 16 A	1.6 kVA | 7 A	1.6 kVA | 7 A		69.84 kW | 126.15 A
TYPICAL FUNCTIONAL			6	L1-63	L1-63	L1-X63	L1-X63		L2-160
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160		XT4S - 250
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED		4P - FIXED
	TRIP UNITS		9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)		EKIP DIP LSIG (In = 160A)
	Icu	KA	10	50kA	50kA	50kA	50kA		50kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In		(0.4 - 1) x In
		Range t	12	k/I^2	k/I^2	k/I^2	k/I^2		k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In
		Range t	14	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2		0.05 - 0.4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In
		Range t	16	<= 0.02 sec	<= 0.02 sec	<= 0.02 sec	<= 0.02 sec		<= 0.02 sec
EARTH FAULT PROTECTION	G	Range A	17	(0.2 - 1) x In	(0.2 - 1) x In	(0.2 - 1) x In	(0.2 - 1) x In		(0.2 - 1) x In
		Range t	18	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec		0.1 - 0.8 sec
CONTACTOR (ABB)			19	-	-	-	-		-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-		-
SURGE ARRESTER (DEHN)			21	-	-	-	-		-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-		-
FUSE HOLDER (ITALWEBER)			23	-	-	-	-		-
INDIRECT PROTECTION (ABB)			24	-	-	-	-		-
VOLTMETER			25	-	-	-	-		-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-		-
	PERFORMANCE/CLASS		27	-	-	-	-		-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-		-
	PERFORMANCE/CLASS		29	-	-	-	-		-
LOCK-OUT RELAY (-)			30	-	-	-	-		-
POWER CONDUCTOR		mmq	31	4G16	4G16	3G16	3G16		5G50

=							
+							
3	08/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)		
2	03/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
1	28/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
0	15/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/11

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 013

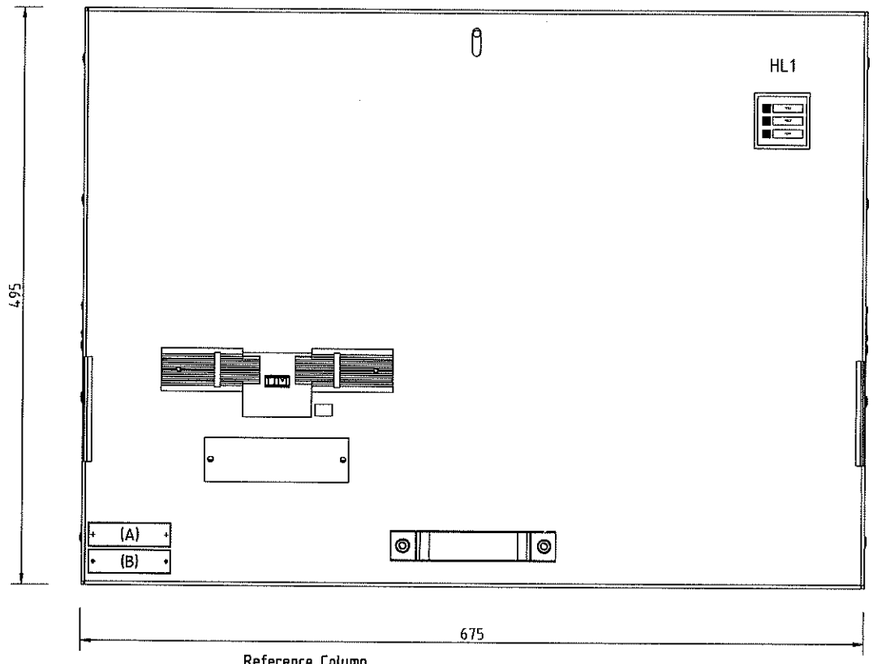
REV. 03

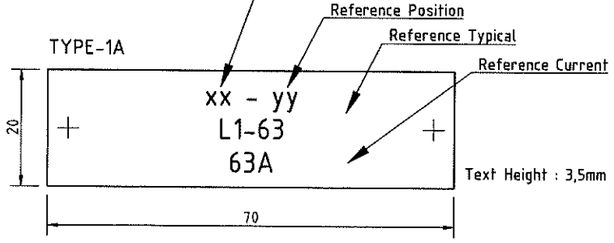
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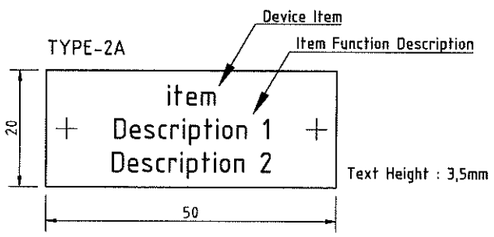
F.to UNI A3: 420mmx297mm

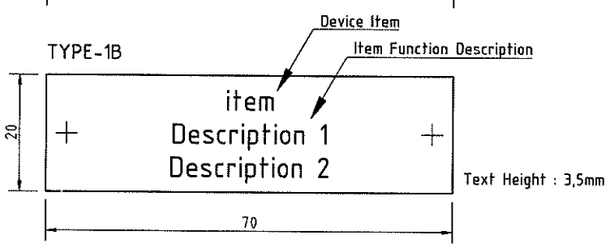
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "L2-n"









NOTE :

A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position (Column / Position inside SWB)
- Typical name (reference applicability typical used)
- Power (reference applicability typical used)

B) USER name plate (type-1B), with :
- Item User (to see SLD diagrams)
- User Description (to see SLD diagrams)

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker	Signalling	NO plate
HL1	Multiled	Signalling	NO plate

=	TYPICAL
+	L-x
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "L1-n" & "L2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 024

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

USERS LEGEND

TYPICAL : LINE FEEDER "L1-n" & "L2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	UP-200F4	AC UPS F&G - 8H UP-200F4 - LINE B	A2 / +04	63A	L1-63
2	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 - LINE A	A3 / +01	100A	L1-100
3	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 - LINE B	A4 / +01	100A	L1-100
4	UP-200F4	AC UPS F&G - 8H UP-200F4 - LINE A	A6 / +05	63A	L1-63
5	UP-200F4	AC UPS F&G - 8H UP-200F4 - LINE B (BYPASS)	A6 / +06	63A	L1-63
6	ESW-200N1	WELDING SOCKETS (TOP DECK)	A6 / +08	160A	L2-160
7	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 (BYPASS)	A7 / +02	100A	L1-100
8	UP-200F1	DC BATTERY SYSTEM SWTG CONTROL - FEEDER A	A7 / +03	63A	L1-63
9	UP-200F1	DC BATTERY SYSTEM SWTG CONTROL - FEEDER B	A7 / +04	63A	L1-63
10	UP-200F2	NAVAID SYSTEM FEEDER A	A7 / +05	10A	L1-10
11	UP-200F2	NAVAID SYSTEM FEEDER B	A7 / +06	10A	L1-10
12	ESW-200N2	WELDING SOCKETS (LOWER DECK)	A7 / +08	160A	L2-160

= TYPICAL
+ L-x

DWG n° : 231298/SD/31
Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 025 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

ITEMS ACRONYM

TYPICAL : LINE FEEDER "L1-n" & "L2-n"

Composition of Typical :

L-x = Common Parts
L1-"nn" or L2-"nn"= Specific Parts

Example for Composition of L1-63:
- to take "L-x" plus "L1-63"

Example for Composition of L2-160:
- to take "L-x" plus "L2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	L-x	L1-40 (In=40A) (Current Trip Unit)	L1-63 (In=63A) (Current Trip Unit)	L1-100 (In=100A) (Current Trip Unit)	L2-160 (In=160A) (Current Trip Unit)	
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
L1-40	X	X				
L1-63	X		X			
L1-100	X			X		
L2-160	X				X	

=	TYPICAL					
+	L-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

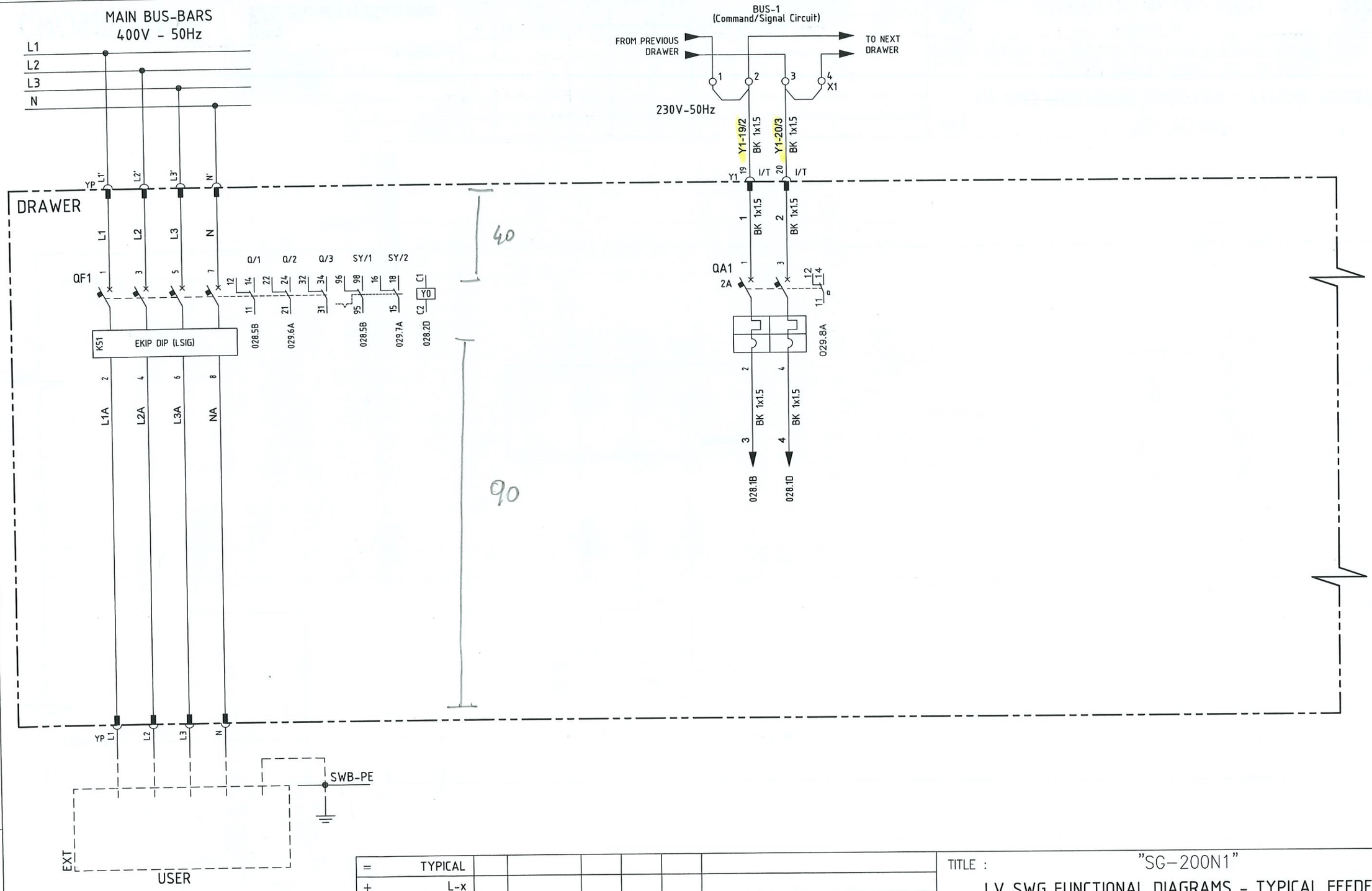
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 026 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00



=	TYPICAL						
+	L-x						
DWG n° : 231298/SD/31							
Item n° : PF1002983/26							
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "L1-n" & "L2-n"

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

SCALE : NTS

A3

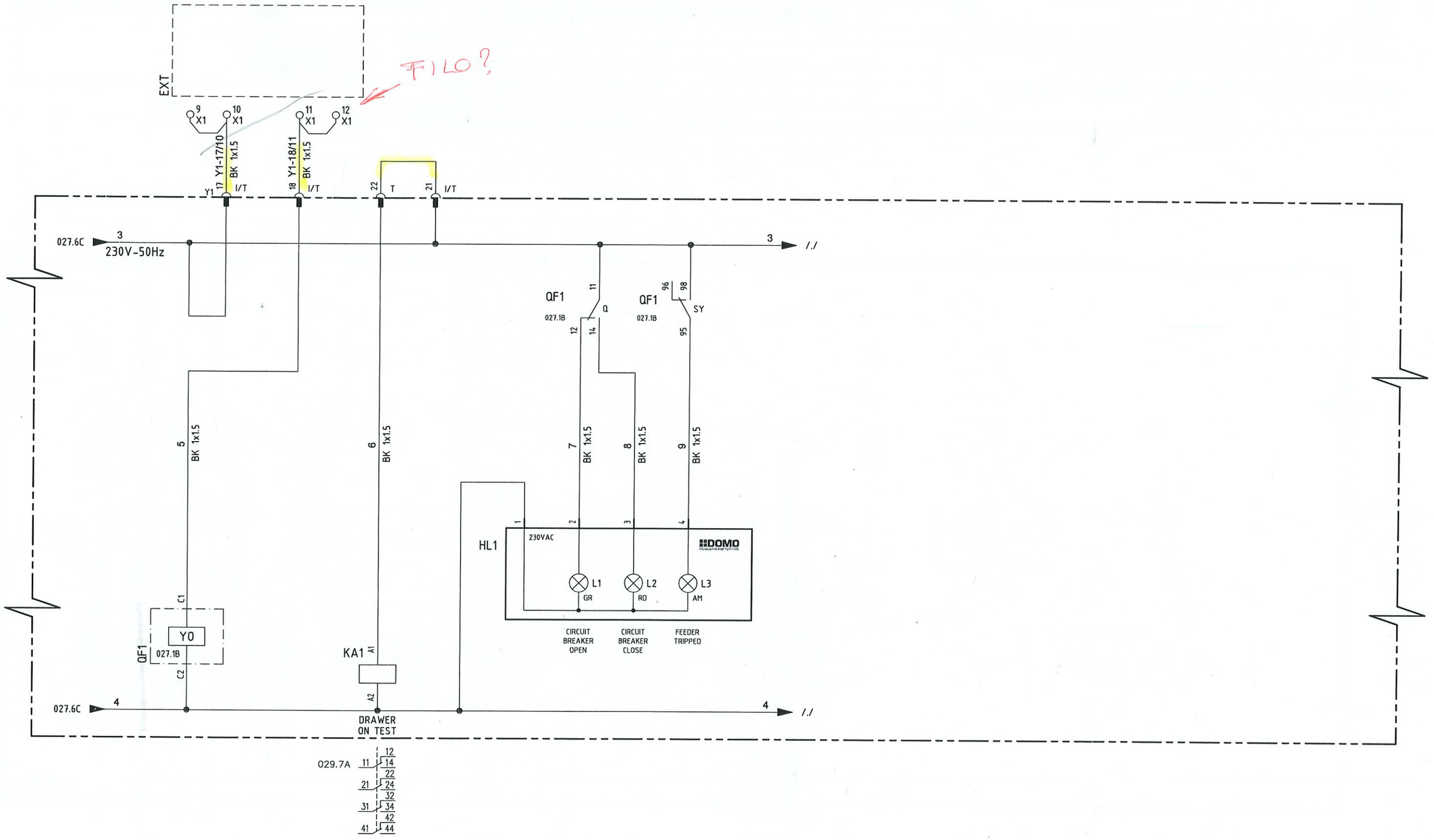
DRAWING NO. 1723002197-EL-DG-00031

SHEET 027

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00



=	TYPICAL						
+	L-x						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "L1-n" & "L2-n"

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

SCALE : NTS

A3

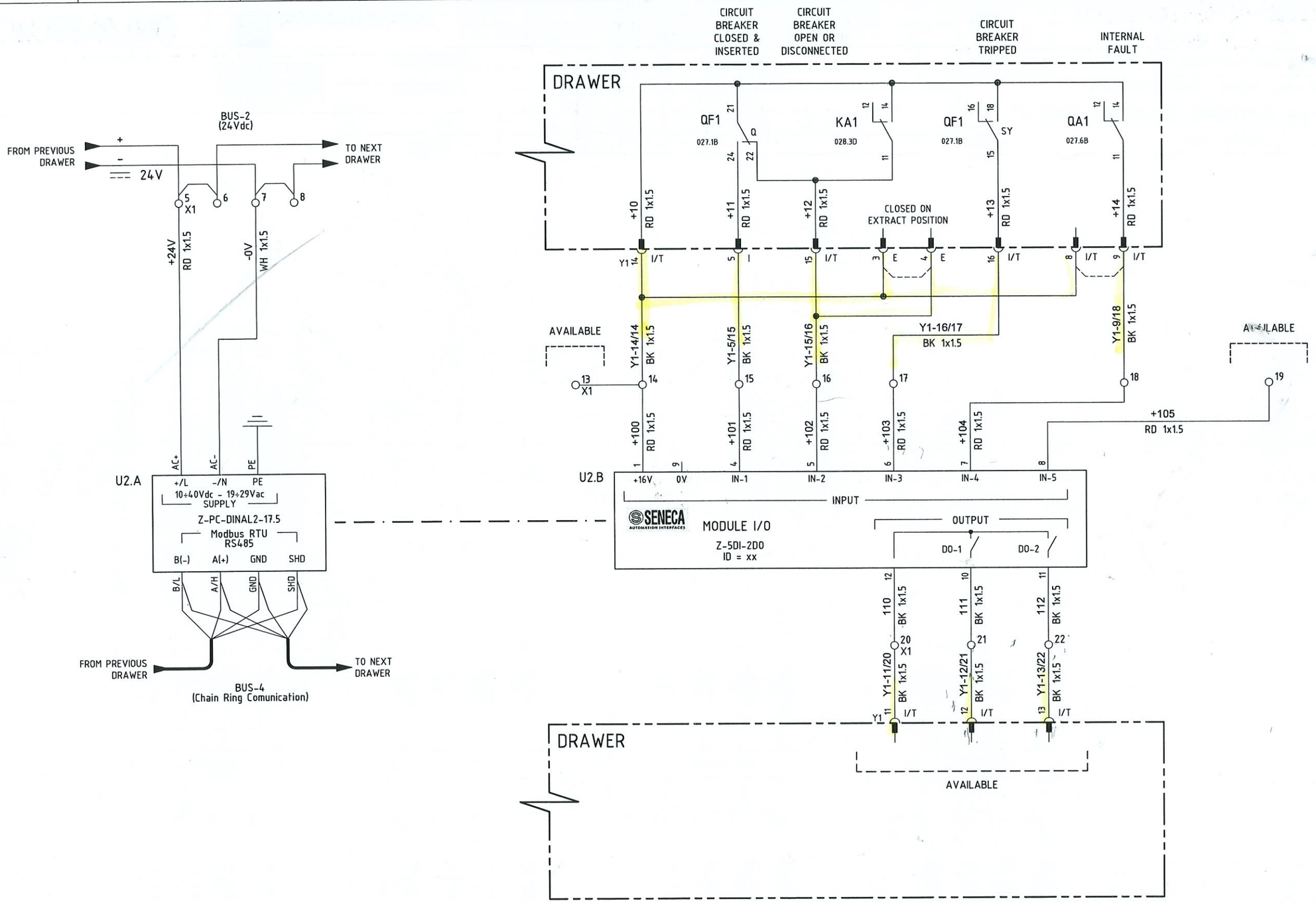
DRAWING NO. 1723002197-EL-DG-00031

SHEET 028

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00



=	TYPICAL						
+	L-x						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
0		09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)	
REV.		DATE	DRN	CHKD	APPD	DESCRIPTION	

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "L1-n" & "L2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 029

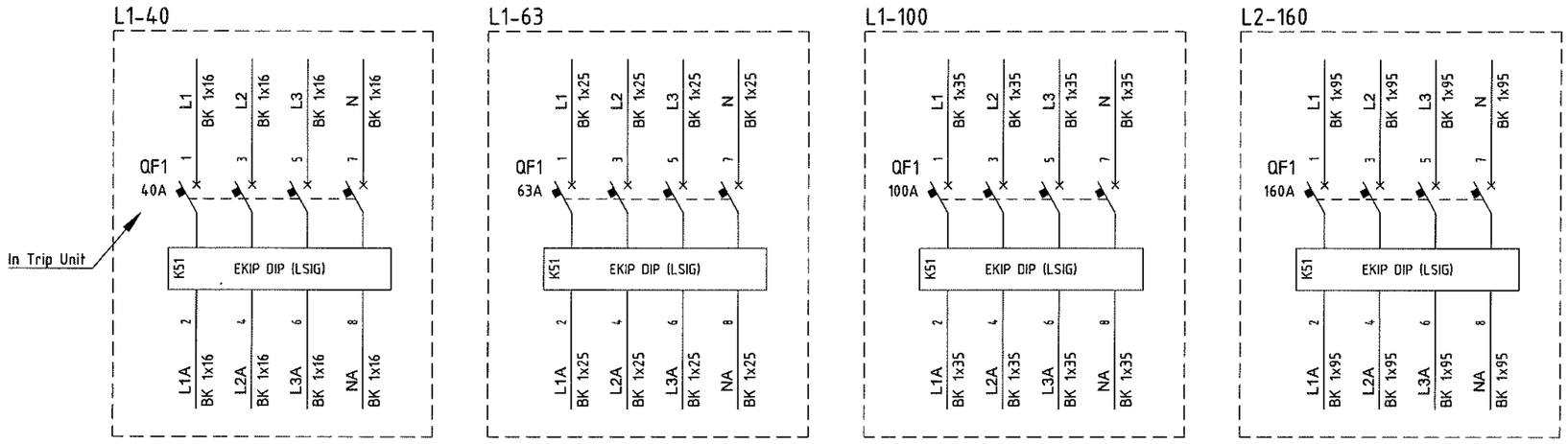
REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

SPECIFIC PARTS

TYPICAL : LINE FEEDER "L1-n" & "L2-n"



=	TYPICAL						
+	L-x						
OWG n° : 231298/SD/31							
Item n° : PF1002983/26							
		0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 030 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

AUXILIARY SOCKET

136450/001 (PF – 1 pcs) + 136458/004 (PM – 1 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
JUMP			•	•				•	•													
RACKED-OUT			X	X				X	X													
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED-IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			029.6B	029.7B	029.6B			029.8B	029.8B		029.7D	029.7D	029.8D	029.5B	029.6B	029.7B	028.2B	028.3B	027.6A	027.6A	028.4B	028.3B

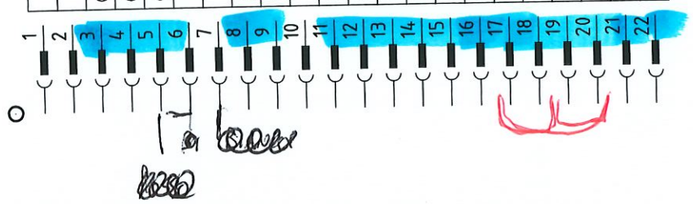
← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION

← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION

← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION

← CROS-REFERENCE USED PIN

TYPICAL - L-x - Y1



NERO

X12 CASSETTI

=	TYPICAL							
+	L-x							
DWG n° :	231298/SD/31							
Item n° :	PF1002983/26							
		0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)	
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "L1-n" & "L2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 031

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

TYPICAL - L-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	027.5A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	027.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	027.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	027.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	029.2A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	029.2A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	029.2A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	029.3A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	028.2A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	028.2A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	028.3A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	028.3A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	029.4B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	029.5B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	029.6B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	029.6B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	029.7B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	029.8B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	029.9B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	029.7D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	029.7D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	029.8D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL						
+	L-x						
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

IMESA ELECTRICAL ENGINEERING

OWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "L1-n" & "L2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 032

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	028	ML22/483L230STLTTR	1	MULTILED 48x48 - 3 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL L-x
KA1	028	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL L-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL L-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL L-x
QA1	027	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL L-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL L-x
U2.A	029	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL L-x
U2.B	029	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL L-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL L-x
		HD400GR_	14	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL L-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL L-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL L-x
		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL L-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	XT2S40LSIG4	1	XT2S 160 Ekip LSIG In=40A 4p F F	ABB	TYPICAL L1-40
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L1-40
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	XT2S63LSIG4	1	XT2S 160 Ekip LSIG In=63A 4p F F	ABB	TYPICAL L1-63
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L1-63
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	XT2S100LSIG4	1	XT2S 160 Ekip LSIG In=100A 4p F F	ABB	TYPICAL L1-100
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L1-100
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L1-100

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL L2-160
		1SDA067536R1	1	SG.EL.Ekip LSIG In=160A XT4 4p	ABB	TYPICAL L2-160
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L2-160
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L2-160

=	TYPICAL
+	L-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 033 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

ITEM	Tag	A7/+03-QF1	: DRAWER INCOMER A UPS - A7/+03-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)	Module			
TASK	code	C10002783	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form FTR-2	Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer:	ABB	Serial N°:	E200845002521070	Relay type:	EKIP DIP LSIG
Auxiliary supply:	24 Vdc	Location:	B200	Cubicle:	A7/+03
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
L	25.2A	189A		3s	528ms
S	126A			0.1	
I	252A	315A		INSTANT	26ms
G	12.6A			0.1	

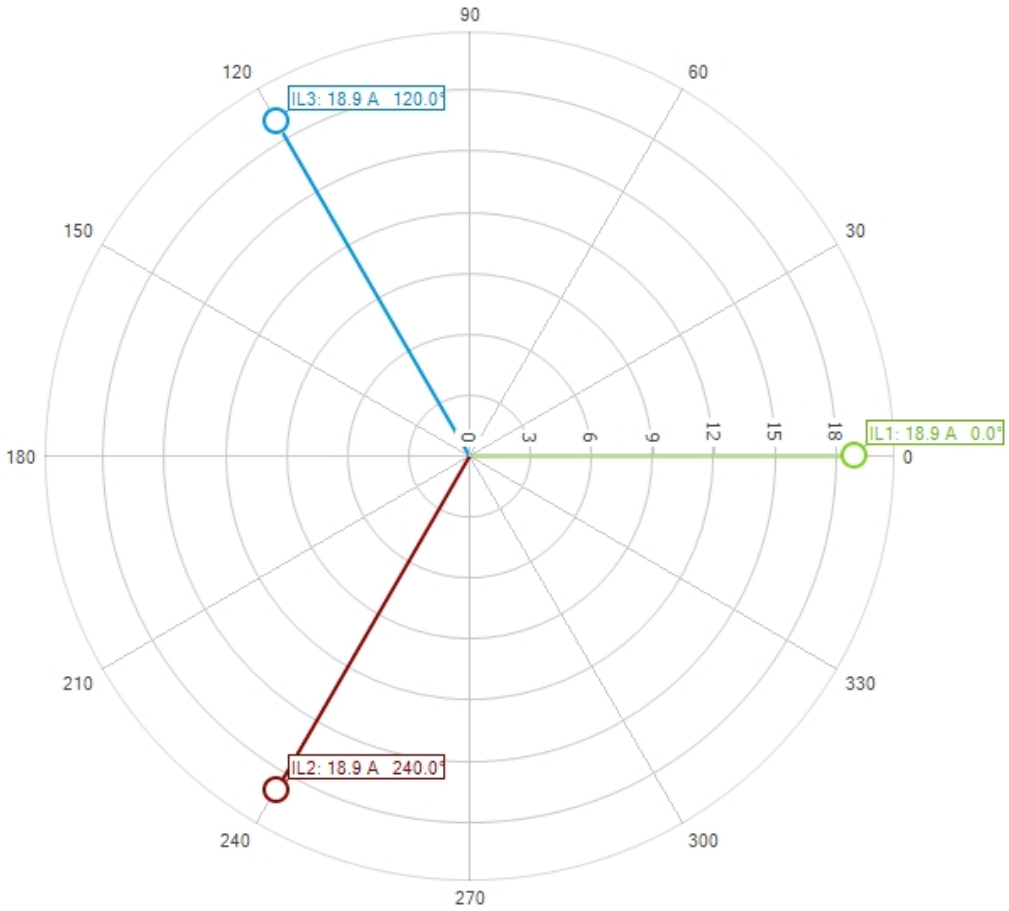
Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: See the attachments for full tests

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-18	2024-09-18	2024-09-20
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-18T06:09:36.000Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-18T07:21:56.627Z	PROVERLIS Digitaly signed by Witness waived 2024-09-20T06:22:40.021Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	0.40	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	2.00	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	4.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

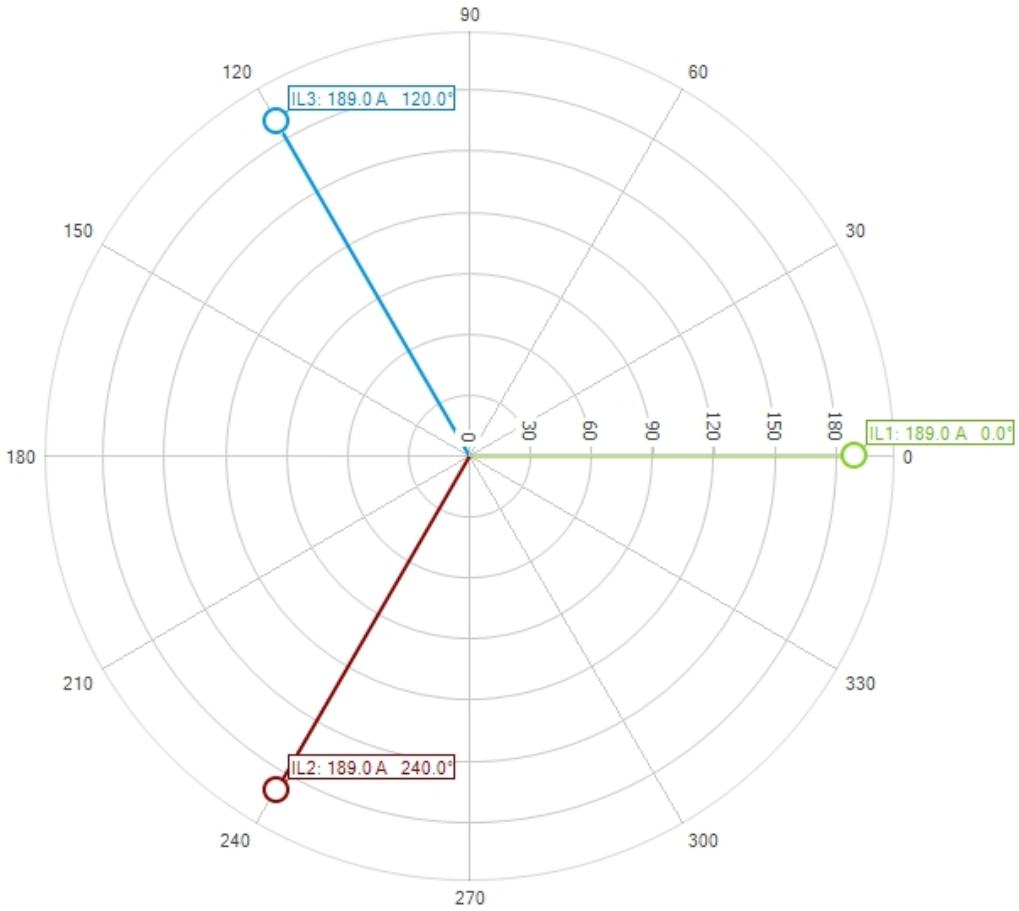
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/03
Relay Serial Number	E200845002521070
Circuit Breaker Serial Number	EFA0723060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

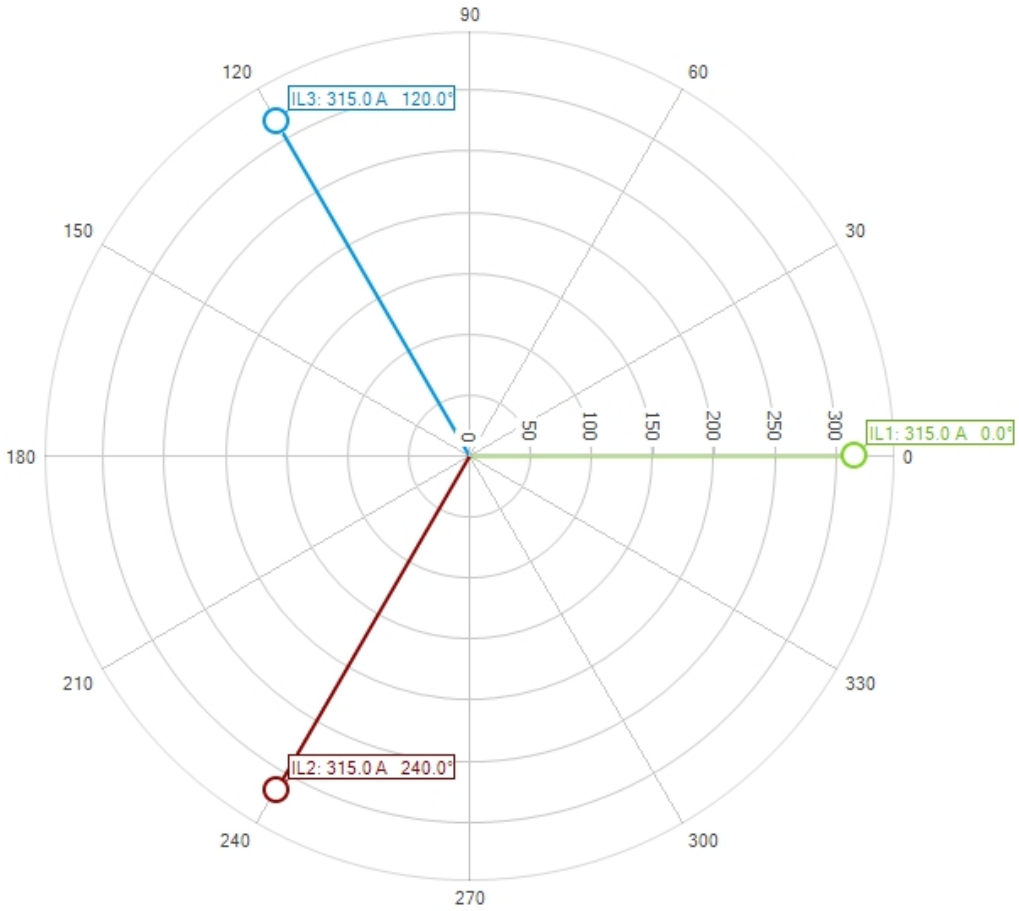
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/03
Relay Serial Number	E200845002521070
Circuit Breaker Serial Number	EFA0723060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection L tripped in 528 ms.
Trip time must be between 0 ms and 1000 ms.



Test

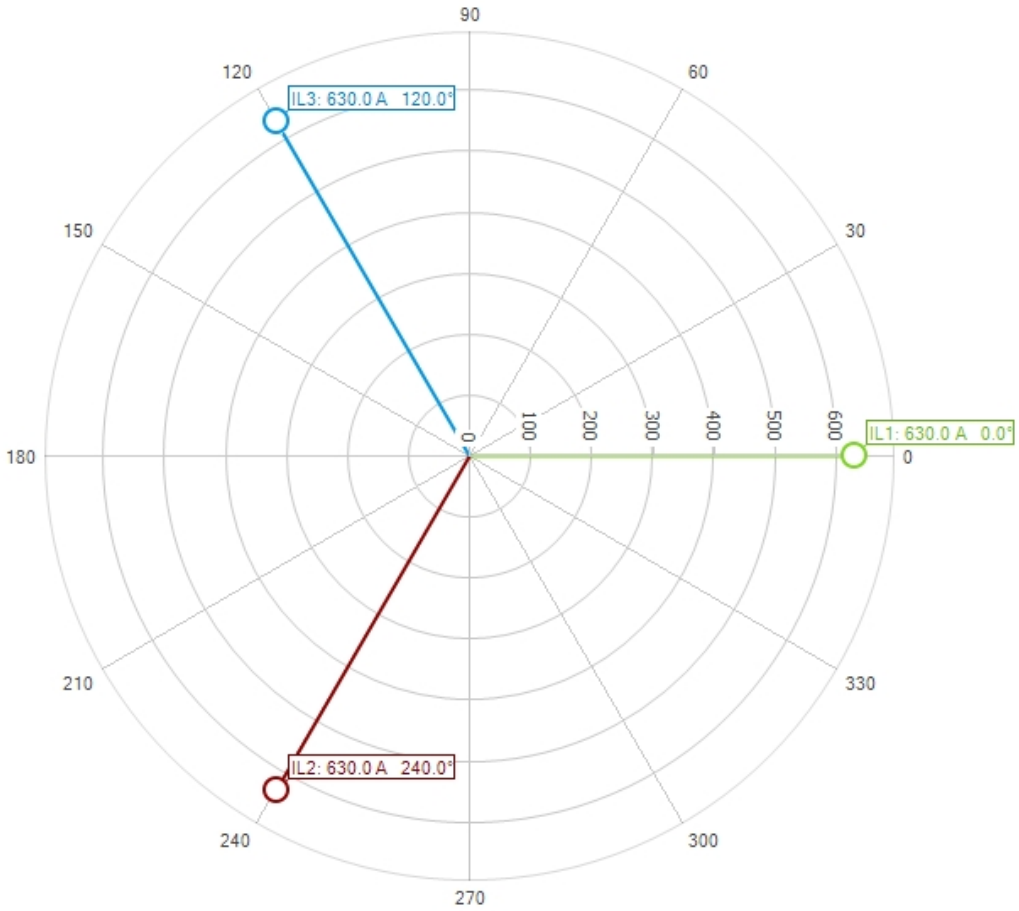
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/03
Relay Serial Number	E200845002521070
Circuit Breaker Serial Number	EFA0723060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 26 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/03
Relay Serial Number	E200845002521070
Circuit Breaker Serial Number	EFA0723060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 25 ms.
Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A7/+03-QF1	: DRAWER INCOMER A UPS - A7/+03-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10002784		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FTR-6 Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	INCOMER A UPS	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A7/+03	Calibration certificate date:	7715/24_10/07/2025

Link Type:	●	Hardwired	Communication	(strike through unapplicable type)
I/O Type:	●	Digital	Analogic	(strike through unapplicable type)

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A7/+03 - KA1/11-14	A7/+03 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A7/+03 - KA1/11-12	A7/+03 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A7/+03 - KA5/11-14	A7/+03 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A7/+03 - KA4/21-24	A7/+03 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A7/+03 - KA2/11-14	A7/+03 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A7/+03 - QA1/11-14	A7/+03 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A7/+03 - SA1/21-22	A7/+03 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Min value sent	Min value received	Max value sent	Max value received	Intermediate value sent	Intermediate value received	Out of scale test (OK, Not OK)	Refresh time (if >2s)	Appearing in all applicable display (Y/N)
1														
2														
3														

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	rm comm	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-02	2024-10-02	2024-10-02
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-02T08:10:04.737Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-02T08:44:57.101Z	PROVERLIS Digitaly signed by Witness waived 2024-10-02T09:18:49.272Z

ROSETTI MARINO — PROVERLIS — CROSSWIND

ITEM	Tag	A7/+04-QF1	: DRAWER INCOMER B UPS - A7/+04-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10002785		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 — Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	SG-200N1-A7/+04
Breaker rating (A)	16A	Nominal current (A)	63A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	100	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	395	V	0.3 A	OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments: POINT 6: See the ftr-2 associated with the drawer for protection study.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	CPY NOT PRESENT
Date	2024-11-06	2024-11-06	2024-11-08
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-11-06T14:25:19.422Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-06T16:00:04.790Z	PROVERLIS Digitaly signed by CPY NOT PRESENT 2024-11-08T16:22:00.031Z

ITEM	Tag	A7/+04-QF1	: DRAWER INCOMER B UPS - A7/+04-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)	Module			
TASK	code	C10002786	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FTR-2	Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer:	ABB	Serial N°:	E219600002521070	Relay type:	EKIP DIP LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A7/+04
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	25.2A	189A		3s	534ms
S	126A			0.1s	
I	252A	315A		INSTANT	36ms
G	12.6A			0.1s	

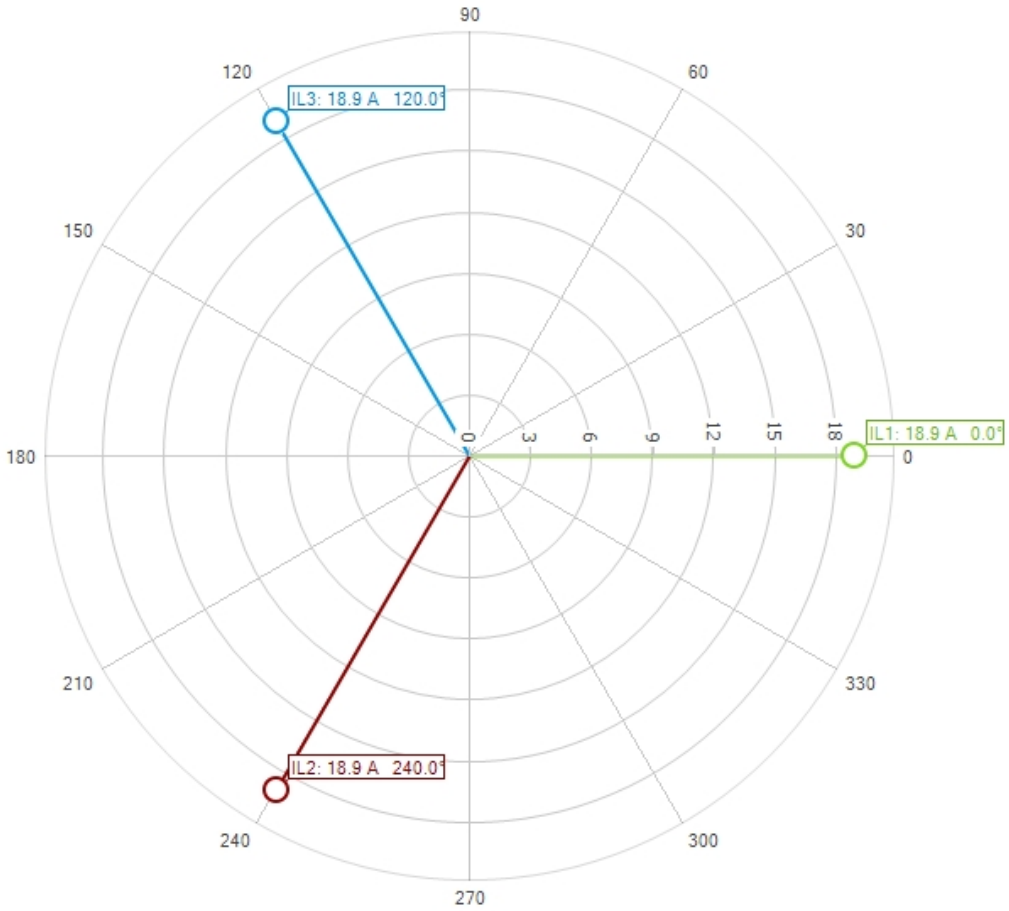
Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: See the attachments for full tests

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-18	2024-09-18	2024-09-20
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-18T06:18:19.124Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-18T07:22:26.121Z	PROVERLIS Digitaly signed by Witness waived 2024-09-20T06:23:05.403Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	0.40	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	2.00	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	4.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

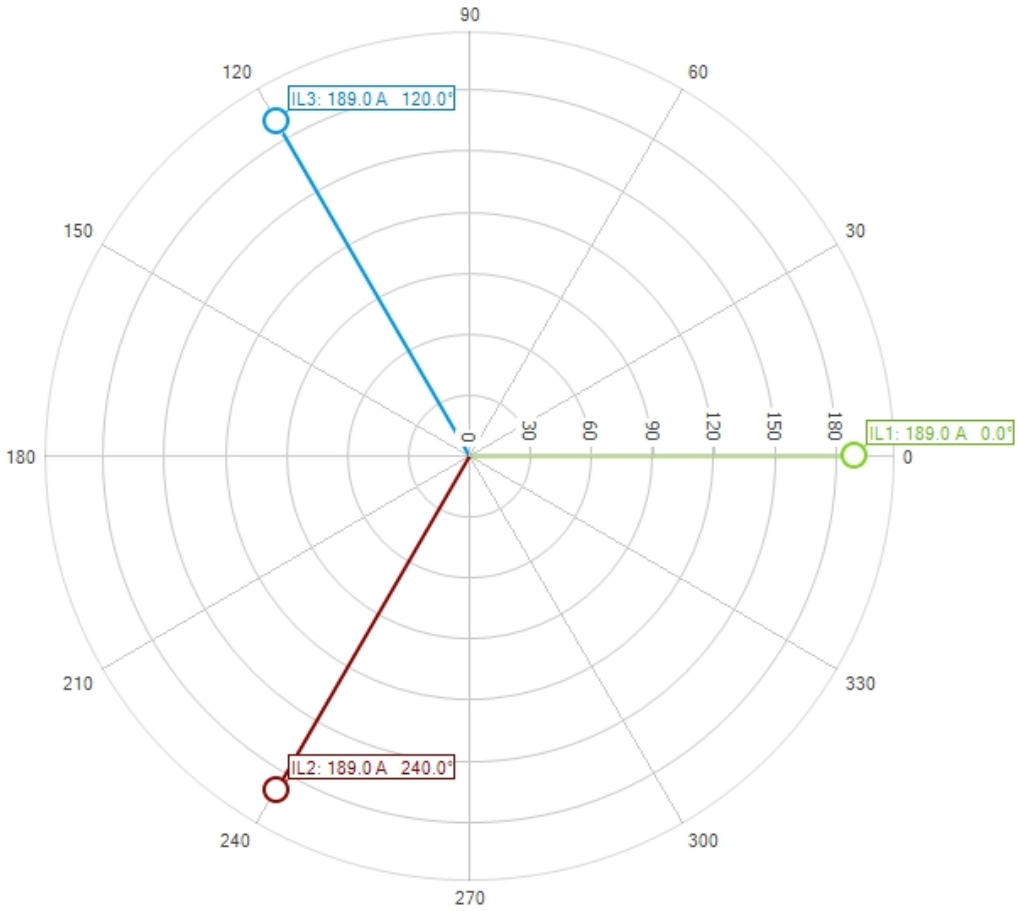
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/04
Relay Serial Number	E219600002521070
Circuit Breaker Serial Number	EFA0719060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

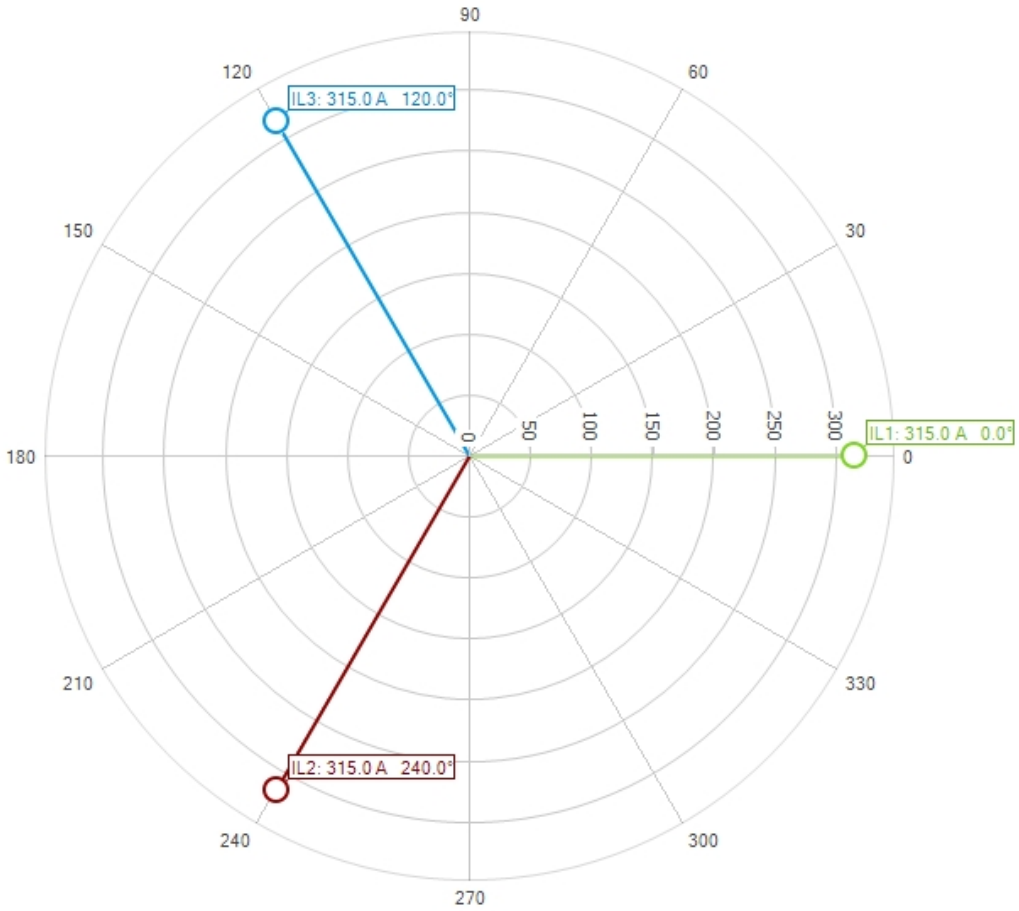
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/04
Relay Serial Number	E219600002521070
Circuit Breaker Serial Number	EFA0719060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection L tripped in 534 ms.
Trip time must be between 0 ms and 1000 ms.



Test

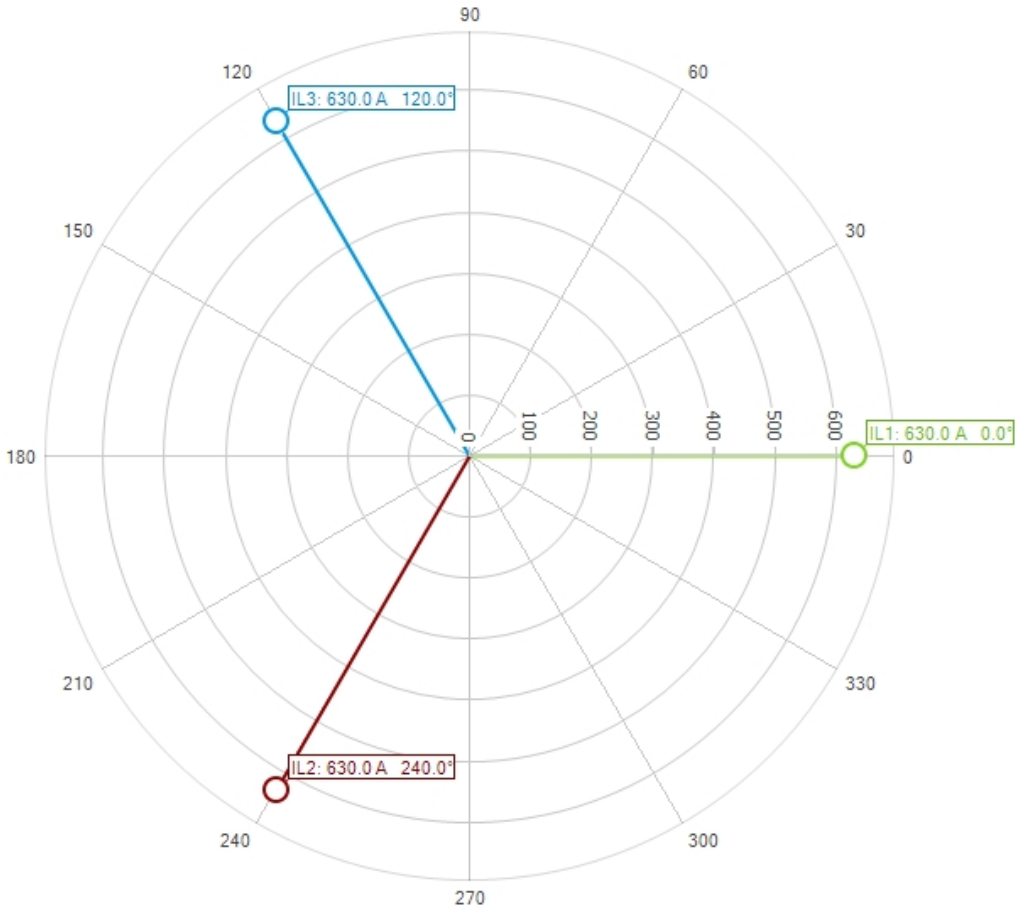
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/04
Relay Serial Number	E219600002521070
Circuit Breaker Serial Number	EFA0719060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 36 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/04
Relay Serial Number	E219600002521070
Circuit Breaker Serial Number	EFA0719060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.40 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.00 In Time = 0.10 s Protection = I Threshold = 4.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 23 ms.
Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A7/+04-QF1	: DRAWER INCOMER B UPS - A7/+04-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)	Module			
TASK	code	C10002787	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	INCOMER B UPS	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A7/+04	Calibration certificate date:	7715/24_10/07/2025

Link Type:	●	Hardwired	Communication	(strike through unapplicable type)
I/O Type:	●	Digital	Analogic	(strike through unapplicable type)

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A7/+04 - KA1/11-14	A7/+04 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A7/+04 - KA1/11-12	A7/+04 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A7/+04 - KA5/11-14	A7/+04 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A7/+04 - KA4/21-24	A7/+04 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A7/+04 - KA2/11-14	A7/+04 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A7/+04 - QA1/11-14	A7/+04 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A7/+04 - SA1/21-22	A7/+04 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Min value sent	Min value received	Max value sent	Max value received	Intermediate value sent	Intermediate value received	Out of scale test (OK, Not OK)	Refresh time (if >2s)	Appearing in all applicable display (Y/N)
1														
2														
3														

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	rm comm	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-02	2024-10-02	2024-10-02
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-02T07:35:26.680Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-02T08:46:20.078Z	PROVERLIS Digitaly signed by Witness waived 2024-10-02T09:19:04.624Z

ITEM	Tag	CB-200F1-QB	: BATTERY CUTOFF UPS DC - CB-200F1-QB	Dwg	1724000372-EL-DG-00006		
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)	Module			
TASK	code	C10002788	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FTR-2	Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer:	ABB	Serial N°:	NA	Relay type:	NA
Auxiliary supply:	NA	Location:	B100	Cubicle:	NA
Switchboard:	UP-200F1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
I	160A	NA	NA	FIXED	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-11-06	2024-11-06	2024-11-08
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-06T14:08:01.671Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-06T16:00:48.557Z	PROVERLIS Digitaly signed by Witness waived 2024-11-08T16:22:38.518Z

ITEM	Tag	DP-200N1-Q43	: BREAKER AUX UPS DC - DP-200N1-Q43	Dwg	1723002197-EL-DG-00013		
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)	Module			
TASK	code	C10002789	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FTR-2	Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer:	ABB	Serial N°:	NA	Relay type:	NA
Auxiliary supply:	NA	Location:	B200	Cubicle:	+03
Switchboard:	DP-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
I	6A	NA	NA	FIXED	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

Comments:

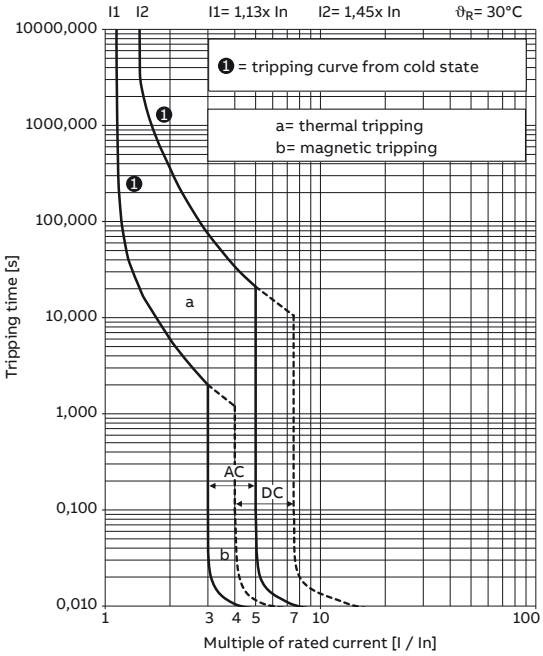
	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-28	2024-10-28	2024-10-28
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-28T11:06:05.539Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-28T12:53:53.084Z	PROVERLIS Digitaly signed by Witness waived 2024-10-28T13:25:55.425Z

Miniature Circuit breakers S300P

Tripping characteristics

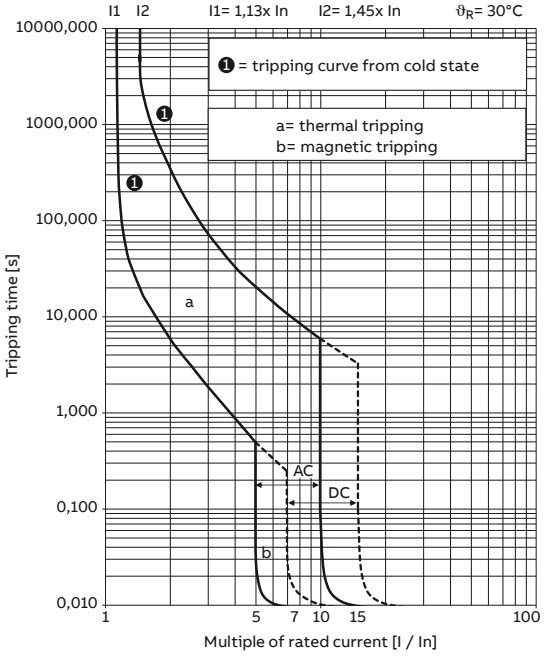
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



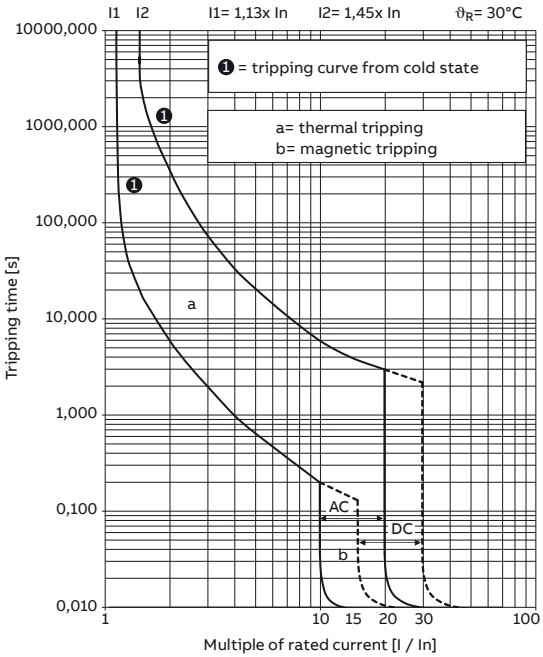
MCB Type S300P - C (5 ... 10 x I_n AC)

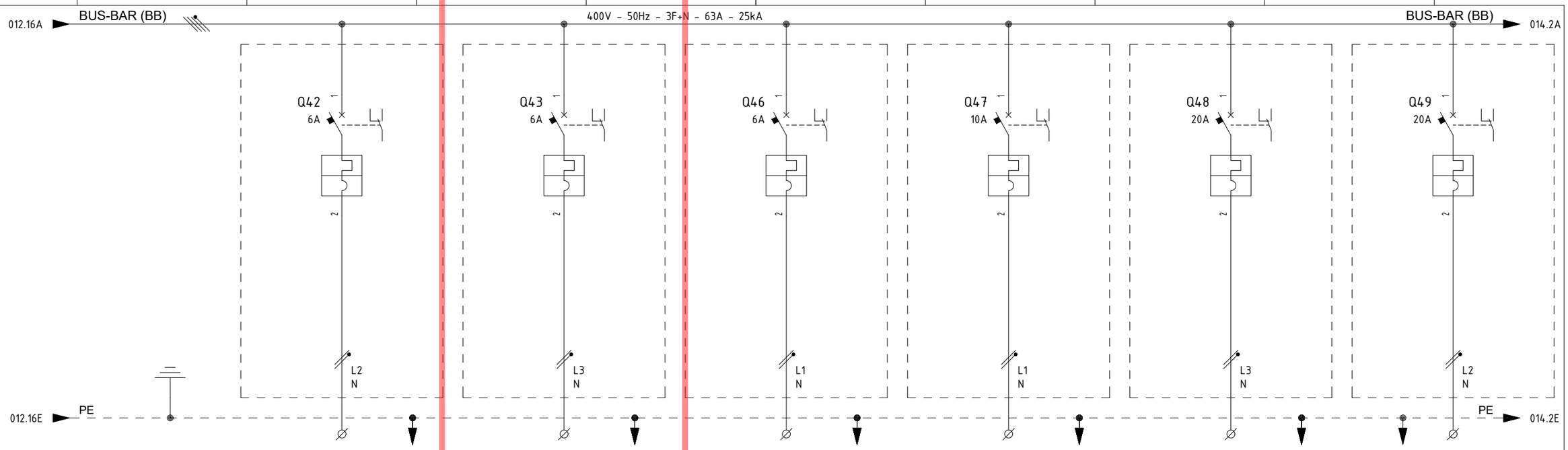
Tripping Characteristic IEC/EN 60898-1



MCB Type S300P - D (10 ... 20 x I_n AC)

Tripping Characteristic IEC/EN 60898-1





ITEM			1	UP-200F4	UP-200F1	-	-	-	-
UTILITY			2	AC UPS F&G AUXILIARY	DC BATTERY SYSTEM AUXILIARY	INS CABINET - SPARE AUXILIARY	SPARE	SPARE	SPARE
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.2 KW | 0.82 A	0.2 KW | 0.82 A	0.5 KW | 2.72 A	1 KW | 5.43 A	3 KW | 16.3 A	3 KW | 16.3 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S302P-C6	S302P-C6	S302P-C10	S302P-C20	S302P-C20
	VERSION		8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS		9	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=10A - Curve C	In=20A - Curve C	In=20A - Curve C
	Icu	KA	10	25kA	25kA	25kA	25kA	25kA	25kA
OVERLOAD	L	Range A	11	-	-	-	-	-	-
		Range t	12	-	-	-	-	-	-
SEL. SHORT-CIRCUIT	S	Range A	13	-	-	-	-	-	-
		Range t	14	-	-	-	-	-	-
INST. SHORT-CIRCUIT	I	Range A	15	-	-	-	-	-	-
		Range t	16	-	-	-	-	-	-
EARTH FAULT PROTECTION	G	Range A	17	-	-	-	-	-	-
		Range t	18	-	-	-	-	-	-
CONTACTOR (ABB)			19	-	-	-	-	-	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	-	-
SURGE ARRESTERS (DHENN)			21	-	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-	-
FUSE HOLDER (ABB)			23	-	-	-	-	-	-
TWILIGHT SWITCH (ABB)			24	-	-	-	-	-	-
VOLTMETER (FRER)			25	-	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-	-
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 6	SCREW / 6
POWER CONDUCTOR		mm²	31	3G2.5	3G2.5	3G2.5	-	-	-

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
3	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
2	24/04/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	15/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	08/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/13

Item n° : PF1002888/101

CROSSWIND

ROSETTI MARINO

TITLE : "DP-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

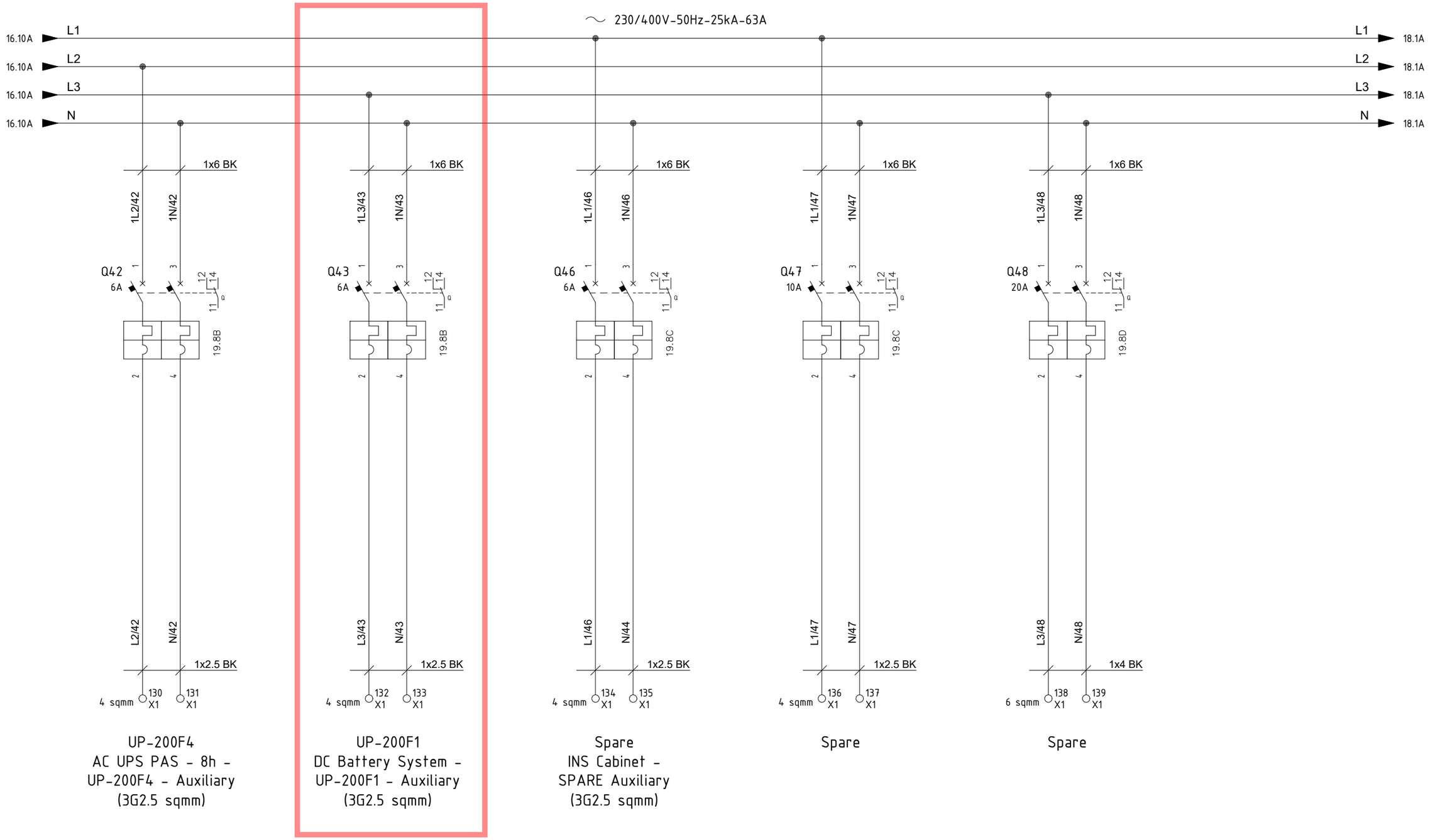
DRAWING NO. 1723002197-EL-DG-00013

SHEET 013

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00013 Rev. 03



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
1	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
0	29/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

=
+
DWG n° : 231298/SD/33
Item n° : PF1002888/101

IMESA ELECTRICAL ENGINEERING
CROSSWIND
ROSETTI MARINO

TITLE : "DP-200N1"
LV SWBD FUNCTIONAL DIAGRAMS
Functional Drawing

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

A3 | DRAWING NO. 1723002197-EL-DG-00033 | SHEET 17 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00033 Rev. 01

ROSETTI MARINO — CROSSWIND

ITEM	Tag	UP-200F1	: DC UPS 10 kVA Redundant System		Dwg	123A90-DDL-EL-DS-20036	
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)		Module	LD_B-100	
TASK	code	C10002790	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FP16B	DC UPS

DATA

Manufacturer	AEG Power Solution	Rating (kVA)	10	input (V)	400
Serial N°	TPRE3855/01	Frequancy (Hz)	50	output (V)	110Vdc

FUNCTION TEST REQUIREMENT

1	Check MC activities of the DC system have been carried out (check list and test sheet).	OK
2	Check equipment for cleaness	OK
3	Energise control of DC system feeders	OK
4	Full test feeder breaker operations in test position.	OK
5	Test breakers interface trips and signals (remote alarms & status). Check the ITR presence in the system	Note
6	Check protection setting on all upstream feeder protective devices	Note
7	Carry out detailed tests of DC system as per manufacturer's test procedure and record on attached manufacturer test sheets.	OK
8	'These tests include as minimum	
	Output voltages adjustment	OK
	Permanent insulation monitor test (if any)	NA
9	Test DC system interface trips and signals (remote alarms & status). Check the ITR presence in the system	OK
10	Perform battery charge / discharge tests according to Manufacturer's instructions. Check the ITR presence in the syste	OK
11	Perform battery autonomy test at rated power. Check the ITR presence in the system	OK

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments: NOTE POINT 5: See the ITR FTR-5 S.S. 84-00 (C10003004, C10003005).
NOTE POINT 6: See the ITR FTR-2 S.S. 84-00 (C10002783, C10002786).

	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2025-03-11	2025-03-11	2025-03-12
Signature	Digitaly signed by Davide Zucconelli 2025-03-11T13:57:52.537Z	Digitaly signed by Kristian Castellani 2025-03-11T14:59:48.864Z	Digitaly signed by Witness waived 2025-03-12T07:10:00.556Z

AEGPS_DOC_REV01
CAE EPLAN Electric P8
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+REC1
UP-200F1 A

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-A320
INTERFACE

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

-R3
100mV
130A

-Q3
160A

BATTERY
110Vdc
-X3
+/-
70 mm²

Battery
symmetry
-X31
+/-
4 mm²

-A10
BATTERY SIMMETRY
FAULT

-L+/-
2P 125A
BUS BAR
110 VDC

+BP
BATTERY PROTECTION

2 (1x25) mm2

-F100
Plastic
box 80*80

+BAT

-SD1

-SD2

-Q10
50A-C
-X2 1+/1
16 mm²
3G16 mm2
amoured cable
(+REC1-A1 /1.4) / SD1

CP-100F1
DC CONTROL 66kV G/S
LINE A-5.2KW

-Q11
20A-C
-X2 2+/2
16 mm²
3G16 mm2
amoured cable
(+REC2-A1 /1.4) / SD2

CP-100F1
DC CONTROL 66kV G/S
LINE B-2KW

-Q12
16A-C
-X2 3+/3
16 mm²
3G16 mm2
amoured cable

SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE A-1KW

-Q13
16A-C
-X2 4+/4
16 mm²
3G16 mm2
amoured cable

SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE B-1KW

-Q14
50A-C
-X2 5+/5
16 mm²

SPARE 5,5KW

-Q15
20A-C
-X2 6+/6
16 mm²

SPARE 2KW

-Q16
16A-C
-X2 7+/7
16 mm²

SPARE 1KW

-F10/F11
DEHNguard

-A21
EARTH +/-

-A1
GCAU
CONTROL UNIT

-A71

-A5.1
Relays

-CR1-X5

-A300
DISPLAY

-A310
KEY PAD

-A73
MODBUS-TCP/IP

-A8
Isolated

SD1 / (+BAT-SD1 /1.8)

-KF
PSR-SCP- 24DC / SIL3

-Z2
400V

-X6
50 mm²

INTERCONNECTION

-X8
4 mm²
CHARGERS
INTERCONNECTION

2,5 mm²

PH4 35 mm²

AUXILIARY SUPPLY
230Vac-50Hz

-X7
L/N
6 mm²
3G2.5 mm2
unamoured cable

-Q6
02A-C

-Q7
02A-C

-H3

-THF4
0/60ºC

-E50
100W

+REC2
UP-200F1 B

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

-A8
(+REC1-CR1-J13:1 /1.4)

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;L3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-A320
INTERFACE

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

2,5 mm²

-A1
GCAU
CONTROL UNIT

-A71

-A5.1
Relays

-CR1-X5

-A300
DISPLAY

-A310
KEY PAD

-A73
MODBUS-TCP/IP

-A8
Isolated

SD2 / (+BAT-SD2 /1.8)

A8 / (+REC2-X8 /1.4)

-A10
BATTERY SIMMETRY
FAULT

Battery
symmetry
-X31
+/-
4 mm²

2,5 mm²

AUXILIARY SUPPLY
230Vac-50Hz

-X7
L/N
6 mm²

-Q6
02A-C

-Q7
02A-C

-H3

-THF4
0/60ºC

-E50
100W

ES21464

				Date	21/03/2024	3W POWER S.P.A.	AEG POWER SOLUTIONS	Single-line	1724000372-EL-DG-00006	= System
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm		System		+ 8 / 47
				Checked	JOP					& EFA
Stat	Alteration	Date	Name	Standard					ES521464 en	A3 Sheet / Sheets 1

ITEM	Tag	UP-200F1	: DC UPS 10 kVA Redundant System	Dwg	123A90-DDL-EL-DS-20036		
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)	Module	LD_B-100		
TASK	code	C10002791	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FTR-6		Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	UP-200F1	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	NA	Calibration certificate date:	7715/24_10/07/2025

Link Type: ● Hardwired ● Communication (strike through unapplicable type)

I/O Type: ● Digital ● Analogic (strike through unapplicable type)

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	Disconnected DC UPS Battery DC UPS (CB-200F1	HW	DO	B-100_TB-X3:7-8	B400-SIS-001_TB-XS-000:39-40	NA	NA	NA	NA	Y	NA	NA	NA	NA
2	Battery room fan fault-charge inhibit (UP-200F1)	HW	DO	B-100_TB-X10:1-2	B400-SIS-001_TB-XS-000:41-42	NA	NA	NA	NA	Y	NA	NA	NA	NA
3														
4														
5														
6														
7														
8														

ANALOGIC

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Min value sent	Min value received	Max value sent	Max value received	Intermediate value sent	Intermediate value received	Out of scale test (OK, Not OK)	Refresh time (if >2s)	Appearing in all applicable display (Y/N)
1														
2														
3														

Comments: NOTE 1: See attachments for full signals and for others information see the OTP: UPS System UP-200F1 10KVA PHASE 3.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2025-03-11	2025-03-11	2025-03-12
Signature	Digitaly signed by Davide Zucconelli 2025-03-11T13:58:43.783Z	Digitaly signed by Kristian Castellani 2025-03-11T15:01:07.085Z	Digitaly signed by Witness waived 2025-03-12T07:10:19.955Z

5.4.4 OTP Steps WORKSITE - PHASE 3

It is foreseen that previous chapters are successfully performed.

All systems fed from SWBD SG-200N1 and from DB DP-200N1 are available and ready to work, all necessary tests are performed and accepted for those systems.
All Cables are pulled up, tested and temporary power supply is completed and available.
LV Power Distribution Switchboards and Distribution Boards is working in normal operation and no alarm pending.

In the following steps will be defined the tests of all signals from/to UPS and SIS hardwired and via Modbus TCP-IP between PCS and UPS.

All I/O signals were tested and recorded through dedicated ITR-B precommissioning check sheets.
Verify and confirm that all related check sheets have been performed successfully.

5.4.5 Test Preparation

Verification of systems UPS UP-200F1.
All systems and subsystems involved in this procedure must be ready for commissioning and available.

To perform the signals test is mandatory that PCS Cabinet – Modbus TCP-IP network system - are already energized, available and ready to work.

To test all signals, refer to specific electrical pre-commissioning check sheets, they will be used for the specific validation of all I/O signals.

5.4.5.1 UPS UP-200F1 - I/O Instrumental I/O list

To test all signals, refer to specific electrical pre-commissioning check sheets, they will be the specific functioning of all I/O.

Following I/O signals groups List to be verified.

This I/O list concern the alarm, feedback and command reading.

Cabinet	FROM	SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	TERMINALS	Note
BOX BATTERY	SIS (ESD)	Disconnect DC UPS UP-200F1 Battery A	DO	84-XS-006	0 TRIP
UPSA/B		Battery room fan fault-charge inhibit	DO	84-XS-009	0 INIBIT

Step	Description	Result	Verified by	Date
1	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list Correct and positive results……☐			

5.4.5.2 UPS UP-200F1 - I/O Modbus TCP-IP list

With reference all register Modbus TPC-IP for PCS system, it attached the Modbus status list

- ***Register tables***

Alarm and event table:

Modbus Register (nMbHR)	Jbus Register (nJbR)	aRN (hex)	Variable	Range
40,002	1	0x1	High Mains Voltage	0 = No alarm, 1 = Alarm
40,003	2	0x2	Low Mains Voltage	
40,004	3	0x3	Charger Failure	
40,005	4	0x4	High Battery Voltage	
40,006	5	0x5	Low Battery Voltage	
40,007	6	0x6	High DC Voltage	
40,008	7	0x7	Low DC Voltage	
40,009	8	0x8	Ground Fault +	
40,010	9	0x9	Ground Fault -	
40,011	10	0xa	Spare 1	
40,012	11	0xb	Spare 2	
40,013	12	0xc	Spare 3	
40,014	13	0xd	Spare 4	
40,015	14	0xe	Spare 5	
40,016	15	0xf	Spare 6	
40,017	16	0x10	Spare 7	
40,018	17	0x11	Spare 8	
40,019	18	0x12	Charger Current Limit Indicator	
40,020	19	0x13	Battery Current Limit Indicator	
40,021	20	0x14	High Charger Current	
40,022	21	0x15	High Battery Current	
40,023	22	0x16	High Temperature	
40,024	23	0x17	Temperature Sensor Error	
40,025	24	0x18	Internal Communication Error	
40,026	25	0x19	Battery Test Fail	
40,027	26	0x1a	Battery Test Aborted	
40,028	27	0x1b	High Battery Temperature	
40,029	28	0x1c	High Float Current	
40,030	29	0x1d	Long Charge Time	
40,031	30	0x1e	No Power Supply Voltage	
40,032	31	0x1f	Battery in Operation	
40,033	32	0x20	Battery Symmetry Fault	

Table 5: Modbus TCP-IP PCS

Measurements and status:

Modbus Register (nMbHR)	Modbus register (nJbR)	aRN (hex)	Variable	Range
40,100	99	0x63	Mains Voltage	VAC / 10
40,101	100	0x64	Battery Voltage	VDC / 10
40,102	101	0x65	Load Voltage	VDC / 10
40,103	102	0x66	Charger Current	Positive Amps / 10
40,104	103	0x67	Battery Current	Signed Amps / 10
40,105	104	0x68	Ambient Temperature	Signed Celsius
40,106	105	0x69	Battery Temperature	Signed Celsius
40,107	106	0x6a	Battery Symmetry Voltage	VDC/10
40,108	107	0x6b	Common Alarm Relay	0: negated, 1: asserted
40,109	108	0x6c	Earth Fault Impedance	Signed earth fault in k-Ohm/10
40,110	109	0x6d	Charge Status	0: Float 1: Highrate 2: Commissioning 3: Battery test 4: Charger Off
40,111	110	0x6e	Remaining Charge Time	Minutes
40,112	111	0x6f	AhMeter	%
40,113	112	0x70	Equation 1	16-bit signed integer value of equation result this result is multiplied by a factor defined by EQ configuration parameter 'ModbusMultiplier ' , rounded to nearest integer value and clamped to [-32,768, 32,767]
40,114	113	0x71	Equation 2	
40,115	114	0x72	Equation 3	
40,116	115	0x73	Equation 4	
40,117	116	0x74	Equation 5	
40,118	117	0x75	Equation 6	
40,119	118	0x76	Equation 7	
40,120	119	0x77	Equation 8	
40,121	120	0x78	Equation 9	
40,122	121	0x79	Equation 10	
40,123	122	0x7a	Equation 11	
40,124	123	0x7b	Equation 12	
40,125	124	0x7c	Equation 13	
40,126	125	0x7d	Equation 14	
40,127	126	0x7e	Equation 15	
40,128	127	0x7f	Equation 16	

All holding registers in this table have a read-only access.

Table 6: Modbus Measure TCP-IP PCS

ROSETTI MARINO — PROVERLIS — CROSSWIND

ITEM	Tag	BA-200F1-C	: UPS DC - BA-200F1-C		Dwg	1724000372-EL-DG-00008	
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)		Module		
TASK	code	C10002792	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form	FTR-4	Battery Charge/Discharge

FTR4 - Battery charge / discharge
Record sheet

BATTERY DATA

Manufacturer:	FAAM	Serial N°:	NA	Type	VRLA GEL TECHNOLOGY
Rated voltage	120V	Battery capacity (Ah):	150	Number of cells	10
Rated autonomy (min)			600		

Test type

Important notice:

Discharge and charge (if required) must be performed according to manufacturer's instructions

Manufacturer:	FAAM	Serial N°:	NA	Type	VRLA GEL TECHNOLOGY
Test type: Charge ● Discharge		Duration	12h	Time	10:45 / 22:45
CdNi	constant current	Current(A)	11.4A / 0.6A	Ambiant T°	11.2°C / 13.2°C
Pb ●	constant voltage	Volt/Cell	13.8V	Initial T° 10.8°C	Final T° 13.2°C

N° Hours	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	...	24
Time (hh:mm)																					
Charge Voltage (V)																					
Charge Current (A)																					
Ambient Temp. (°C)																					
Battery Cell Temp. (°C)																					
Battery Cell N°	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)
1																					
2																					
3																					
4																					
5																					
...																					
N																					

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 175	17140769	7715/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025
FLUKE 62 MAX	53172376WS	7716/24	10/07/2025

Comments: See attachment for full measures.

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM		CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-11-11	2024-11-12	2024-11-12
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-11T09:57:03.004Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-12T15:32:00.208Z	PROVERLIS Digitaly signed by Witness waived 2024-11-12T15:59:41.829Z

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F1 10kVA

UP-200F1 [ANNEX001]

SUBSYSTEM 84-00: BATTERY FIRST CHARGE RECORD SHEET DURATION 12HOURS

ROSETTI MARINO

	BATTERY RACK UPS-BAT-1																								
	12h CAPACITY CHARGE TEST RECORD																								
N° Hours	0,00	0,30	1,00	1,30	2,00	2,30	3,00	3,30	4,00	4,30	5,00	5,30	6,00	...	...	...	...	...	...	...	...	...	...	21,30	22,00	Note:
Time (hh:mm)	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:45	16:15	16:45											8:15	8:45	
Charge Voltage (V)	128,3	137,7	138,1	138,1	138,2	138,2	138,3	137,8	138,1	137,9	138,1	138,0	138,0											137,2	137,3	14,4 V ~ 15,0 V at 20°C N.A V
Charge Current (A)	11,4	2,2	1,8	1,7	1,5	1,5	1,7	1,8	1,9	2,1	2,3	2,2	2,5											0,6	0,6	INITIAL CHARGING CURRENT < 45A 11,4 A
Ambient Temp. (°C)	11,2	11,5	10,5	11,5	12,0	12,0	12,3	12,8	12,8	12,5	12,6	12,8	12,8											12,1	12,2	
Battery Cell Temp. (°C)	10,8	12,0	10,5	12,3	12,5	12,5	12,3	12,5	12,2	12,8	12,6	12,6	12,7											13,1	13,2	

Battery N°	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	
1	13,82	14,22	14,19	14,10	14,06	14,06	13,98	13,98	14,00	13,96	13,90	13,89	13,88											13,70	13,73	FAAM BATTERY,TYPE FLG 12-150 Ah
2	13,60	13,56	13,48	13,47	13,45	13,42	13,41	13,46	13,48	13,51	13,53	13,56	13,57											13,60	13,60	FAAM BATTERY,TYPE FLG 12-150 Ah
3	14,12	14,31	14,66	14,61	14,49	14,57	14,55	14,57	14,53	14,48	14,39	14,36	14,33											13,90	13,92	FAAM BATTERY,TYPE FLG 12-150 Ah
4	13,83	14,83	14,50	14,51	14,60	14,40	14,23	14,04	13,89	13,85	13,83	13,81	13,81											13,90	13,91	FAAM BATTERY,TYPE FLG 12-150 Ah
5	13,44	13,24	13,20	13,22	13,25	13,29	13,33	13,38	13,43	13,48	13,53	13,57	13,59											13,69	13,70	FAAM BATTERY,TYPE FLG 12-150 Ah
6	13,65	13,78	13,82	13,87	13,85	13,83	13,82	13,79	13,78	13,77	13,75	13,71	13,68											13,68	13,68	FAAM BATTERY,TYPE FLG 12-150 Ah
7	13,60	13,50	13,49	13,50	13,56	13,58	13,54	13,52	13,52	13,53	13,57	13,57	13,58											13,59	13,62	FAAM BATTERY,TYPE FLG 12-150 Ah
8	13,79	13,46	13,43	13,46	13,49	13,51	13,49	13,51	13,53	13,55	13,55	13,59	13,61											13,66	13,68	FAAM BATTERY,TYPE FLG 12-150 Ah
9	13,91	14,11	14,15	14,19	14,21	14,24	14,27	14,32	14,34	14,34	14,33	14,36	14,34											13,83	13,85	FAAM BATTERY,TYPE FLG 12-150 Ah
10	13,33	13,18	13,15	13,16	13,19	13,23	13,27	13,32	13,37	13,42	13,46	13,49	13,51											13,59	13,62	FAAM BATTERY,TYPE FLG 12-150 Ah
TERMINAL VOLT. n.1~n.10																										FAAM BATTERY,TYPE FLG 12-150 Ah

7/11/24

FIRMA: MATTIA GIROTTI

ROSETTI MARINO — CROSSWIND

ITEM	Tag	BA-200F1-D	: UPS DC - BA-200F1-D		Dwg	1724000372-EL-DG-00008	
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)		Module		
TASK	code	C10002793	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form	FTR-4	Battery Charge/Discharge

FTR4 - Battery charge / discharge
Record sheet

BATTERY DATA

Manufacturer:	FAM	Serial N°:	NA	Type	VRLA GEL TECHNOLOGY
Rated voltage	120V	Battery capacity (Ah):	150 Ah	Number of cells	10
Rated autonomy (min)			600 min		

Test type

Important notice:

Discharge and charge (if required) must be performed according to manufacturer's instructions

Manufacturer:	FAM	Serial N°:	NA	Type	VRLA GEL TECNOLOGY
Test type: Charge	Discharge ●	Duration	10 h	Time	Start:9:00 Stop:19:30
CdNi	constant current ●	Current(A)	15 A	Ambiant T°	NA
Pb ●	constant voltage	Volt/Cell	NA	Initial T° 12.2°	Final T° 18°

N° Hours	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	...	24
Time (hh:mm)																					
Charge Voltage (V)																					
Charge Current (A)																					
Ambient Temp. (°C)																					
Battery Cell Temp. (°C)																					
Battery Cell N°	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)
1																					
2																					
3																					
4																					
5																					
...																					
N																					

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 175	17140769	7715/24	10/07/2025
FLUKE 376	16600082	7724/24	10/07/2025
LOAD BANK MAREL XP 250.250	517		

Comments: SEE ATTACHED FORM

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-11	2024-11-12	2024-11-12
Signature	Digitaly signed by Davide Zucconelli 2024-11-11T10:00:27.101Z	Digitaly signed by Kristian Castellani 2024-11-12T15:33:22.053Z	Digitaly signed by Witness waived 2024-11-12T16:00:10.092Z

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F1 10kVA

ROSETTI MARINO

UP-200F1 [ANNEX 002]

SUBSYSTEM 84-00: BATTERY CHARGE / DISCHARGE RECORD SHEET

EQUIPMENT	BATTERY RACK UP-200F1	TEST MEASUREMENT:	ANNEX XX: BEFORE DISCHARGE

BATTERY BANK TERMINAL VOLTAGE

AMBIENT TEMPERATURE 12,2 °C BATTERY TEMPERATURE 13,2 °C

CELL N°	TAG UTILITY / TYPE	MANIFACTURER	MODEL	LOCATION	VOLTAGE (V)	DATE	TIME	REMARKS
1	FAAM,TYPE FLG 12-150 Ah			B 100	13,28	07/11/24	08:50	
2	FAAM,TYPE FLG 12-150 Ah			B 100	13,21	07/11/24	08:50	
3	FAAM,TYPE FLG 12-150 Ah			B 100	13,40	07/11/24	08:50	
4	FAAM,TYPE FLG 12-150 Ah			B 100	13,36	07/11/24	08:50	
5	FAAM,TYPE FLG 12-150 Ah			B 100	13,26	07/11/24	08:50	
6	FAAM,TYPE FLG 12-150 Ah			B 100	13,26	07/11/24	08:50	
7	FAAM,TYPE FLG 12-150 Ah			B 100	13,22	07/11/24	08:50	
8	FAAM,TYPE FLG 12-150 Ah			B 100	13,25	07/11/24	08:50	
9	FAAM,TYPE FLG 12-150 Ah			B 100	13,35	07/11/24	08:50	
10	FAAM,TYPE FLG 12-150 Ah			B 100	13,21	07/11/24	08:50	

07/11/24

FIRMA: MATTIA GIROTTI

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F1 10kVA

ROSETTI MARINO

UPS UP-200F1 [ANNEX 005]
SUBSYSTEM 84-00: BATTERY DISCHARGE RECORD SHEET

BATTERY RACK' UPS-BAT-1

10h CAPACITY DISCHARGE TEST RECORD WITH APPLIED RESISTIVE LOAD BANK

N° Hours	0,00	0,30	1,00	1,30	2,00	2,30	3,00	3,30	4,00	4,30	5,00	5,30	6,00	6,30	7,00	7,30	8,00	8,30	9,00	9,30	10,00	Note:
Time (hh:mm)	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	18:30
Discharge ~~Power (W)~~ VOLTAGE (V)	137,3	126,6	123,7	122,6	121,9	120,8	120,3	119,6	118,9	118,7	//	119,5	118,2	117,6	116,8	115,5	114,8	113,8	113,9	113,8	112,8	111,8 179W ..... W
Discharge Current (A)	0,6	14,03	13,02	13,3	13,2	16,5	16,5	16,3	16,1	12,8	//	13,0	13,0	12,7	12,6	15,6	15,7	15,6	15,2	13,8	13,8	14,0 13,50A. ..... A
Ambient Temp. (°C)	12,2	13,5	14,2	14,5	14,8	14,6	14,4	14,5	15,7	15,8	//	15,6	16,2	16,6	16,2	16,4	17,2	17,8	18,0	18,1	18,3	18,0
Battery Cell Temp. (°C)	13,2	14,1	14,5	14,3	15,0	15,4	15,8	15,6	15,8	15,6	//	16,1	15,8	16,3	16,1	16,2	16,6	17,4	17,5	17,8	18,1	18,1

Battery Cell N°	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)
1	13,73	12,48	12,38	12,28	12,22	12,10	12,05	11,98	11,92	11,90	//	11,85	11,84	11,78	11,72	11,58	11,49	11,85	11,44	11,38	11,31	11,20
2	13,60	12,43	12,34	12,24	12,18	12,06	12,00	11,84	11,86	11,84	//	11,80	11,88	11,72	11,66	11,51	11,40	11,86	11,42	11,31	11,32	11,18
3	13,82	12,53	12,44	12,34	12,26	12,15	12,10	12,04	11,98	11,96	//	11,88	11,81	11,85	11,78	11,67	11,58	11,52	11,41	11,35	11,28	11,08
4	13,41	12,50	12,41	12,30	12,23	12,11	12,06	11,88	11,93	11,91	//	11,85	11,86	11,80	11,74	11,61	11,50	11,40	11,38	11,42	11,28	11,11
5	13,70	12,49	12,38	12,20	12,18	12,08	12,03	11,96	11,88	11,87	//	11,82	11,83	11,76	11,70	11,50	11,45	11,40	11,41	11,33	11,28	11,18
6	13,68	12,43	12,34	12,23	12,18	12,04	11,98	11,82	11,85	11,83	//	11,88	11,78	11,71	11,65	11,48	11,38	11,42	11,45	11,34	11,23	11,12
7	13,62	12,42	12,32	12,22	12,16	12,04	11,97	11,80	11,84	11,82	//	11,86	11,77	11,70	11,63	11,48	11,37	11,32	11,38	11,31	11,21	11,07
8	13,68	12,44	12,35	12,25	12,18	12,07	12,01	11,84	11,88	11,86	//	11,83	11,80	11,74	11,67	11,53	11,42	11,32	11,36	11,30	11,20	11,08
9	13,85	12,45	12,35	12,25	12,20	12,08	12,03	11,87	11,80	11,88	//	11,82	11,83	11,76	11,70	11,45	11,38	11,42	11,37	11,28	11,08	11,06
10	13,62	12,45	12,36	12,24	12,18	12,06	12,01	11,85	11,88	11,86	//	11,83	11,81	11,75	11,68	11,55	11,45	11,32	11,38	11,36	11,27	11,07
TERMINAL VOLT. n.1~n.10																						

07/11/2024

FIRMA: MATTIA GIROTTI

ITEM	Tag	BA-200F1	: Battery Bank for DC UPS 10 kVA	Dwg	123A90-DDL-EL-DS-20036
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)	Module	LD_B-100
TASK	code	C10002794	Location: Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity: FTS	Discipline: Electrical	Form: FTR-3		Battery Autonomy

FTR3 - Battery autonomy
Record sheet

BATTERY DATA

Manufacturer:	FAAM	Serial N°:	NA	Type	FLG 12-150
Rated voltage	110V	Battery capacity (Ah):	150	Number of cells	10
Rated autonomy (min):	600				

Battery autonomy test

Floating battery voltage:	2,27V	V	Test load (kW):	1.6	kW

Time	0'	15"	30"	45"	1'	1'30"	2'	3'	4'	5'	6'	7'
Battery voltage	NOTE1	NOTE1										
Discharge current	NOTE1	NOTE1										

Time	8'	9'	10'	15'	20'	25'	30'	35'	40'	45'	50'	55'
Battery voltage												
Discharge current												

Time	60'	70'	80'	90'	100'	110'	120'					
Battery voltage												
Discharge current												

Battery stopping voltage

Design	10 x FLG 12-150	Measured	11,13V

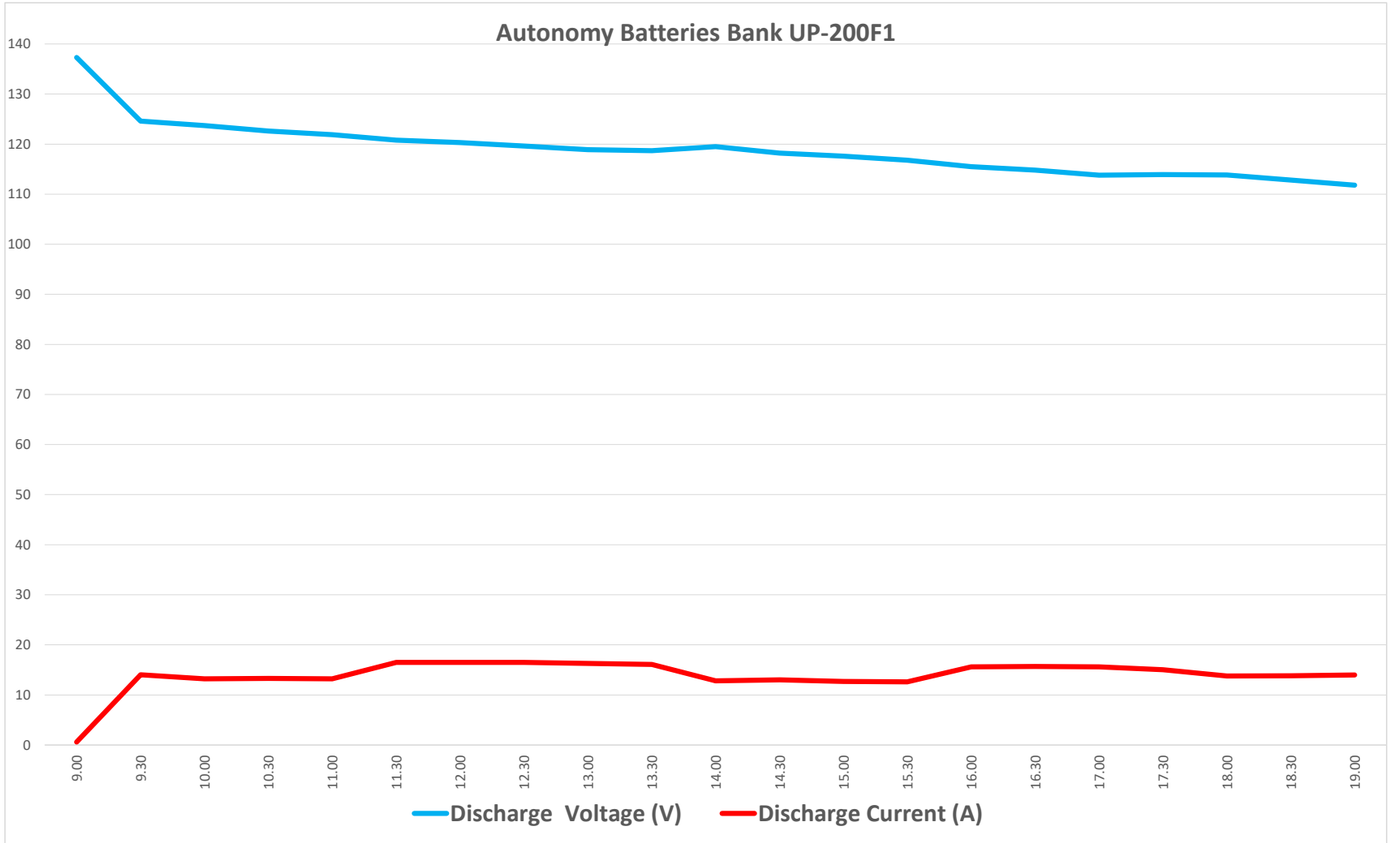
Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 175	17140769	7715/24	10/07/2025
LOAD BANK - MAREL XP 250.250	517		

Comments: NOTE 1: See the attachments for the autonomy graph.

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-11-11	2024-11-15	2024-11-18
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-11T13:52:07.293Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-15T07:58:02.542Z	PROVERLIS Digitaly signed by Witness waived 2024-11-18T13:09:20.988Z

	TIME	BATTERY VOLTAGE (V)	DISCHARGE CURRENT DC (A)
1	09:00	137,3	0,6
2	09:30	124,6	14
3	10:00	123,7	13
4	10:30	122,6	13,3
5	11:00	121,9	13,2
6	11:30	120,8	16,5
7	12:00	120,3	16,5
8	12:30	119,6	16,3
9	13:00	118,9	16,1
10	13:30	118,7	12,8
11	14:00	119,5	13
12	14:30	118,2	13
13	15:00	117,6	12,7
14	15:30	116,8	12,6
15	16:00	115,5	15,6
16	16:30	114,8	15,7
17	17:00	113,8	15,6
18	17:30	113,9	15,2
19	18:00	113,8	13,8
20	18:30	112,8	13,8
21	19:00	111,8	14



Test discharge rate in Amperes to 1,8 Vpc at 20°C = 15A

The result is OK and for every battery the minimum Vpc registered is 1,843V > 1,8V

ITEM	Tag	A7/+03-QF1	: DRAWER INCOMER A UPS - A7/+03-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10003004		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity FTS	Discipline	Electrical	Form	FTR-5 Remote Signalling

FTR5 - Remote signalling
Record sheet

DATA

Switchboard:	SG-200N1	Cubicle N°:	A7/+03

FUNCTION TEST

	Order/Inputs		Status/Output					
	Start order	Stop order	Run	Fault	Stop Signalisation	Available/Ready to start	TRIP	CB OPEN/CLOSE
UCP								
ECS								
SSS								
PSS								
PCS				● ●			● ●	● ●
Control Station								
Control Panel								
HVAC Panel								
MCC							● ●	● ●

Column 1 (To check) to be filled during commissioning preparation stage - black if the check is asked
Column 2 (Checked) to be filled black if check is Ok

Comments:

	Performed by	☐ WITNESS ☉ REVIEW	☉ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW Com
Name	Davide Zucconelli	Kristian Castellani	Jamie McAllister
Date	2025-04-22	2025-04-22	2025-04-22
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2025-04-22T09:05:51.099Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-22T14:29:28.921Z	PROVERLIS Digitaly signed by Jamie McAllister 2025-04-22T15:05:24.433Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A7/+04-QF1	: DRAWER INCOMER B UPS - A7/+04-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10003005		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity FTS	Discipline	Electrical	Form	FTR-5 Remote Signalling

FTR5 - Remote signalling
Record sheet

DATA

Switchboard:	SG-200N1	Cubicle N°:	A7/+04

FUNCTION TEST

	Order/Inputs		Status/Output					
	Start order	Stop order	Run	Fault	Stop Signalisation	Available/Ready to start	TRIP	CB OPEN/CLOSE
UCP								
ECS								
SSS								
PSS								
PCS				● ●			● ●	● ●
Control Station								
Control Panel								
HVAC Panel								
MCC							● ●	● ●

Column 1 (To check) to be filled during commissioning preparation stage - black if the check is asked
Column 2 (Checked) to be filled black if check is Ok

Comments:

	Performed by	☐ WITNESS ☉ REVIEW	☉ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW Com
Name	Davide Zucconelli	Kristian Castellani	Jamie McAllister
Date	2025-04-22	2025-04-22	2025-04-22
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2025-04-22T08:59:45.463Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-22T14:33:30.639Z	PROVERLIS Digitaly signed by Jamie McAllister 2025-04-22T15:06:16.332Z

ITEM	Tag	UP-200F1-Q14	: SPARE			Dwg	1724000372-EL-DG-00008
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10004595		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FTR-2 Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer: ABB	Serial N°: NA	Relay type: NA
Auxiliary supply: NA	Location: B100	Cubicle: NA
Switchboard: UP-200F1		

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
I	50A	NA	NA	FIXED	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	08/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-08	2024-11-08	2024-11-08
Signature	Digitaly signed by Davide Zucconelli 2024-11-08T10:30:30.059Z	Digitaly signed by Kristian Castellani 2024-11-08T15:23:42.558Z	Digitaly signed by Witness waived 2024-11-08T16:30:02.225Z

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+REC1
UP-200F1 A

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;L3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-PR2-A2
TPC

-A320
INTERFACE

-PR1-A2
TPC

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

SD1 / (+BAT-SD1 /1.8)

-A1
GCAU
CONTROL UNIT

-A5.1
Relays

-CR1-X5

-A71

-A300
DISPLAY

-KF
PSR-SCP- 24DC / SIL3

-A73
MODBUS-TCP/IP

-A8
Isolated

-A310
KEY PAD

AUXILIARY SUPPLY
230Vac-50Hz

-Q6
02A-C

-H3

-X7
L/N
6 mm²
3G2.5 mm2
unamoured cable

-Q7
02A-C

-THF4
0/60ºC

-E50
100W

-X8
4 mm²
CHARGERS
INTERCONNECTION

2,5 mm²

INTERCONNECTION
50 mm²
-X6

PH4 35 mm²

-R3
100mV
130A

-Q3
160A

BATTERY
110Vdc
-X3
+/-
70 mm²

Battery
symmetry
-X31
+/-
4 mm²

-A10
BATTERY SIMMETRY
FAULT

-L+/-
2P 125A
BUS BAR
110 VDC

-Z2
400V

-Q10
50A-C
CP-100F1
DC CONTROL 66kV G/S
LINE A-5.2KW
-X2 1+/1
16 mm²
3G16 mm2
amoured cable
(+REC1-A1 /1.4) / SD1

-Q11
20A-C
CP-100F1
DC CONTROL 66kV G/S
LINE B-2KW
-X2 2+/2
16 mm²
3G16 mm2
amoured cable
(+REC2-A1 /1.4) / SD2

-Q12
16A-C
SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE A-1KW
-X2 3+/3
16 mm²
3G16 mm2
amoured cable

-Q13
16A-C
SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE B-1KW
-X2 4+/4
16 mm²
3G16 mm2
amoured cable

-Q14
50A-C
SPARE 5,5KW
-X2 5+/5
16 mm²

-Q15
20A-C
SPARE 2KW
-X2 6+/6
16 mm²

-Q16
16A-C
SPARE 1KW
-X2 7+/7
16 mm²

-F10/F11
DEHNguard

-A21
EARTH +/-

+BP
BATTERY PROTECTION

2 (1x25) mm2

-F100
Plastic
box 80*80

+BAT

-SD1

-SD2

Int
2,5 mm²

+REC2
UP-200F1 B

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

-A8
(+REC1-CR1-J13:1 /1.4)

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;L3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-PR2-A2
TPC

-A320
INTERFACE

-PR1-A2
TPC

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

SD2 / (+BAT-SD2 /1.8)

-A1
GCAU
CONTROL UNIT

-A5.1
Relays

-CR1-X5

-A71

-A300
DISPLAY

-A73
MODBUS-TCP/IP

-A8
Isolated

-A310
KEY PAD

A8 / (+REC2-X8 /1.4)

AUXILIARY SUPPLY
230Vac-50Hz

-Q6
02A-C

-H3

-X7
L/N
6 mm²

-Q7
02A-C

-THF4
0/60ºC

-E50
100W

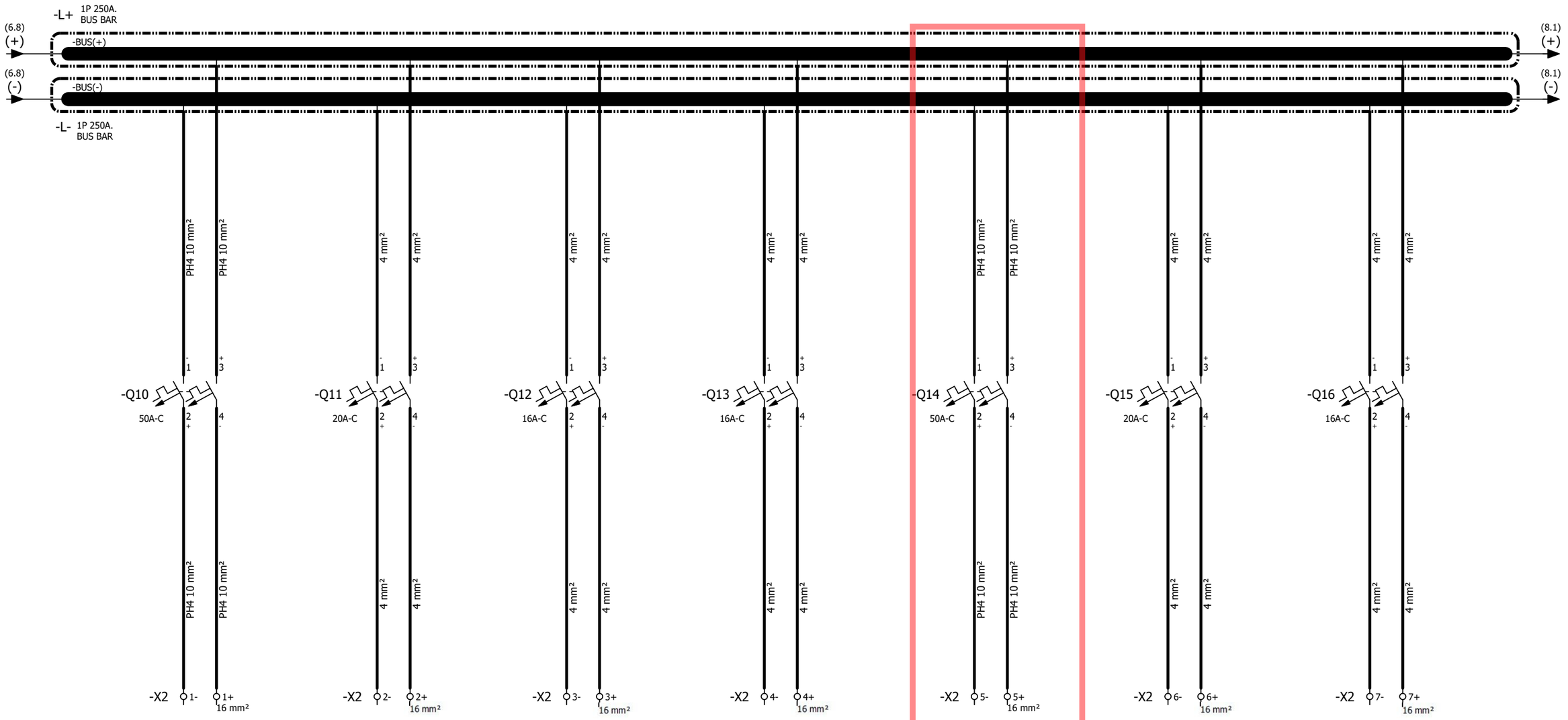
Battery
symmetry
-X31
+/-
4 mm²

-A10
BATTERY SIMMETRY
FAULT

				Date	21/03/2024	3W POWER S.P.A.		Single-line	1724000372-EL-DG-00006	= System	
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm	AEG POWER SOLUTIONS			+	8 / 47
				Checked	JOP			System		& EFA	Sheet 1
Stat	Alteration	Date	Name	Standard					ES521464 en	A3	Sheets 1

ES521464

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	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
SUPPLIED FROM	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
RATING	50A-C	20A-C	16A-C	16A-C	50A-C	20A-C	16A-C
MAXIMUM CROSS-SECTION	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²
AUXILIARY CONTACT	98 96 95 (/8.5)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)
FUNCTION	CP-100F1 DC CONTROL 66kV G/S LINE A-5.2KW	CP-100F1 DC CONTROL 66kV G/S LINE B-2KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE A-1KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE B-1KW	SPARE 5,5KW	SPARE 2KW	SPARE 1KW

S300P
Data sheet



System pro *M* compact®
S300P miniature circuit breakers comply with IEC/EN 60947-2, IEC/EN 60898-1, UL 1077 and CSA 22.2 No. 235, protecting the installation in commercial and industrial applications by supporting a breaking capacity of 25 kA.

—
01

—
01
S300P
Miniature Circuit Breaker

S300P MCB is designed to be used in installations where high breaking capacities are required to protect against short-circuits and overloads.

S300P is compliant to the product standards
IEC/EN 60947-2
IEC/EN 60898-1
UL 1077
CSA 22.2 No.235
and features the following main technical characteristics:

- Rated nominal current: 0.2 A ... 63 A
- Characteristic: B, C, D, K, Z
- Pole variant: 1, 2, 3, 4, 1+N, 3+N
- Rated breaking capacity I_{cu}: 25 kA; 100 kA (≤ 6 A)
- Rated operational voltage U_e: 240/415 V AC
- Rated impulse withstand voltage U_{imp}: 6 kV

Application benefits

- Integrated trip indicator for clear signalization of tripping events on site
- Dual DIN-Rail release for fast and easy installation
- Fully compatible with whole range of System pro *M* compact® accessories supporting lots of different functions
- Quick and easy product identification by QR-code along with direct access to the ABB product database
- Terminals equipped with fail safe feature to avoid improper installation
- Supply possible from top or bottom and in parallel with cables and busbars thanks to terminals composed by two different openings
- Excellent technical performance to ensure safety and protection of installation and personal
- Certified quality and compliance according to worldwide product standards

S300P
Technical data



S300P

		S300P
General Data	Standards	IEC/EN 60947-2, IEC/EN 60898-1, UL 1077, CSA 22.2 No. 235
	Poles	1P, 2P, 3P, 4P, 1+N, 3+N
	Tripping characteristics	B, C, D, K, Z
	Rated current I_n	6…63 A (B-curve), 0.5…63 A (C-, D-, Z-curve), 0.2…63 A (K-curve)
	Rated frequency f	50 / 60 Hz, DC
	Rated insulation voltage U_i acc. to IEC/EN 60664-1	500 V AC
	Overvoltage category	IV
	Pollution degree	3
Data acc. to IEC/EN 60947-2	Tripping Characteristics	B, C, D, K, Z
	Rated operational voltage U_e	1P, 1+N: 240 V AC, 72 V DC 2P: 415 V AC, 125 V DC 3P, 3+N, 4P: 415 V AC
	Max. power frequency recovery voltage U_{max}	1P, 1+N: 264 V AC, 72 V DC 2P, 3P, 3+N, 4P: 462 V AC, 125 V DC
	Min. operating voltage	12 V AC – 12 V DC
	Rated ultimate short-circuit breaking capacity I_{cu}	25 kA; 100 kA (≤ 6 A)
	Rated service short-circuit breaking capacity I_{cs}	12.5 kA (≤ 25 A); 10 kA (32-40 A); 7.5 kA (>40 A)
	Rated impulse withstand voltage U_{imp} (1.2/50 µs)	6 kV
	Reference temperature for tripping characteristics	55 °C (B-, C-, D-curve), 40 °C (K-, Z-curve)
	Electrical endurance	I_n < 32 A: 20,000 ops. (AC), I_n ≥ 32 A: 10,000 ops. (AC); 1,500 ops. (DC)
Data acc. to IEC/EN 60898-1	Tripping Characteristics	B, C, D
	Rated operational voltage U_n	1P: 240/415 V AC, 72 V DC 1+N: 240 V AC, 72 V DC 2P: 415 V AC, 125 V DC 3P, 3P+N, 4P: 415 V AC
	Max. power frequency recovery voltage U_{max}	1P, 1+N: 264 V AC, 72 V DC 2P, 3P, 3+N, 4P: 457 V AC, 125 V DC
	Min. operating voltage	12 V AC – 12 V DC
	Rated short-circuit capacity I_{cn}	25 kA (≤ 25 A), 20 kA (32 - 40 A), 15 kA (> 40 A)
	Dielectric test voltage	2.0 kV (50/60 Hz, 1 min)
	Reference temperature for tripping characteristics	30 °C
	Electrical endurance	I_n < 32 A: 20,000 ops. (AC), I_n ≥ 32 A: 10,000 ops. (AC); 1,000 ops. (DC)
Data acc. to UL1077 / CSA 22.2 No. 235	Tripping Characteristics	B, C, D, K, Z
	Rated voltage	1P: 277 V AC, 60 V DC 2...4P: 480Y/277 V AC, 125 V DC (2 poles in series)
	Rated interrupting capacity	10 kA
	Application Suppl. prot., for general use.	TC2, OL0, SC:U1
	Reference temperature for tripping characteristics	40 °C
	Electrical endurance	6,000 ops., 1 cycle (1s.-ON, 9s.-OFF)

S300P
Mechanical data

		S300P
Mechanical Data	Housing	Insulation group I, RAL 7035
	Toggle	Insulation group II, black, sealable
	Contact position indication	Real CPI (green OFF / red ON)
	Trip position indicator	TPI (grey NO TRIP / orange TRIP)
	Protection degree acc. to DIN EN 60529	IP20, IP40 in enclosure with cover
	Mechanical endurance	20,000 ops.
	Shock resistance acc. to IEC/EN 60068-2-27	25 g - 2 shocks - 13 ms
	Vibration resistance acc. to IEC/EN 60068-2-6	5 g - 20 cycles at 5 ... 150 ... 5 Hz at 0.8 I_n
	Environmental conditions (damp heat cyclic) acc. to IEC/EN 60068-2-30	28 cycles with 55 °C/90-96 % and 25 °C/95-100 %
	Ambient temperature	-40 ... +70 °C
	Storage temperature	-50 ... +70 °C
Installation	Terminal	Failsafe bi-directional cylinder-lift terminal
	Cross-section of conductors (top/bottom)	solid, stranded: 35 mm² / 35 mm² flexible: 25 mm² / 25 mm² 14 – 4 AWG
	Cross-section of busbars (top/bottom)	10 mm² / 10 mm² 14 – 8 AWG
	Torque	2.8 Nm; 18 in-lbs.
	Screw driver	No. 2 Pozidrive
	Mounting	on DIN rail 35 mm, acc. to EN 60715 by dual DIN-rail release
	Mounting position	any
	Supply	any
Dimensions and weight	Mounting dimensions acc. to DIN 43880	1
	Pole dimensions (H x D x W)	88 x 69 x 17.5 mm
	Pole weight approx.	124 g
Combination with auxiliary elements	Auxiliary contact	Yes
	Bottom fixed auiliary contact	Yes
	Signal contact	Yes
	Shunt trip	Yes
	Undervoltage release	Yes
	Motor operating device	Yes
Standards	IEC/EN 60947-2	
	IEC/EN 60898-1	
	UL 1077	
	CSA 22.2. No.235	
	GB/T 14048.2	
	GB/T 10963.1	

Approvals

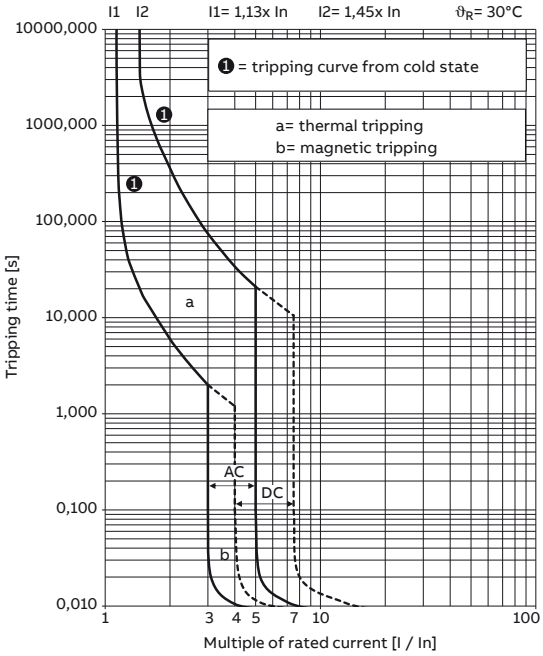
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- UL 1077 - US
- CSA 22.2 No.235 - CA
- CCC - PRC
- EAC - RU
- KEMA - NL
- IMQ - IT
- SII - IL
- S+ - CH
- ÖVE - AT
- NF - FR
- EZU - CZ
- ANCE - MX
- KC - KR
- UKCA - UK
- DNV - NO
- GL - DE
- LRS - UK
- RINA - IT

Miniature Circuit breakers S300P

Tripping characteristics

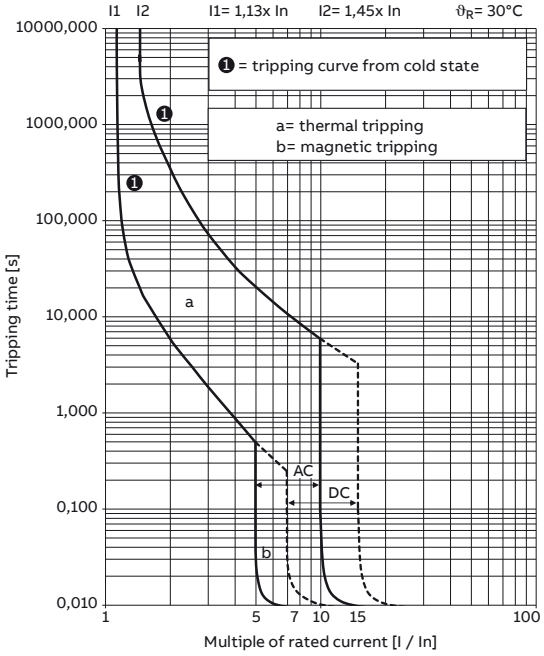
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



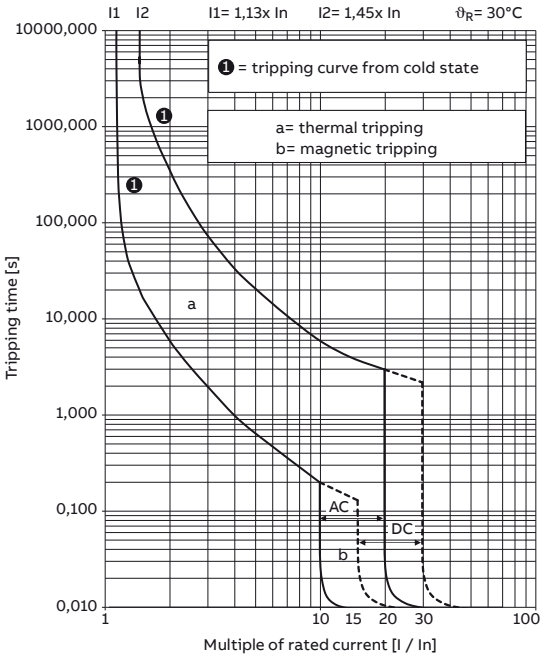
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1

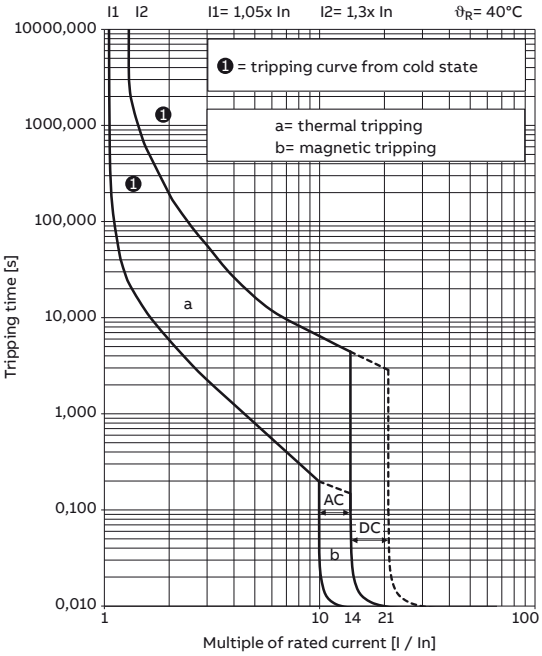


MCB Type S300P - D (10 ... 20 x I_n AC)

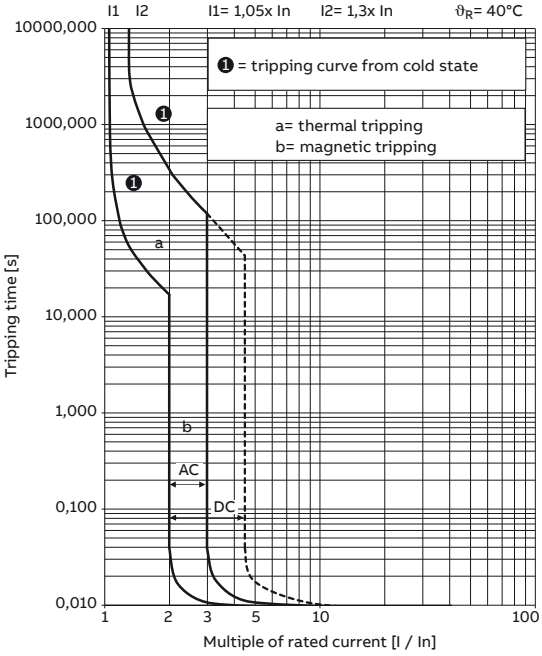
Tripping Characteristic IEC/EN 60898-1



MCB Type S300P - K (10 ... 14 x I_n AC)
Tripping Characteristic IEC/EN 60947-2



MCB Type S300P - Z (2 ... 3 x I_n AC)
Tripping Characteristic IEC/EN 60947-2



Tripping characteristics S300P

Acc. to	Tripping characteristics	Rated current	Thermal release [2]			Electromagnetic release [1]		
			Currents:		Tripping time	Currents:		Tripping time
			conventional non-tripping current	conventional tripping current		hold current surges	trip at least at	
IEC/EN 60898-1	B	06 to 63 A	1.13 · I_n		> 1 h	3 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		5 · I_n	< 0.1 s
	C	0.5 to 63 A	1.13 · I_n		> 1 h	5 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		10 · I_n	< 0.1 s
	D	0.5 to 63 A	1.13 · I_n		> 1 h	10 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		20 · I_n	< 0.1 s
IEC/EN 60947-2	K	0.2 to 63 A	1.05 · I_n		> 1 h	10 · I_n		> 0.2 s
				1.3 · I_n	< 1 h [3]		14 · I_n	< 0.2 s
	Z	0.5 to 63 A	1.05 · I_n		> 1 h	2 · I_n		> 0.2 s
				1.3 · I_n	< 1 h [3]		3 · I_n	< 0.2 s

[1] The indicated electromagnetic tripping values apply to a frequency range of 16 2/3... 60 Hz. For different network frequencies or direct current the values change according to the multipler in the table below
[2] The thermal releases are calibrated to a nominal reference ambient temperature; for Z and K, the value is 40 °C, for B, C and D is 30 °C. In the case of higher ambient temperatures, the current values fall by ca. 6 % for each 10 K temperature rise.
[3] As from operating temperature (after I_1 > 1 h or, as applicable, 2 h).

	AC			DC
	100 Hz	200 Hz	400 Hz	
Multiplier	1.1	1.2	1.5	1.5

The thermal tripping performance is independent from the network frequency.

Miniature Circuit breakers S300P

Derating

For installations of miniature circuit breakers at other temperatures than the reference value and installations of several miniature circuit breakers directly side by side, derating factors have to be considered.

Deviating ambient temperature

The rated value of the current of a miniature circuit breaker refers to a temperature of 40 °C for circuit-breakers with characteristics K and Z and 30 °C for characteristics B, C and D. The following table contains the derating of load capability of S300P MCBs with temperature from -40 °C to 70 °C for the curves B, C, D, K, and Z.

Tripping characteristic	Rated Current I_n (A)	Max. Operating currents depending on the ambient temperature T (°C)											
		-40	-30	-20	-10	0	10	20	30	40	50	60	70
B. C and D	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
	1	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9
	1.6	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4
	2	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8
	3	3.6	3.5	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6
	4	4.8	4.7	4.6	4.5	4.4	4.2	4.1	4.0	3.9	3.8	3.6	3.5
	6	7.3	7.1	6.9	6.7	6.5	6.4	6.2	6.0	5.8	5.6	5.5	5.3
	8	9.7	9.4	9.2	9.0	8.7	8.5	8.2	8.0	7.8	7.5	7.3	7.0
	10	12.1	11.8	11.5	11.2	10.9	10.6	10.3	10.0	9.7	9.4	9.1	8.8
	13	15.5	15.5	15.0	14.5	14.0	14.0	13.5	13.0	12.5	12.0	12.0	11.5
	16	19.5	19.0	18.5	18.0	17.5	17.0	16.5	16.0	15.5	15.0	14.5	14.0
	20	24.0	23.5	23.0	22.5	22.0	21.0	20.5	20.0	19.5	19.0	18.0	17.5
	25	30.5	29.5	29.0	28.0	27.5	26.5	26.0	25.0	24.5	23.5	23.0	22.0
	32	38.5	38.0	37.0	36.0	35.0	34.0	33.0	32.0	31.0	30.0	29.0	28.0
	40	48.5	47.0	46.0	45.0	43.5	42.5	41.0	40.0	39.0	37.5	36.5	35.0
	50	60.5	59.0	57.5	56.0	54.5	53.0	51.5	50.0	48.5	47.0	45.5	44.0
	63	76.0	74.5	72.5	70.5	68.5	67.0	65.0	63.0	61.0	59.0	57.5	55.5
K and Z	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4
	0.75	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7
	1	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	0.9
	1.6	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4
	2	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8
	3	4.0	3.9	3.7	3.6	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7
	4	5.3	5.2	5.0	4.8	4.6	4.5	4.3	4.1	4.0	3.9	3.7	3.6
	6	8.0	7.7	7.5	7.2	6.9	6.7	6.5	6.2	6.0	5.8	5.6	5.4
	8	10.7	10.3	9.9	9.6	9.3	8.9	8.6	8.3	8.0	7.7	7.4	7.1
	10	13.4	12.9	12.4	12.0	11.6	11.2	10.8	10.4	10.0	9.6	9.3	8.9
	13	17.5	17.0	16.0	15.5	15.0	14.5	14.0	13.5	13.0	12.5	12.0	11.5
	16	21.5	20.5	20.0	19.0	18.5	18.0	17.0	16.5	16.0	15.5	15.0	14.5
	20	26.5	26.0	25.0	24.0	23.0	22.5	21.5	20.5	20.0	19.5	18.5	18.0
	25	33.5	32.0	31.0	30.0	29.0	28.0	27.0	26.0	25.0	24.0	23.0	22.5
	32	43.0	41.5	40.0	38.5	37.0	35.5	34.5	33.0	32.0	31.0	29.5	28.5
	40	53.5	51.5	49.5	48.0	46.5	44.5	43.0	41.5	40.0	38.5	37.0	35.5
	50	67.0	64.5	62.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.5	44.5
	63	84.5	81.0	78.5	75.5	73.0	70.5	67.5	65.5	63.0	60.5	58.5	56.5

Influence of adjacent devices

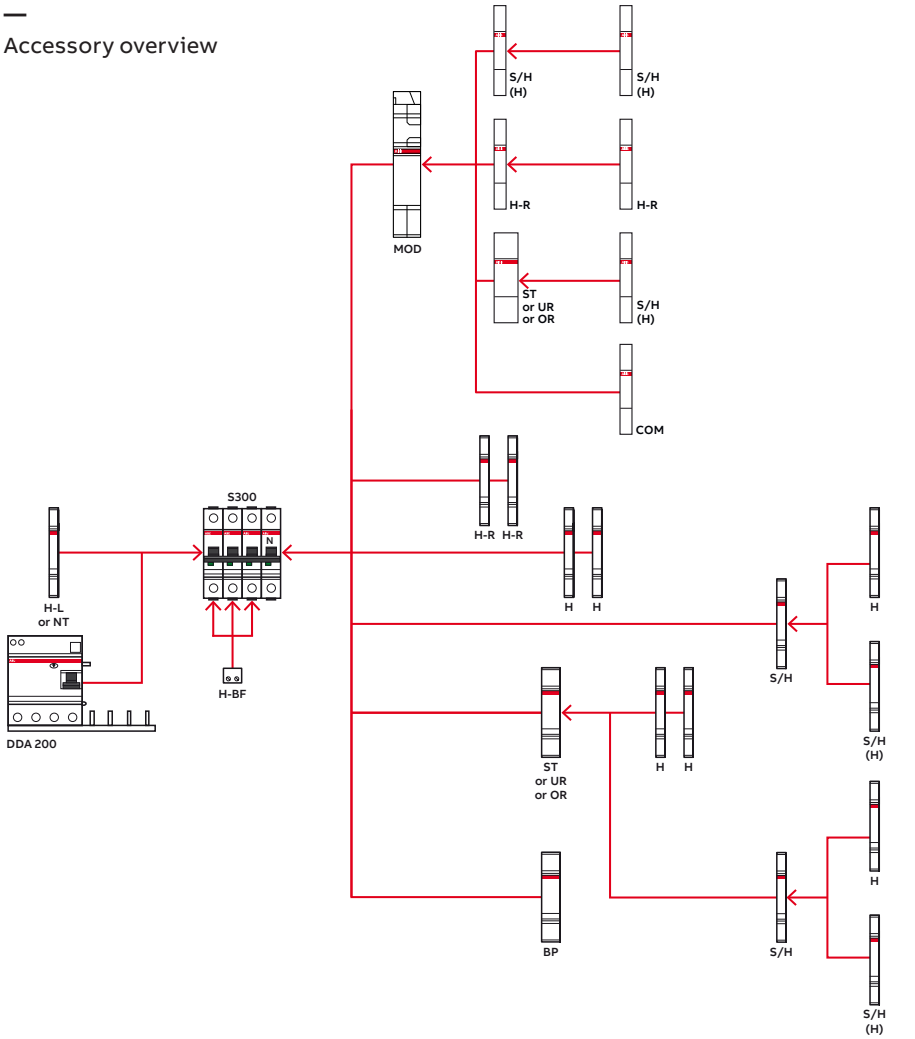
If several miniature circuit breakers are installed directly side by side with high load on all poles, a correction factor must be applied to the rated current (see table). If distance pieces are used, the factor is not to be considered.

No. of adjacent devices	Factor F
1	1
2.3	0.9
4.5	0.8
≥ 6	0.75

Miniature Circuit breakers S300P

Accessories and dimensional drawings

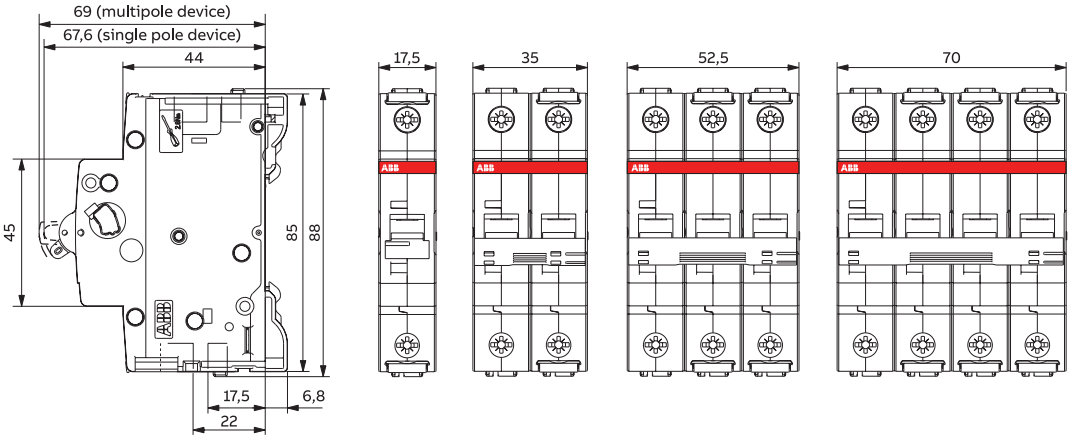
Accessory overview



H	Auxiliary contact (change-over contact)	S2C-H6R	H-L	Auxiliary contact	S2C-H..L
H-R	Auxiliary contact	S2C-H6-..R	H-BF	Auxiliary contact for bottom fitting (1 per pole)	S2C-H01 S2C-H10
S/H	Signal/Auxiliary contact used as auxiliary contact	S2C-S/H6R	BP	Mechanical tripping device	S2C-BP
			NT	Neutral disconnector	S2C-NT..
ST	Shunt trip	S3C-A..	MOD (1)	Motor operating device	S3C-MOD
UR	Undervoltage release	S2C-UA	COM	ModBus Interface	eMOD/AR ModBus
OR	Overvoltage release	S2C-OVP			
DDA 200	RCD-block	DDA 20..			

(1) In case of using S300 with DDA 200, MOD does not operate in case of earth-voltage fault

Dimensional drawing



Miniature Circuit breakers S300P

B characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	6	9080583	S301P-B6	2CDS381001R0065	0.124	10
	8	9086011	S301P-B8	2CDS381001R0085	0.124	10
	10	9080521	S301P-B10	2CDS381001R0105	0.124	10
	13	9080484	S301P-B13	2CDS381001R0135	0.124	10
	16	9080439	S301P-B16	2CDS381001R0165	0.124	10
	20	9080392	S301P-B20	2CDS381001R0205	0.124	10
	25	9080347	S301P-B25	2CDS381001R0255	0.124	10
	32	9080255	S301P-B32	2CDS381001R0325	0.124	10
	40	9080187	S301P-B40	2CDS381001R0405	0.124	10
	50	9080064	S301P-B50	2CDS381001R0505	0.124	10
	63	9079938	S301P-B63	2CDS381001R0635	0.124	10
2	6	9078993	S302P-B6	2CDS382001R0065	0.248	5
	8	9086059	S302P-B8	2CDS382001R0085	0.248	5
	10	9078931	S302P-B10	2CDS382001R0105	0.248	5
	13	9078894	S302P-B13	2CDS382001R0135	0.248	5
	16	9078849	S302P-B16	2CDS382001R0165	0.248	5
	20	9078801	S302P-B20	2CDS382001R0205	0.248	5
	25	9078757	S302P-B25	2CDS382001R0255	0.248	5
	32	9078665	S302P-B32	2CDS382001R0325	0.248	5
	40	9078597	S302P-B40	2CDS382001R0405	0.248	5
	50	9078474	S302P-B50	2CDS382001R0505	0.248	5
	63	9078344	S302P-B63	2CDS382001R0635	0.248	5
3	6	9078191	S303P-B6	2CDS383001R0065	0.372	1
	8	9086073	S303P-B8	2CDS383001R0085	0.372	1
	10	9078139	S303P-B10	2CDS383001R0105	0.372	1
	13	9078092	S303P-B13	2CDS383001R0135	0.372	1
	16	9078047	S303P-B16	2CDS383001R0165	0.372	1
	20	9078009	S303P-B20	2CDS383001R0205	0.372	1
	25	9077958	S303P-B25	2CDS383001R0255	0.372	1
	32	9077866	S303P-B32	2CDS383001R0325	0.372	1
	40	9077798	S303P-B40	2CDS383001R0405	0.372	1
	50	9077675	S303P-B50	2CDS383001R0505	0.372	1
	63	9077545	S303P-B63	2CDS383001R0635	0.372	1

Miniature Circuit breakers S300P

B characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	6	9076593	S304P-B6	2CDS384001R0065	0.496	1
	8	9086110	S304P-B8	2CDS384001R0085	0.496	1
	10	9076531	S304P-B10	2CDS384001R0105	0.496	1
	13	9076494	S304P-B13	2CDS384001R0135	0.496	1
	16	9076449	S304P-B16	2CDS384001R0165	0.496	1
	20	9135559	S304P-B20	2CDS384001R0205	0.496	1
	25	9076357	S304P-B25	2CDS384001R0255	0.496	1
	32	9076265	S304P-B32	2CDS384001R0325	0.496	1
	40	9076197	S304P-B40	2CDS384001R0405	0.496	1
	50	9076074	S304P-B50	2CDS384001R0505	0.496	1
	63	9075947	S304P-B63	2CDS384001R0635	0.496	1
1+N	6	9079785	S301P-B6NA	2CDS381103R0065	0.248	5
	8	9086035	S301P-B8NA	2CDS381103R0085	0.248	5
	10	9079730	S301P-B10NA	2CDS381103R0105	0.248	5
	13	9079693	S301P-B13NA	2CDS381103R0135	0.248	5
	16	9079648	S301P-B16NA	2CDS381103R0165	0.248	5
	20	9079600	S301P-B20NA	2CDS381103R0205	0.248	5
	25	9079556	S301P-B25NA	2CDS381103R0255	0.248	5
	32	9079464	S301P-B32NA	2CDS381103R0325	0.248	5
	40	9079396	S301P-B40NA	2CDS381103R0405	0.248	5
	50	9079273	S301P-B50NA	2CDS381103R0505	0.248	5
	63	9079143	S301P-B63NA	2CDS381103R0635	0.248	5
3+N	6	9077392	S303P-B6NA	2CDS383103R0065	0.496	1
	8	9086097	S303P-B8NA	2CDS383103R0085	0.496	1
	10	9077330	S303P-B10NA	2CDS383103R0105	0.496	1
	13	9077293	S303P-B13NA	2CDS383103R0135	0.496	1
	16	9077248	S303P-B16NA	2CDS383103R0165	0.496	1
	20	9135641	S303P-B20NA	2CDS383103R0205	0.496	1
	25	9077156	S303P-B25NA	2CDS383103R0255	0.496	1
	32	9077064	S303P-B32NA	2CDS383103R0325	0.496	1
	40	9076999	S303P-B40NA	2CDS383103R0405	0.496	1
	50	9076876	S303P-B50NA	2CDS383103R0505	0.496	1
	63	9076746	S303P-B63NA	2CDS383103R0635	0.496	1

Miniature Circuit breakers S300P

C characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9079891	S301P-C0.5	2CDS381001R0984	0.124	10
	1	9080675	S301P-C1	2CDS381001R0014	0.124	10
	1.6	9079914	S301P-C1.6	2CDS381001R0974	0.124	10
	2	9080651	S301P-C2	2CDS381001R0024	0.124	10
	3	9080637	S301P-C3	2CDS381001R0034	0.124	10
	4	9080613	S301P-C4	2CDS381001R0044	0.124	10
	6	9080590	S301P-C6	2CDS381001R0064	0.124	10
	8	9080569	S301P-C8	2CDS381001R0084	0.124	10
	10	9080538	S301P-C10	2CDS381001R0104	0.124	10
	13	9080491	S301P-C13	2CDS381001R0134	0.124	10
	16	9080446	S301P-C16	2CDS381001R0164	0.124	10
	20	9080408	S301P-C20	2CDS381001R0204	0.124	10
	25	9080354	S301P-C25	2CDS381001R0254	0.124	10
	32	9080262	S301P-C32	2CDS381001R0324	0.124	10
	40	9080194	S301P-C40	2CDS381001R0404	0.124	10
	50	9080071	S301P-C50	2CDS381001R0504	0.124	10
	63	9079945	S301P-C63	2CDS381001R0634	0.124	10
2	0.5	9078306	S302P-C0.5	2CDS382001R0984	0.248	5
	1	9079082	S302P-C1	2CDS382001R0014	0.248	5
	1.6	9078320	S302P-C1.6	2CDS382001R0974	0.248	5
	2	9079068	S302P-C2	2CDS382001R0024	0.248	5
	3	9079044	S302P-C3	2CDS382001R0034	0.248	5
	4	9079020	S302P-C4	2CDS382001R0044	0.248	5
	6	9079006	S302P-C6	2CDS382001R0064	0.248	5
	8	9078979	S302P-C8	2CDS382001R0084	0.248	5
	10	9078948	S302P-C10	2CDS382001R0104	0.248	5
	13	9078900	S302P-C13	2CDS382001R0134	0.248	5
	16	9078856	S302P-C16	2CDS382001R0164	0.248	5
	20	9078818	S302P-C20	2CDS382001R0204	0.248	5
	25	9078764	S302P-C25	2CDS382001R0254	0.248	5
	32	9078672	S302P-C32	2CDS382001R0324	0.248	5
	40	9078603	S302P-C40	2CDS382001R0404	0.248	5
	50	9078481	S302P-C50	2CDS382001R0504	0.248	5
	63	9078351	S302P-C63	2CDS382001R0634	0.248	5
3	0.5	9077507	S303P-C0.5	2CDS383001R0984	0.372	1
	1	9078283	S303P-C1	2CDS383001R0014	0.372	1
	1.6	9077521	S303P-C1.6	2CDS383001R0974	0.372	1
	2	9078269	S303P-C2	2CDS383001R0024	0.372	1
	3	9078245	S303P-C3	2CDS383001R0034	0.372	1
	4	9078221	S303P-C4	2CDS383001R0044	0.372	1
	6	9078207	S303P-C6	2CDS383001R0064	0.372	1
	8	9078177	S303P-C8	2CDS383001R0084	0.372	1
	10	9078146	S303P-C10	2CDS383001R0104	0.372	1
	13	9078108	S303P-C13	2CDS383001R0134	0.372	1
	16	9078054	S303P-C16	2CDS383001R0164	0.372	1
	20	9078016	S303P-C20	2CDS383001R0204	0.372	1
	25	9077965	S303P-C25	2CDS383001R0254	0.372	1
	32	9077873	S303P-C32	2CDS383001R0324	0.372	1
	40	9077804	S303P-C40	2CDS383001R0404	0.372	1
	50	9077682	S303P-C50	2CDS383001R0504	0.372	1
	63	9077552	S303P-C63	2CDS383001R0634	0.372	1

Miniature Circuit breakers S300P

C characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9135511	S304P-C0.5	2CDS384001R0984	0.496	1
	1	9076685	S304P-C1	2CDS384001R0014	0.496	1
	1.6	9075923	S304P-C1.6	2CDS384001R0974	0.496	1
	2	9076661	S304P-C2	2CDS384001R0024	0.496	1
	3	9076647	S304P-C3	2CDS384001R0034	0.496	1
	4	9076623	S304P-C4	2CDS384001R0044	0.496	1
	6	9135573	S304P-C6	2CDS384001R0064	0.496	1
	8	9076579	S304P-C8	2CDS384001R0084	0.496	1
	10	9076548	S304P-C10	2CDS384001R0104	0.496	1
	13	9135566	S304P-C13	2CDS384001R0134	0.496	1
	16	9076456	S304P-C16	2CDS384001R0164	0.496	1
	20	9076418	S304P-C20	2CDS384001R0204	0.496	1
	25	9076364	S304P-C25	2CDS384001R0254	0.496	1
	32	9076272	S304P-C32	2CDS384001R0324	0.496	1
	40	9135689	S304P-C40	2CDS384001R0404	0.496	1
	50	9076081	S304P-C50	2CDS384001R0504	0.496	1
	63	9075954	S304P-C63	2CDS384001R0634	0.496	1
1+N	0.5	9079105	S301P-C0.5NA	2CDS381103R0984	0.248	5
	1	9079877	S301P-C1NA	2CDS381103R0014	0.248	5
	1.6	9079129	S301P-C1.6NA	2CDS381103R0974	0.248	5
	2	9079853	S301P-C2NA	2CDS381103R0024	0.248	5
	3	9079839	S301P-C3NA	2CDS381103R0034	0.248	5
	4	9079815	S301P-C4NA	2CDS381103R0044	0.248	5
	6	9079792	S301P-C6NA	2CDS381103R0064	0.248	5
	8	9079778	S301P-C8NA	2CDS381103R0084	0.248	5
	10	9079747	S301P-C10NA	2CDS381103R0104	0.248	5
	13	9079709	S301P-C13NA	2CDS381103R0134	0.248	5
	16	9079655	S301P-C16NA	2CDS381103R0164	0.248	5
	20	9079617	S301P-C20NA	2CDS381103R0204	0.248	5
	25	9079563	S301P-C25NA	2CDS381103R0254	0.248	5
	32	9079471	S301P-C32NA	2CDS381103R0324	0.248	5
	40	9079402	S301P-C40NA	2CDS381103R0404	0.248	5
	50	9079280	S301P-C50NA	2CDS381103R0504	0.248	5
	63	9079150	S301P-C63NA	2CDS381103R0634	0.248	5
3+N	0.5	9135580	S303P-C0.5NA	2CDS383103R0984	0.496	1
	1	9077484	S303P-C1NA	2CDS383103R0014	0.496	1
	1.6	9076722	S303P-C1.6NA	2CDS383103R0974	0.496	1
	2	9077460	S303P-C2NA	2CDS383103R0024	0.496	1
	3	9077446	S303P-C3NA	2CDS383103R0034	0.496	1
	4	9077422	S303P-C4NA	2CDS383103R0044	0.496	1
	6	9077408	S303P-C6NA	2CDS383103R0064	0.496	1
	8	9077378	S303P-C8NA	2CDS383103R0084	0.496	1
	10	9077347	S303P-C10NA	2CDS383103R0104	0.496	1
	13	9135658	S303P-C13NA	2CDS383103R0134	0.496	1
	16	9077255	S303P-C16NA	2CDS383103R0164	0.496	1
	20	9077217	S303P-C20NA	2CDS383103R0204	0.496	1
	25	9077163	S303P-C25NA	2CDS383103R0254	0.496	1
	32	9077071	S303P-C32NA	2CDS383103R0324	0.496	1
	40	9135627	S303P-C40NA	2CDS383103R0404	0.496	1
	50	9076883	S303P-C50NA	2CDS383103R0504	0.496	1
	63	9076753	S303P-C63NA	2CDS383103R0634	0.496	1

Miniature Circuit breakers S300P

D characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9079907	S301P-D0.5	2CDS381001R0981	0.124	10
	1	9080682	S301P-D1	2CDS381001R0011	0.124	10
	1.6	9079921	S301P-D1.6	2CDS381001R0971	0.124	10
	2	9080668	S301P-D2	2CDS381001R0021	0.124	10
	3	9080644	S301P-D3	2CDS381001R0031	0.124	10
	4	9080620	S301P-D4	2CDS381001R0041	0.124	10
	6	9080606	S301P-D6	2CDS381001R0061	0.124	10
	8	9080576	S301P-D8	2CDS381001R0081	0.124	10
	10	9080545	S301P-D10	2CDS381001R0101	0.124	10
	13	9080507	S301P-D13	2CDS381001R0131	0.124	10
	16	9080453	S301P-D16	2CDS381001R0161	0.124	10
	20	9080415	S301P-D20	2CDS381001R0201	0.124	10
	25	9080361	S301P-D25	2CDS381001R0251	0.124	10
	32	9080279	S301P-D32	2CDS381001R0321	0.124	10
	40	9080200	S301P-D40	2CDS381001R0401	0.124	10
	50	9080088	S301P-D50	2CDS381001R0501	0.124	10
	63	9079952	S301P-D63	2CDS381001R0631	0.124	10
2	0.5	9078313	S302P-D0.5	2CDS382001R0981	0.248	5
	1	9079099	S302P-D1	2CDS382001R0011	0.248	5
	1.6	9078337	S302P-D1.6	2CDS382001R0971	0.248	5
	2	9079075	S302P-D2	2CDS382001R0021	0.248	5
	3	9079051	S302P-D3	2CDS382001R0031	0.248	5
	4	9079037	S302P-D4	2CDS382001R0041	0.248	5
	6	9079013	S302P-D6	2CDS382001R0061	0.248	5
	8	9078986	S302P-D8	2CDS382001R0081	0.248	5
	10	9078955	S302P-D10	2CDS382001R0101	0.248	5
	13	9078917	S302P-D13	2CDS382001R0131	0.248	5
	16	9078863	S302P-D16	2CDS382001R0161	0.248	5
	20	9078825	S302P-D20	2CDS382001R0201	0.248	5
	25	9078771	S302P-D25	2CDS382001R0251	0.248	5
	32	9078689	S302P-D32	2CDS382001R0321	0.248	5
	40	9078610	S302P-D40	2CDS382001R0401	0.248	5
	50	9078498	S302P-D50	2CDS382001R0501	0.248	5
	63	9078368	S302P-D63	2CDS382001R0631	0.248	5
3	0.5	9077514	S303P-D0.5	2CDS383001R0981	0.372	1
	1	9078290	S303P-D1	2CDS383001R0011	0.372	1
	1.6	9077538	S303P-D1.6	2CDS383001R0971	0.372	1
	2	9078276	S303P-D2	2CDS383001R0021	0.372	1
	3	9078252	S303P-D3	2CDS383001R0031	0.372	1
	4	9078238	S303P-D4	2CDS383001R0041	0.372	1
	6	9078214	S303P-D6	2CDS383001R0061	0.372	1
	8	9078184	S303P-D8	2CDS383001R0081	0.372	1
	10	9078153	S303P-D10	2CDS383001R0101	0.372	1
	13	9078115	S303P-D13	2CDS383001R0131	0.372	1
	16	9078061	S303P-D16	2CDS383001R0161	0.372	1
	20	9078023	S303P-D20	2CDS383001R0201	0.372	1
	25	9077972	S303P-D25	2CDS383001R0251	0.372	1
	32	9077880	S303P-D32	2CDS383001R0321	0.372	1
	40	9077811	S303P-D40	2CDS383001R0401	0.372	1
	50	9077699	S303P-D50	2CDS383001R0501	0.372	1
	63	9077569	S303P-D63	2CDS383001R0631	0.372	1

Miniature Circuit breakers S300P

D characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9075916	S304P-D0.5	2CDS384001R0981	0.496	1
	1	9076692	S304P-D1	2CDS384001R0011	0.496	1
	1.6	9075930	S304P-D1.6	2CDS384001R0971	0.496	1
	2	9076678	S304P-D2	2CDS384001R0021	0.496	1
	3	9076654	S304P-D3	2CDS384001R0031	0.496	1
	4	9076630	S304P-D4	2CDS384001R0041	0.496	1
	6	9076616	S304P-D6	2CDS384001R0061	0.496	1
	8	9076586	S304P-D8	2CDS384001R0081	0.496	1
	10	9076555	S304P-D10	2CDS384001R0101	0.496	1
	13	9076517	S304P-D13	2CDS384001R0131	0.496	1
	16	9076463	S304P-D16	2CDS384001R0161	0.496	1
	20	9076425	S304P-D20	2CDS384001R0201	0.496	1
	25	9076371	S304P-D25	2CDS384001R0251	0.496	1
	32	9076289	S304P-D32	2CDS384001R0321	0.496	1
	40	9076210	S304P-D40	2CDS384001R0401	0.496	1
	50	9076098	S304P-D50	2CDS384001R0501	0.496	1
	63	9075961	S304P-D63	2CDS384001R0631	0.496	1
1+N	0.5	9079112	S301P-D0.5NA	2CDS381103R0981	0.248	5
	1	9079884	S301P-D1NA	2CDS381103R0011	0.248	5
	1.6	9079136	S301P-D1.6NA	2CDS381103R0971	0.248	5
	2	9079860	S301P-D2NA	2CDS381103R0021	0.248	5
	3	9079846	S301P-D3NA	2CDS381103R0031	0.248	5
	4	9079822	S301P-D4NA	2CDS381103R0041	0.248	5
	6	9079808	S301P-D6NA	2CDS381103R0061	0.248	5
	8	9085717	S301P-D8NA	2CDS381103R0081	0.248	5
	10	9079754	S301P-D10NA	2CDS381103R0101	0.248	5
	13	9079716	S301P-D13NA	2CDS381103R0131	0.248	5
	16	9079662	S301P-D16NA	2CDS381103R0161	0.248	5
	20	9079624	S301P-D20NA	2CDS381103R0201	0.248	5
	25	9079570	S301P-D25NA	2CDS381103R0251	0.248	5
	32	9079488	S301P-D32NA	2CDS381103R0321	0.248	5
	40	9079419	S301P-D40NA	2CDS381103R0401	0.248	5
	50	9079297	S301P-D50NA	2CDS381103R0501	0.248	5
	63	9079167	S301P-D63NA	2CDS381103R0631	0.248	5
3+N	0.5	9076715	S303P-D0.5NA	2CDS383103R0981	0.496	1
	1	9077491	S303P-D1NA	2CDS383103R0011	0.496	1
	1.6	9076739	S303P-D1.6NA	2CDS383103R0971	0.496	1
	2	9077477	S303P-D2NA	2CDS383103R0021	0.496	1
	3	9077453	S303P-D3NA	2CDS383103R0031	0.496	1
	4	9077439	S303P-D4NA	2CDS383103R0041	0.496	1
	6	9077415	S303P-D6NA	2CDS383103R0061	0.496	1
	8	9077385	S303P-D8NA	2CDS383103R0081	0.496	1
	10	9077354	S303P-D10NA	2CDS383103R0101	0.496	1
	13	9077316	S303P-D13NA	2CDS383103R0131	0.496	1
	16	9077262	S303P-D16NA	2CDS383103R0161	0.496	1
	20	9077224	S303P-D20NA	2CDS383103R0201	0.496	1
	25	9077170	S303P-D25NA	2CDS383103R0251	0.496	1
	32	9077088	S303P-D32NA	2CDS383103R0321	0.496	1
	40	9077019	S303P-D40NA	2CDS383103R0401	0.496	1
	50	9076890	S303P-D50NA	2CDS383103R0501	0.496	1
	63	9076760	S303P-D63NA	2CDS383103R0631	0.496	1

Miniature Circuit breakers S300P

K characteristic



S 301



S 302

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.2	9080552	S301P-K0.2	2CDS381001R0087	0.124	10
	0.3	9080514	S301P-K0.3	2CDS381001R0117	0.124	10
	0.5	9080477	S301P-K0.5	2CDS381001R0157	0.124	10
	0.75	9080422	S301P-K0.75	2CDS381001R0187	0.124	10
	1	9080385	S301P-K1	2CDS381001R0217	0.124	10
	1.6	9080330	S301P-K1.6	2CDS381001R0257	0.124	10
	2	9080316	S301P-K2	2CDS381001R0277	0.124	10
	3	9080293	S301P-K3	2CDS381001R0317	0.124	10
	4	9080248	S301P-K4	2CDS381001R0337	0.124	10
	6	9080224	S301P-K6	2CDS381001R0377	0.124	10
	8	9080170	S301P-K8	2CDS381001R0407	0.124	10
	10	9080156	S301P-K10	2CDS381001R0427	0.124	10
	13	9080132	S301P-K13	2CDS381001R0447	0.124	10
	16	9080125	S301P-K16	2CDS381001R0467	0.124	10
	20	9080101	S301P-K20	2CDS381001R0487	0.124	10
	25	9080057	S301P-K25	2CDS381001R0517	0.124	10
	32	9080033	S301P-K32	2CDS381001R0537	0.124	10
	40	9080019	S301P-K40	2CDS381001R0557	0.124	10
	50	9079990	S301P-K50	2CDS381001R0577	0.124	10
	63	9079976	S301P-K63	2CDS381001R0607	0.124	10
2	0.2	9078962	S302P-K0.2	2CDS382001R0087	0.248	5
	0.3	9078924	S302P-K0.3	2CDS382001R0117	0.248	5
	0.5	9078887	S302P-K0.5	2CDS382001R0157	0.248	5
	0.75	9078832	S302P-K0.75	2CDS382001R0187	0.248	5
	1	9078795	S302P-K1	2CDS382001R0217	0.248	5
	1.6	9078740	S302P-K1.6	2CDS382001R0257	0.248	5
	2	9078726	S302P-K2	2CDS382001R0277	0.248	5
	3	9078702	S302P-K3	2CDS382001R0317	0.248	5
	4	9078658	S302P-K4	2CDS382001R0337	0.248	5
	6	9078634	S302P-K6	2CDS382001R0377	0.248	5
	8	9078580	S302P-K8	2CDS382001R0407	0.248	5
	10	9078566	S302P-K10	2CDS382001R0427	0.248	5
	13	9078542	S302P-K13	2CDS382001R0447	0.248	5
	16	9078535	S302P-K16	2CDS382001R0467	0.248	5
	20	9078511	S302P-K20	2CDS382001R0487	0.248	5
	25	9078467	S302P-K25	2CDS382001R0517	0.248	5
	32	9078443	S302P-K32	2CDS382001R0537	0.248	5
	40	9078429	S302P-K40	2CDS382001R0557	0.248	5
	50	9078405	S302P-K50	2CDS382001R0577	0.248	5
	63	9078382	S302P-K63	2CDS382001R0607	0.248	5

Miniature Circuit breakers S300P

K characteristic



S 303



S 304

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
3	0.2	9078160	S303P-K0.2	2CDS383001R0087	0.372	1
	0.3	9078122	S303P-K0.3	2CDS383001R0117	0.372	1
	0.5	9078085	S303P-K0.5	2CDS383001R0157	0.372	1
	0.75	9078030	S303P-K0.75	2CDS383001R0187	0.372	1
	1	9077996	S303P-K1	2CDS383001R0217	0.372	1
	1.6	9077941	S303P-K1.6	2CDS383001R0257	0.372	1
	2	9077927	S303P-K2	2CDS383001R0277	0.372	1
	3	9077903	S303P-K3	2CDS383001R0317	0.372	1
	4	9077859	S303P-K4	2CDS383001R0337	0.372	1
	6	9077835	S303P-K6	2CDS383001R0377	0.372	1
	8	9077781	S303P-K8	2CDS383001R0407	0.372	1
	10	9077767	S303P-K10	2CDS383001R0427	0.372	1
	13	9077743	S303P-K13	2CDS383001R0447	0.372	1
	16	9077736	S303P-K16	2CDS383001R0467	0.372	1
	20	9077712	S303P-K20	2CDS383001R0487	0.372	1
	25	9077668	S303P-K25	2CDS383001R0517	0.372	1
	32	9077644	S303P-K32	2CDS383001R0537	0.372	1
	40	9077620	S303P-K40	2CDS383001R0557	0.372	1
	50	9077606	S303P-K50	2CDS383001R0577	0.372	1
	63	9077583	S303P-K63	2CDS383001R0607	0.372	1
4	0.2	9076562	S304P-K0.2	2CDS384001R0087	0.496	1
	0.3	9076524	S304P-K0.3	2CDS384001R0117	0.496	1
	0.5	9076487	S304P-K0.5	2CDS384001R0157	0.496	1
	0.75	9076432	S304P-K0.75	2CDS384001R0187	0.496	1
	1	9076395	S304P-K1	2CDS384001R0217	0.496	1
	1.6	9076340	S304P-K1.6	2CDS384001R0257	0.496	1
	2	9076326	S304P-K2	2CDS384001R0277	0.496	1
	3	9135542	S304P-K3	2CDS384001R0317	0.496	1
	4	9076258	S304P-K4	2CDS384001R0337	0.496	1
	6	9076234	S304P-K6	2CDS384001R0377	0.496	1
	8	9076180	S304P-K8	2CDS384001R0407	0.496	1
	10	9076166	S304P-K10	2CDS384001R0427	0.496	1
	13	9076142	S304P-K13	2CDS384001R0447	0.496	1
	16	9076135	S304P-K16	2CDS384001R0467	0.496	1
	20	9076111	S304P-K20	2CDS384001R0487	0.496	1
	25	9076067	S304P-K25	2CDS384001R0517	0.496	1
	32	9076043	S304P-K32	2CDS384001R0537	0.496	1
	40	9076029	S304P-K40	2CDS384001R0557	0.496	1
	50	9135528	S304P-K50	2CDS384001R0577	0.496	1
	63	9075985	S304P-K63	2CDS384001R0607	0.496	1

Miniature Circuit breakers S300P

K characteristic



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1+N	0.2	9079761	S301P-K0.2NA	2CDS381103R0087	0.248	5
	0.3	9079723	S301P-K0.3NA	2CDS381103R0117	0.248	5
	0.5	9079686	S301P-K0.5NA	2CDS381103R0157	0.248	5
	0.75	9079631	S301P-K0.75NA	2CDS381103R0187	0.248	5
	1	9079594	S301P-K1NA	2CDS381103R0217	0.248	5
	1.6	9079549	S301P-K1.6NA	2CDS381103R0257	0.248	5
	2	9079525	S301P-K2NA	2CDS381103R0277	0.248	5
	3	9079501	S301P-K3NA	2CDS381103R0317	0.248	5
	4	9079457	S301P-K4NA	2CDS381103R0337	0.248	5
	6	9079433	S301P-K6NA	2CDS381103R0377	0.248	5
	8	9079389	S301P-K8NA	2CDS381103R0407	0.248	5
	10	9079365	S301P-K10NA	2CDS381103R0427	0.248	5
	13	9079341	S301P-K13NA	2CDS381103R0447	0.248	5
	16	9079334	S301P-K16NA	2CDS381103R0467	0.248	5
	20	9079310	S301P-K20NA	2CDS381103R0487	0.248	5
	25	9079266	S301P-K25NA	2CDS381103R0517	0.248	5
	32	9079242	S301P-K32NA	2CDS381103R0537	0.248	5
	40	9079228	S301P-K40NA	2CDS381103R0557	0.248	5
	50	9135665	S301P-K50NA	2CDS381103R0577	0.248	5
	63	9079181	S301P-K63NA	2CDS381103R0607	0.248	5
3+N	0.2	9077361	S303P-K0.2NA	2CDS383103R0087	0.496	1
	0.3	9077323	S303P-K0.3NA	2CDS383103R0117	0.496	1
	0.5	9077286	S303P-K0.5NA	2CDS383103R0157	0.496	1
	0.75	9077231	S303P-K0.75NA	2CDS383103R0187	0.496	1
	1	9077194	S303P-K1NA	2CDS383103R0217	0.496	1
	1.6	9077149	S303P-K1.6NA	2CDS383103R0257	0.496	1
	2	9077125	S303P-K2NA	2CDS383103R0277	0.496	1
	3	9135634	S303P-K3NA	2CDS383103R0317	0.496	1
	4	9077057	S303P-K4NA	2CDS383103R0337	0.496	1
	6	9077033	S303P-K6NA	2CDS383103R0377	0.496	1
	8	9076982	S303P-K8NA	2CDS383103R0407	0.496	1
	10	9076968	S303P-K10NA	2CDS383103R0427	0.496	1
	13	9076944	S303P-K13NA	2CDS383103R0447	0.496	1
	16	9076937	S303P-K16NA	2CDS383103R0467	0.496	1
	20	9076913	S303P-K20NA	2CDS383103R0487	0.496	1
	25	9076869	S303P-K25NA	2CDS383103R0517	0.496	1
	32	9076845	S303P-K32NA	2CDS383103R0537	0.496	1
	40	9076821	S303P-K40NA	2CDS383103R0557	0.496	1
	50	9135597	S303P-K50NA	2CDS383103R0577	0.496	1
	63	9076784	S303P-K63NA	2CDS383103R0607	0.496	1

Miniature Circuit breakers S300P

Z characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9080460	S301P-Z0.5	2CDS381001R0158	0.124	10
	1	9080378	S301P-Z1	2CDS381001R0218	0.124	10
	1.6	9080323	S301P-Z1.6	2CDS381001R0258	0.124	10
	2	9080309	S301P-Z2	2CDS381001R0278	0.124	10
	3	9080286	S301P-Z3	2CDS381001R0318	0.124	10
	4	9080231	S301P-Z4	2CDS381001R0338	0.124	10
	6	9080217	S301P-Z6	2CDS381001R0378	0.124	10
	8	9080163	S301P-Z8	2CDS381001R0408	0.124	10
	10	9080149	S301P-Z10	2CDS381001R0428	0.124	10
	16	9080118	S301P-Z16	2CDS381001R0468	0.124	10
	20	9080095	S301P-Z20	2CDS381001R0488	0.124	10
	25	9080040	S301P-Z25	2CDS381001R0518	0.124	10
	32	9080026	S301P-Z32	2CDS381001R0538	0.124	10
	40	9080002	S301P-Z40	2CDS381001R0558	0.124	10
	50	9079983	S301P-Z50	2CDS381001R0578	0.124	10
	63	9079969	S301P-Z63	2CDS381001R0608	0.124	10
2	0.5	9078870	S302P-Z0.5	2CDS382001R0158	0.248	5
	1	9078788	S302P-Z1	2CDS382001R0218	0.248	5
	1.6	9078733	S302P-Z1.6	2CDS382001R0258	0.248	5
	2	9078719	S302P-Z2	2CDS382001R0278	0.248	5
	3	9078696	S302P-Z3	2CDS382001R0318	0.248	5
	4	9078641	S302P-Z4	2CDS382001R0338	0.248	5
	6	9078627	S302P-Z6	2CDS382001R0378	0.248	5
	8	9078573	S302P-Z8	2CDS382001R0408	0.248	5
	10	9078559	S302P-Z10	2CDS382001R0428	0.248	5
	16	9078528	S302P-Z16	2CDS382001R0468	0.248	5
	20	9078504	S302P-Z20	2CDS382001R0488	0.248	5
	25	9078450	S302P-Z25	2CDS382001R0518	0.248	5
	32	9078436	S302P-Z32	2CDS382001R0538	0.248	5
	40	9078412	S302P-Z40	2CDS382001R0558	0.248	5
	50	9078399	S302P-Z50	2CDS382001R0578	0.248	5
	63	9078375	S302P-Z63	2CDS382001R0608	0.248	5
3	0.5	9078078	S303P-Z0.5	2CDS383001R0158	0.372	1
	1	9077989	S303P-Z1	2CDS383001R0218	0.372	1
	1.6	9077934	S303P-Z1.6	2CDS383001R0258	0.372	1
	2	9077910	S303P-Z2	2CDS383001R0278	0.372	1
	3	9077897	S303P-Z3	2CDS383001R0318	0.372	1
	4	9077842	S303P-Z4	2CDS383001R0338	0.372	1
	6	9077828	S303P-Z6	2CDS383001R0378	0.372	1
	8	9077774	S303P-Z8	2CDS383001R0408	0.372	1
	10	9077750	S303P-Z10	2CDS383001R0428	0.372	1
	16	9077729	S303P-Z16	2CDS383001R0468	0.372	1
	20	9077705	S303P-Z20	2CDS383001R0488	0.372	1
	25	9077651	S303P-Z25	2CDS383001R0518	0.372	1
	32	9077637	S303P-Z32	2CDS383001R0538	0.372	1
	40	9077613	S303P-Z40	2CDS383001R0558	0.372	1
	50	9077590	S303P-Z50	2CDS383001R0578	0.372	1
	63	9077576	S303P-Z63	2CDS383001R0608	0.372	1

Miniature Circuit breakers S300P

Z characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9076470	S304P-Z0.5	2CDS384001R0158	0.496	1
	1	9076388	S304P-Z1	2CDS384001R0218	0.496	1
	1.6	9076333	S304P-Z1.6	2CDS384001R0258	0.496	1
	2	9076319	S304P-Z2	2CDS384001R0278	0.496	1
	3	9076296	S304P-Z3	2CDS384001R0318	0.496	1
	4	9076241	S304P-Z4	2CDS384001R0338	0.496	1
	6	9076227	S304P-Z6	2CDS384001R0378	0.496	1
	8	9076173	S304P-Z8	2CDS384001R0408	0.496	1
	10	9076159	S304P-Z10	2CDS384001R0428	0.496	1
	16	9076128	S304P-Z16	2CDS384001R0468	0.496	1
	20	9135535	S304P-Z20	2CDS384001R0488	0.496	1
	25	9076050	S304P-Z25	2CDS384001R0518	0.496	1
	32	9076036	S304P-Z32	2CDS384001R0538	0.496	1
	40	9076012	S304P-Z40	2CDS384001R0558	0.496	1
	50	9075992	S304P-Z50	2CDS384001R0578	0.496	1
	63	9075978	S304P-Z63	2CDS384001R0608	0.496	1
1+N	0.5	9079679	S301P-Z0.5NA	2CDS381103R0158	0.248	5
	1	9079587	S301P-Z1NA	2CDS381103R0218	0.248	5
	1.6	9079532	S301P-Z1.6NA	2CDS381103R0258	0.248	5
	2	9079518	S301P-Z2NA	2CDS381103R0278	0.248	5
	3	9079495	S301P-Z3NA	2CDS381103R0318	0.248	5
	4	9079440	S301P-Z4NA	2CDS381103R0338	0.248	5
	6	9079426	S301P-Z6NA	2CDS381103R0378	0.248	5
	8	9079372	S301P-Z8NA	2CDS381103R0408	0.248	5
	10	9079358	S301P-Z10NA	2CDS381103R0428	0.248	5
	16	9079327	S301P-Z16NA	2CDS381103R0468	0.248	5
	20	9135672	S301P-Z20NA	2CDS381103R0488	0.248	5
	25	9079259	S301P-Z25NA	2CDS381103R0518	0.248	5
	32	9079235	S301P-Z32NA	2CDS381103R0538	0.248	5
	40	9079211	S301P-Z40NA	2CDS381103R0558	0.248	5
	50	9079198	S301P-Z50NA	2CDS381103R0578	0.248	5
	63	9079174	S301P-Z63NA	2CDS381103R0608	0.248	5
3+N	0.5	9077279	S303P-Z0.5NA	2CDS383103R0158	0.496	1
	1	9077187	S303P-Z1NA	2CDS383103R0218	0.496	1
	1.6	9077132	S303P-Z1.6NA	2CDS383103R0258	0.496	1
	2	9077118	S303P-Z2NA	2CDS383103R0278	0.496	1
	3	9077095	S303P-Z3NA	2CDS383103R0318	0.496	1
	4	9077040	S303P-Z4NA	2CDS383103R0338	0.496	1
	6	9077026	S303P-Z6NA	2CDS383103R0378	0.496	1
	8	9076975	S303P-Z8NA	2CDS383103R0408	0.496	1
	10	9076951	S303P-Z10NA	2CDS383103R0428	0.496	1
	16	9076920	S303P-Z16NA	2CDS383103R0468	0.496	1
	20	9135610	S303P-Z20NA	2CDS383103R0488	0.496	1
	25	9076852	S303P-Z25NA	2CDS383103R0518	0.496	1
	32	9076838	S303P-Z32NA	2CDS383103R0538	0.496	1
	40	9076814	S303P-Z40NA	2CDS383103R0558	0.496	1
	50	9076791	S303P-Z50NA	2CDS383103R0578	0.496	1
	63	9076777	S303P-Z63NA	2CDS383103R0608	0.496	1

ABB S.p.A.
Electrification
Smart Building

www.abb.com/lowvoltage

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9AKK107992A4964 Rev. F - 04.2024

ITEM	Tag	UP-200F1-Q15	: SPARE			Dwg	1724000372-EL-DG-00008
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10004596		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FTR-2 Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer: ABB	Serial N°: NA	Relay type: NA
Auxiliary supply: NA	Location: B100	Cubicle: NA
Switchboard: UP-200F1		

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
I	20A	NA	NA	FIXED	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	08/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-08	2024-11-08	2024-11-08
Signature	Digitaly signed by Davide Zucconelli 2024-11-08T10:31:05.378Z	Digitaly signed by Kristian Castellani 2024-11-08T15:24:43.573Z	Digitaly signed by Witness waived 2024-11-08T16:30:20.683Z

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+REC1
UP-200F1 A

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;L3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-A320
INTERFACE

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

-R3
100mV
130A

-Q3
160A

BATTERY
110Vdc
-X3
+/-
70 mm²

Battery
symmetry
-X31
+/-
4 mm²

-A10
BATTERY SIMMETRY
FAULT

+BP
BATTERY PROTECTION

2 (1x25) mm2

-F100
Plastic
box 80*80

+BAT

-L+/-
2P 125A
BUS BAR
110 VDC

-A1
GCAU
CONTROL UNIT

-A71

-A5.1
Relays

-CR1-X5

-A300
DISPLAY

-A310
KEY PAD

-A73
MODBUS-TCP/IP

-A8
Isolated

SD1 / (+BAT-SD1 /1.8)

-KF
PSR-SCP- 24DC / SIL3

-Z2
400V

-Q10
50A-C
CP-100F1
DC CONTROL 66kV G/S
LINE A-5.2KW
-X2 1+/1
16 mm²
3G16 mm2
amoured cable
(+REC1-A1 /1.4) / SD1

-SD1

-Q11
20A-C
CP-100F1
DC CONTROL 66kV G/S
LINE B-2KW
-X2 2+/2
16 mm²
3G16 mm2
amoured cable

-SD2
(+REC2-A1 /1.4) / SD2

-Q12
16A-C
SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE A-1KW
-X2 3+/3
16 mm²
3G16 mm2
amoured cable

-Q13
16A-C
SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE B-1KW
-X2 4+/4
16 mm²
3G16 mm2
amoured cable

-Q14
50A-C
SPARE 5,5KW
-X2 5+/5
16 mm²

-Q15
20A-C
SPARE 2KW
-X2 6+/6
16 mm²

-Q16
16A-C
SPARE 1KW
-X2 7+/7
16 mm²

-F10/F11
DEHNguard

-A21
EARTH +/-

AUXILIARY SUPPLY
230Vac-50Hz

-X7
L/N
6 mm²
3G2.5 mm2
unamoured cable

-Q6
02A-C

-Q7
02A-C

-H3

-THF4
0/60ºC

-E50
100W

-X8
4 mm²
CHARGERS
INTERCONNECTION

2,5 mm²

INTERCONNECTION
50 mm²
-X6

PH4 35 mm²

+REC2
UP-200F1 B

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

-A8
(+REC1-CR1-J13:1 /1.4)

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;L3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-A320
INTERFACE

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

2,5 mm²

-A1
GCAU
CONTROL UNIT

-A71

-A5.1
Relays

-CR1-X5

-A300
DISPLAY

-A310
KEY PAD

-A73
MODBUS-TCP/IP

-A8
Isolated

SD2 / (+BAT-SD2 /1.8)

A8 / (+REC2-X8 /1.4)

AUXILIARY SUPPLY
230Vac-50Hz

-X7
L/N
6 mm²

-Q6
02A-C

-Q7
02A-C

-H3

-THF4
0/60ºC

-E50
100W

2,5 mm²

Battery
symmetry
-X31
+/-
4 mm²

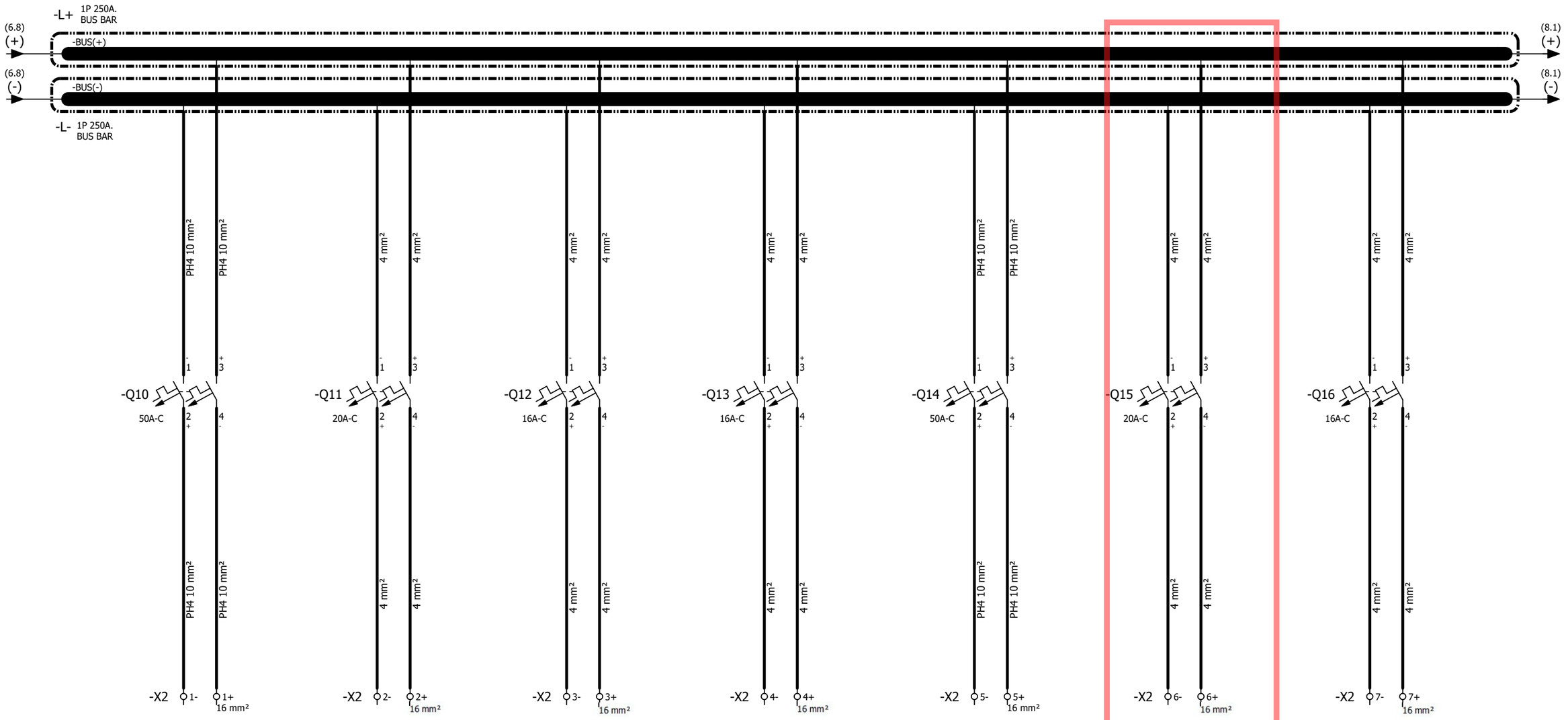
-A10
BATTERY SIMMETRY
FAULT

				Date	21/03/2024	3W POWER S.P.A.	AEG POWER SOLUTIONS	Single-line	1724000372-EL-DG-00006
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm		System	
				Checked	JOP				
Stat	Alteration	Date	Name	Standard					

= System
+ 8 / 47
& EFA
ES521464 en
A3
Sheet
Sheets 1

ES521464

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	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
SUPPLIED FROM	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
RATING	50A-C	20A-C	16A-C	16A-C	50A-C	20A-C	16A-C
MAXIMUM CROSS-SECTION	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²
AUXILIARY CONTACT	98 96 95 (/8.5)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)
FUNCTION	CP-100F1 DC CONTROL 66kV G/S LINE A-5.2KW	CP-100F1 DC CONTROL 66kV G/S LINE B-2KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE A-1KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE B-1KW	SPARE 5,5KW	SPARE 2KW	SPARE 1KW

ES521464

				Date	21/03/2024	3W POWER S.P.A.	AEG POWER SOLUTIONS	Distribution Rectifier 1 System	= System
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm			+ REC1 20 / 49
				Checked	JOP				& EFS Sheet 7
Stat	Alteration	Date	Name	Standard				ES521464 en	A3 Sheets 13

S300P
Data sheet



System pro *M* compact®
S300P miniature circuit breakers comply with IEC/EN 60947-2, IEC/EN 60898-1, UL 1077 and CSA 22.2 No. 235, protecting the installation in commercial and industrial applications by supporting a breaking capacity of 25 kA.

—
01

—
01
S300P
Miniature Circuit Breaker

S300P MCB is designed to be used in installations where high breaking capacities are required to protect against short-circuits and overloads.

S300P is compliant to the product standards
IEC/EN 60947-2
IEC/EN 60898-1
UL 1077
CSA 22.2 No.235
and features the following main technical characteristics:

- Rated nominal current: 0.2 A ... 63 A
- Characteristic: B, C, D, K, Z
- Pole variant: 1, 2, 3, 4, 1+N, 3+N
- Rated breaking capacity I_{cu}: 25 kA; 100 kA (≤ 6 A)
- Rated operational voltage U_e: 240/415 V AC
- Rated impulse withstand voltage U_{imp}: 6 kV

Application benefits

- Integrated trip indicator for clear signalization of tripping events on site
- Dual DIN-Rail release for fast and easy installation
- Fully compatible with whole range of System pro *M* compact® accessories supporting lots of different functions
- Quick and easy product identification by QR-code along with direct access to the ABB product database
- Terminals equipped with fail safe feature to avoid improper installation
- Supply possible from top or bottom and in parallel with cables and busbars thanks to terminals composed by two different openings
- Excellent technical performance to ensure safety and protection of installation and personal
- Certified quality and compliance according to worldwide product standards

S300P
Technical data



S300P

		S300P
General Data	Standards	IEC/EN 60947-2, IEC/EN 60898-1, UL 1077, CSA 22.2 No. 235
	Poles	1P, 2P, 3P, 4P, 1+N, 3+N
	Tripping characteristics	B, C, D, K, Z
	Rated current I_n	6…63 A (B-curve), 0.5…63 A (C-, D-, Z-curve), 0.2…63 A (K-curve)
	Rated frequency f	50 / 60 Hz, DC
	Rated insulation voltage U_i acc. to IEC/EN 60664-1	500 V AC
	Overvoltage category	IV
	Pollution degree	3
Data acc. to IEC/EN 60947-2	Tripping Characteristics	B, C, D, K, Z
	Rated operational voltage U_e	1P, 1+N: 240 V AC, 72 V DC 2P: 415 V AC, 125 V DC 3P, 3+N, 4P: 415 V AC
	Max. power frequency recovery voltage U_{max}	1P, 1+N: 264 V AC, 72 V DC 2P, 3P, 3+N, 4P: 462 V AC, 125 V DC
	Min. operating voltage	12 V AC – 12 V DC
	Rated ultimate short-circuit breaking capacity I_{cu}	25 kA; 100 kA (≤ 6 A)
	Rated service short-circuit breaking capacity I_{cs}	12.5 kA (≤ 25 A); 10 kA (32-40 A); 7.5 kA (>40 A)
	Rated impulse withstand voltage U_{imp} (1.2/50 µs)	6 kV
	Reference temperature for tripping characteristics	55 °C (B-, C-, D-curve), 40 °C (K-, Z-curve)
	Electrical endurance	I_n < 32 A: 20,000 ops. (AC), I_n ≥ 32 A: 10,000 ops. (AC); 1,500 ops. (DC)
Data acc. to IEC/EN 60898-1	Tripping Characteristics	B, C, D
	Rated operational voltage U_n	1P: 240/415 V AC, 72 V DC 1+N: 240 V AC, 72 V DC 2P: 415 V AC, 125 V DC 3P, 3P+N, 4P: 415 V AC
	Max. power frequency recovery voltage U_{max}	1P, 1+N: 264 V AC, 72 V DC 2P, 3P, 3+N, 4P: 457 V AC, 125 V DC
	Min. operating voltage	12 V AC – 12 V DC
	Rated short-circuit capacity I_{cn}	25 kA (≤ 25 A), 20 kA (32 - 40 A), 15 kA (> 40 A)
	Dielectric test voltage	2.0 kV (50/60 Hz, 1 min)
	Reference temperature for tripping characteristics	30 °C
	Electrical endurance	I_n < 32 A: 20,000 ops. (AC), I_n ≥ 32 A: 10,000 ops. (AC); 1,000 ops. (DC)
Data acc. to UL1077 / CSA 22.2 No. 235	Tripping Characteristics	B, C, D, K, Z
	Rated voltage	1P: 277 V AC, 60 V DC 2...4P: 480Y/277 V AC, 125 V DC (2 poles in series)
	Rated interrupting capacity	10 kA
	Application Suppl. prot., for general use.	TC2, OL0, SC:U1
	Reference temperature for tripping characteristics	40 °C
	Electrical endurance	6,000 ops., 1 cycle (1s.-ON, 9s.-OFF)

S300P
Mechanical data

		S300P
Mechanical Data	Housing	Insulation group I, RAL 7035
	Toggle	Insulation group II, black, sealable
	Contact position indication	Real CPI (green OFF / red ON)
	Trip position indicator	TPI (grey NO TRIP / orange TRIP)
	Protection degree acc. to DIN EN 60529	IP20, IP40 in enclosure with cover
	Mechanical endurance	20,000 ops.
	Shock resistance acc. to IEC/EN 60068-2-27	25 g - 2 shocks - 13 ms
	Vibration resistance acc. to IEC/EN 60068-2-6	5 g - 20 cycles at 5 ... 150 ... 5 Hz at 0.8 I_n
	Environmental conditions (damp heat cyclic) acc. to IEC/EN 60068-2-30	28 cycles with 55 °C/90-96 % and 25 °C/95-100 %
	Ambient temperature	-40 ... +70 °C
	Storage temperature	-50 ... +70 °C
Installation	Terminal	Failsafe bi-directional cylinder-lift terminal
	Cross-section of conductors (top/bottom)	solid, stranded: 35 mm² / 35 mm² flexible: 25 mm² / 25 mm² 14 – 4 AWG
	Cross-section of busbars (top/bottom)	10 mm² / 10 mm² 14 – 8 AWG
	Torque	2.8 Nm; 18 in-lbs.
	Screw driver	No. 2 Pozidrive
	Mounting	on DIN rail 35 mm, acc. to EN 60715 by dual DIN-rail release
	Mounting position	any
	Supply	any
Dimensions and weight	Mounting dimensions acc. to DIN 43880	1
	Pole dimensions (H x D x W)	88 x 69 x 17.5 mm
	Pole weight approx.	124 g
Combination with auxiliary elements	Auxiliary contact	Yes
	Bottom fixed auiliary contact	Yes
	Signal contact	Yes
	Shunt trip	Yes
	Undervoltage release	Yes
	Motor operating device	Yes
Standards	IEC/EN 60947-2	
	IEC/EN 60898-1	
	UL 1077	
	CSA 22.2. No.235	
	GB/T 14048.2	
	GB/T 10963.1	

Approvals

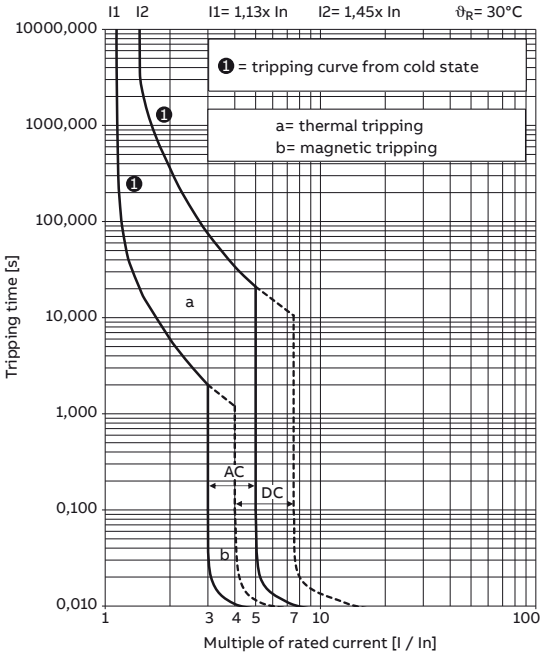
- VDE - DE
- UL 1077 - US
- CSA 22.2 No.235 - CA
- CCC - PRC
- EAC - RU
- KEMA - NL
- IMQ - IT
- SII - IL
- S+ - CH
- ÖVE - AT
- NF - FR
- EZU - CZ
- ANCE - MX
- KC - KR
- UKCA - UK
- DNV - NO
- GL - DE
- LRS - UK
- RINA - IT

Miniature Circuit breakers S300P

Tripping characteristics

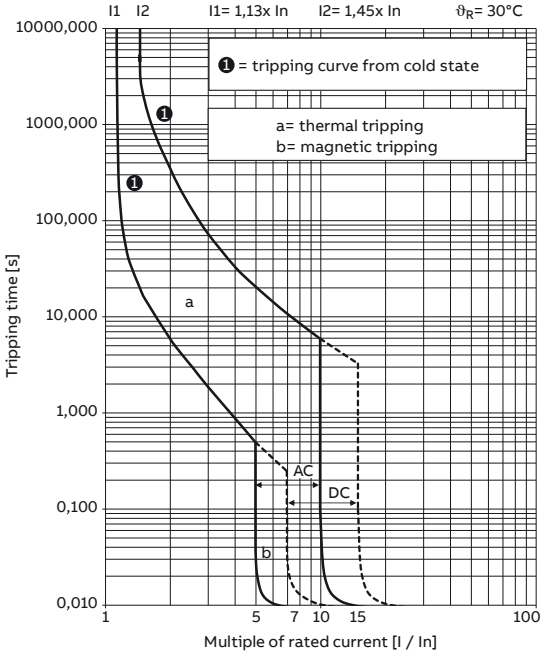
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



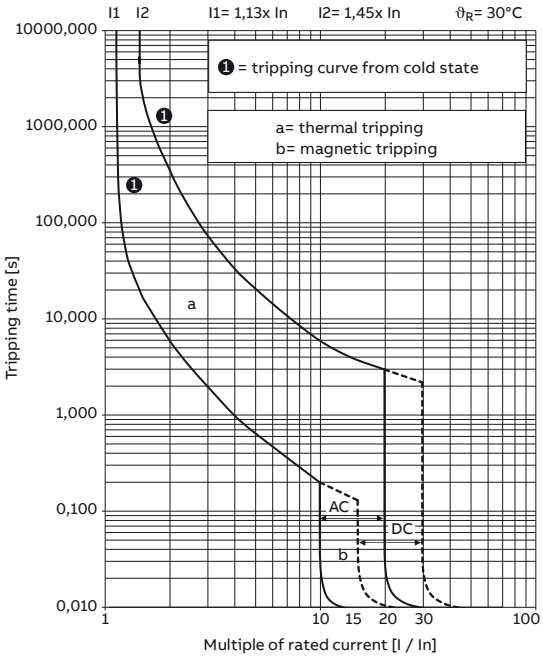
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1

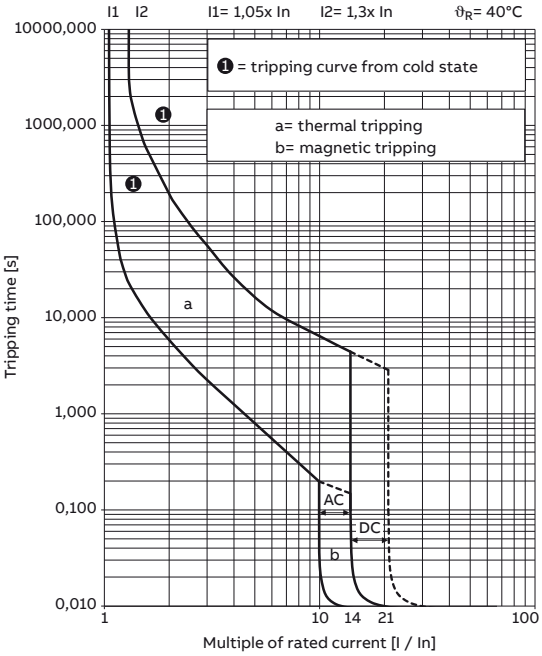


MCB Type S300P - D (10 ... 20 x I_n AC)

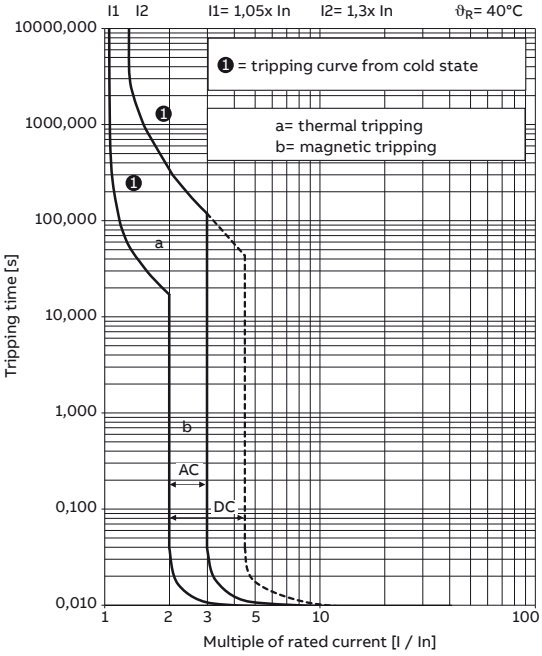
Tripping Characteristic IEC/EN 60898-1



MCB Type S300P - K (10 ... 14 x I_n AC)
Tripping Characteristic IEC/EN 60947-2



MCB Type S300P - Z (2 ... 3 x I_n AC)
Tripping Characteristic IEC/EN 60947-2



Tripping characteristics S300P

Acc. to	Tripping characteristics	Rated current	Thermal release [2]			Electromagnetic release [1]		
			Currents:		Tripping time	Currents:		Tripping time
			conventional non-tripping current	conventional tripping current		hold current surges	trip at least at	
IEC/EN 60898-1	B	06 to 63 A	1.13 · I_n		> 1 h	3 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		5 · I_n	< 0.1 s
	C	0.5 to 63 A	1.13 · I_n		> 1 h	5 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		10 · I_n	< 0.1 s
	D	0.5 to 63 A	1.13 · I_n		> 1 h	10 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		20 · I_n	< 0.1 s
IEC/EN 60947-2	K	0.2 to 63 A	1.05 · I_n		> 1 h	10 · I_n		> 0.2 s
				1.3 · I_n	< 1 h [3]		14 · I_n	< 0.2 s
	Z	0.5 to 63 A	1.05 · I_n		> 1 h	2 · I_n		> 0.2 s
				1.3 · I_n	< 1 h [3]		3 · I_n	< 0.2 s

[1] The indicated electromagnetic tripping values apply to a frequency range of 16 2/3... 60 Hz. For different network frequencies or direct current the values change according to the multipler in the table below
[2] The thermal releases are calibrated to a nominal reference ambient temperature; for Z and K, the value is 40 °C, for B, C and D is 30 °C. In the case of higher ambient temperatures, the current values fall by ca. 6 % for each 10 K temperature rise.
[3] As from operating temperature (after I_1 > 1 h or, as applicable, 2 h).

	AC			DC
	100 Hz	200 Hz	400 Hz	
Multiplier	1.1	1.2	1.5	1.5

The thermal tripping performance is independent from the network frequency.

Miniature Circuit breakers S300P

Derating

For installations of miniature circuit breakers at other temperatures than the reference value and installations of several miniature circuit breakers directly side by side, derating factors have to be considered.

Deviating ambient temperature

The rated value of the current of a miniature circuit breaker refers to a temperature of 40 °C for circuit-breakers with characteristics K and Z and 30 °C for characteristics B, C and D. The following table contains the derating of load capability of S300P MCBs with temperature from -40 °C to 70 °C for the curves B, C, D, K, and Z.

Tripping characteristic	Rated Current I_n (A)	Max. Operating currents depending on the ambient temperature T (°C)											
		-40	-30	-20	-10	0	10	20	30	40	50	60	70
B. C and D	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
	1	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9
	1.6	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4
	2	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8
	3	3.6	3.5	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6
	4	4.8	4.7	4.6	4.5	4.4	4.2	4.1	4.0	3.9	3.8	3.6	3.5
	6	7.3	7.1	6.9	6.7	6.5	6.4	6.2	6.0	5.8	5.6	5.5	5.3
	8	9.7	9.4	9.2	9.0	8.7	8.5	8.2	8.0	7.8	7.5	7.3	7.0
	10	12.1	11.8	11.5	11.2	10.9	10.6	10.3	10.0	9.7	9.4	9.1	8.8
	13	15.5	15.5	15.0	14.5	14.0	14.0	13.5	13.0	12.5	12.0	12.0	11.5
	16	19.5	19.0	18.5	18.0	17.5	17.0	16.5	16.0	15.5	15.0	14.5	14.0
	20	24.0	23.5	23.0	22.5	22.0	21.0	20.5	20.0	19.5	19.0	18.0	17.5
	25	30.5	29.5	29.0	28.0	27.5	26.5	26.0	25.0	24.5	23.5	23.0	22.0
	32	38.5	38.0	37.0	36.0	35.0	34.0	33.0	32.0	31.0	30.0	29.0	28.0
	40	48.5	47.0	46.0	45.0	43.5	42.5	41.0	40.0	39.0	37.5	36.5	35.0
	50	60.5	59.0	57.5	56.0	54.5	53.0	51.5	50.0	48.5	47.0	45.5	44.0
	63	76.0	74.5	72.5	70.5	68.5	67.0	65.0	63.0	61.0	59.0	57.5	55.5
K and Z	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4
	0.75	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7
	1	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	0.9
	1.6	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4
	2	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8
	3	4.0	3.9	3.7	3.6	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7
	4	5.3	5.2	5.0	4.8	4.6	4.5	4.3	4.1	4.0	3.9	3.7	3.6
	6	8.0	7.7	7.5	7.2	6.9	6.7	6.5	6.2	6.0	5.8	5.6	5.4
	8	10.7	10.3	9.9	9.6	9.3	8.9	8.6	8.3	8.0	7.7	7.4	7.1
	10	13.4	12.9	12.4	12.0	11.6	11.2	10.8	10.4	10.0	9.6	9.3	8.9
	13	17.5	17.0	16.0	15.5	15.0	14.5	14.0	13.5	13.0	12.5	12.0	11.5
	16	21.5	20.5	20.0	19.0	18.5	18.0	17.0	16.5	16.0	15.5	15.0	14.5
	20	26.5	26.0	25.0	24.0	23.0	22.5	21.5	20.5	20.0	19.5	18.5	18.0
	25	33.5	32.0	31.0	30.0	29.0	28.0	27.0	26.0	25.0	24.0	23.0	22.5
	32	43.0	41.5	40.0	38.5	37.0	35.5	34.5	33.0	32.0	31.0	29.5	28.5
	40	53.5	51.5	49.5	48.0	46.5	44.5	43.0	41.5	40.0	38.5	37.0	35.5
	50	67.0	64.5	62.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.5	44.5
	63	84.5	81.0	78.5	75.5	73.0	70.5	67.5	65.5	63.0	60.5	58.5	56.5

Influence of adjacent devices

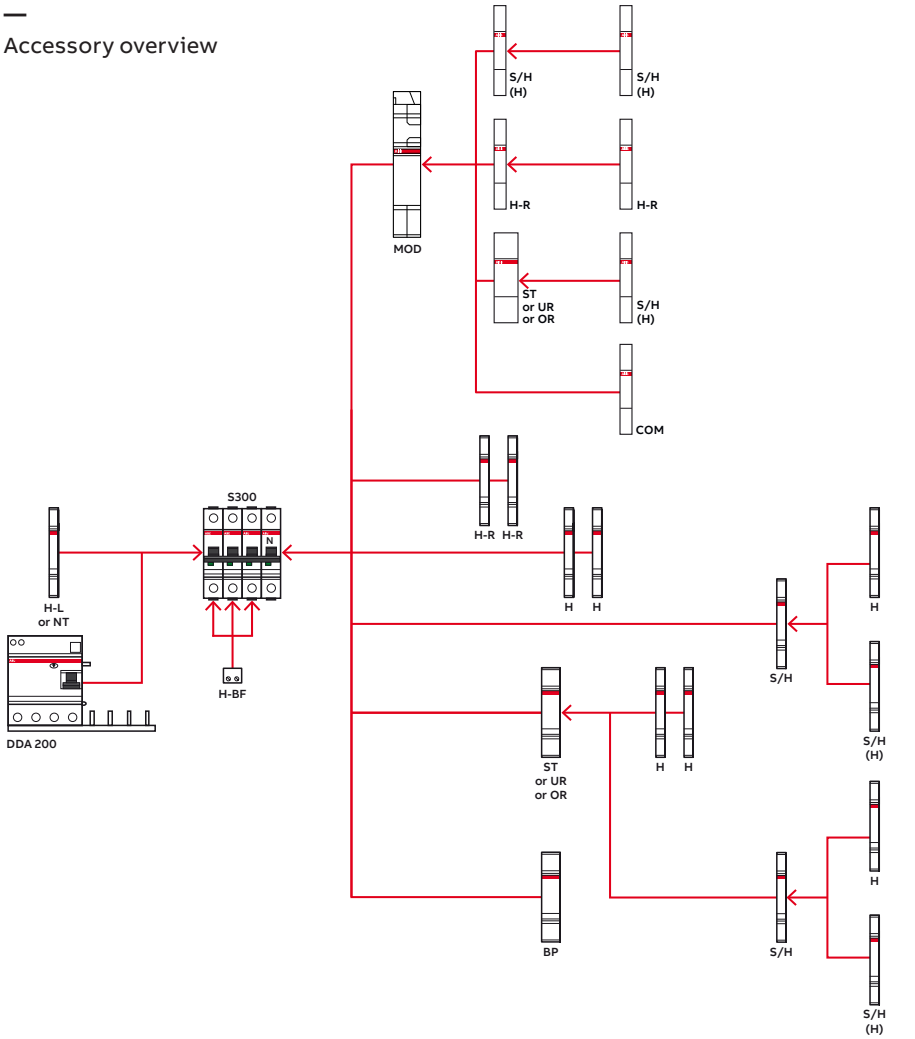
If several miniature circuit breakers are installed directly side by side with high load on all poles, a correction factor must be applied to the rated current (see table). If distance pieces are used, the factor is not to be considered.

No. of adjacent devices	Factor F
1	1
2.3	0.9
4.5	0.8
≥ 6	0.75

Miniature Circuit breakers S300P

Accessories and dimensional drawings

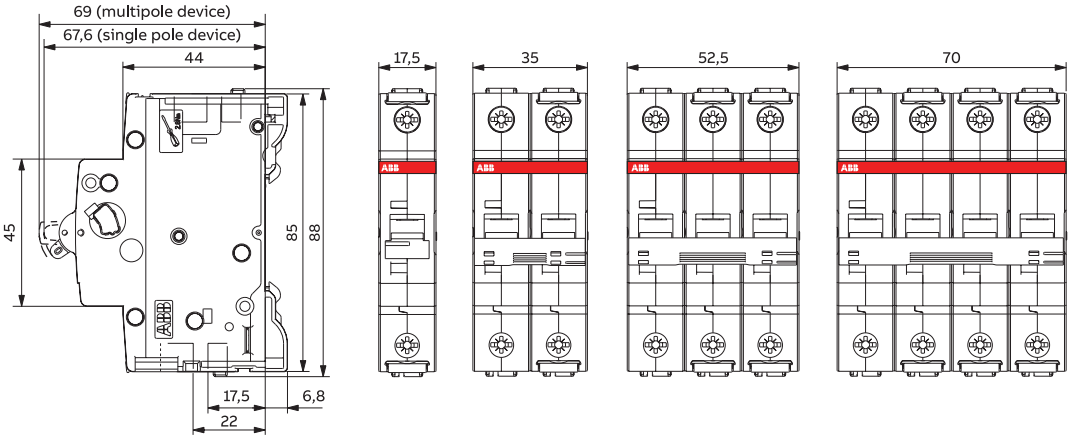
Accessory overview



H	Auxiliary contact (change-over contact)	S2C-H6R	H-L	Auxiliary contact	S2C-H..L
H-R	Auxiliary contact	S2C-H6-..R	H-BF	Auxiliary contact for bottom fitting (1 per pole)	S2C-H01 S2C-H10
S/H	Signal/Auxiliary contact used as auxiliary contact	S2C-S/H6R	BP	Mechanical tripping device	S2C-BP
			NT	Neutral disconnector	S2C-NT..
ST	Shunt trip	S3C-A..	MOD (1)	Motor operating device	S3C-MOD
UR	Undervoltage release	S2C-UA	COM	ModBus Interface	eMOD/AR ModBus
OR	Overvoltage release	S2C-OVP			
DDA 200	RCD-block	DDA 20..			

(1) In case of using S300 with DDA 200, MOD does not operate in case of earth-voltage fault

Dimensional drawing



Miniature Circuit breakers S300P

B characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	6	9080583	S301P-B6	2CDS381001R0065	0.124	10
	8	9086011	S301P-B8	2CDS381001R0085	0.124	10
	10	9080521	S301P-B10	2CDS381001R0105	0.124	10
	13	9080484	S301P-B13	2CDS381001R0135	0.124	10
	16	9080439	S301P-B16	2CDS381001R0165	0.124	10
	20	9080392	S301P-B20	2CDS381001R0205	0.124	10
	25	9080347	S301P-B25	2CDS381001R0255	0.124	10
	32	9080255	S301P-B32	2CDS381001R0325	0.124	10
	40	9080187	S301P-B40	2CDS381001R0405	0.124	10
	50	9080064	S301P-B50	2CDS381001R0505	0.124	10
	63	9079938	S301P-B63	2CDS381001R0635	0.124	10
2	6	9078993	S302P-B6	2CDS382001R0065	0.248	5
	8	9086059	S302P-B8	2CDS382001R0085	0.248	5
	10	9078931	S302P-B10	2CDS382001R0105	0.248	5
	13	9078894	S302P-B13	2CDS382001R0135	0.248	5
	16	9078849	S302P-B16	2CDS382001R0165	0.248	5
	20	9078801	S302P-B20	2CDS382001R0205	0.248	5
	25	9078757	S302P-B25	2CDS382001R0255	0.248	5
	32	9078665	S302P-B32	2CDS382001R0325	0.248	5
	40	9078597	S302P-B40	2CDS382001R0405	0.248	5
	50	9078474	S302P-B50	2CDS382001R0505	0.248	5
	63	9078344	S302P-B63	2CDS382001R0635	0.248	5
3	6	9078191	S303P-B6	2CDS383001R0065	0.372	1
	8	9086073	S303P-B8	2CDS383001R0085	0.372	1
	10	9078139	S303P-B10	2CDS383001R0105	0.372	1
	13	9078092	S303P-B13	2CDS383001R0135	0.372	1
	16	9078047	S303P-B16	2CDS383001R0165	0.372	1
	20	9078009	S303P-B20	2CDS383001R0205	0.372	1
	25	9077958	S303P-B25	2CDS383001R0255	0.372	1
	32	9077866	S303P-B32	2CDS383001R0325	0.372	1
	40	9077798	S303P-B40	2CDS383001R0405	0.372	1
	50	9077675	S303P-B50	2CDS383001R0505	0.372	1
	63	9077545	S303P-B63	2CDS383001R0635	0.372	1

Miniature Circuit breakers S300P

B characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	6	9076593	S304P-B6	2CDS384001R0065	0.496	1
	8	9086110	S304P-B8	2CDS384001R0085	0.496	1
	10	9076531	S304P-B10	2CDS384001R0105	0.496	1
	13	9076494	S304P-B13	2CDS384001R0135	0.496	1
	16	9076449	S304P-B16	2CDS384001R0165	0.496	1
	20	9135559	S304P-B20	2CDS384001R0205	0.496	1
	25	9076357	S304P-B25	2CDS384001R0255	0.496	1
	32	9076265	S304P-B32	2CDS384001R0325	0.496	1
	40	9076197	S304P-B40	2CDS384001R0405	0.496	1
	50	9076074	S304P-B50	2CDS384001R0505	0.496	1
	63	9075947	S304P-B63	2CDS384001R0635	0.496	1
1+N	6	9079785	S301P-B6NA	2CDS381103R0065	0.248	5
	8	9086035	S301P-B8NA	2CDS381103R0085	0.248	5
	10	9079730	S301P-B10NA	2CDS381103R0105	0.248	5
	13	9079693	S301P-B13NA	2CDS381103R0135	0.248	5
	16	9079648	S301P-B16NA	2CDS381103R0165	0.248	5
	20	9079600	S301P-B20NA	2CDS381103R0205	0.248	5
	25	9079556	S301P-B25NA	2CDS381103R0255	0.248	5
	32	9079464	S301P-B32NA	2CDS381103R0325	0.248	5
	40	9079396	S301P-B40NA	2CDS381103R0405	0.248	5
	50	9079273	S301P-B50NA	2CDS381103R0505	0.248	5
	63	9079143	S301P-B63NA	2CDS381103R0635	0.248	5
3+N	6	9077392	S303P-B6NA	2CDS383103R0065	0.496	1
	8	9086097	S303P-B8NA	2CDS383103R0085	0.496	1
	10	9077330	S303P-B10NA	2CDS383103R0105	0.496	1
	13	9077293	S303P-B13NA	2CDS383103R0135	0.496	1
	16	9077248	S303P-B16NA	2CDS383103R0165	0.496	1
	20	9135641	S303P-B20NA	2CDS383103R0205	0.496	1
	25	9077156	S303P-B25NA	2CDS383103R0255	0.496	1
	32	9077064	S303P-B32NA	2CDS383103R0325	0.496	1
	40	9076999	S303P-B40NA	2CDS383103R0405	0.496	1
	50	9076876	S303P-B50NA	2CDS383103R0505	0.496	1
	63	9076746	S303P-B63NA	2CDS383103R0635	0.496	1

Miniature Circuit breakers S300P

C characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9079891	S301P-C0.5	2CDS381001R0984	0.124	10
	1	9080675	S301P-C1	2CDS381001R0014	0.124	10
	1.6	9079914	S301P-C1.6	2CDS381001R0974	0.124	10
	2	9080651	S301P-C2	2CDS381001R0024	0.124	10
	3	9080637	S301P-C3	2CDS381001R0034	0.124	10
	4	9080613	S301P-C4	2CDS381001R0044	0.124	10
	6	9080590	S301P-C6	2CDS381001R0064	0.124	10
	8	9080569	S301P-C8	2CDS381001R0084	0.124	10
	10	9080538	S301P-C10	2CDS381001R0104	0.124	10
	13	9080491	S301P-C13	2CDS381001R0134	0.124	10
	16	9080446	S301P-C16	2CDS381001R0164	0.124	10
	20	9080408	S301P-C20	2CDS381001R0204	0.124	10
	25	9080354	S301P-C25	2CDS381001R0254	0.124	10
	32	9080262	S301P-C32	2CDS381001R0324	0.124	10
	40	9080194	S301P-C40	2CDS381001R0404	0.124	10
	50	9080071	S301P-C50	2CDS381001R0504	0.124	10
	63	9079945	S301P-C63	2CDS381001R0634	0.124	10
2	0.5	9078306	S302P-C0.5	2CDS382001R0984	0.248	5
	1	9079082	S302P-C1	2CDS382001R0014	0.248	5
	1.6	9078320	S302P-C1.6	2CDS382001R0974	0.248	5
	2	9079068	S302P-C2	2CDS382001R0024	0.248	5
	3	9079044	S302P-C3	2CDS382001R0034	0.248	5
	4	9079020	S302P-C4	2CDS382001R0044	0.248	5
	6	9079006	S302P-C6	2CDS382001R0064	0.248	5
	8	9078979	S302P-C8	2CDS382001R0084	0.248	5
	10	9078948	S302P-C10	2CDS382001R0104	0.248	5
	13	9078900	S302P-C13	2CDS382001R0134	0.248	5
	16	9078856	S302P-C16	2CDS382001R0164	0.248	5
	20	9078818	S302P-C20	2CDS382001R0204	0.248	5
	25	9078764	S302P-C25	2CDS382001R0254	0.248	5
	32	9078672	S302P-C32	2CDS382001R0324	0.248	5
	40	9078603	S302P-C40	2CDS382001R0404	0.248	5
	50	9078481	S302P-C50	2CDS382001R0504	0.248	5
	63	9078351	S302P-C63	2CDS382001R0634	0.248	5
3	0.5	9077507	S303P-C0.5	2CDS383001R0984	0.372	1
	1	9078283	S303P-C1	2CDS383001R0014	0.372	1
	1.6	9077521	S303P-C1.6	2CDS383001R0974	0.372	1
	2	9078269	S303P-C2	2CDS383001R0024	0.372	1
	3	9078245	S303P-C3	2CDS383001R0034	0.372	1
	4	9078221	S303P-C4	2CDS383001R0044	0.372	1
	6	9078207	S303P-C6	2CDS383001R0064	0.372	1
	8	9078177	S303P-C8	2CDS383001R0084	0.372	1
	10	9078146	S303P-C10	2CDS383001R0104	0.372	1
	13	9078108	S303P-C13	2CDS383001R0134	0.372	1
	16	9078054	S303P-C16	2CDS383001R0164	0.372	1
	20	9078016	S303P-C20	2CDS383001R0204	0.372	1
	25	9077965	S303P-C25	2CDS383001R0254	0.372	1
	32	9077873	S303P-C32	2CDS383001R0324	0.372	1
	40	9077804	S303P-C40	2CDS383001R0404	0.372	1
	50	9077682	S303P-C50	2CDS383001R0504	0.372	1
	63	9077552	S303P-C63	2CDS383001R0634	0.372	1

Miniature Circuit breakers S300P

C characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9135511	S304P-C0.5	2CDS384001R0984	0.496	1
	1	9076685	S304P-C1	2CDS384001R0014	0.496	1
	1.6	9075923	S304P-C1.6	2CDS384001R0974	0.496	1
	2	9076661	S304P-C2	2CDS384001R0024	0.496	1
	3	9076647	S304P-C3	2CDS384001R0034	0.496	1
	4	9076623	S304P-C4	2CDS384001R0044	0.496	1
	6	9135573	S304P-C6	2CDS384001R0064	0.496	1
	8	9076579	S304P-C8	2CDS384001R0084	0.496	1
	10	9076548	S304P-C10	2CDS384001R0104	0.496	1
	13	9135566	S304P-C13	2CDS384001R0134	0.496	1
	16	9076456	S304P-C16	2CDS384001R0164	0.496	1
	20	9076418	S304P-C20	2CDS384001R0204	0.496	1
	25	9076364	S304P-C25	2CDS384001R0254	0.496	1
	32	9076272	S304P-C32	2CDS384001R0324	0.496	1
	40	9135689	S304P-C40	2CDS384001R0404	0.496	1
	50	9076081	S304P-C50	2CDS384001R0504	0.496	1
	63	9075954	S304P-C63	2CDS384001R0634	0.496	1
1+N	0.5	9079105	S301P-C0.5NA	2CDS381103R0984	0.248	5
	1	9079877	S301P-C1NA	2CDS381103R0014	0.248	5
	1.6	9079129	S301P-C1.6NA	2CDS381103R0974	0.248	5
	2	9079853	S301P-C2NA	2CDS381103R0024	0.248	5
	3	9079839	S301P-C3NA	2CDS381103R0034	0.248	5
	4	9079815	S301P-C4NA	2CDS381103R0044	0.248	5
	6	9079792	S301P-C6NA	2CDS381103R0064	0.248	5
	8	9079778	S301P-C8NA	2CDS381103R0084	0.248	5
	10	9079747	S301P-C10NA	2CDS381103R0104	0.248	5
	13	9079709	S301P-C13NA	2CDS381103R0134	0.248	5
	16	9079655	S301P-C16NA	2CDS381103R0164	0.248	5
	20	9079617	S301P-C20NA	2CDS381103R0204	0.248	5
	25	9079563	S301P-C25NA	2CDS381103R0254	0.248	5
	32	9079471	S301P-C32NA	2CDS381103R0324	0.248	5
	40	9079402	S301P-C40NA	2CDS381103R0404	0.248	5
	50	9079280	S301P-C50NA	2CDS381103R0504	0.248	5
	63	9079150	S301P-C63NA	2CDS381103R0634	0.248	5
3+N	0.5	9135580	S303P-C0.5NA	2CDS383103R0984	0.496	1
	1	9077484	S303P-C1NA	2CDS383103R0014	0.496	1
	1.6	9076722	S303P-C1.6NA	2CDS383103R0974	0.496	1
	2	9077460	S303P-C2NA	2CDS383103R0024	0.496	1
	3	9077446	S303P-C3NA	2CDS383103R0034	0.496	1
	4	9077422	S303P-C4NA	2CDS383103R0044	0.496	1
	6	9077408	S303P-C6NA	2CDS383103R0064	0.496	1
	8	9077378	S303P-C8NA	2CDS383103R0084	0.496	1
	10	9077347	S303P-C10NA	2CDS383103R0104	0.496	1
	13	9135658	S303P-C13NA	2CDS383103R0134	0.496	1
	16	9077255	S303P-C16NA	2CDS383103R0164	0.496	1
	20	9077217	S303P-C20NA	2CDS383103R0204	0.496	1
	25	9077163	S303P-C25NA	2CDS383103R0254	0.496	1
	32	9077071	S303P-C32NA	2CDS383103R0324	0.496	1
	40	9135627	S303P-C40NA	2CDS383103R0404	0.496	1
	50	9076883	S303P-C50NA	2CDS383103R0504	0.496	1
	63	9076753	S303P-C63NA	2CDS383103R0634	0.496	1

Miniature Circuit breakers S300P

D characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9079907	S301P-D0.5	2CDS381001R0981	0.124	10
	1	9080682	S301P-D1	2CDS381001R0011	0.124	10
	1.6	9079921	S301P-D1.6	2CDS381001R0971	0.124	10
	2	9080668	S301P-D2	2CDS381001R0021	0.124	10
	3	9080644	S301P-D3	2CDS381001R0031	0.124	10
	4	9080620	S301P-D4	2CDS381001R0041	0.124	10
	6	9080606	S301P-D6	2CDS381001R0061	0.124	10
	8	9080576	S301P-D8	2CDS381001R0081	0.124	10
	10	9080545	S301P-D10	2CDS381001R0101	0.124	10
	13	9080507	S301P-D13	2CDS381001R0131	0.124	10
	16	9080453	S301P-D16	2CDS381001R0161	0.124	10
	20	9080415	S301P-D20	2CDS381001R0201	0.124	10
	25	9080361	S301P-D25	2CDS381001R0251	0.124	10
	32	9080279	S301P-D32	2CDS381001R0321	0.124	10
	40	9080200	S301P-D40	2CDS381001R0401	0.124	10
	50	9080088	S301P-D50	2CDS381001R0501	0.124	10
	63	9079952	S301P-D63	2CDS381001R0631	0.124	10
2	0.5	9078313	S302P-D0.5	2CDS382001R0981	0.248	5
	1	9079099	S302P-D1	2CDS382001R0011	0.248	5
	1.6	9078337	S302P-D1.6	2CDS382001R0971	0.248	5
	2	9079075	S302P-D2	2CDS382001R0021	0.248	5
	3	9079051	S302P-D3	2CDS382001R0031	0.248	5
	4	9079037	S302P-D4	2CDS382001R0041	0.248	5
	6	9079013	S302P-D6	2CDS382001R0061	0.248	5
	8	9078986	S302P-D8	2CDS382001R0081	0.248	5
	10	9078955	S302P-D10	2CDS382001R0101	0.248	5
	13	9078917	S302P-D13	2CDS382001R0131	0.248	5
	16	9078863	S302P-D16	2CDS382001R0161	0.248	5
	20	9078825	S302P-D20	2CDS382001R0201	0.248	5
	25	9078771	S302P-D25	2CDS382001R0251	0.248	5
	32	9078689	S302P-D32	2CDS382001R0321	0.248	5
	40	9078610	S302P-D40	2CDS382001R0401	0.248	5
	50	9078498	S302P-D50	2CDS382001R0501	0.248	5
	63	9078368	S302P-D63	2CDS382001R0631	0.248	5
3	0.5	9077514	S303P-D0.5	2CDS383001R0981	0.372	1
	1	9078290	S303P-D1	2CDS383001R0011	0.372	1
	1.6	9077538	S303P-D1.6	2CDS383001R0971	0.372	1
	2	9078276	S303P-D2	2CDS383001R0021	0.372	1
	3	9078252	S303P-D3	2CDS383001R0031	0.372	1
	4	9078238	S303P-D4	2CDS383001R0041	0.372	1
	6	9078214	S303P-D6	2CDS383001R0061	0.372	1
	8	9078184	S303P-D8	2CDS383001R0081	0.372	1
	10	9078153	S303P-D10	2CDS383001R0101	0.372	1
	13	9078115	S303P-D13	2CDS383001R0131	0.372	1
	16	9078061	S303P-D16	2CDS383001R0161	0.372	1
	20	9078023	S303P-D20	2CDS383001R0201	0.372	1
	25	9077972	S303P-D25	2CDS383001R0251	0.372	1
	32	9077880	S303P-D32	2CDS383001R0321	0.372	1
	40	9077811	S303P-D40	2CDS383001R0401	0.372	1
	50	9077699	S303P-D50	2CDS383001R0501	0.372	1
	63	9077569	S303P-D63	2CDS383001R0631	0.372	1

Miniature Circuit breakers S300P

D characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9075916	S304P-D0.5	2CDS384001R0981	0.496	1
	1	9076692	S304P-D1	2CDS384001R0011	0.496	1
	1.6	9075930	S304P-D1.6	2CDS384001R0971	0.496	1
	2	9076678	S304P-D2	2CDS384001R0021	0.496	1
	3	9076654	S304P-D3	2CDS384001R0031	0.496	1
	4	9076630	S304P-D4	2CDS384001R0041	0.496	1
	6	9076616	S304P-D6	2CDS384001R0061	0.496	1
	8	9076586	S304P-D8	2CDS384001R0081	0.496	1
	10	9076555	S304P-D10	2CDS384001R0101	0.496	1
	13	9076517	S304P-D13	2CDS384001R0131	0.496	1
	16	9076463	S304P-D16	2CDS384001R0161	0.496	1
	20	9076425	S304P-D20	2CDS384001R0201	0.496	1
	25	9076371	S304P-D25	2CDS384001R0251	0.496	1
	32	9076289	S304P-D32	2CDS384001R0321	0.496	1
	40	9076210	S304P-D40	2CDS384001R0401	0.496	1
	50	9076098	S304P-D50	2CDS384001R0501	0.496	1
	63	9075961	S304P-D63	2CDS384001R0631	0.496	1
1+N	0.5	9079112	S301P-D0.5NA	2CDS381103R0981	0.248	5
	1	9079884	S301P-D1NA	2CDS381103R0011	0.248	5
	1.6	9079136	S301P-D1.6NA	2CDS381103R0971	0.248	5
	2	9079860	S301P-D2NA	2CDS381103R0021	0.248	5
	3	9079846	S301P-D3NA	2CDS381103R0031	0.248	5
	4	9079822	S301P-D4NA	2CDS381103R0041	0.248	5
	6	9079808	S301P-D6NA	2CDS381103R0061	0.248	5
	8	9085717	S301P-D8NA	2CDS381103R0081	0.248	5
	10	9079754	S301P-D10NA	2CDS381103R0101	0.248	5
	13	9079716	S301P-D13NA	2CDS381103R0131	0.248	5
	16	9079662	S301P-D16NA	2CDS381103R0161	0.248	5
	20	9079624	S301P-D20NA	2CDS381103R0201	0.248	5
	25	9079570	S301P-D25NA	2CDS381103R0251	0.248	5
	32	9079488	S301P-D32NA	2CDS381103R0321	0.248	5
	40	9079419	S301P-D40NA	2CDS381103R0401	0.248	5
	50	9079297	S301P-D50NA	2CDS381103R0501	0.248	5
	63	9079167	S301P-D63NA	2CDS381103R0631	0.248	5
3+N	0.5	9076715	S303P-D0.5NA	2CDS383103R0981	0.496	1
	1	9077491	S303P-D1NA	2CDS383103R0011	0.496	1
	1.6	9076739	S303P-D1.6NA	2CDS383103R0971	0.496	1
	2	9077477	S303P-D2NA	2CDS383103R0021	0.496	1
	3	9077453	S303P-D3NA	2CDS383103R0031	0.496	1
	4	9077439	S303P-D4NA	2CDS383103R0041	0.496	1
	6	9077415	S303P-D6NA	2CDS383103R0061	0.496	1
	8	9077385	S303P-D8NA	2CDS383103R0081	0.496	1
	10	9077354	S303P-D10NA	2CDS383103R0101	0.496	1
	13	9077316	S303P-D13NA	2CDS383103R0131	0.496	1
	16	9077262	S303P-D16NA	2CDS383103R0161	0.496	1
	20	9077224	S303P-D20NA	2CDS383103R0201	0.496	1
	25	9077170	S303P-D25NA	2CDS383103R0251	0.496	1
	32	9077088	S303P-D32NA	2CDS383103R0321	0.496	1
	40	9077019	S303P-D40NA	2CDS383103R0401	0.496	1
	50	9076890	S303P-D50NA	2CDS383103R0501	0.496	1
	63	9076760	S303P-D63NA	2CDS383103R0631	0.496	1

Miniature Circuit breakers S300P

K characteristic



S 301



S 302

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.2	9080552	S301P-K0.2	2CDS381001R0087	0.124	10
	0.3	9080514	S301P-K0.3	2CDS381001R0117	0.124	10
	0.5	9080477	S301P-K0.5	2CDS381001R0157	0.124	10
	0.75	9080422	S301P-K0.75	2CDS381001R0187	0.124	10
	1	9080385	S301P-K1	2CDS381001R0217	0.124	10
	1.6	9080330	S301P-K1.6	2CDS381001R0257	0.124	10
	2	9080316	S301P-K2	2CDS381001R0277	0.124	10
	3	9080293	S301P-K3	2CDS381001R0317	0.124	10
	4	9080248	S301P-K4	2CDS381001R0337	0.124	10
	6	9080224	S301P-K6	2CDS381001R0377	0.124	10
	8	9080170	S301P-K8	2CDS381001R0407	0.124	10
	10	9080156	S301P-K10	2CDS381001R0427	0.124	10
	13	9080132	S301P-K13	2CDS381001R0447	0.124	10
	16	9080125	S301P-K16	2CDS381001R0467	0.124	10
	20	9080101	S301P-K20	2CDS381001R0487	0.124	10
	25	9080057	S301P-K25	2CDS381001R0517	0.124	10
	32	9080033	S301P-K32	2CDS381001R0537	0.124	10
	40	9080019	S301P-K40	2CDS381001R0557	0.124	10
	50	9079990	S301P-K50	2CDS381001R0577	0.124	10
	63	9079976	S301P-K63	2CDS381001R0607	0.124	10
2	0.2	9078962	S302P-K0.2	2CDS382001R0087	0.248	5
	0.3	9078924	S302P-K0.3	2CDS382001R0117	0.248	5
	0.5	9078887	S302P-K0.5	2CDS382001R0157	0.248	5
	0.75	9078832	S302P-K0.75	2CDS382001R0187	0.248	5
	1	9078795	S302P-K1	2CDS382001R0217	0.248	5
	1.6	9078740	S302P-K1.6	2CDS382001R0257	0.248	5
	2	9078726	S302P-K2	2CDS382001R0277	0.248	5
	3	9078702	S302P-K3	2CDS382001R0317	0.248	5
	4	9078658	S302P-K4	2CDS382001R0337	0.248	5
	6	9078634	S302P-K6	2CDS382001R0377	0.248	5
	8	9078580	S302P-K8	2CDS382001R0407	0.248	5
	10	9078566	S302P-K10	2CDS382001R0427	0.248	5
	13	9078542	S302P-K13	2CDS382001R0447	0.248	5
	16	9078535	S302P-K16	2CDS382001R0467	0.248	5
	20	9078511	S302P-K20	2CDS382001R0487	0.248	5
	25	9078467	S302P-K25	2CDS382001R0517	0.248	5
	32	9078443	S302P-K32	2CDS382001R0537	0.248	5
	40	9078429	S302P-K40	2CDS382001R0557	0.248	5
	50	9078405	S302P-K50	2CDS382001R0577	0.248	5
	63	9078382	S302P-K63	2CDS382001R0607	0.248	5

Miniature Circuit breakers S300P

K characteristic



S 303



S 304

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
3	0.2	9078160	S303P-K0.2	2CDS383001R0087	0.372	1
	0.3	9078122	S303P-K0.3	2CDS383001R0117	0.372	1
	0.5	9078085	S303P-K0.5	2CDS383001R0157	0.372	1
	0.75	9078030	S303P-K0.75	2CDS383001R0187	0.372	1
	1	9077996	S303P-K1	2CDS383001R0217	0.372	1
	1.6	9077941	S303P-K1.6	2CDS383001R0257	0.372	1
	2	9077927	S303P-K2	2CDS383001R0277	0.372	1
	3	9077903	S303P-K3	2CDS383001R0317	0.372	1
	4	9077859	S303P-K4	2CDS383001R0337	0.372	1
	6	9077835	S303P-K6	2CDS383001R0377	0.372	1
	8	9077781	S303P-K8	2CDS383001R0407	0.372	1
	10	9077767	S303P-K10	2CDS383001R0427	0.372	1
	13	9077743	S303P-K13	2CDS383001R0447	0.372	1
	16	9077736	S303P-K16	2CDS383001R0467	0.372	1
	20	9077712	S303P-K20	2CDS383001R0487	0.372	1
	25	9077668	S303P-K25	2CDS383001R0517	0.372	1
	32	9077644	S303P-K32	2CDS383001R0537	0.372	1
	40	9077620	S303P-K40	2CDS383001R0557	0.372	1
	50	9077606	S303P-K50	2CDS383001R0577	0.372	1
	63	9077583	S303P-K63	2CDS383001R0607	0.372	1
4	0.2	9076562	S304P-K0.2	2CDS384001R0087	0.496	1
	0.3	9076524	S304P-K0.3	2CDS384001R0117	0.496	1
	0.5	9076487	S304P-K0.5	2CDS384001R0157	0.496	1
	0.75	9076432	S304P-K0.75	2CDS384001R0187	0.496	1
	1	9076395	S304P-K1	2CDS384001R0217	0.496	1
	1.6	9076340	S304P-K1.6	2CDS384001R0257	0.496	1
	2	9076326	S304P-K2	2CDS384001R0277	0.496	1
	3	9135542	S304P-K3	2CDS384001R0317	0.496	1
	4	9076258	S304P-K4	2CDS384001R0337	0.496	1
	6	9076234	S304P-K6	2CDS384001R0377	0.496	1
	8	9076180	S304P-K8	2CDS384001R0407	0.496	1
	10	9076166	S304P-K10	2CDS384001R0427	0.496	1
	13	9076142	S304P-K13	2CDS384001R0447	0.496	1
	16	9076135	S304P-K16	2CDS384001R0467	0.496	1
	20	9076111	S304P-K20	2CDS384001R0487	0.496	1
	25	9076067	S304P-K25	2CDS384001R0517	0.496	1
	32	9076043	S304P-K32	2CDS384001R0537	0.496	1
	40	9076029	S304P-K40	2CDS384001R0557	0.496	1
	50	9135528	S304P-K50	2CDS384001R0577	0.496	1
	63	9075985	S304P-K63	2CDS384001R0607	0.496	1

Miniature Circuit breakers S300P

K characteristic



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1+N	0.2	9079761	S301P-K0.2NA	2CDS381103R0087	0.248	5
	0.3	9079723	S301P-K0.3NA	2CDS381103R0117	0.248	5
	0.5	9079686	S301P-K0.5NA	2CDS381103R0157	0.248	5
	0.75	9079631	S301P-K0.75NA	2CDS381103R0187	0.248	5
	1	9079594	S301P-K1NA	2CDS381103R0217	0.248	5
	1.6	9079549	S301P-K1.6NA	2CDS381103R0257	0.248	5
	2	9079525	S301P-K2NA	2CDS381103R0277	0.248	5
	3	9079501	S301P-K3NA	2CDS381103R0317	0.248	5
	4	9079457	S301P-K4NA	2CDS381103R0337	0.248	5
	6	9079433	S301P-K6NA	2CDS381103R0377	0.248	5
	8	9079389	S301P-K8NA	2CDS381103R0407	0.248	5
	10	9079365	S301P-K10NA	2CDS381103R0427	0.248	5
	13	9079341	S301P-K13NA	2CDS381103R0447	0.248	5
	16	9079334	S301P-K16NA	2CDS381103R0467	0.248	5
	20	9079310	S301P-K20NA	2CDS381103R0487	0.248	5
	25	9079266	S301P-K25NA	2CDS381103R0517	0.248	5
	32	9079242	S301P-K32NA	2CDS381103R0537	0.248	5
	40	9079228	S301P-K40NA	2CDS381103R0557	0.248	5
	50	9135665	S301P-K50NA	2CDS381103R0577	0.248	5
	63	9079181	S301P-K63NA	2CDS381103R0607	0.248	5
3+N	0.2	9077361	S303P-K0.2NA	2CDS383103R0087	0.496	1
	0.3	9077323	S303P-K0.3NA	2CDS383103R0117	0.496	1
	0.5	9077286	S303P-K0.5NA	2CDS383103R0157	0.496	1
	0.75	9077231	S303P-K0.75NA	2CDS383103R0187	0.496	1
	1	9077194	S303P-K1NA	2CDS383103R0217	0.496	1
	1.6	9077149	S303P-K1.6NA	2CDS383103R0257	0.496	1
	2	9077125	S303P-K2NA	2CDS383103R0277	0.496	1
	3	9135634	S303P-K3NA	2CDS383103R0317	0.496	1
	4	9077057	S303P-K4NA	2CDS383103R0337	0.496	1
	6	9077033	S303P-K6NA	2CDS383103R0377	0.496	1
	8	9076982	S303P-K8NA	2CDS383103R0407	0.496	1
	10	9076968	S303P-K10NA	2CDS383103R0427	0.496	1
	13	9076944	S303P-K13NA	2CDS383103R0447	0.496	1
	16	9076937	S303P-K16NA	2CDS383103R0467	0.496	1
	20	9076913	S303P-K20NA	2CDS383103R0487	0.496	1
	25	9076869	S303P-K25NA	2CDS383103R0517	0.496	1
	32	9076845	S303P-K32NA	2CDS383103R0537	0.496	1
	40	9076821	S303P-K40NA	2CDS383103R0557	0.496	1
	50	9135597	S303P-K50NA	2CDS383103R0577	0.496	1
	63	9076784	S303P-K63NA	2CDS383103R0607	0.496	1

Miniature Circuit breakers S300P

Z characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9080460	S301P-Z0.5	2CDS381001R0158	0.124	10
	1	9080378	S301P-Z1	2CDS381001R0218	0.124	10
	1.6	9080323	S301P-Z1.6	2CDS381001R0258	0.124	10
	2	9080309	S301P-Z2	2CDS381001R0278	0.124	10
	3	9080286	S301P-Z3	2CDS381001R0318	0.124	10
	4	9080231	S301P-Z4	2CDS381001R0338	0.124	10
	6	9080217	S301P-Z6	2CDS381001R0378	0.124	10
	8	9080163	S301P-Z8	2CDS381001R0408	0.124	10
	10	9080149	S301P-Z10	2CDS381001R0428	0.124	10
	16	9080118	S301P-Z16	2CDS381001R0468	0.124	10
	20	9080095	S301P-Z20	2CDS381001R0488	0.124	10
	25	9080040	S301P-Z25	2CDS381001R0518	0.124	10
	32	9080026	S301P-Z32	2CDS381001R0538	0.124	10
	40	9080002	S301P-Z40	2CDS381001R0558	0.124	10
	50	9079983	S301P-Z50	2CDS381001R0578	0.124	10
	63	9079969	S301P-Z63	2CDS381001R0608	0.124	10
2	0.5	9078870	S302P-Z0.5	2CDS382001R0158	0.248	5
	1	9078788	S302P-Z1	2CDS382001R0218	0.248	5
	1.6	9078733	S302P-Z1.6	2CDS382001R0258	0.248	5
	2	9078719	S302P-Z2	2CDS382001R0278	0.248	5
	3	9078696	S302P-Z3	2CDS382001R0318	0.248	5
	4	9078641	S302P-Z4	2CDS382001R0338	0.248	5
	6	9078627	S302P-Z6	2CDS382001R0378	0.248	5
	8	9078573	S302P-Z8	2CDS382001R0408	0.248	5
	10	9078559	S302P-Z10	2CDS382001R0428	0.248	5
	16	9078528	S302P-Z16	2CDS382001R0468	0.248	5
	20	9078504	S302P-Z20	2CDS382001R0488	0.248	5
	25	9078450	S302P-Z25	2CDS382001R0518	0.248	5
	32	9078436	S302P-Z32	2CDS382001R0538	0.248	5
	40	9078412	S302P-Z40	2CDS382001R0558	0.248	5
	50	9078399	S302P-Z50	2CDS382001R0578	0.248	5
	63	9078375	S302P-Z63	2CDS382001R0608	0.248	5
3	0.5	9078078	S303P-Z0.5	2CDS383001R0158	0.372	1
	1	9077989	S303P-Z1	2CDS383001R0218	0.372	1
	1.6	9077934	S303P-Z1.6	2CDS383001R0258	0.372	1
	2	9077910	S303P-Z2	2CDS383001R0278	0.372	1
	3	9077897	S303P-Z3	2CDS383001R0318	0.372	1
	4	9077842	S303P-Z4	2CDS383001R0338	0.372	1
	6	9077828	S303P-Z6	2CDS383001R0378	0.372	1
	8	9077774	S303P-Z8	2CDS383001R0408	0.372	1
	10	9077750	S303P-Z10	2CDS383001R0428	0.372	1
	16	9077729	S303P-Z16	2CDS383001R0468	0.372	1
	20	9077705	S303P-Z20	2CDS383001R0488	0.372	1
	25	9077651	S303P-Z25	2CDS383001R0518	0.372	1
	32	9077637	S303P-Z32	2CDS383001R0538	0.372	1
	40	9077613	S303P-Z40	2CDS383001R0558	0.372	1
	50	9077590	S303P-Z50	2CDS383001R0578	0.372	1
	63	9077576	S303P-Z63	2CDS383001R0608	0.372	1

Miniature Circuit breakers S300P

Z characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9076470	S304P-Z0.5	2CDS384001R0158	0.496	1
	1	9076388	S304P-Z1	2CDS384001R0218	0.496	1
	1.6	9076333	S304P-Z1.6	2CDS384001R0258	0.496	1
	2	9076319	S304P-Z2	2CDS384001R0278	0.496	1
	3	9076296	S304P-Z3	2CDS384001R0318	0.496	1
	4	9076241	S304P-Z4	2CDS384001R0338	0.496	1
	6	9076227	S304P-Z6	2CDS384001R0378	0.496	1
	8	9076173	S304P-Z8	2CDS384001R0408	0.496	1
	10	9076159	S304P-Z10	2CDS384001R0428	0.496	1
	16	9076128	S304P-Z16	2CDS384001R0468	0.496	1
	20	9135535	S304P-Z20	2CDS384001R0488	0.496	1
	25	9076050	S304P-Z25	2CDS384001R0518	0.496	1
	32	9076036	S304P-Z32	2CDS384001R0538	0.496	1
	40	9076012	S304P-Z40	2CDS384001R0558	0.496	1
	50	9075992	S304P-Z50	2CDS384001R0578	0.496	1
	63	9075978	S304P-Z63	2CDS384001R0608	0.496	1
1+N	0.5	9079679	S301P-Z0.5NA	2CDS381103R0158	0.248	5
	1	9079587	S301P-Z1NA	2CDS381103R0218	0.248	5
	1.6	9079532	S301P-Z1.6NA	2CDS381103R0258	0.248	5
	2	9079518	S301P-Z2NA	2CDS381103R0278	0.248	5
	3	9079495	S301P-Z3NA	2CDS381103R0318	0.248	5
	4	9079440	S301P-Z4NA	2CDS381103R0338	0.248	5
	6	9079426	S301P-Z6NA	2CDS381103R0378	0.248	5
	8	9079372	S301P-Z8NA	2CDS381103R0408	0.248	5
	10	9079358	S301P-Z10NA	2CDS381103R0428	0.248	5
	16	9079327	S301P-Z16NA	2CDS381103R0468	0.248	5
	20	9135672	S301P-Z20NA	2CDS381103R0488	0.248	5
	25	9079259	S301P-Z25NA	2CDS381103R0518	0.248	5
	32	9079235	S301P-Z32NA	2CDS381103R0538	0.248	5
	40	9079211	S301P-Z40NA	2CDS381103R0558	0.248	5
	50	9079198	S301P-Z50NA	2CDS381103R0578	0.248	5
	63	9079174	S301P-Z63NA	2CDS381103R0608	0.248	5
3+N	0.5	9077279	S303P-Z0.5NA	2CDS383103R0158	0.496	1
	1	9077187	S303P-Z1NA	2CDS383103R0218	0.496	1
	1.6	9077132	S303P-Z1.6NA	2CDS383103R0258	0.496	1
	2	9077118	S303P-Z2NA	2CDS383103R0278	0.496	1
	3	9077095	S303P-Z3NA	2CDS383103R0318	0.496	1
	4	9077040	S303P-Z4NA	2CDS383103R0338	0.496	1
	6	9077026	S303P-Z6NA	2CDS383103R0378	0.496	1
	8	9076975	S303P-Z8NA	2CDS383103R0408	0.496	1
	10	9076951	S303P-Z10NA	2CDS383103R0428	0.496	1
	16	9076920	S303P-Z16NA	2CDS383103R0468	0.496	1
	20	9135610	S303P-Z20NA	2CDS383103R0488	0.496	1
	25	9076852	S303P-Z25NA	2CDS383103R0518	0.496	1
	32	9076838	S303P-Z32NA	2CDS383103R0538	0.496	1
	40	9076814	S303P-Z40NA	2CDS383103R0558	0.496	1
	50	9076791	S303P-Z50NA	2CDS383103R0578	0.496	1
	63	9076777	S303P-Z63NA	2CDS383103R0608	0.496	1

ABB S.p.A.
Electrification
Smart Building

www.abb.com/lowvoltage

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9AKK107992A4964 Rev. F - 04.2024

ITEM	Tag	UP-200F1-Q16	: SPARE			Dwg	1724000372-EL-DG-00008
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10004597		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FTR-2 Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer: ABB	Serial N°: NA	Relay type: NA
Auxiliary supply: NA	Location: B100	Cubicle: NA
Switchboard: UP-200F1		

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
I	16A	NA	NA	FIXED	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	08/07/2025

Comments:

	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-08	2024-11-08	2024-11-08
Signature	Digitaly signed by Davide Zucconelli 2024-11-08T10:31:33.701Z	Digitaly signed by Kristian Castellani 2024-11-08T15:25:43.933Z	Digitaly signed by Witness waived 2024-11-08T16:30:38.978Z

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+REC1
UP-200F1 A

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-A320
INTERFACE

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

-R3
100mV
130A

-Q3
160A

BATTERY
110Vdc
-X3
+/-
70 mm²

Battery
symmetry
-X31
+/-
4 mm²

-A10
BATTERY SIMMETRY
FAULT

+BP
BATTERY PROTECTION

2 (1x25) mm2

-F100
Plastic
box 80*80

+BAT

-L+/-
2P 125A
BUS BAR
110 VDC

-Q10
50A-C
-X2 1+/1
16 mm²
3G16 mm2
amoured cable
(+REC1-A1 /1.4) / SD1
CP-100F1
DC CONTROL 66kV G/S
LINE A-5.2KW

-SD1

-Q11
20A-C
-X2 2+/2
16 mm²
3G16 mm2
amoured cable
(+REC2-A1 /1.4) / SD2
CP-100F1
DC CONTROL 66kV G/S
LINE B-2KW

-SD2

-Q12
16A-C
-X2 3+/3
16 mm²
3G16 mm2
amoured cable
SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE A-1KW

-Q13
16A-C
-X2 4+/4
16 mm²
3G16 mm2
amoured cable
SG-100D1
DC CONTROL 6,6kV
SWITCHGEAR LINE B-1KW

-Q14
50A-C
-X2 5+/5
16 mm²
SPARE 5,5KW

-Q15
20A-C
-X2 6+/6
16 mm²
SPARE 2KW

-Q16
16A-C
-X2 7+/7
16 mm²
SPARE 1KW

-F10/F11
DEHNguard

-A21
EARTH +/-

-Z2
400V

INTERCONNECTION
50 mm²
-X6

-KF
PSR-SCP- 24DC / SIL3

-A1
GCAU
CONTROL UNIT

-A5.1
Relays

-CR1-X5

-A71

-A300
DISPLAY

-A73
MODBUS-TCP/IP

-A8
Isolated

-A310
KEY PAD

SD1 / (+BAT-SD1 /1.8)

-X8
4 mm²
CHARGERS
INTERCONNECTION

2,5 mm²

PH4 35 mm²

AUXILIARY SUPPLY
230Vac-50Hz

-X7
L/N
6 mm²
3G2.5 mm2
unamoured cable

-Q6
02A-C

-H3

-Q7
02A-C

-THF4
0/60ºC

-E50
100W

+REC2
UP-200F1 B

-M1/2
220-240 Vca
50-60Hz
FAN

-PR2-TH1
THERMOSTAT 100º

-PR2-TH2
THERMOSTAT 90º

-PR1-TH1
THERMOSTAT 100º

-PR1-TH2
THERMOSTAT 90º

-A8
(+REC1-CR1-J13:1 /1.4)

Charger
100A 12Pulses

-Z1
0/450V

-X1
L1
70 mm²
4G16 mm2
unamoured cable

MAINS
3x400Vac 50Hz -50kA

L1;L2;L3;PE

-Q1
50A

-T1
110V/100A
019.6KVA

-PR2
TPC

-PR1
TPC

-A320
INTERFACE

-R2
100mV
130A

-C1
3x6800µF
160V
Filtering 1%

-F1
NH00
125A

-V21
100A

-Q2
160A

SD2 / (+BAT-SD2 /1.8)

-A1
GCAU
CONTROL UNIT

-A5.1
Relays

-CR1-X5

-A71

-A300
DISPLAY

-A73
MODBUS-TCP/IP

-A8
Isolated

-A310
KEY PAD

A8 / (+REC2-X8 /1.4)

AUXILIARY SUPPLY
230Vac-50Hz

-X7
L/N
6 mm²

-Q6
02A-C

-H3

-Q7
02A-C

-THF4
0/60ºC

-E50
100W

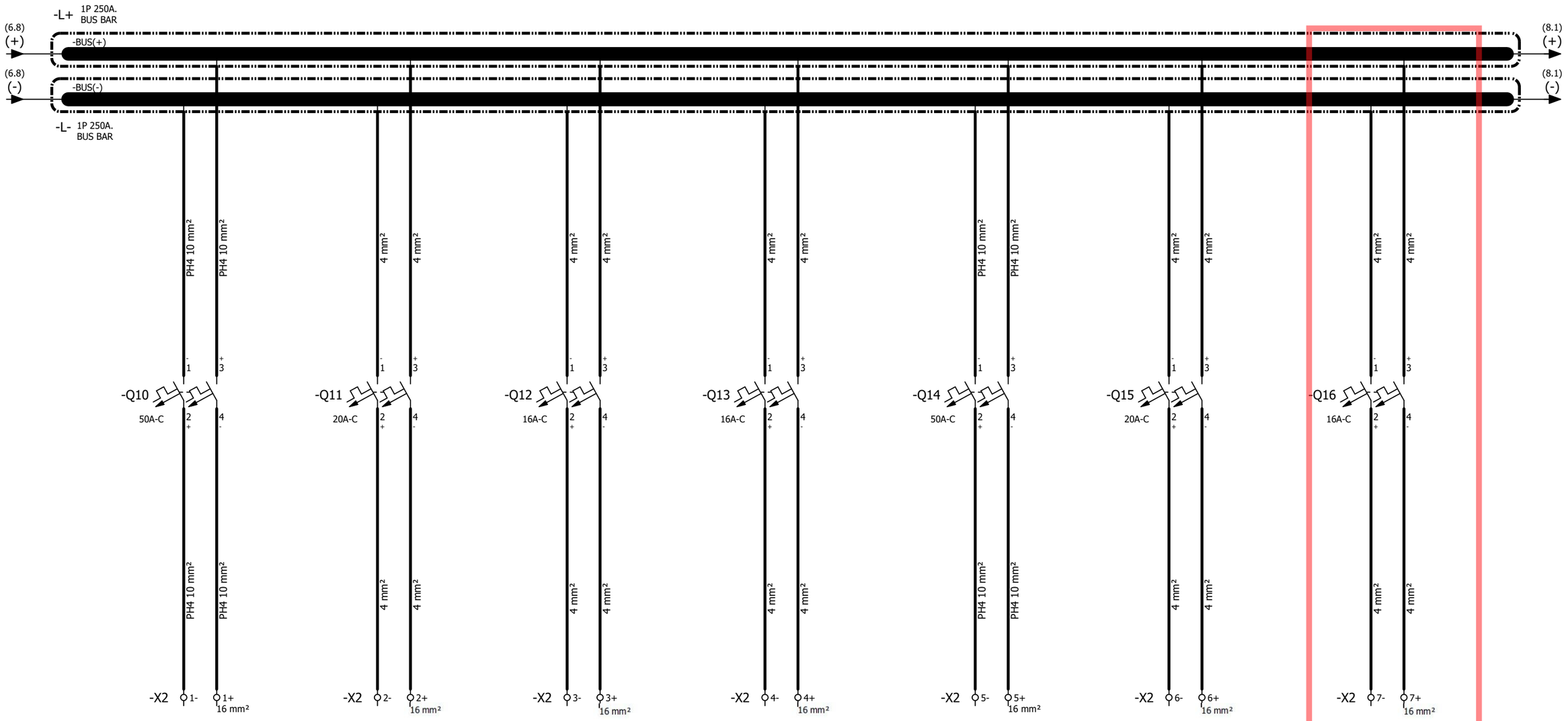
Battery
symmetry
-X31
+/-
4 mm²

-A10
BATTERY SIMMETRY
FAULT

ES21464

				Date	21/03/2024	3W POWER S.P.A.		1724000372-EL-DG-00006	= System
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm	AEG POWER SOLUTIONS	Single-line	+ 8 / 47
				Checked	JOP			System	& EFA
Stat	Alteration	Date	Name	Standard				ES521464 en	A3 Sheet / Sheets 1

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	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
SUPPLIED FROM	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
RATING	50A-C	20A-C	16A-C	16A-C	50A-C	20A-C	16A-C
MAXIMUM CROSS-SECTION	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²
AUXILIARY CONTACT	98 96 95 (/8.5)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)
FUNCTION	CP-100F1 DC CONTROL 66kV G/S LINE A-5.2KW	CP-100F1 DC CONTROL 66kV G/S LINE B-2KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE A-1KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE B-1KW	SPARE 5,5KW	SPARE 2KW	SPARE 1KW

S300P
Data sheet



System pro *M* compact®
S300P miniature circuit breakers comply with IEC/EN 60947-2, IEC/EN 60898-1, UL 1077 and CSA 22.2 No. 235, protecting the installation in commercial and industrial applications by supporting a breaking capacity of 25 kA.

—
01

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01
S300P
Miniature Circuit Breaker

S300P MCB is designed to be used in installations where high breaking capacities are required to protect against short-circuits and overloads.

S300P is compliant to the product standards
IEC/EN 60947-2
IEC/EN 60898-1
UL 1077
CSA 22.2 No.235
and features the following main technical characteristics:

- Rated nominal current: 0.2 A ... 63 A
- Characteristic: B, C, D, K, Z
- Pole variant: 1, 2, 3, 4, 1+N, 3+N
- Rated breaking capacity I_{cu}: 25 kA; 100 kA (≤ 6 A)
- Rated operational voltage U_e: 240/415 V AC
- Rated impulse withstand voltage U_{imp}: 6 kV

Application benefits

- Integrated trip indicator for clear signalization of tripping events on site
- Dual DIN-Rail release for fast and easy installation
- Fully compatible with whole range of System pro *M* compact® accessories supporting lots of different functions
- Quick and easy product identification by QR-code along with direct access to the ABB product database
- Terminals equipped with fail safe feature to avoid improper installation
- Supply possible from top or bottom and in parallel with cables and busbars thanks to terminals composed by two different openings
- Excellent technical performance to ensure safety and protection of installation and personal
- Certified quality and compliance according to worldwide product standards

S300P
Technical data



S300P

		S300P
General Data	Standards	IEC/EN 60947-2, IEC/EN 60898-1, UL 1077, CSA 22.2 No. 235
	Poles	1P, 2P, 3P, 4P, 1+N, 3+N
	Tripping characteristics	B, C, D, K, Z
	Rated current I_n	6…63 A (B-curve), 0.5…63 A (C-, D-, Z-curve), 0.2…63 A (K-curve)
	Rated frequency f	50 / 60 Hz, DC
	Rated insulation voltage U_i acc. to IEC/EN 60664-1	500 V AC
	Overvoltage category	IV
	Pollution degree	3
Data acc. to IEC/EN 60947-2	Tripping Characteristics	B, C, D, K, Z
	Rated operational voltage U_e	1P, 1+N: 240 V AC, 72 V DC 2P: 415 V AC, 125 V DC 3P, 3+N, 4P: 415 V AC
	Max. power frequency recovery voltage U_{max}	1P, 1+N: 264 V AC, 72 V DC 2P, 3P, 3+N, 4P: 462 V AC, 125 V DC
	Min. operating voltage	12 V AC – 12 V DC
	Rated ultimate short-circuit breaking capacity I_{cu}	25 kA; 100 kA (≤ 6 A)
	Rated service short-circuit breaking capacity I_{cs}	12.5 kA (≤ 25 A); 10 kA (32-40 A); 7.5 kA (>40 A)
	Rated impulse withstand voltage U_{imp} (1.2/50 µs)	6 kV
	Reference temperature for tripping characteristics	55 °C (B-, C-, D-curve), 40 °C (K-, Z-curve)
	Electrical endurance	I_n < 32 A: 20,000 ops. (AC), I_n ≥ 32 A: 10,000 ops. (AC); 1,500 ops. (DC)
Data acc. to IEC/EN 60898-1	Tripping Characteristics	B, C, D
	Rated operational voltage U_n	1P: 240/415 V AC, 72 V DC 1+N: 240 V AC, 72 V DC 2P: 415 V AC, 125 V DC 3P, 3P+N, 4P: 415 V AC
	Max. power frequency recovery voltage U_{max}	1P, 1+N: 264 V AC, 72 V DC 2P, 3P, 3+N, 4P: 457 V AC, 125 V DC
	Min. operating voltage	12 V AC – 12 V DC
	Rated short-circuit capacity I_{cn}	25 kA (≤ 25 A), 20 kA (32 - 40 A), 15 kA (> 40 A)
	Dielectric test voltage	2.0 kV (50/60 Hz, 1 min)
	Reference temperature for tripping characteristics	30 °C
	Electrical endurance	I_n < 32 A: 20,000 ops. (AC), I_n ≥ 32 A: 10,000 ops. (AC); 1,000 ops. (DC)
Data acc. to UL1077 / CSA 22.2 No. 235	Tripping Characteristics	B, C, D, K, Z
	Rated voltage	1P: 277 V AC, 60 V DC 2...4P: 480Y/277 V AC, 125 V DC (2 poles in series)
	Rated interrupting capacity	10 kA
	Application Suppl. prot., for general use.	TC2, OL0, SC:U1
	Reference temperature for tripping characteristics	40 °C
	Electrical endurance	6,000 ops., 1 cycle (1s.-ON, 9s.-OFF)

S300P
Mechanical data

		S300P
Mechanical Data	Housing	Insulation group I, RAL 7035
	Toggle	Insulation group II, black, sealable
	Contact position indication	Real CPI (green OFF / red ON)
	Trip position indicator	TPI (grey NO TRIP / orange TRIP)
	Protection degree acc. to DIN EN 60529	IP20, IP40 in enclosure with cover
	Mechanical endurance	20,000 ops.
	Shock resistance acc. to IEC/EN 60068-2-27	25 g - 2 shocks - 13 ms
	Vibration resistance acc. to IEC/EN 60068-2-6	5 g - 20 cycles at 5 ... 150 ... 5 Hz at 0.8 I_n
	Environmental conditions (damp heat cyclic) acc. to IEC/EN 60068-2-30	28 cycles with 55 °C/90-96 % and 25 °C/95-100 %
	Ambient temperature	-40 ... +70 °C
	Storage temperature	-50 ... +70 °C
Installation	Terminal	Failsafe bi-directional cylinder-lift terminal
	Cross-section of conductors (top/bottom)	solid, stranded: 35 mm² / 35 mm² flexible: 25 mm² / 25 mm² 14 – 4 AWG
	Cross-section of busbars (top/bottom)	10 mm² / 10 mm² 14 – 8 AWG
	Torque	2.8 Nm; 18 in-lbs.
	Screw driver	No. 2 Pozidrive
	Mounting	on DIN rail 35 mm, acc. to EN 60715 by dual DIN-rail release
	Mounting position	any
	Supply	any
Dimensions and weight	Mounting dimensions acc. to DIN 43880	1
	Pole dimensions (H x D x W)	88 x 69 x 17.5 mm
	Pole weight approx.	124 g
Combination with auxiliary elements	Auxiliary contact	Yes
	Bottom fixed auiliary contact	Yes
	Signal contact	Yes
	Shunt trip	Yes
	Undervoltage release	Yes
	Motor operating device	Yes
Standards	IEC/EN 60947-2	
	IEC/EN 60898-1	
	UL 1077	
	CSA 22.2. No.235	
	GB/T 14048.2	
	GB/T 10963.1	

Approvals

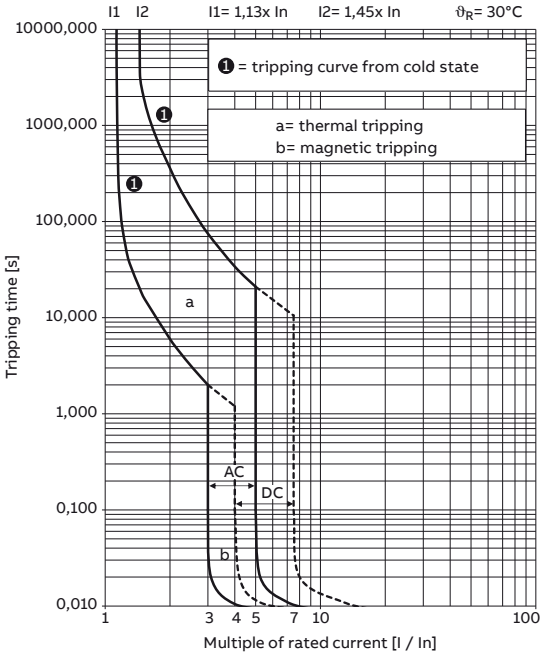
- VDE - DE
- UL 1077 - US
- CSA 22.2 No.235 - CA
- CCC - PRC
- EAC - RU
- KEMA - NL
- IMQ - IT
- SII - IL
- S+ - CH
- ÖVE - AT
- NF - FR
- EZU - CZ
- ANCE - MX
- KC - KR
- UKCA - UK
- DNV - NO
- GL - DE
- LRS - UK
- RINA - IT

Miniature Circuit breakers S300P

Tripping characteristics

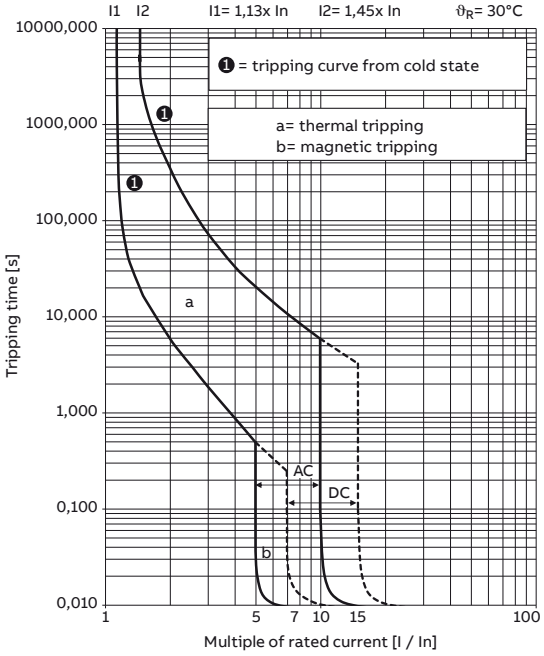
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



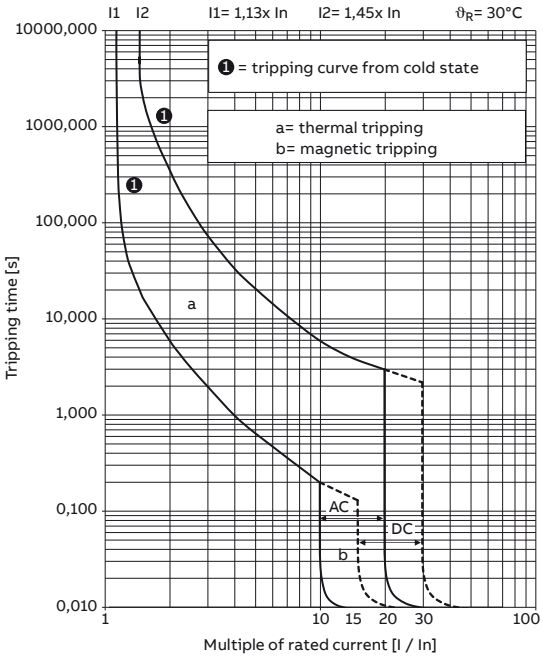
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1

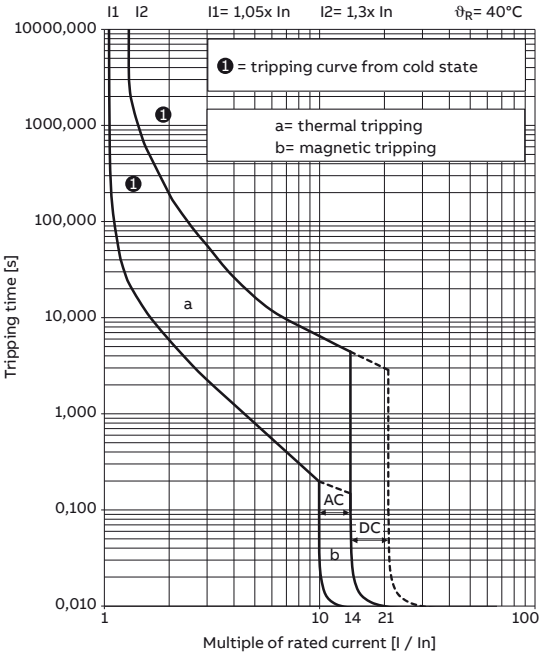


MCB Type S300P - D (10 ... 20 x I_n AC)

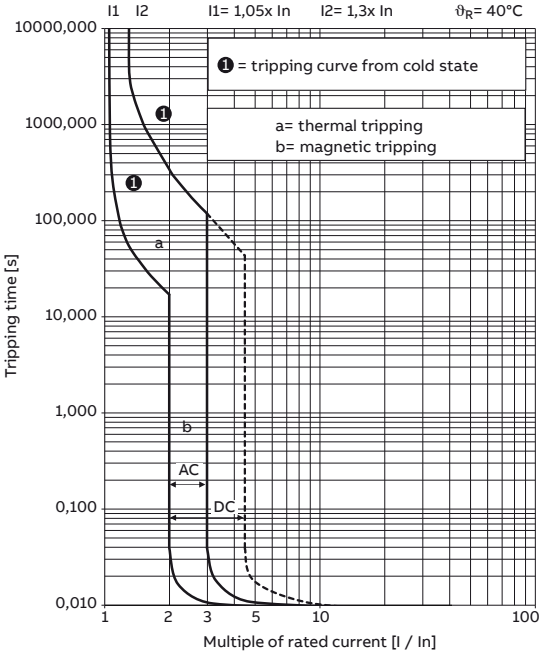
Tripping Characteristic IEC/EN 60898-1



MCB Type S300P - K (10 ... 14 x I_n AC)
Tripping Characteristic IEC/EN 60947-2



MCB Type S300P - Z (2 ... 3 x I_n AC)
Tripping Characteristic IEC/EN 60947-2



Tripping characteristics S300P

Acc. to	Tripping characteristics	Rated current	Thermal release [2]			Electromagnetic release [1]		
			Currents:		Tripping time	Currents:		Tripping time
			conventional non-tripping current	conventional tripping current		hold current surges	trip at least at	
IEC/EN 60898-1	B	06 to 63 A	1.13 · I_n		> 1 h	3 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		5 · I_n	< 0.1 s
	C	0.5 to 63 A	1.13 · I_n		> 1 h	5 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		10 · I_n	< 0.1 s
	D	0.5 to 63 A	1.13 · I_n		> 1 h	10 · I_n		> 0.1 s
				1.45 · I_n	< 1 h		20 · I_n	< 0.1 s
IEC/EN 60947-2	K	0.2 to 63 A	1.05 · I_n		> 1 h	10 · I_n		> 0.2 s
				1.3 · I_n	< 1 h [3]		14 · I_n	< 0.2 s
	Z	0.5 to 63 A	1.05 · I_n		> 1 h	2 · I_n		> 0.2 s
				1.3 · I_n	< 1 h [3]		3 · I_n	< 0.2 s

[1] The indicated electromagnetic tripping values apply to a frequency range of 16 2/3... 60 Hz. For different network frequencies or direct current the values change according to the multipler in the table below
[2] The thermal releases are calibrated to a nominal reference ambient temperature; for Z and K, the value is 40 °C, for B, C and D is 30 °C. In the case of higher ambient temperatures, the current values fall by ca. 6 % for each 10 K temperature rise.
[3] As from operating temperature (after I_1 > 1 h or, as applicable, 2 h).

	AC			DC
	100 Hz	200 Hz	400 Hz	
Multiplier	1.1	1.2	1.5	1.5

The thermal tripping performance is independent from the network frequency.

Miniature Circuit breakers S300P

Derating

For installations of miniature circuit breakers at other temperatures than the reference value and installations of several miniature circuit breakers directly side by side, derating factors have to be considered.

Deviating ambient temperature

The rated value of the current of a miniature circuit breaker refers to a temperature of 40 °C for circuit-breakers with characteristics K and Z and 30 °C for characteristics B, C and D. The following table contains the derating of load capability of S300P MCBs with temperature from -40 °C to 70 °C for the curves B, C, D, K, and Z.

Tripping characteristic	Rated Current I_n (A)	Max. Operating currents depending on the ambient temperature T (°C)											
		-40	-30	-20	-10	0	10	20	30	40	50	60	70
B. C and D	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
	1	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9
	1.6	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4
	2	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8
	3	3.6	3.5	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6
	4	4.8	4.7	4.6	4.5	4.4	4.2	4.1	4.0	3.9	3.8	3.6	3.5
	6	7.3	7.1	6.9	6.7	6.5	6.4	6.2	6.0	5.8	5.6	5.5	5.3
	8	9.7	9.4	9.2	9.0	8.7	8.5	8.2	8.0	7.8	7.5	7.3	7.0
	10	12.1	11.8	11.5	11.2	10.9	10.6	10.3	10.0	9.7	9.4	9.1	8.8
	13	15.5	15.5	15.0	14.5	14.0	14.0	13.5	13.0	12.5	12.0	12.0	11.5
	16	19.5	19.0	18.5	18.0	17.5	17.0	16.5	16.0	15.5	15.0	14.5	14.0
	20	24.0	23.5	23.0	22.5	22.0	21.0	20.5	20.0	19.5	19.0	18.0	17.5
	25	30.5	29.5	29.0	28.0	27.5	26.5	26.0	25.0	24.5	23.5	23.0	22.0
	32	38.5	38.0	37.0	36.0	35.0	34.0	33.0	32.0	31.0	30.0	29.0	28.0
	40	48.5	47.0	46.0	45.0	43.5	42.5	41.0	40.0	39.0	37.5	36.5	35.0
	50	60.5	59.0	57.5	56.0	54.5	53.0	51.5	50.0	48.5	47.0	45.5	44.0
	63	76.0	74.5	72.5	70.5	68.5	67.0	65.0	63.0	61.0	59.0	57.5	55.5
K and Z	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4
	0.75	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7
	1	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	0.9
	1.6	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4
	2	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8
	3	4.0	3.9	3.7	3.6	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7
	4	5.3	5.2	5.0	4.8	4.6	4.5	4.3	4.1	4.0	3.9	3.7	3.6
	6	8.0	7.7	7.5	7.2	6.9	6.7	6.5	6.2	6.0	5.8	5.6	5.4
	8	10.7	10.3	9.9	9.6	9.3	8.9	8.6	8.3	8.0	7.7	7.4	7.1
	10	13.4	12.9	12.4	12.0	11.6	11.2	10.8	10.4	10.0	9.6	9.3	8.9
	13	17.5	17.0	16.0	15.5	15.0	14.5	14.0	13.5	13.0	12.5	12.0	11.5
	16	21.5	20.5	20.0	19.0	18.5	18.0	17.0	16.5	16.0	15.5	15.0	14.5
	20	26.5	26.0	25.0	24.0	23.0	22.5	21.5	20.5	20.0	19.5	18.5	18.0
	25	33.5	32.0	31.0	30.0	29.0	28.0	27.0	26.0	25.0	24.0	23.0	22.5
	32	43.0	41.5	40.0	38.5	37.0	35.5	34.5	33.0	32.0	31.0	29.5	28.5
	40	53.5	51.5	49.5	48.0	46.5	44.5	43.0	41.5	40.0	38.5	37.0	35.5
	50	67.0	64.5	62.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.5	44.5
	63	84.5	81.0	78.5	75.5	73.0	70.5	67.5	65.5	63.0	60.5	58.5	56.5

Influence of adjacent devices

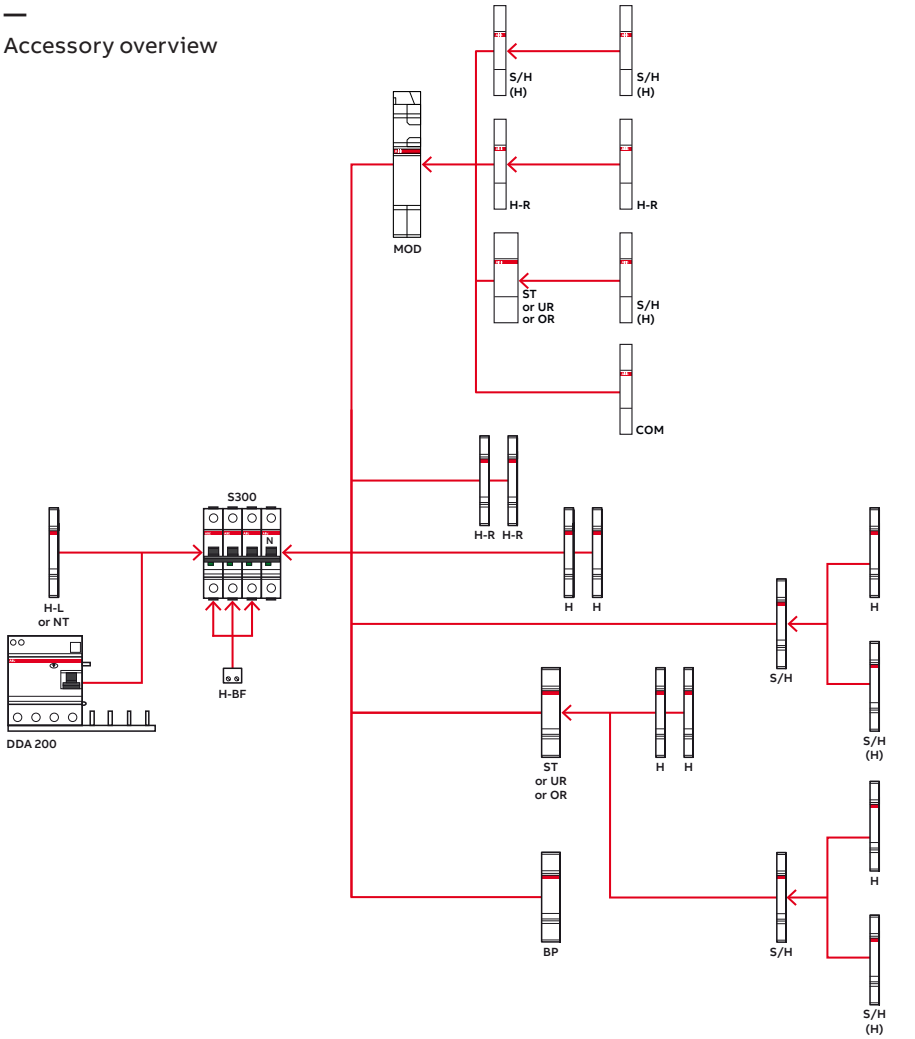
If several miniature circuit breakers are installed directly side by side with high load on all poles, a correction factor must be applied to the rated current (see table). If distance pieces are used, the factor is not to be considered.

No. of adjacent devices	Factor F
1	1
2.3	0.9
4.5	0.8
≥ 6	0.75

Miniature Circuit breakers S300P

Accessories and dimensional drawings

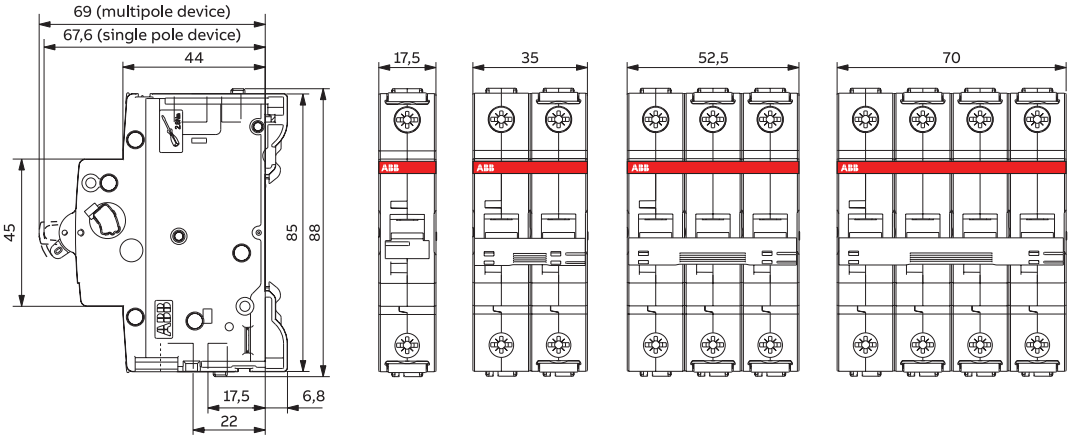
Accessory overview



H	Auxiliary contact (change-over contact)	S2C-H6R	H-L	Auxiliary contact	S2C-H..L
H-R	Auxiliary contact	S2C-H6-..R	H-BF	Auxiliary contact for bottom fitting (1 per pole)	S2C-H01 S2C-H10
S/H	Signal/Auxiliary contact used as auxiliary contact	S2C-S/H6R	BP	Mechanical tripping device	S2C-BP
			NT	Neutral disconnector	S2C-NT..
ST	Shunt trip	S3C-A..	MOD (1)	Motor operating device	S3C-MOD
UR	Undervoltage release	S2C-UA	COM	ModBus Interface	eMOD/AR ModBus
OR	Overvoltage release	S2C-OVP			
DDA 200	RCD-block	DDA 20..			

(1) In case of using S300 with DDA 200, MOD does not operate in case of earth-voltage fault

Dimensional drawing



Miniature Circuit breakers S300P

B characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	6	9080583	S301P-B6	2CDS381001R0065	0.124	10
	8	9086011	S301P-B8	2CDS381001R0085	0.124	10
	10	9080521	S301P-B10	2CDS381001R0105	0.124	10
	13	9080484	S301P-B13	2CDS381001R0135	0.124	10
	16	9080439	S301P-B16	2CDS381001R0165	0.124	10
	20	9080392	S301P-B20	2CDS381001R0205	0.124	10
	25	9080347	S301P-B25	2CDS381001R0255	0.124	10
	32	9080255	S301P-B32	2CDS381001R0325	0.124	10
	40	9080187	S301P-B40	2CDS381001R0405	0.124	10
	50	9080064	S301P-B50	2CDS381001R0505	0.124	10
	63	9079938	S301P-B63	2CDS381001R0635	0.124	10
2	6	9078993	S302P-B6	2CDS382001R0065	0.248	5
	8	9086059	S302P-B8	2CDS382001R0085	0.248	5
	10	9078931	S302P-B10	2CDS382001R0105	0.248	5
	13	9078894	S302P-B13	2CDS382001R0135	0.248	5
	16	9078849	S302P-B16	2CDS382001R0165	0.248	5
	20	9078801	S302P-B20	2CDS382001R0205	0.248	5
	25	9078757	S302P-B25	2CDS382001R0255	0.248	5
	32	9078665	S302P-B32	2CDS382001R0325	0.248	5
	40	9078597	S302P-B40	2CDS382001R0405	0.248	5
	50	9078474	S302P-B50	2CDS382001R0505	0.248	5
	63	9078344	S302P-B63	2CDS382001R0635	0.248	5
3	6	9078191	S303P-B6	2CDS383001R0065	0.372	1
	8	9086073	S303P-B8	2CDS383001R0085	0.372	1
	10	9078139	S303P-B10	2CDS383001R0105	0.372	1
	13	9078092	S303P-B13	2CDS383001R0135	0.372	1
	16	9078047	S303P-B16	2CDS383001R0165	0.372	1
	20	9078009	S303P-B20	2CDS383001R0205	0.372	1
	25	9077958	S303P-B25	2CDS383001R0255	0.372	1
	32	9077866	S303P-B32	2CDS383001R0325	0.372	1
	40	9077798	S303P-B40	2CDS383001R0405	0.372	1
	50	9077675	S303P-B50	2CDS383001R0505	0.372	1
	63	9077545	S303P-B63	2CDS383001R0635	0.372	1

Miniature Circuit breakers S300P

B characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	6	9076593	S304P-B6	2CDS384001R0065	0.496	1
	8	9086110	S304P-B8	2CDS384001R0085	0.496	1
	10	9076531	S304P-B10	2CDS384001R0105	0.496	1
	13	9076494	S304P-B13	2CDS384001R0135	0.496	1
	16	9076449	S304P-B16	2CDS384001R0165	0.496	1
	20	9135559	S304P-B20	2CDS384001R0205	0.496	1
	25	9076357	S304P-B25	2CDS384001R0255	0.496	1
	32	9076265	S304P-B32	2CDS384001R0325	0.496	1
	40	9076197	S304P-B40	2CDS384001R0405	0.496	1
	50	9076074	S304P-B50	2CDS384001R0505	0.496	1
	63	9075947	S304P-B63	2CDS384001R0635	0.496	1
1+N	6	9079785	S301P-B6NA	2CDS381103R0065	0.248	5
	8	9086035	S301P-B8NA	2CDS381103R0085	0.248	5
	10	9079730	S301P-B10NA	2CDS381103R0105	0.248	5
	13	9079693	S301P-B13NA	2CDS381103R0135	0.248	5
	16	9079648	S301P-B16NA	2CDS381103R0165	0.248	5
	20	9079600	S301P-B20NA	2CDS381103R0205	0.248	5
	25	9079556	S301P-B25NA	2CDS381103R0255	0.248	5
	32	9079464	S301P-B32NA	2CDS381103R0325	0.248	5
	40	9079396	S301P-B40NA	2CDS381103R0405	0.248	5
	50	9079273	S301P-B50NA	2CDS381103R0505	0.248	5
	63	9079143	S301P-B63NA	2CDS381103R0635	0.248	5
3+N	6	9077392	S303P-B6NA	2CDS383103R0065	0.496	1
	8	9086097	S303P-B8NA	2CDS383103R0085	0.496	1
	10	9077330	S303P-B10NA	2CDS383103R0105	0.496	1
	13	9077293	S303P-B13NA	2CDS383103R0135	0.496	1
	16	9077248	S303P-B16NA	2CDS383103R0165	0.496	1
	20	9135641	S303P-B20NA	2CDS383103R0205	0.496	1
	25	9077156	S303P-B25NA	2CDS383103R0255	0.496	1
	32	9077064	S303P-B32NA	2CDS383103R0325	0.496	1
	40	9076999	S303P-B40NA	2CDS383103R0405	0.496	1
	50	9076876	S303P-B50NA	2CDS383103R0505	0.496	1
	63	9076746	S303P-B63NA	2CDS383103R0635	0.496	1

Miniature Circuit breakers S300P

C characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9079891	S301P-C0.5	2CDS381001R0984	0.124	10
	1	9080675	S301P-C1	2CDS381001R0014	0.124	10
	1.6	9079914	S301P-C1.6	2CDS381001R0974	0.124	10
	2	9080651	S301P-C2	2CDS381001R0024	0.124	10
	3	9080637	S301P-C3	2CDS381001R0034	0.124	10
	4	9080613	S301P-C4	2CDS381001R0044	0.124	10
	6	9080590	S301P-C6	2CDS381001R0064	0.124	10
	8	9080569	S301P-C8	2CDS381001R0084	0.124	10
	10	9080538	S301P-C10	2CDS381001R0104	0.124	10
	13	9080491	S301P-C13	2CDS381001R0134	0.124	10
	16	9080446	S301P-C16	2CDS381001R0164	0.124	10
	20	9080408	S301P-C20	2CDS381001R0204	0.124	10
	25	9080354	S301P-C25	2CDS381001R0254	0.124	10
	32	9080262	S301P-C32	2CDS381001R0324	0.124	10
	40	9080194	S301P-C40	2CDS381001R0404	0.124	10
	50	9080071	S301P-C50	2CDS381001R0504	0.124	10
	63	9079945	S301P-C63	2CDS381001R0634	0.124	10
2	0.5	9078306	S302P-C0.5	2CDS382001R0984	0.248	5
	1	9079082	S302P-C1	2CDS382001R0014	0.248	5
	1.6	9078320	S302P-C1.6	2CDS382001R0974	0.248	5
	2	9079068	S302P-C2	2CDS382001R0024	0.248	5
	3	9079044	S302P-C3	2CDS382001R0034	0.248	5
	4	9079020	S302P-C4	2CDS382001R0044	0.248	5
	6	9079006	S302P-C6	2CDS382001R0064	0.248	5
	8	9078979	S302P-C8	2CDS382001R0084	0.248	5
	10	9078948	S302P-C10	2CDS382001R0104	0.248	5
	13	9078900	S302P-C13	2CDS382001R0134	0.248	5
	16	9078856	S302P-C16	2CDS382001R0164	0.248	5
	20	9078818	S302P-C20	2CDS382001R0204	0.248	5
	25	9078764	S302P-C25	2CDS382001R0254	0.248	5
	32	9078672	S302P-C32	2CDS382001R0324	0.248	5
	40	9078603	S302P-C40	2CDS382001R0404	0.248	5
	50	9078481	S302P-C50	2CDS382001R0504	0.248	5
	63	9078351	S302P-C63	2CDS382001R0634	0.248	5
3	0.5	9077507	S303P-C0.5	2CDS383001R0984	0.372	1
	1	9078283	S303P-C1	2CDS383001R0014	0.372	1
	1.6	9077521	S303P-C1.6	2CDS383001R0974	0.372	1
	2	9078269	S303P-C2	2CDS383001R0024	0.372	1
	3	9078245	S303P-C3	2CDS383001R0034	0.372	1
	4	9078221	S303P-C4	2CDS383001R0044	0.372	1
	6	9078207	S303P-C6	2CDS383001R0064	0.372	1
	8	9078177	S303P-C8	2CDS383001R0084	0.372	1
	10	9078146	S303P-C10	2CDS383001R0104	0.372	1
	13	9078108	S303P-C13	2CDS383001R0134	0.372	1
	16	9078054	S303P-C16	2CDS383001R0164	0.372	1
	20	9078016	S303P-C20	2CDS383001R0204	0.372	1
	25	9077965	S303P-C25	2CDS383001R0254	0.372	1
	32	9077873	S303P-C32	2CDS383001R0324	0.372	1
	40	9077804	S303P-C40	2CDS383001R0404	0.372	1
	50	9077682	S303P-C50	2CDS383001R0504	0.372	1
	63	9077552	S303P-C63	2CDS383001R0634	0.372	1

Miniature Circuit breakers S300P

C characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9135511	S304P-C0.5	2CDS384001R0984	0.496	1
	1	9076685	S304P-C1	2CDS384001R0014	0.496	1
	1.6	9075923	S304P-C1.6	2CDS384001R0974	0.496	1
	2	9076661	S304P-C2	2CDS384001R0024	0.496	1
	3	9076647	S304P-C3	2CDS384001R0034	0.496	1
	4	9076623	S304P-C4	2CDS384001R0044	0.496	1
	6	9135573	S304P-C6	2CDS384001R0064	0.496	1
	8	9076579	S304P-C8	2CDS384001R0084	0.496	1
	10	9076548	S304P-C10	2CDS384001R0104	0.496	1
	13	9135566	S304P-C13	2CDS384001R0134	0.496	1
	16	9076456	S304P-C16	2CDS384001R0164	0.496	1
	20	9076418	S304P-C20	2CDS384001R0204	0.496	1
	25	9076364	S304P-C25	2CDS384001R0254	0.496	1
	32	9076272	S304P-C32	2CDS384001R0324	0.496	1
	40	9135689	S304P-C40	2CDS384001R0404	0.496	1
	50	9076081	S304P-C50	2CDS384001R0504	0.496	1
	63	9075954	S304P-C63	2CDS384001R0634	0.496	1
1+N	0.5	9079105	S301P-C0.5NA	2CDS381103R0984	0.248	5
	1	9079877	S301P-C1NA	2CDS381103R0014	0.248	5
	1.6	9079129	S301P-C1.6NA	2CDS381103R0974	0.248	5
	2	9079853	S301P-C2NA	2CDS381103R0024	0.248	5
	3	9079839	S301P-C3NA	2CDS381103R0034	0.248	5
	4	9079815	S301P-C4NA	2CDS381103R0044	0.248	5
	6	9079792	S301P-C6NA	2CDS381103R0064	0.248	5
	8	9079778	S301P-C8NA	2CDS381103R0084	0.248	5
	10	9079747	S301P-C10NA	2CDS381103R0104	0.248	5
	13	9079709	S301P-C13NA	2CDS381103R0134	0.248	5
	16	9079655	S301P-C16NA	2CDS381103R0164	0.248	5
	20	9079617	S301P-C20NA	2CDS381103R0204	0.248	5
	25	9079563	S301P-C25NA	2CDS381103R0254	0.248	5
	32	9079471	S301P-C32NA	2CDS381103R0324	0.248	5
	40	9079402	S301P-C40NA	2CDS381103R0404	0.248	5
	50	9079280	S301P-C50NA	2CDS381103R0504	0.248	5
	63	9079150	S301P-C63NA	2CDS381103R0634	0.248	5
3+N	0.5	9135580	S303P-C0.5NA	2CDS383103R0984	0.496	1
	1	9077484	S303P-C1NA	2CDS383103R0014	0.496	1
	1.6	9076722	S303P-C1.6NA	2CDS383103R0974	0.496	1
	2	9077460	S303P-C2NA	2CDS383103R0024	0.496	1
	3	9077446	S303P-C3NA	2CDS383103R0034	0.496	1
	4	9077422	S303P-C4NA	2CDS383103R0044	0.496	1
	6	9077408	S303P-C6NA	2CDS383103R0064	0.496	1
	8	9077378	S303P-C8NA	2CDS383103R0084	0.496	1
	10	9077347	S303P-C10NA	2CDS383103R0104	0.496	1
	13	9135658	S303P-C13NA	2CDS383103R0134	0.496	1
	16	9077255	S303P-C16NA	2CDS383103R0164	0.496	1
	20	9077217	S303P-C20NA	2CDS383103R0204	0.496	1
	25	9077163	S303P-C25NA	2CDS383103R0254	0.496	1
	32	9077071	S303P-C32NA	2CDS383103R0324	0.496	1
	40	9135627	S303P-C40NA	2CDS383103R0404	0.496	1
	50	9076883	S303P-C50NA	2CDS383103R0504	0.496	1
	63	9076753	S303P-C63NA	2CDS383103R0634	0.496	1

Miniature Circuit breakers S300P

D characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9079907	S301P-D0.5	2CDS381001R0981	0.124	10
	1	9080682	S301P-D1	2CDS381001R0011	0.124	10
	1.6	9079921	S301P-D1.6	2CDS381001R0971	0.124	10
	2	9080668	S301P-D2	2CDS381001R0021	0.124	10
	3	9080644	S301P-D3	2CDS381001R0031	0.124	10
	4	9080620	S301P-D4	2CDS381001R0041	0.124	10
	6	9080606	S301P-D6	2CDS381001R0061	0.124	10
	8	9080576	S301P-D8	2CDS381001R0081	0.124	10
	10	9080545	S301P-D10	2CDS381001R0101	0.124	10
	13	9080507	S301P-D13	2CDS381001R0131	0.124	10
	16	9080453	S301P-D16	2CDS381001R0161	0.124	10
	20	9080415	S301P-D20	2CDS381001R0201	0.124	10
	25	9080361	S301P-D25	2CDS381001R0251	0.124	10
	32	9080279	S301P-D32	2CDS381001R0321	0.124	10
	40	9080200	S301P-D40	2CDS381001R0401	0.124	10
	50	9080088	S301P-D50	2CDS381001R0501	0.124	10
	63	9079952	S301P-D63	2CDS381001R0631	0.124	10
2	0.5	9078313	S302P-D0.5	2CDS382001R0981	0.248	5
	1	9079099	S302P-D1	2CDS382001R0011	0.248	5
	1.6	9078337	S302P-D1.6	2CDS382001R0971	0.248	5
	2	9079075	S302P-D2	2CDS382001R0021	0.248	5
	3	9079051	S302P-D3	2CDS382001R0031	0.248	5
	4	9079037	S302P-D4	2CDS382001R0041	0.248	5
	6	9079013	S302P-D6	2CDS382001R0061	0.248	5
	8	9078986	S302P-D8	2CDS382001R0081	0.248	5
	10	9078955	S302P-D10	2CDS382001R0101	0.248	5
	13	9078917	S302P-D13	2CDS382001R0131	0.248	5
	16	9078863	S302P-D16	2CDS382001R0161	0.248	5
	20	9078825	S302P-D20	2CDS382001R0201	0.248	5
	25	9078771	S302P-D25	2CDS382001R0251	0.248	5
	32	9078689	S302P-D32	2CDS382001R0321	0.248	5
	40	9078610	S302P-D40	2CDS382001R0401	0.248	5
	50	9078498	S302P-D50	2CDS382001R0501	0.248	5
	63	9078368	S302P-D63	2CDS382001R0631	0.248	5
3	0.5	9077514	S303P-D0.5	2CDS383001R0981	0.372	1
	1	9078290	S303P-D1	2CDS383001R0011	0.372	1
	1.6	9077538	S303P-D1.6	2CDS383001R0971	0.372	1
	2	9078276	S303P-D2	2CDS383001R0021	0.372	1
	3	9078252	S303P-D3	2CDS383001R0031	0.372	1
	4	9078238	S303P-D4	2CDS383001R0041	0.372	1
	6	9078214	S303P-D6	2CDS383001R0061	0.372	1
	8	9078184	S303P-D8	2CDS383001R0081	0.372	1
	10	9078153	S303P-D10	2CDS383001R0101	0.372	1
	13	9078115	S303P-D13	2CDS383001R0131	0.372	1
	16	9078061	S303P-D16	2CDS383001R0161	0.372	1
	20	9078023	S303P-D20	2CDS383001R0201	0.372	1
	25	9077972	S303P-D25	2CDS383001R0251	0.372	1
	32	9077880	S303P-D32	2CDS383001R0321	0.372	1
	40	9077811	S303P-D40	2CDS383001R0401	0.372	1
	50	9077699	S303P-D50	2CDS383001R0501	0.372	1
	63	9077569	S303P-D63	2CDS383001R0631	0.372	1

Miniature Circuit breakers S300P

D characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9075916	S304P-D0.5	2CDS384001R0981	0.496	1
	1	9076692	S304P-D1	2CDS384001R0011	0.496	1
	1.6	9075930	S304P-D1.6	2CDS384001R0971	0.496	1
	2	9076678	S304P-D2	2CDS384001R0021	0.496	1
	3	9076654	S304P-D3	2CDS384001R0031	0.496	1
	4	9076630	S304P-D4	2CDS384001R0041	0.496	1
	6	9076616	S304P-D6	2CDS384001R0061	0.496	1
	8	9076586	S304P-D8	2CDS384001R0081	0.496	1
	10	9076555	S304P-D10	2CDS384001R0101	0.496	1
	13	9076517	S304P-D13	2CDS384001R0131	0.496	1
	16	9076463	S304P-D16	2CDS384001R0161	0.496	1
	20	9076425	S304P-D20	2CDS384001R0201	0.496	1
	25	9076371	S304P-D25	2CDS384001R0251	0.496	1
	32	9076289	S304P-D32	2CDS384001R0321	0.496	1
	40	9076210	S304P-D40	2CDS384001R0401	0.496	1
	50	9076098	S304P-D50	2CDS384001R0501	0.496	1
	63	9075961	S304P-D63	2CDS384001R0631	0.496	1
1+N	0.5	9079112	S301P-D0.5NA	2CDS381103R0981	0.248	5
	1	9079884	S301P-D1NA	2CDS381103R0011	0.248	5
	1.6	9079136	S301P-D1.6NA	2CDS381103R0971	0.248	5
	2	9079860	S301P-D2NA	2CDS381103R0021	0.248	5
	3	9079846	S301P-D3NA	2CDS381103R0031	0.248	5
	4	9079822	S301P-D4NA	2CDS381103R0041	0.248	5
	6	9079808	S301P-D6NA	2CDS381103R0061	0.248	5
	8	9085717	S301P-D8NA	2CDS381103R0081	0.248	5
	10	9079754	S301P-D10NA	2CDS381103R0101	0.248	5
	13	9079716	S301P-D13NA	2CDS381103R0131	0.248	5
	16	9079662	S301P-D16NA	2CDS381103R0161	0.248	5
	20	9079624	S301P-D20NA	2CDS381103R0201	0.248	5
	25	9079570	S301P-D25NA	2CDS381103R0251	0.248	5
	32	9079488	S301P-D32NA	2CDS381103R0321	0.248	5
	40	9079419	S301P-D40NA	2CDS381103R0401	0.248	5
	50	9079297	S301P-D50NA	2CDS381103R0501	0.248	5
	63	9079167	S301P-D63NA	2CDS381103R0631	0.248	5
3+N	0.5	9076715	S303P-D0.5NA	2CDS383103R0981	0.496	1
	1	9077491	S303P-D1NA	2CDS383103R0011	0.496	1
	1.6	9076739	S303P-D1.6NA	2CDS383103R0971	0.496	1
	2	9077477	S303P-D2NA	2CDS383103R0021	0.496	1
	3	9077453	S303P-D3NA	2CDS383103R0031	0.496	1
	4	9077439	S303P-D4NA	2CDS383103R0041	0.496	1
	6	9077415	S303P-D6NA	2CDS383103R0061	0.496	1
	8	9077385	S303P-D8NA	2CDS383103R0081	0.496	1
	10	9077354	S303P-D10NA	2CDS383103R0101	0.496	1
	13	9077316	S303P-D13NA	2CDS383103R0131	0.496	1
	16	9077262	S303P-D16NA	2CDS383103R0161	0.496	1
	20	9077224	S303P-D20NA	2CDS383103R0201	0.496	1
	25	9077170	S303P-D25NA	2CDS383103R0251	0.496	1
	32	9077088	S303P-D32NA	2CDS383103R0321	0.496	1
	40	9077019	S303P-D40NA	2CDS383103R0401	0.496	1
	50	9076890	S303P-D50NA	2CDS383103R0501	0.496	1
	63	9076760	S303P-D63NA	2CDS383103R0631	0.496	1

Miniature Circuit breakers S300P

K characteristic



S 301



S 302

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.2	9080552	S301P-K0.2	2CDS381001R0087	0.124	10
	0.3	9080514	S301P-K0.3	2CDS381001R0117	0.124	10
	0.5	9080477	S301P-K0.5	2CDS381001R0157	0.124	10
	0.75	9080422	S301P-K0.75	2CDS381001R0187	0.124	10
	1	9080385	S301P-K1	2CDS381001R0217	0.124	10
	1.6	9080330	S301P-K1.6	2CDS381001R0257	0.124	10
	2	9080316	S301P-K2	2CDS381001R0277	0.124	10
	3	9080293	S301P-K3	2CDS381001R0317	0.124	10
	4	9080248	S301P-K4	2CDS381001R0337	0.124	10
	6	9080224	S301P-K6	2CDS381001R0377	0.124	10
	8	9080170	S301P-K8	2CDS381001R0407	0.124	10
	10	9080156	S301P-K10	2CDS381001R0427	0.124	10
	13	9080132	S301P-K13	2CDS381001R0447	0.124	10
	16	9080125	S301P-K16	2CDS381001R0467	0.124	10
	20	9080101	S301P-K20	2CDS381001R0487	0.124	10
	25	9080057	S301P-K25	2CDS381001R0517	0.124	10
	32	9080033	S301P-K32	2CDS381001R0537	0.124	10
	40	9080019	S301P-K40	2CDS381001R0557	0.124	10
	50	9079990	S301P-K50	2CDS381001R0577	0.124	10
	63	9079976	S301P-K63	2CDS381001R0607	0.124	10
2	0.2	9078962	S302P-K0.2	2CDS382001R0087	0.248	5
	0.3	9078924	S302P-K0.3	2CDS382001R0117	0.248	5
	0.5	9078887	S302P-K0.5	2CDS382001R0157	0.248	5
	0.75	9078832	S302P-K0.75	2CDS382001R0187	0.248	5
	1	9078795	S302P-K1	2CDS382001R0217	0.248	5
	1.6	9078740	S302P-K1.6	2CDS382001R0257	0.248	5
	2	9078726	S302P-K2	2CDS382001R0277	0.248	5
	3	9078702	S302P-K3	2CDS382001R0317	0.248	5
	4	9078658	S302P-K4	2CDS382001R0337	0.248	5
	6	9078634	S302P-K6	2CDS382001R0377	0.248	5
	8	9078580	S302P-K8	2CDS382001R0407	0.248	5
	10	9078566	S302P-K10	2CDS382001R0427	0.248	5
	13	9078542	S302P-K13	2CDS382001R0447	0.248	5
	16	9078535	S302P-K16	2CDS382001R0467	0.248	5
	20	9078511	S302P-K20	2CDS382001R0487	0.248	5
	25	9078467	S302P-K25	2CDS382001R0517	0.248	5
	32	9078443	S302P-K32	2CDS382001R0537	0.248	5
	40	9078429	S302P-K40	2CDS382001R0557	0.248	5
	50	9078405	S302P-K50	2CDS382001R0577	0.248	5
	63	9078382	S302P-K63	2CDS382001R0607	0.248	5

Miniature Circuit breakers S300P

K characteristic



S 303



S 304

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
3	0.2	9078160	S303P-K0.2	2CDS383001R0087	0.372	1
	0.3	9078122	S303P-K0.3	2CDS383001R0117	0.372	1
	0.5	9078085	S303P-K0.5	2CDS383001R0157	0.372	1
	0.75	9078030	S303P-K0.75	2CDS383001R0187	0.372	1
	1	9077996	S303P-K1	2CDS383001R0217	0.372	1
	1.6	9077941	S303P-K1.6	2CDS383001R0257	0.372	1
	2	9077927	S303P-K2	2CDS383001R0277	0.372	1
	3	9077903	S303P-K3	2CDS383001R0317	0.372	1
	4	9077859	S303P-K4	2CDS383001R0337	0.372	1
	6	9077835	S303P-K6	2CDS383001R0377	0.372	1
	8	9077781	S303P-K8	2CDS383001R0407	0.372	1
	10	9077767	S303P-K10	2CDS383001R0427	0.372	1
	13	9077743	S303P-K13	2CDS383001R0447	0.372	1
	16	9077736	S303P-K16	2CDS383001R0467	0.372	1
	20	9077712	S303P-K20	2CDS383001R0487	0.372	1
	25	9077668	S303P-K25	2CDS383001R0517	0.372	1
	32	9077644	S303P-K32	2CDS383001R0537	0.372	1
	40	9077620	S303P-K40	2CDS383001R0557	0.372	1
	50	9077606	S303P-K50	2CDS383001R0577	0.372	1
	63	9077583	S303P-K63	2CDS383001R0607	0.372	1
4	0.2	9076562	S304P-K0.2	2CDS384001R0087	0.496	1
	0.3	9076524	S304P-K0.3	2CDS384001R0117	0.496	1
	0.5	9076487	S304P-K0.5	2CDS384001R0157	0.496	1
	0.75	9076432	S304P-K0.75	2CDS384001R0187	0.496	1
	1	9076395	S304P-K1	2CDS384001R0217	0.496	1
	1.6	9076340	S304P-K1.6	2CDS384001R0257	0.496	1
	2	9076326	S304P-K2	2CDS384001R0277	0.496	1
	3	9135542	S304P-K3	2CDS384001R0317	0.496	1
	4	9076258	S304P-K4	2CDS384001R0337	0.496	1
	6	9076234	S304P-K6	2CDS384001R0377	0.496	1
	8	9076180	S304P-K8	2CDS384001R0407	0.496	1
	10	9076166	S304P-K10	2CDS384001R0427	0.496	1
	13	9076142	S304P-K13	2CDS384001R0447	0.496	1
	16	9076135	S304P-K16	2CDS384001R0467	0.496	1
	20	9076111	S304P-K20	2CDS384001R0487	0.496	1
	25	9076067	S304P-K25	2CDS384001R0517	0.496	1
	32	9076043	S304P-K32	2CDS384001R0537	0.496	1
	40	9076029	S304P-K40	2CDS384001R0557	0.496	1
	50	9135528	S304P-K50	2CDS384001R0577	0.496	1
	63	9075985	S304P-K63	2CDS384001R0607	0.496	1

Miniature Circuit breakers S300P

K characteristic



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1+N	0.2	9079761	S301P-K0.2NA	2CDS381103R0087	0.248	5
	0.3	9079723	S301P-K0.3NA	2CDS381103R0117	0.248	5
	0.5	9079686	S301P-K0.5NA	2CDS381103R0157	0.248	5
	0.75	9079631	S301P-K0.75NA	2CDS381103R0187	0.248	5
	1	9079594	S301P-K1NA	2CDS381103R0217	0.248	5
	1.6	9079549	S301P-K1.6NA	2CDS381103R0257	0.248	5
	2	9079525	S301P-K2NA	2CDS381103R0277	0.248	5
	3	9079501	S301P-K3NA	2CDS381103R0317	0.248	5
	4	9079457	S301P-K4NA	2CDS381103R0337	0.248	5
	6	9079433	S301P-K6NA	2CDS381103R0377	0.248	5
	8	9079389	S301P-K8NA	2CDS381103R0407	0.248	5
	10	9079365	S301P-K10NA	2CDS381103R0427	0.248	5
	13	9079341	S301P-K13NA	2CDS381103R0447	0.248	5
	16	9079334	S301P-K16NA	2CDS381103R0467	0.248	5
	20	9079310	S301P-K20NA	2CDS381103R0487	0.248	5
	25	9079266	S301P-K25NA	2CDS381103R0517	0.248	5
	32	9079242	S301P-K32NA	2CDS381103R0537	0.248	5
	40	9079228	S301P-K40NA	2CDS381103R0557	0.248	5
	50	9135665	S301P-K50NA	2CDS381103R0577	0.248	5
	63	9079181	S301P-K63NA	2CDS381103R0607	0.248	5
3+N	0.2	9077361	S303P-K0.2NA	2CDS383103R0087	0.496	1
	0.3	9077323	S303P-K0.3NA	2CDS383103R0117	0.496	1
	0.5	9077286	S303P-K0.5NA	2CDS383103R0157	0.496	1
	0.75	9077231	S303P-K0.75NA	2CDS383103R0187	0.496	1
	1	9077194	S303P-K1NA	2CDS383103R0217	0.496	1
	1.6	9077149	S303P-K1.6NA	2CDS383103R0257	0.496	1
	2	9077125	S303P-K2NA	2CDS383103R0277	0.496	1
	3	9135634	S303P-K3NA	2CDS383103R0317	0.496	1
	4	9077057	S303P-K4NA	2CDS383103R0337	0.496	1
	6	9077033	S303P-K6NA	2CDS383103R0377	0.496	1
	8	9076982	S303P-K8NA	2CDS383103R0407	0.496	1
	10	9076968	S303P-K10NA	2CDS383103R0427	0.496	1
	13	9076944	S303P-K13NA	2CDS383103R0447	0.496	1
	16	9076937	S303P-K16NA	2CDS383103R0467	0.496	1
	20	9076913	S303P-K20NA	2CDS383103R0487	0.496	1
	25	9076869	S303P-K25NA	2CDS383103R0517	0.496	1
	32	9076845	S303P-K32NA	2CDS383103R0537	0.496	1
	40	9076821	S303P-K40NA	2CDS383103R0557	0.496	1
	50	9135597	S303P-K50NA	2CDS383103R0577	0.496	1
	63	9076784	S303P-K63NA	2CDS383103R0607	0.496	1

Miniature Circuit breakers S300P

Z characteristic



S 301



S 302



S 303

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
1	0.5	9080460	S301P-Z0.5	2CDS381001R0158	0.124	10
	1	9080378	S301P-Z1	2CDS381001R0218	0.124	10
	1.6	9080323	S301P-Z1.6	2CDS381001R0258	0.124	10
	2	9080309	S301P-Z2	2CDS381001R0278	0.124	10
	3	9080286	S301P-Z3	2CDS381001R0318	0.124	10
	4	9080231	S301P-Z4	2CDS381001R0338	0.124	10
	6	9080217	S301P-Z6	2CDS381001R0378	0.124	10
	8	9080163	S301P-Z8	2CDS381001R0408	0.124	10
	10	9080149	S301P-Z10	2CDS381001R0428	0.124	10
	16	9080118	S301P-Z16	2CDS381001R0468	0.124	10
	20	9080095	S301P-Z20	2CDS381001R0488	0.124	10
	25	9080040	S301P-Z25	2CDS381001R0518	0.124	10
	32	9080026	S301P-Z32	2CDS381001R0538	0.124	10
	40	9080002	S301P-Z40	2CDS381001R0558	0.124	10
	50	9079983	S301P-Z50	2CDS381001R0578	0.124	10
	63	9079969	S301P-Z63	2CDS381001R0608	0.124	10
2	0.5	9078870	S302P-Z0.5	2CDS382001R0158	0.248	5
	1	9078788	S302P-Z1	2CDS382001R0218	0.248	5
	1.6	9078733	S302P-Z1.6	2CDS382001R0258	0.248	5
	2	9078719	S302P-Z2	2CDS382001R0278	0.248	5
	3	9078696	S302P-Z3	2CDS382001R0318	0.248	5
	4	9078641	S302P-Z4	2CDS382001R0338	0.248	5
	6	9078627	S302P-Z6	2CDS382001R0378	0.248	5
	8	9078573	S302P-Z8	2CDS382001R0408	0.248	5
	10	9078559	S302P-Z10	2CDS382001R0428	0.248	5
	16	9078528	S302P-Z16	2CDS382001R0468	0.248	5
	20	9078504	S302P-Z20	2CDS382001R0488	0.248	5
	25	9078450	S302P-Z25	2CDS382001R0518	0.248	5
	32	9078436	S302P-Z32	2CDS382001R0538	0.248	5
	40	9078412	S302P-Z40	2CDS382001R0558	0.248	5
	50	9078399	S302P-Z50	2CDS382001R0578	0.248	5
	63	9078375	S302P-Z63	2CDS382001R0608	0.248	5
3	0.5	9078078	S303P-Z0.5	2CDS383001R0158	0.372	1
	1	9077989	S303P-Z1	2CDS383001R0218	0.372	1
	1.6	9077934	S303P-Z1.6	2CDS383001R0258	0.372	1
	2	9077910	S303P-Z2	2CDS383001R0278	0.372	1
	3	9077897	S303P-Z3	2CDS383001R0318	0.372	1
	4	9077842	S303P-Z4	2CDS383001R0338	0.372	1
	6	9077828	S303P-Z6	2CDS383001R0378	0.372	1
	8	9077774	S303P-Z8	2CDS383001R0408	0.372	1
	10	9077750	S303P-Z10	2CDS383001R0428	0.372	1
	16	9077729	S303P-Z16	2CDS383001R0468	0.372	1
	20	9077705	S303P-Z20	2CDS383001R0488	0.372	1
	25	9077651	S303P-Z25	2CDS383001R0518	0.372	1
	32	9077637	S303P-Z32	2CDS383001R0538	0.372	1
	40	9077613	S303P-Z40	2CDS383001R0558	0.372	1
	50	9077590	S303P-Z50	2CDS383001R0578	0.372	1
	63	9077576	S303P-Z63	2CDS383001R0608	0.372	1

Miniature Circuit breakers S300P

Z characteristic



S 304



S 301 NA



S 303 NA

Number of poles	Rated current [A]	Order details Bbn 401677 EAN	Type code	Ordercode	Weight 1 piece kg	Pack unit pc.
4	0.5	9076470	S304P-Z0.5	2CDS384001R0158	0.496	1
	1	9076388	S304P-Z1	2CDS384001R0218	0.496	1
	1.6	9076333	S304P-Z1.6	2CDS384001R0258	0.496	1
	2	9076319	S304P-Z2	2CDS384001R0278	0.496	1
	3	9076296	S304P-Z3	2CDS384001R0318	0.496	1
	4	9076241	S304P-Z4	2CDS384001R0338	0.496	1
	6	9076227	S304P-Z6	2CDS384001R0378	0.496	1
	8	9076173	S304P-Z8	2CDS384001R0408	0.496	1
	10	9076159	S304P-Z10	2CDS384001R0428	0.496	1
	16	9076128	S304P-Z16	2CDS384001R0468	0.496	1
	20	9135535	S304P-Z20	2CDS384001R0488	0.496	1
	25	9076050	S304P-Z25	2CDS384001R0518	0.496	1
	32	9076036	S304P-Z32	2CDS384001R0538	0.496	1
	40	9076012	S304P-Z40	2CDS384001R0558	0.496	1
	50	9075992	S304P-Z50	2CDS384001R0578	0.496	1
	63	9075978	S304P-Z63	2CDS384001R0608	0.496	1
1+N	0.5	9079679	S301P-Z0.5NA	2CDS381103R0158	0.248	5
	1	9079587	S301P-Z1NA	2CDS381103R0218	0.248	5
	1.6	9079532	S301P-Z1.6NA	2CDS381103R0258	0.248	5
	2	9079518	S301P-Z2NA	2CDS381103R0278	0.248	5
	3	9079495	S301P-Z3NA	2CDS381103R0318	0.248	5
	4	9079440	S301P-Z4NA	2CDS381103R0338	0.248	5
	6	9079426	S301P-Z6NA	2CDS381103R0378	0.248	5
	8	9079372	S301P-Z8NA	2CDS381103R0408	0.248	5
	10	9079358	S301P-Z10NA	2CDS381103R0428	0.248	5
	16	9079327	S301P-Z16NA	2CDS381103R0468	0.248	5
	20	9135672	S301P-Z20NA	2CDS381103R0488	0.248	5
	25	9079259	S301P-Z25NA	2CDS381103R0518	0.248	5
	32	9079235	S301P-Z32NA	2CDS381103R0538	0.248	5
	40	9079211	S301P-Z40NA	2CDS381103R0558	0.248	5
	50	9079198	S301P-Z50NA	2CDS381103R0578	0.248	5
	63	9079174	S301P-Z63NA	2CDS381103R0608	0.248	5
3+N	0.5	9077279	S303P-Z0.5NA	2CDS383103R0158	0.496	1
	1	9077187	S303P-Z1NA	2CDS383103R0218	0.496	1
	1.6	9077132	S303P-Z1.6NA	2CDS383103R0258	0.496	1
	2	9077118	S303P-Z2NA	2CDS383103R0278	0.496	1
	3	9077095	S303P-Z3NA	2CDS383103R0318	0.496	1
	4	9077040	S303P-Z4NA	2CDS383103R0338	0.496	1
	6	9077026	S303P-Z6NA	2CDS383103R0378	0.496	1
	8	9076975	S303P-Z8NA	2CDS383103R0408	0.496	1
	10	9076951	S303P-Z10NA	2CDS383103R0428	0.496	1
	16	9076920	S303P-Z16NA	2CDS383103R0468	0.496	1
	20	9135610	S303P-Z20NA	2CDS383103R0488	0.496	1
	25	9076852	S303P-Z25NA	2CDS383103R0518	0.496	1
	32	9076838	S303P-Z32NA	2CDS383103R0538	0.496	1
	40	9076814	S303P-Z40NA	2CDS383103R0558	0.496	1
	50	9076791	S303P-Z50NA	2CDS383103R0578	0.496	1
	63	9076777	S303P-Z63NA	2CDS383103R0608	0.496	1

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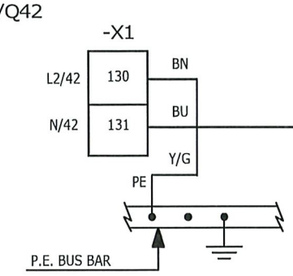
9AKK107992A4964 Rev. F - 04.2024

Section 4.2 Electrical
“As-Commissioned” interconnection diagrams

FROM	TO

DESCRIPTION: LIGHTING & SMALL POWER DB BOP
TAG NUMBER: DP-200N1

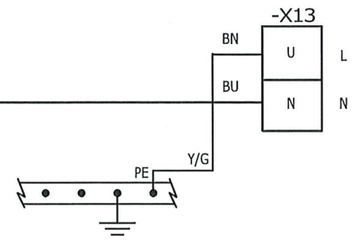
CUBICLE/CB: +03/Q42



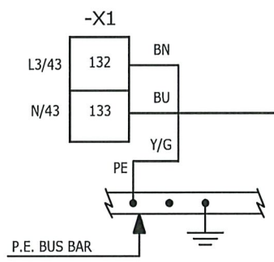
83123-CEL
3G2.5 mm²

MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS F&G AUXILIARY
TAG NUMBER: UP-200F4 BY PASS



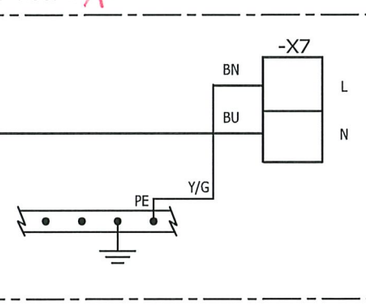
CUBICLE/CB: +03/Q43



83124-CEL
3G2.5 mm²

MARCO MORETTO
19/3/25

DESCRIPTION: DC BATTERY SYSTEM AUXILIARY
TAG NUMBER: UP-200F1 A



AS COMMISSIONED: MATTIA GIROTTI

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DG-20149

REV.:	DATE:	SIGNATURE:
2_F	09/01/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	19/11/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	SAI	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
LIGHTING & SMALL POWER DB BOP

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

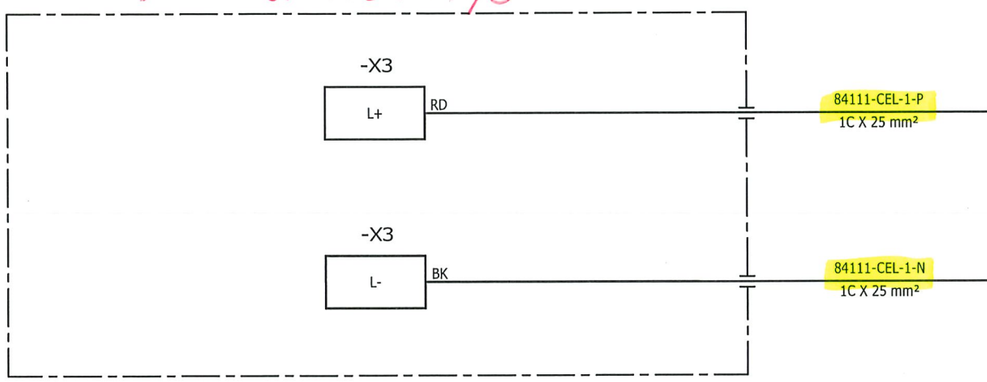
A3 | DRAWING NO. 123A90-DDL-EL-DG-20149 | SHEET 057 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20149 Rev. 02

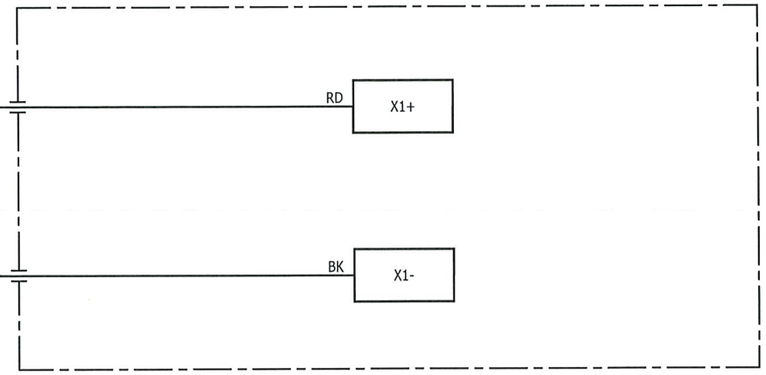
FROM	TO

DESCRIPTION: DC UPS - CHARGER
TAG NUMBER: ~~BC-200F1~~ UP-200F1A/B

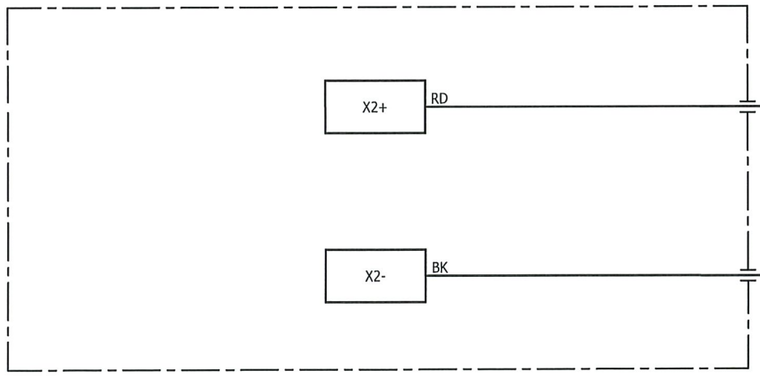


DESCRIPTION: DC UPS - BATTERY ISOLATOR
TAG NUMBER: CB-200F1

MARCO MORETTO 19/3/25

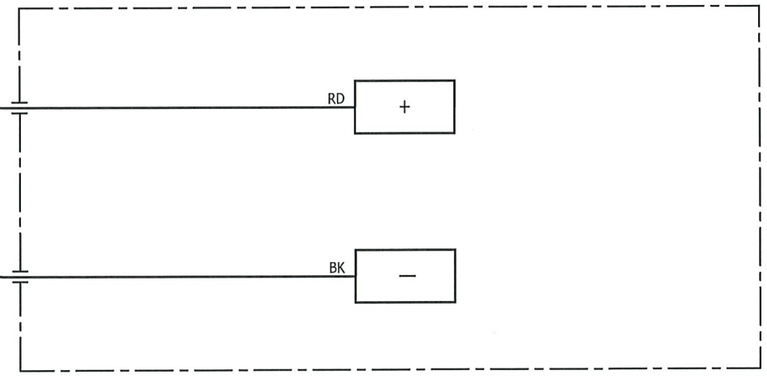


DESCRIPTION: DC UPS - BATTERY ISOLATOR
TAG NUMBER: CB-200F1



NO MARK UP
MARCO MORETTO
20/3/25

DESCRIPTION: DC UPS - BATTERY
TAG NUMBER: BA-200F1



AS COMMISSIONED: MATTIA GIRTI

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DG-20149**

REV.:	DATE:	SIGNATURE:
2_F	09/01/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	19/11/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	SAI	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
DC UPS – CHARGER & DC UPS – BATTERY ISOLATOR

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DG-20149	065	02

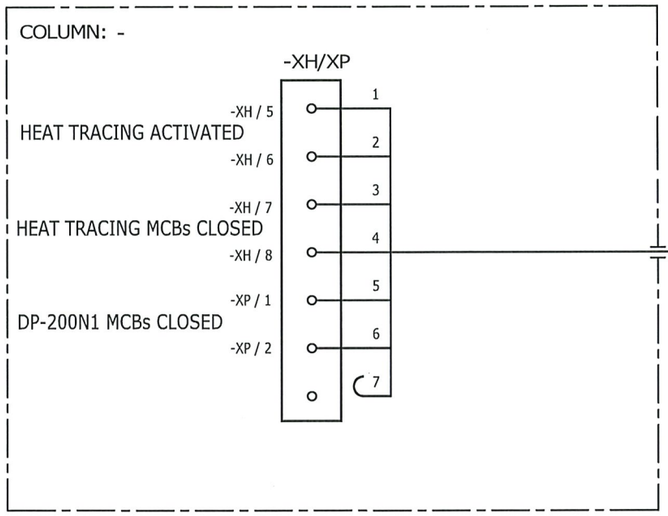
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20149 Rev. 02

FROM	TO

DESCRIPTION: SIGNALS FOR CONTROL SYSTEM
TAG NUMBER: DP-200N1

COLUMN: -



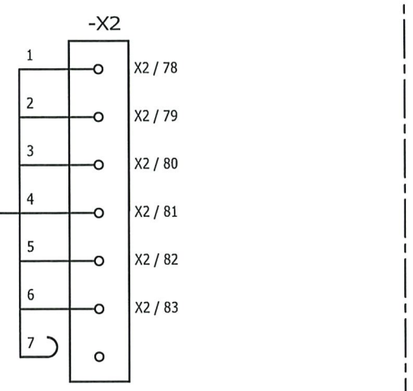
BK

83127-CEC
7C X 1.5 mm²

NO MARK UP
19/3/25
MARCO MORETTO

DESCRIPTION: AUXILIARY LV
TAG NUMBER: SG-200N1

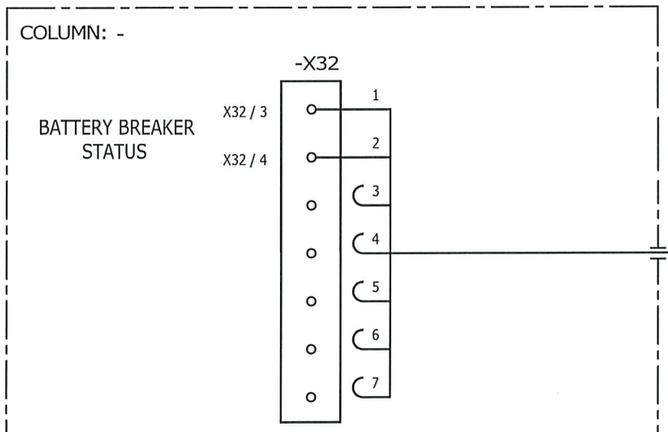
COLUMN: +A2/02



BK

DESCRIPTION: DC UPS - CHARGER
TAG NUMBER: ~~BC-200F1B~~ (UP-200F1B)

COLUMN: -



BK

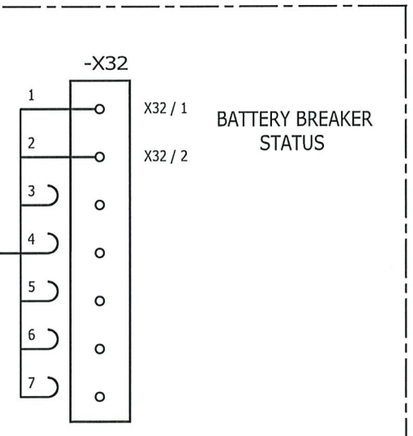
84110-CEC
7C X 1.5 mm²

MARCO MORETTO
20/3/25

AS COMMISSIONED: MATTIA GIRTI

DESCRIPTION: DC UPS - CHARGER
TAG NUMBER: ~~BC-200F1A~~ UP-200F1A

COLUMN: -



BK

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DG-20149**

REV.:	DATE:	SIGNATURE:
2_F	09/01/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	19/11/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	SAI	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
SIGNALS FOR CONTROL SYSTEM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3 | DRAWING NO. 123A90-DDL-EL-DG-20149 | SHEET 088 | REV. 02

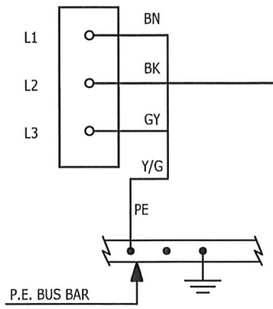
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20149 Rev. 02

FROM	TO

DESCRIPTION: LV SWITCHGEAR
TAG NUMBER: SG-200N1

COLUMN/CUBIC.: A2/+04

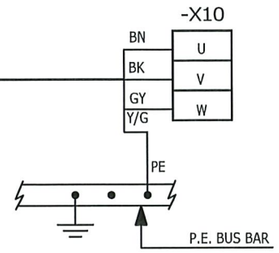


83033-CEL
4G35 mm²

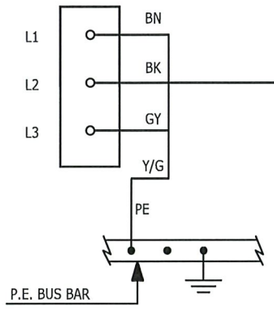
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TAG NUMBER: UP-200F4 BY PASS

MARCO MORETTO
20/3/25

PANEL:.BYPASS



COLUMN/CUBIC.: A7/+03

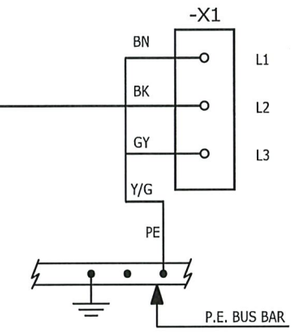


83034-CEL
4G16 mm²

MARCO MORETTO
19/3/25

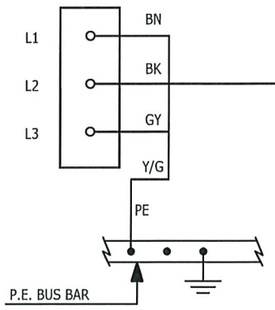
DESCRIPTION: DC BATTERY SYSTEM - SWITCHGEAR CONTROL - FEEDER A
TAG NUMBER: UP-200F1 A

PANEL:.CHARGER-1



DESCRIPTION: DC BATTERY SYSTEM - SWITCHGEAR CONTROL - FEEDER B
TAG NUMBER: UP-200F1 B

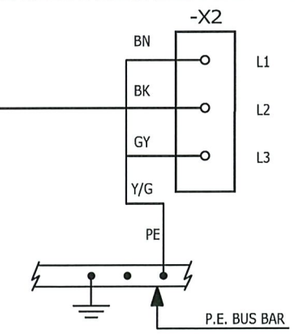
COLUMN/CUBIC.: A7/+04



83035-CEL
4G16 mm²

MARCO MORETTO
19/3/25

PANEL:.CHARGER-2



AS COMMISSIONED: MATTIA GIROTTI

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DG-20149**

REV.:	DATE:	SIGNATURE:
2_F	09/01/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	19/11/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	SAI	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
LV SWITCHGEAR SG-200N1

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

SCALE : 1:X

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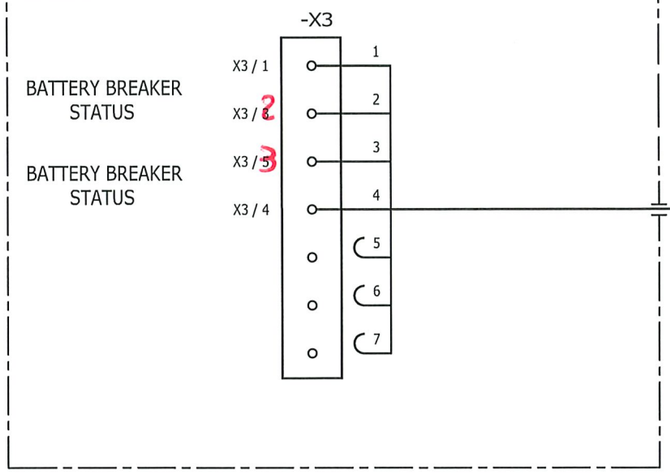
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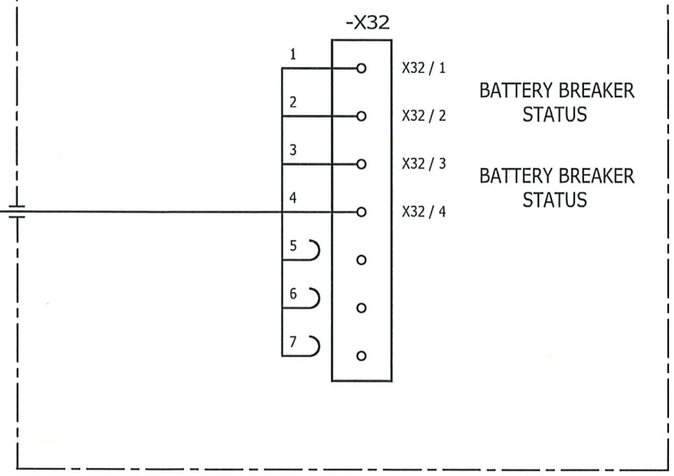
DESCRIPTION: DC UPS - BATTERY ISOLATOR
TAG NUMBER: CB-200F1

COLUMN: -



DESCRIPTION: DC UPS - CHARGER
TAG NUMBER: ~~BC-200F1B~~ (UP-200F1B)

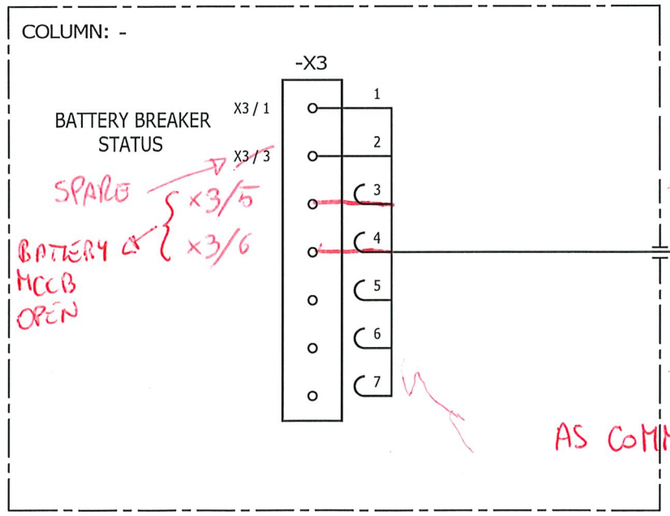
COLUMN: -



MARCO MORETTO
19/3/25

DESCRIPTION: AC UPS PAS - BATTERY ISOLATOR-A
TAG NUMBER: CB-200F3A

COLUMN: -

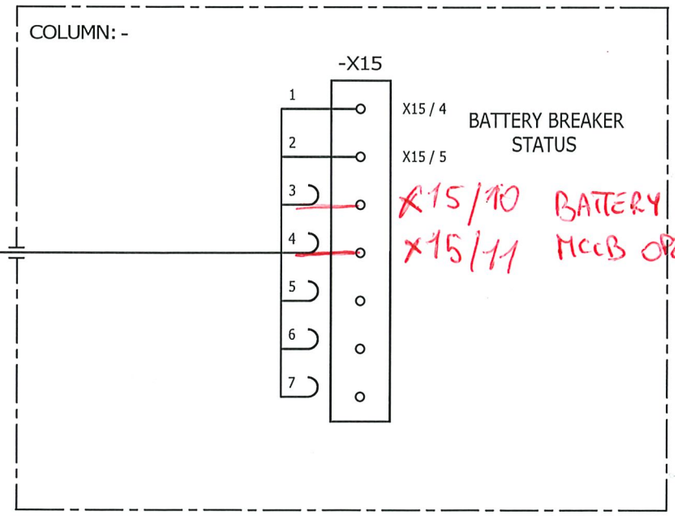


SPARE ~~X3/5~~ X3/6
BATTERY MCCB OPEN

MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS PAS - CHARGER-A
TAG NUMBER: ~~BC-200F3A~~ UP-200 F4 BY PASS

COLUMN: -



~~X15/10~~ BATTERY
X15/11 MCCB OPEN

AS COMMISSIONED: NATCHA BIRGI

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FDL DWG: **123A90-FDL-EL-DG-20149**

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ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

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01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
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TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
SIGNALS FOR CONTROL SYSTEM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3	DRAWING NO.	SHEET	REV.
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File Name : 123A90-DDL-EL-DG-20149 Rev. 02

Section 4.3 Instrumentation functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00 & discipline : I

Instrumental	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
84-XS-006	DISCONNECT DC UPS (B-100 CONTAINER)	ONSHORE	C10003818	FJ01D	100	2025-01-28	RFO 3
84-XS-009	INHIBIT. BATTERY CHARGING B-100	ONSHORE	C10003813	FJ01D	100	2025-01-28	RFO 3

ITEM	Tag	84-XS-009	: INHIBIT. BATTERY CHARGING B-100		Dwg	123A90-DDL-IN-LIS-40089	
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)		Module		
TASK	code	C10003813	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline Instrumental	Form	FJ01D	Digital Loop

LOOP DATA

Loop TAG	84-XS-009				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-SIS-001	Terminal	06A/06B		Slot	05	Rack	03	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	No	Alarm/trip	Yes	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		OK	OK
7	Loop not energized	Yes		Yes		OK	OK
8	Checking of line monitoring	No		No		OK	OK
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						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	
14	Any defect is recorded for punch list issuance	

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE 175	AW1/018 17140769	7715/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW OPS
Name	Marco Di Maria	Giandonato Delmissier	Jamie McAllister
Date	2025-01-27	2025-01-28	2025-01-28

PROVERLIS Digitaly signed by Marco Di Maria 2025-01-27T17:31:47.496Z

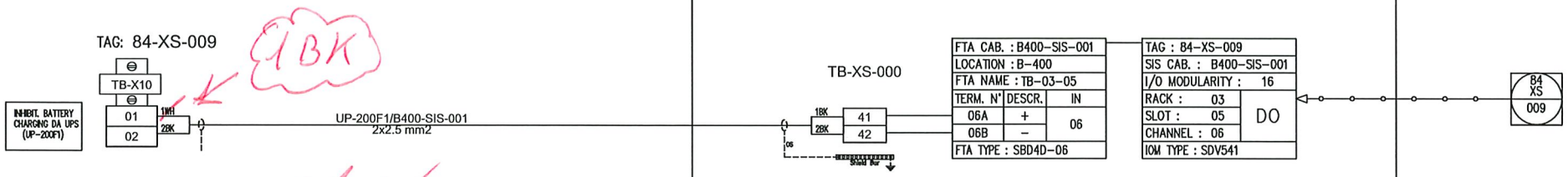
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PROVERLIS Digitaly signed by Jamie McAllister 2025-01-28T08:56:53.011Z

Signature			

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

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



21/01/25

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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
84-XS-009
INHIBIT. BATTERY CHARGING B-100

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 172	REV. 01

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

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	84-XS-006	: DISCONNECT DC UPS (B-100 CONTAINER)			Dwg	123A90-DDL-IN-LIS-40089
	S/Sys	84-00	: DC 10 kVA UPS System (UP-200F1)			Module	
TASK	code	C10003818		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form	FJ01D Digital Loop

LOOP DATA

Loop TAG	84-XS-006				TSLD	123A90-FDL-IN-DG-40014 rev.1A			
IO Type	Input	No	Output	Yes	Energy by transmitter	No	Energy by system	Yes	
Marshalling	B400-SIS-001	Terminal	05A/05B		Slot	05	Rack	03	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	No	Alarm/trip	Yes	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		OK	OK
7	Loop not energized	Yes		Yes		OK	OK
8	Checking of line monitoring	No		No		OK	OK
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						
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	
14	Any defect is recorded for punch list issuance	

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE 175	AW1/018 17140769	7715/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW OPS
Name	Laurentiu Grozavu	Giandonato Delmissier	Jamie McAllister
Date	2025-01-27	2025-01-28	2025-01-28

PROVERLIS Digitaly signed by Laurentiu Grozavu 2025-01-27T17:08:57.482Z

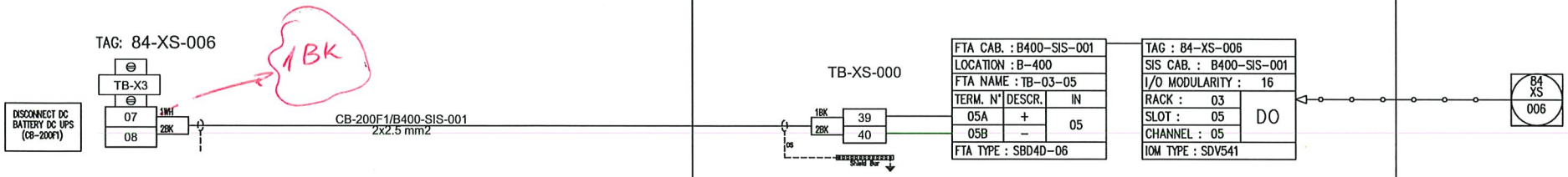
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PROVERLIS Digitaly signed by Jamie McAllister 2025-01-28T09:35:41.820Z

Signature			

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

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



21/01/25

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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
84-XS-006
DISCONNECT DC UPS (B-100 CONTAINER)

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 171	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

Section 5.2 Operational Test Certificates

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00

Miscellaneous	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03050	OTP - UPS System UP-200F1 10kVA	ONSHORE	C10004627	5300	100	2025-04-19	-
		OFFSHORE	C10004948	5300	0	-	-

ITEM	Tag	123A90-PML-COM-PRO-03050 : OTP - UPS System UP-200F1 10kVA				Dwg	123A90-PML-COM-PRO-03050
	S/Sys	84-00 : DC 10 kVA UPS System (UP-200F1)				Module	
TASK	code	C10004627		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity OTS	Discipline	Miscellaneous Form 5300		Operational Test Procedure

OTP - OPERATIONAL TEST PROCEDURE

Attached procedure number: 123A90-PML-COM-PRO-03050

Associated subsystems: 84-00

Completion date: 15/04/2025

Comments/Remarks:

	Performed by	☒ WITNESS ☐ REVIEW	☒ WITNESS ☐ REVIEW
	COMMISSIONING DISCIPLINE LEAD	RM COMMISSIONING MANAGER	CPY COMMISSIONING MANAGER
Name	Kristian Castellani	Anthony Iveson	Martin Taylor
Date	2025-04-15	2025-04-15	2025-04-19
Signature	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-15T12:27:23.640Z	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-15T12:53:03.523Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-19T04:39:28.558Z

Base Load Power Hub (BLPH)

OTP: UPS System UP-200F1 10kVA

Document Number: 123A90-PML-COM-PRO-03050

Document Class: 2

02	15/11/2024	Accepted for Construction (AFC)	K.CASTELLANI	A.IVESON	M.BRUNELLI
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00	30/09/2024	Issue for Review (IFR)	K.CASTELLANI	A.IVESON	M.BRUNELLI
Rev.	Date	Description	Prepared	Reviewed	Approved

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

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No.	Description
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2	
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1 INTRODUCTION

1.1 Project Overview

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

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

1.2 Project Location

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



Figure 1 - HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

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

1.3 Project Concept

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

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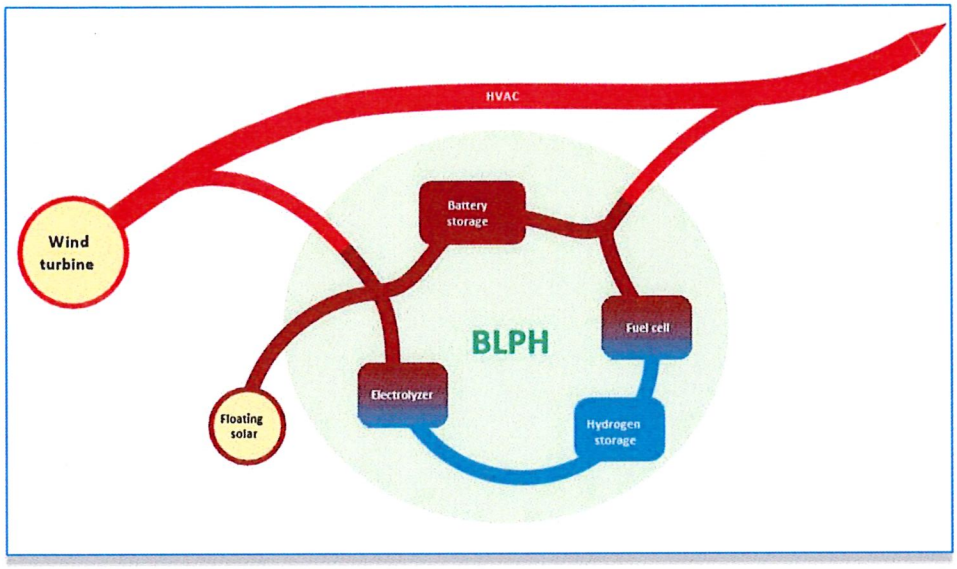


Figure 3 - BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.
The purpose of the BLPH is to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with CrossWind's control room.

2 DOCUMENT SCOPE

The purpose of this document is to describe the methodology and the planned actions to be implemented for the preparation and execution of Mechanical Completion, Pre-commissioning, Commissioning & Start-Up activities to be performed on the PLANT, including COMPANY PROVIDED ITEMS, at the onshore premises of CONTRACTOR located in Milan (Italy) offices and Piomboni yard - Marina di Ravenna (Italy).

CONTRACTOR, pursuant to CONTRACT and PROJECT requirements, shall implement an exacting methodology, complete with a distinct set of tools and documentation to meet the following key objectives:
Perform the Mechanical Completion, Pre-commissioning and Commissioning on the WORKSITE to the maximum extent possible so as to minimise the commissioning operations on SITE;

- Ensure safety for the people, environment and facilities during the execution of the Commissioning activities at WORKSITE,
- Ensure integrity and operation of the equipment for their lifetime in accordance with PROJECT design and specifications,
- Plan a smooth and flawless execution of the Commissioning activities avoiding unforeseen downtimes and delays.

Achievement of the above objectives shall be obtained by:

- Defining and prioritizing a predetermined sequence of the Mechanical Completion checks, Pre-commissioning and Commissioning tests and tasks,
- Checking, testing systematically and exhaustively all the components of PLANT in compliance with PROJECT approved procedures and CONTRACT terms, managed by a dedicated team of inspectors, technicians and field engineers who will perform the Mechanical Completion, Pre-commissioning, Commissioning and Start-Up tasks and subsequently record the results via discipline specific check, inspection and test sheets (ITR's) & where applicable via discrete Operational Test Procedures (OTP's).
- Ensuring full traceability of the performed checks and tests, through implementation of a dedicated Project Completions Management System (CMS) containing individual references to all tagged items.

3 OTP SUMMARY

3.1 Test Objective

The operating test of UPS AC system is executed to ensure that the system is started up in a safe and controlled manner and to verify the correct operation according to the project requirements.

Activities shall be developed as follows:

- Onshore pre-commissioning and commissioning activities at Contractor site (WORKSITE)
    - **PHASE 1:** UPS START UP with battery banks first charging and discharging tests
    - **PHASE 2:** UPS OPERATIONAL AND FUNCTIONAL TESTS
    - **PHASE 3:** COMMUNICATION TESTS with PCS and ESD systems.
- Offshore commissioning (SITE)
    - Visual inspection of all components, UPS start up with Black Start.

3.2 System Boundary Limits

See below the affected systems and subsystems on the Overall Single Line Diagram

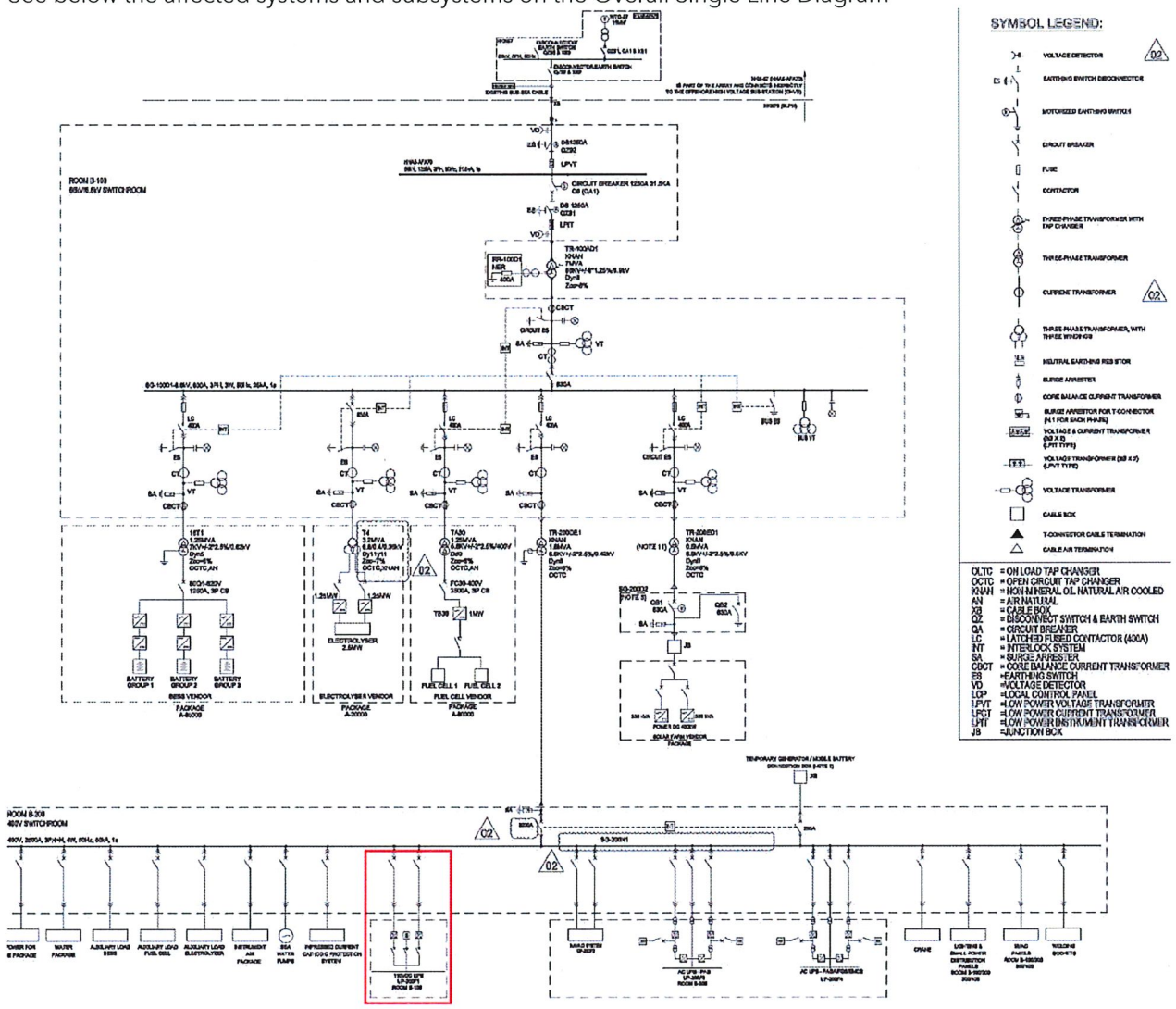


Figure 4 – OTP System Boundary Limits

3.3 Test and System Description

This document is related to the following systems/ subsystems:

- 83-00: 400/230V Switchboard SG-200N1
- 83-20: 400/230V Distribution Board DP-200N1
- 84-10: 110V DC UPS - 10KVA (UP-200F1)
- 84-10: 110V UPS DISTRIBUTION BOARD (UP-200F1)
- 84-10: UPS BATTERY RACK BANK (BA-200F1)

- 84-10: UPS CUT OFF BREAKER (CB-200F1)
- 79-00: EMERGENCY SHUTDOWN SYSTEMS (SIS)
- 87-10: PROCESS CONTROL SYSTEM (PCS)

All equipment is installed inside Technical Room B-100.

These parts of the system shall be tested at worksite and at site.

The UPS are metal enclosed prefabricated self-supporting type, for floor installation in compliance to the requirements of IEC 61439 1&2.
The UPS main data are the following:

GENERAL CHARACTERISTICS CLIMATIC CONDITION:
- Installation: Marine Offshore-Indoor
- Design Ambient Temperature: -8,4+40°C
- Rel. Humidity average 95%

ENCLOSURES:
- Type: Floor Standing
- Cell Type: MCC/F
- Finish Colour: RAL 7035

CONNECTIONS:
- Cable Compartment Access: Front (Incoming & Outgoing)
- Cable Entry From: Top
- Cabinet Access: Front

POWER SUPPLY:
- Rated Service Voltage: 110V
- Rated Frequency: 50 Hz
- Cabinet Rated Current: 100 A

BUSBARS:
- Busbars: 3P+PE
- Maximum Operating Temperature: 70°C
- Protection: External IP 31

BATTERY:
- Configuration 1x100%
- Autonomy :30 MIN
- Temp. Design: -8,4 - 40 °C
- Humidity :95%
- Number of batteries = 10
- Rated battery Voltage = 12V
- Nominal Battery System Voltage = 120 V
- Lead ACID VLRA GEL
- Capacity 150 Ah
- Recharge: 10h
- Float Charge: 2,25 V
- Boost Charge: 2,25 V

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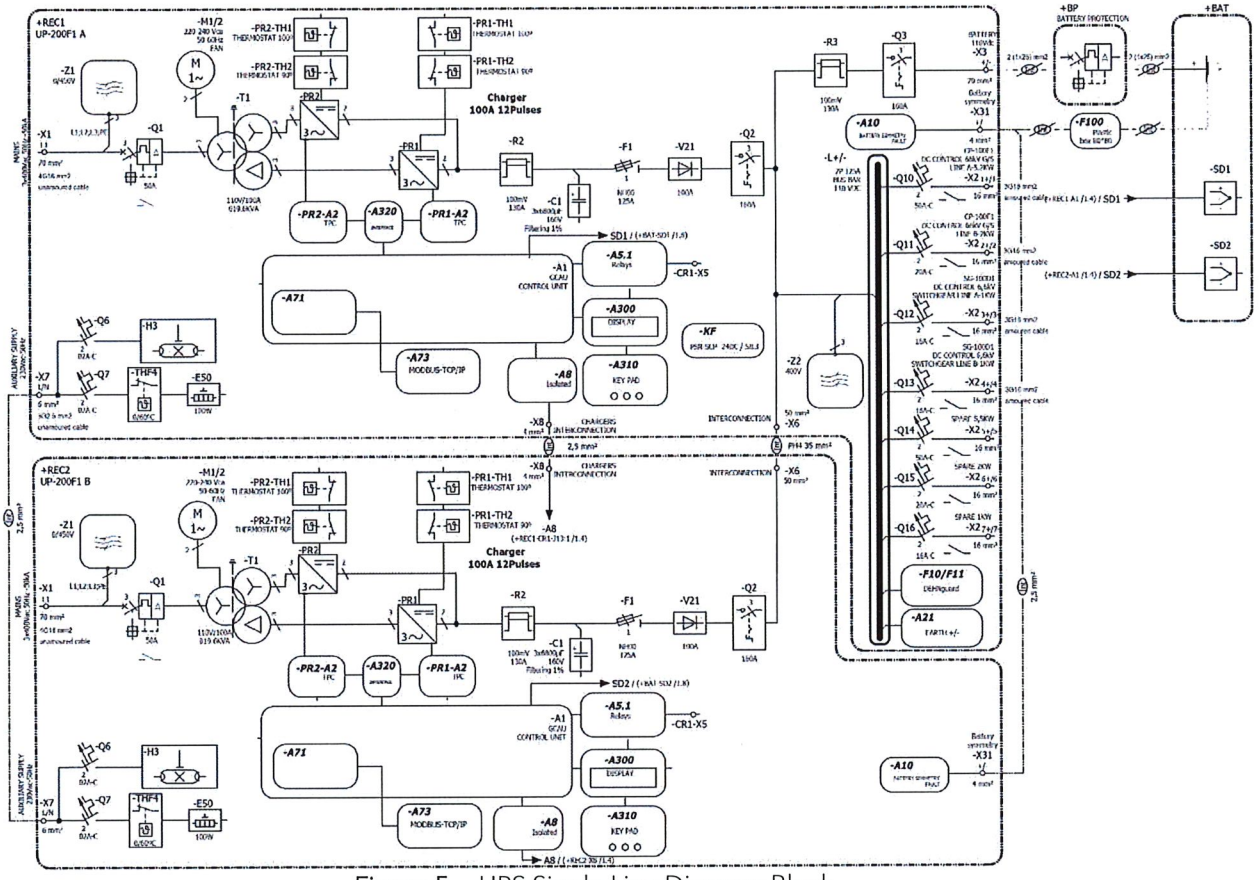


Figure 5 – UPS Single Line Diagram Block

The basic Single Line Diagram of the UPS and relevant connections is shown in the document 123A90-DDL-EL-DG-20158 "Overall/Key Single Line Electrical Diagram".

3.4 Safety Devices

- Appropriate Personnel Protective Equipment (PPE) and safety equipment e.g., safety shoes, safety glasses, hand gloves, helmet, earplugs etc. are available and must be used in line with the site requirements.
- Warning safety signs are to be posted with restricted access to essential personnel only.
- Adequate firefighting equipment.
- Specific details will be provided as part of the individual activity risk assessment prepared for each Permit to Work, which is a mandatory requirement for energizing items of equipment. Arc flash protection is not foreseen during execution of this OTP.
- PPE Will be Arc Flash Cat. 1.

3.5 HSE Management

All necessary safety precautions must be taken to avoid any risk for personnel injury.

- All personnel involved in this operational test shall be competent for the tasks they will be required to undertake
- Place safety / warning signs and segregate the entire area with barrier tapes (safety barriers) of a colour distinguished (blue and white) from those used for construction activities

- Restrict access into area only to authorized personnel
- Conduct "Toolbox Talk" with all personnel prior to starting test work
- Appropriate Personnel Protective Equipment (PPE) and safety equipment e.g. safety shoes, hand gloves, helmet, earplugs etc. are available and must be used in line with the site requirements
- All activities carried out on the project shall be performed in accordance with the "Permit to Work" system Doc. PRO-HSE-23
- Electrical and mechanical isolations are to be assured as per Doc. PRO-HSE-08 and "Commissioning and start-up operation" procedure.
- Observe and enforce all international codes and regulations to safeguard personnel, plant and environment.
- Ensure that the working area is clean, tidy, well illuminated and that access and escape routes are free from obstructions.

Before starting work on any of the activities in this OTP it is the responsibility of the persons performing the work to:

- Familiarize themselves with the plant/equipment to be worked on
- Ensure they are aware of all other work activities that are taking place, or due to take place
- If necessary, re-plan any situation/activity
- Ensure proper communications between parties involved in the execution of the OTP
- Read the relevant Vendor documentation for the equipment covered by this OTP and observe any special requirements and limitations recommended or imposed by Vendor
- Verify that all personnel involved in the implementation of this procedure are familiar with its content as well as the associated safety requirements (Toolbox Talk)

3.6 Acceptance Criteria

Before Power ON:
Visual inspection and verification are a crucial step to identify any obvious issues with the installation, such as loose connections, missing components, or damage to the equipment.

Crosschecking the installation with engineering documentation ensures that the installation is done correctly and according to the manufacturer's guidelines. These steps can help identify any missing or incorrect components, and wrong connections.

Applicable panels:

- SS84-00 UPS-200F1

Refer Overall SLD with Marked-up Sub-systems.

After Power ON:
Powering ON the unit is an essential step to verify that the equipment is functioning correctly. Observing if everything is OK and any alarm will help detect possible errors or malfunctions.

Phase 1 will prove:

- Voltage, frequency and phase sequence to the terminals of Incoming 1&2 (Rectifier) are according to specification
- UPS startup

Charging/Discharging of battery banks

Phase 2 will prove:

- Unit Synchronization

- Powering of one unit at the time will show A in normal operation and B in stand-by and vice versa.
- Installation and functionality of Battery breakers
- Unit changes to Battery operation
- Output / Distribution as per specification
- Black Start Operation

Phase 3 will prove:

- Test functionality of UPS and Test communication Modbus TCP-IP with PCS

4 DOCUMENTS REFERENCES AND ABBREVIATIONS

4.1 Reference Documents

4.1.1 Company Documents and Standards

Document ID	Document Title
[1] K559-2254-CG-PHI-001	Commissioning Philosophy
[2] K559-2254-EL-ELL-002	BLPH Electrical Load List (CCS MODE 2(A) 'HOT STANDBY')
[3] K559-2254-EL-ELL-003	BLPH Electrical Load List (CCS MODE 3(C) 'DISCHARGING')
[4] K559-2254-EL-ELL-004	BLPH Electrical Load List (CCS MODE 4(A) 'COLD STANDBY')
[5] K559-2254-EL-ELL-005	BLPH Electrical Load List (CCS MODE 4A(D) 'EMERGENCY MODE (Island))
[6] K559-2254-EL-ELL-006	BLPH Electrical Load List (CCS MODE 5(D) 'POWER OUT (Blackout))
[7] K559-2254-PR-PHI-001	Main process control philosophy

Table 1: Company Key Reference Documentation

4.1.2 Project Documents

Document ID	Document Title
[1] 123A90-PML-PM-LIS-01001	Master Document Register
[2] 123A90-PML-PM-PL-00001	Project Execution Plan
[3] 123A90-PML-QHSE-PL-00001	Project HSE Plan
[4] 123A90-PRO-HSE-23	RM Yard Permit To Work Procedure
[5] 123A90-PML-COM-PL-03002	Mechanical Completion & Commissioning Execution Plan
[6] 123A90-PML-COM-PRO-03007	Commissioning Strategy
[7] 123A90-PML-COM-LIS-03011	System/Sub-Systems List
[8] 123A90-PML-COM-LIS-03012	System/Sub-System Boundary Limit Diagrams

Document ID	Document Title
[9] 123A90-PML-COM-PRO-03038	Leak Test Procedure
[10]123A90-PML-COM-SP-03032	Pre-Commissioning Functional Test Sheet Template Collection (ITR-B)
[11]123A90-PML-COM-SP-03014	Commissioning TDS - Temporary Equipment & Facilities
[12]123A90-PML-COM-PRO-03019	OTP – Onshore Performance & Integrated Test Procedure
[13]123A90-PML-COM-LIS-03034	Inhibit-Override Register
[14]123A90-PML-COM-LIS-03035	PSV Calibration Register
[15]123A90-PML-COM-PRO-03036	OTP - Black Start Procedure
[16]123A90-PML-COM-LIS-03024	Commissioning Spare Parts and Consumables List
[17]123A90-PML-COM-PRO-03022	Initial offshore START-UP procedures
[18]123A90-PML-COM-SP-03057	Worksite WEF (Work Execution Flow Scheme)
[19]123A90-PML-COM-SP-03058	Site WEF (Work Execution Flow Scheme)
[20]123A90-PML-COM-RE-03001	Commissioning Final Dossier (ITR-B)
[21]123A90-PML-QHSE-PRO-00116	Flushing and Cleaning Procedures
[22]123A90-PML-QHSE-SP-00118	Mechanical Completion Check Sheet Template Collection (ITR-A)
[23]123A90-PML-QHSE-RE-00115	Mechanical Completion Final Dossier (ITR-A)
[24]123A90-PML-QHSE-PRO-00117	Punch list Management Procedure
[25]123A90- 123A90-PML-COM-PRO-03041	OTP - Hydrogen Storage & Venting Systems
[26]123A90- 123A90-PML-COM-PRO-03042	OTP - Sea Water Intake & Fresh Water Treatment Syst.
[27]123A90- 123A90-PML-COM-PRO-03043	OTP - Instrument Air System
[28]123A90- 123A90-PML-COM-PRO-03055	OTP - Nitrogen Generation System
[29]123A90- 123A90-PML-COM-PRO-03045	OTP - HV Switchgear & 66 kV Transformer Systems
[30]123A90- 123A90-PML-COM-PRO-03046	OTP - MV Switchgear & 6.6 kV Transformer Systems
[31]123A90- 123A90-PML-COM-PRO-03047	OTP - LV Switch Boards & LV Distribution Board Syst.
[32]123A90- 123A90-PML-COM-PRO-03048	OTP - Lighting & Small Power Systems
[33]123A90- 123A90-PML-COM-PRO-03049	OTP - Electrical Heat Tracing Systems
[34]123A90- 123A90-PML-COM-PRO-03050	OTP - DC UPS System 10kVA UP-200F1
[35]123A90- 123A90-PML-COM-PRO-03051	OTP - Data Network Systems
[36]123A90- 123A90-PML-COM-PRO-03053	OTP - Navaid System
[37]123A90- 123A90-PML-COM-PRO-03054	OTP - F&G and ESD C&E Logics

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Document ID	Document Title
[38]123A90-PML-QHSE-PRO-00120	Proverlis Management Procedure
[39]123A90-PML-COM-PRO-03056	OTP – Document Template
[40]123A90-PML-COM-PRO-03059	OTP - AC UPS System 35kVA UP-200F3
[41]123A90-PML-COM-PRO-03060	OTP - AC UPS System 15kVA UP-200F4

Table 2: Reference Project Deliverables

4.1.3 Vendor Documents

Document ID	Document Title
[1] 1723002197-COM-LIS-00001	SPARE PART INDEX REGISTER (COMMISSIONING AND OPERATION)
[2] 172400372-QC-ITP-00002	INSPECTION AND TEST PLAN
[3] 1724000372-EL-DA-00004	GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS
[4] 1724000372-EL-DS-00005	UPS & BATTERIES TECHNICAL DATA SHEET
[5] 1724000372-EL-DG-00007	AC UPS SINGLE LINE DIAGRAM AND INTERCONNECTING DIAGRAM
[6] 1724000372-EL-DG-00009	AC UPS-WIRING DIAGRAM & TERMINAL SCHEDULE INCLUDING EQUIPMENTS LIST &BILL OF MATERIAL
[7] 1724000372-EL-DG-00011	AC UPS-BATTERY LAYOUT AND INTERCONNECTING DIAGRAM
[8] 1724000372-EL-CAL-00012	BATTERY SIZING CALCULATION
[9] 1724000372-EL-CAL-00013	HEAT DISSIPATION
[10] 1724000372-EL-LIS-000014	I/O LIST
[11] 1724000372-EL-PRO-00015	PAINTING PROCEDURE
[12] 1724000372-EL-PRO-00017	UPS-FACTORY ACCEPTANCE TEST PROCEDURE
[13] 1724000372-EL-PRO-00019	UPS-SITE ACCEPTANCE TEST PROCEDURE/PRE - COMMISSIONING/COMMISSIONING PROCEDURE
[14] 1724000372-QC-LIS-00020	EQUIPMENT MANUFACTURE RECORD BOOK (FINAL DOSSIER)-INDEX
[15] 1723002197-QC-LIS-00021	EX CERTIFICATION LIST
[16] 1723002197-EL-LIS-00022	ATEX DOCUMENTATION
[17] 1723002197-QC-PRO-00055	PACKING, SHIPPING, HANDLING AND STORAGE PROCEDURES
[18] 1724000372-EL-MAN-00024	INSTALLATION, OPERATING AND MAINTENANCE MANUAL (INCLUDING SITE ERECTION INSTRUCTIONS AND PROCEDURES)

Table 3: Vendor Reference Documentation

4.2 Acronyms and Abbreviations

Acronyms / Abbreviations	Description
AIS	Automatic Identification System
AHU	Air Handling Unit
AOC	Achievement of Commissioning

Acronyms / Abbreviations	Description
C&E	Cause & Effects
CCS	Central Control System
CCTV	Closed Circuit Television
CMS	Completions Management System
CPI	Company Provided Item
CRS	Comments Response Sheet
CSU	Commissioning & Start-Up
E&I	Electrical & Instrumentation
EMCS	Electrical Monitoring & Control System
ESD	Emergency Shut Down
FAT	Factory Acceptance Test
FT	Functional Test
F&G	Fire & Gas
GALT	Gross Air Leak Test
HAZID	Hazard Identification Studies
HAZOP	Hazard and Operability Studies
HKN	Hollandse Kust Noord
HV	High Voltage
HVAC	Heating, Ventilation and Air Conditioning
HSE	Health, Safety, & Environment
ICSS	Integrated Control and Safety System
ITR	Inspection & Test Record
LC	Locked Closed
LO	Locked Open
LoSH	Limits of System Handover
LOTO	Lock-Out / Tag-Out
LV	Low Voltage
MC	Mechanical Completion
MDR	Master Document Register
MOC	Management of Change
NUI	Normally Unmanned Installation
OEM	Original Equipment Manufacturer
OMAR	Operating Modes Assurance Review
OTP	Operational Test Procedure (Commissioning)
OR	Operations Readiness

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Acronyms / Abbreviations	Description
ORR	Operations Readiness Review
PACO	Process Automation, Control and Optimisation
PCS	Process Control System
PID (P&ID)	Piping and Instrumentation Diagram
PSV	Pressure Safety Valve
PTW	Permit to Work
PVP	Piping and Vessels Preparation
PC&C	Pre-Commissioning & Commissioning
PSUA	Pre Start-Up Audit
PSSR	Pre Start-up Safety Review
RFC	Ready for Commissioning
RFO	Ready for Operation
RFSA	Ready For Sail Away
RFSU	Ready For Start-Up
SAT	Site Acceptance test
SECE	Safety Environmental Critical Element
SIF	Safety Instrumentation Function
SIL	Safety Integrity Level
SIMOPS	Simultaneous Operations & Maintenance
SIS	Safety Instrumented System
SLD	Single Line Diagram
SoF	Statement of Fitness
TA	Technical Authority
TQ	Technical Query
TIV	Technical Integrity verification
UPS	Uninterruptible Power Supply
VHF	Very High Frequency
VSAT	Very Small Aperture Terminal

Table 4: Acronyms and Abbreviations

5 OTP AT ONSHORE WORKSITE

This chapter refer to the activities on the Contractor worksite (construction yard).

5.1 Planning and Manpower

5.1.1 Planned tasks with estimated manpower

Estimated manpower for the entire duration of the Test:

- 1 E&I commissioning superintendent
- 1 E&I commissioning supervisor from Contractor
- 1 E&I commissioning technicians from Contractor
- 1 Vendor technician
- 1 PCS/ESD Workstation Operators (phase 3)

5.1.2 Test duration estimate

The test duration should be as follows:

- 3 days approx.

If necessary, the estimated time can be extended in order to complete all required pre-commissioning and commissioning activities.

5.1.3 Vendor Assistance

Equipment vendor 3W Power S.p.A. will provide a qualified specialist to assist with all aspects of commissioning of the UPS-200F1 system.

5.1.4 Items Postponed to C&E OTP

Not applicable

5.1.5 HOLDS

Not applicable

5.2 OTP Test Requirements – Onshore WORKSITE

5.2.1 Pre-Commissioning Achievement

Prior the commissioning operation starts, the relevant pre-commissioning ITRs should be fully signed.

5.2.2 Commissioning Achievement

The commissioning achievement will be the successful operation, functionality and safeguarding test of UPS, installed and put in operation during the WORKSITE phase:

- 83-00: 400V Switchboard SG-200N1
- 83-20: 400V Distribution Board DP-200N1
- 84-00:230V UPS AC UP-200F1

5.2.3 Status of Required Associated Subsystems

PHASE 1 UPS START UP
Subsystems required RFC for Commissioning of UPS

- 83-00 400V Switchboard SG200N1
- 83-20 Distribution board DP-200N1
- 88-00: Earthing System
- 83-99: Temporary Yard 400/230V Main and auxiliary power supplies
- 84-00: UPS AC UP-200F1

PHASE 2 UPS OPERATIONAL AND FUNCTIONAL TESTS
Subsystems required RFC for Commissioning of LV Power Distribution:

- 83-00 400V Switchboard SG200N1
- 83-20 Distribution board DP-200N1
- 88-00: Earthing System
- 83-99: Temporary Yard 400/230V Main and auxiliary power supplies
- 84-00: UPS AC UP-200F1

PHASE 3 COMMUNICATION TESTS with PCS and ESD systems
Subsystems required RFC for Commissioning of UPS:

- 83-00 400V Switchboard SG200N1
- 83-20 Distribution board DP-200N1
- 88-00: Earthing System
- 83-99: Temporary Yard 400/230V Main and auxiliary power supplies
- 84-00: UPS AC UP-200F1
- 79-00: SIS (ESD)
- 87-10: Process Control System (PCS)

5.2.4 Special Tools & Test Equipment

The following special tool and Test Equipment are required (see vendor document 1723002197-EL-LIS-00053):

- Voltage, frequency, continuity tester (Multimeter)
- Phases sequence tester
- Infrared temperature instrument
- Temporary Load Bank (Rated 10kVA)
- Portable radios
- 230VAC/24VDC temporary stabilized power supply

TESTING & MEASUREMENT INSTRUMENT USED			
Type	Serial N.	Calibration certificate	Validity

5.2.5 Consumable List

Not applicable

5.2.6 Commissioning Spare Parts

Reference is made to 3W document 1723002197-COM-LIS-00052 "Commissioning and operation Spare Parts Index Register" regarding the UPS spare parts.

5.2.7 Temporary Facilities

Phase 1 and Phase2: Temporary Load Bank for battery discharge tests and UPS functional test with rating 10kVA.

5.3 OTP Description – Onshore WORKSITE

5.3.1 OTP Test Preparation

Step	Description	Result	Verified by	Date
1	System Ready for Commissioning Certificate (RFC) is issued and approved.	OK	M.Catella	06/11/2029
2	No Mechanical Completion or Pre-commissioning punch list 'A' items are outstanding against the system to be commissioned.	OK	M.Catella	06/11/2029
3	Factory Acceptance Test Procedure has been carried out successfully (refer to Doc. 1723002197-QC-PRO-00045)	OK	M.Catella	06/11/2029
4	All personnel involved in the implementation of this procedure are familiar with its content as well as with associated safety requirements (Toolbox Talk to be conducted before initiation of activities).	OK	M.Catella	06/11/2029
5	A final walkdown of the system has been completed, to ensure that the system and the area are ready for commissioning.	OK	M.Catella	06/11/2029
6	Check that areas are free for work and escape routes are clear of any obstructions.	OK	M.Catella	06/11/2029
7	All safety barriers and warning signs have been installed.	OK	M.Catella	06/11/2029
8	Ensure that proper communications have been established between parties involved in the implementation of the procedure.	OK	M.Catella	06/11/2029
9	Verify availability of test equipment and consumables as per section 3.2.4.	OK	M.Catella	06/11/2029
10	System(s) isolations as per LOTO procedure defined within HSSE Permits to Work and Commissioning procedures duly prepared and approved. Particular attention will be given to LOTO isolation of UPS outgoing MCB feeders.	OK	M.Catella	06/11/2029
11	All yard personnel have been duly notified by dedicated LUN (Livening Up Notification) that the system(s) is ready for commissioning.	OK	M.Catella	06/11/2029

5.3.2 Electrical Preparation

Step	Description	Result	Verified by	Date
12	Check related punch list 'B' items and confirm acceptability for start of commissioning activities.	Ok		06/11/2024
13	Verify that all relevant associated systems / subsystems are completed.	Ok		06/11/2024
14	Check that grounding and bonding are in accordance with applicable documents.	Ok		06/11/2024
15	Review and confirmation of protection settings on up-stream LV Switchboards feeder power supply circuit breakers.	ok		06/11/2024
16	Verify finalization of UPS 'A', 'B' and Units internal power and auxiliary circuit connections in accordance with manufacturers documentation.	Ok		06/11/2024
17	Verify finalization of the auxiliary contact connection between UP-200F1 UPS Unit 'A' and UPS MAIN DISTRIBUTION SWITCHBOARD SG-200N1 related to acquisition of the simultaneous CLOSED status of three circuit breakers INCOMER UPS 'A', IN-COMER UPS 'B'	ok		06/11/2024

5.3.3 Mechanical Preparation

Not applicable.

5.3.4 Instrument Preparation

Step	Description	Result	Verified by	Date
18	Check related punch list 'B' items and confirm acceptability for start of commissioning activities.	Ok		06/11/2024
19	Verify that all relevant associated systems / subsystems are ready.	Ok		06/11/2024
20	Check Inhibit and Override register has been prepared and validated.	Ok		06/11/2024
21	Verify that relevant equipment/ components are available and in operation for start of commissioning activities.	Ok		06/11/2024

5.3.5 Piping Preparation

Not applicable

5.3.6 Additional Discipline Preparation

Not applicable.

5.4 OTP Test Steps – Onshore WORKSITE - PHASE 1

During the PHASE 1 will be tested:

- Startup UPS 'A' and 'B'
- First charge of battery rack (12 hours)
- Discharge of battery rack (10 hours)
- Second recharge rack (battery bank in normal operation)

5.4.1 Test Preparation

Need to Verify:

- 400V Power supply is available
- All systems and subsystems involved in this procedure must be ready for commissioning and available.

5.4.1.1 UPS Start-Up Procedure

Step	Description	Result	Verified by	Date
START-UP UPS				
	Preparation before start-up:			
1	*Before start-up, check that the default equipment data tallies with the battery data*	Ok	M. Patella	06/11/2024
2	*Before start-up, check that the equipment is earthed in accordance with regulations*	Ok	M. Patella	06/11/2024
3	*Make sure that the ventilation grids are never covered during operation*	Ok	M. Patella	06/11/2024
4	Check the battery cut off Q3 breaker is open.	ok	M. Patella	06/11/2024
5	Set the load interrupter switch Q1 to the "OFF" position.	ok	M. Patella	06/11/2024
6	Remove the protective cover from the connection panel	ok	M. Patella	06/11/2024
7	Check connection of the mains voltage for the rectifier.	Ok	M. Patella	06/11/2024
8	Measure the mains voltage at connection terminal X1 (outer conductor/outer conductor): the mains voltage is U~ = 400 V	Ok	M. Patella	06/11/2024

Step	Description	Result	Verified by	Date
9	Check the Phase rotation at connection terminal X1: L1, L2 and L3 clockwise rotation	Ok		06/11/2024
10	Disconnect the mains voltage for the rectifier	Ok		
11	Resolve any problems identified	Ok		
12	Replace the protective cover on the connection panel.	ok		
13	Confirm absence of anomalies preventing UPS start-up.	ok		
Starting UP the UPS 'A'				
14	Set the load interrupter switch Q1 to the "OFF" position	ok		
15	Connect the mains voltage for the rectifier.	ok		
16	Connect the mains voltage for the auxiliaries' circuit	ok		
17	Set the load interrupter switch Q2 to the "ON" position.	Ok		
18	Check the functionality of Rectifier on the controller display A300	ok		
19	Set the output interrupter switch Q1 to "ON" position	Ok		
20	Check the battery breaker Q3 voltage and polarity	Ok		
21	Set the battery interrupter switch Q3 to "ON" position	Ok		
22	Set the external battery cut-off interrupter switch Q0 to "ON" position	Ok		
23	Check the correct connection of the battery and charging status on controller display A300	Ok		
24	The first UPS 'A' unit is now in operation.	Ok		
Starting UP the UPS 'B'				
25	Set the load interrupter switch Q1 to the "OFF" position	Ok		

Step	Description	Result	Verified by	Date
26	Connect the mains voltage for the rectifier.	Ok	[signature]	06/11/2024
27	Set the load interrupter switch Q2 to the "ON" position.	Ok	[signature]	06/11/2024
28	Check the functionality of Rectifier on the controller display A300	Ok	[signature]	06/11/2024
29	Set the output interrupter switch Q1 to "ON" position	Ok	[signature]	06/11/2024
30	The second UPS unit is now in operation.	Ok	[signature]	06/11/2024

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5.4.1.2 Charge And Discharge Battery bank

Here follows the installed battery type datasheet:

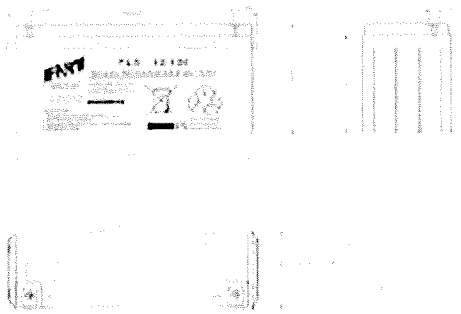
FAAM

FLG 12-150

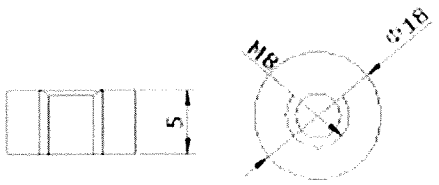
DIMENSIONAL FEATURES

Nominal Voltage Nominal Capacity (20 hours)		12V 150Ah (Vfin 1,85/pc at 20°C)
Dimensions	Length Width Box Height Total Height	485±2mm 172±2mm 240±2mm 240±2mm
Drawing n° 4 00327-0		Weight 47,5 Kg ± 5%
Standard Terminal		Female screw type : M8

Nominal Capacity (100Hr) 229Ah (Vfin 1,8pc at 20°C)
Gel technology VRLA (Valve Regulated Lead Acid)
ABS FV-0 container and lid
Battery sealed no maintenance
Design life >12 years (at 20°C) "Long Life"
Standards: IEC EN 60896 Parts 21 and 22



Bolt-and-nut terminal
Bolt Type:M8



(in mm)

ELECTRIC FEATURES

Characteristics

Capacity	20 hours rate (Vfin 1,8pc at 20°C)	150,00Ah
	10 hours rate (Vfin 1,8pc at 20°C)	135,00Ah
	5 hours rate (Vfin 1,8pc at 20°C)	118,60Ah
	3 hours rate (Vfin 1,8pc at 20°C)	103,95Ah
	1 hour rate (Vfin 1,6pc at 20°C)	86,01Ah
Capacity affected by temperature	40°C	102%
	20°C	100%
	0°C	85%
Internal Resistance 3,9 mΩ ±10%		SCC 3250 A ±10%
Constant Voltage Charge	Cycle use	Initial Charging Current less than 45 A Voltage 14,4÷15,0V at 20°C Temperature Coefficient -30 mV/°C
	Stand by use	No limit on Initial Charging Current Voltage 13,5÷13,8V at 20°C Temperature Coefficient -20 mV/°C

Discharge curves @ 20°C



Constant Current(Amp) and Constant Power (Watt/Cell) Discharge Table at 20°C

Final V./Time		5min	15min	30min	60min	90min	120min	180min	300min	480min	600min
9.9V	A	204,28	144,89	101,40	85,79	67,98	57,46	34,72	23,82	16,42	14,18
	W	554,04	416,51	274,45	176,47	142,95	107,70	70,94	48,71	36,42	30,49
10.2V	A	185,64	143,39	98,38	70,44	55,82	47,18	34,65	23,72	16,35	13,97
	W	538,86	403,20	265,95	170,99	138,51	104,36	70,52	48,43	36,21	30,43
10.8V	A	149,11	124,90	93,46	68,80	54,51	46,08	34,26	23,34	16,09	13,50
	W	505,97	380,38	250,90	161,31	130,67	98,45	69,14	47,48	35,50	29,83

Step	Description	Result	Verified by	Date
Battery bank FIRST Charging operation (commissioning charge)				
In charger only mode the rectifier is on and charging the battery. There is no output voltage, and the load is not supplied.				
This mode can be used to fully charge the battery before operation. This activity will be performed with Vendor Technician.				
Verification of system status for CHARGING:				
31	Perform first full commissioning charge of Battery Bank with duration 12 hours. N.B. The UPS unit must be recalibrated by vendor filed engineer for the purpose of the test. Commissioning charge voltage setting equal to: .....V With reference to Annex 001 '12h Capacity charge test record' start recording measurements at beginning of charging cycle every 30 minutes. ANNEX 001 12H CAPACITY CHARGE TEST RECORD	OK		03/03/2025
After successful completion of above steps record Battery Bank terminal voltage.				
32	Record Battery Bank Terminal voltage. Record results in: "ANNEX 002 - BEFORE DISCHARGE BANK"	OK		03/03/2025
After successful completion of above steps prepare for Battery Bank Discharge test.				
Verification for system status for DISCHARGING:				
33	Verify that Batteries are disconnected from UPS, cut off breaker Q2 is open.	OK		03/03/2025
34	With vendor field service engineer connect temporary load bank to DC output of UPS.	OK		03/03/2025
35	The Discharge tests will be performed with a constant discharge current of 13,5A for the duration of the 10h test.	OK		03/03/2025

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Step	Description	Result	Verified by	Date
36	Verify that all connections between UPS and temporary Load Bank are correct	OK		05/11/2024
37	Verify and confirm that auxiliary power supply for Load Bank is OK.	OK		05/11/2024
After completion of above verification steps continue with following steps and record results in relevant attached ANNEX documents. Records measurements in intervals of 30 minutes. During each measurement record ambient temperature.				
38	Perform discharge of Battery Bank for 10h. Record results in: "ANNEX 03 - DISCHARGE BANK"	OK		05/11/2024
	Battery Re-Charge			
	Verification for system status for CHARGING:			
39	N.B. The UPS unit must now be recalibrated by vendor field engineer to the normal voltage value for the UPS normal operation. UPS Normal Voltage battery charging calibration equal to: V	OK		05/11/2024
40	Proceed with recharging of battery bank A under normal operation UPS charging conditions and monitor periodically battery voltages for a period of 10 h. Confirm normal operation of UPS 'A' with no alarms and battery bank voltages after 10 hours period.	OK		06/11/2024

5.4.2 OT WORKSITE Phase 1 – Tests Notes and Remarks

5.4.2.1 OTP Worksite Phase 1 - Tests Certifying Authority Table of Attendances

Name and Surname	Certifying Authority	Position	Signature

5.4.2.2 OTP WORKSITE Phase 1 - Tests Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature
KRISTIAN CARLSEN	ROSETTI M.	LEAD ELECTRIC COMM.	
PP MARTIN TAYLOR	CROSSWIND	COMM MANAGER	
ANTHONY IVESON	ROSETTI MARINO	COMM. MGR.	

5.4.3 OTP Steps WORKSITE - PHASE 2

It is foreseen that previous sections are successfully performed.

The cabinet UPS is available, and all necessary tests are performed and accepted for that system.
All Cables are pulled up, tested and yard temporary power supply is completed and available.
UPS AC is working in normal operation and no alarm pending.

In the following steps the functionality of UPS shall be tested for:

- SS 83-00: 400V Switchboard SG-200N1 Main power supply feeders
- SS 83-20: 400V Distribution Board DP-200N1 Aux. power supply feeder
- SS 84-00: 230V UPS UP-200F1

Powering ON the unit is an essential step to verify that the equipment is functioning correctly. Observing if everything is OK and any alarm will help detect possible errors or malfunctions.

PHASE 2 will be performed through permanent power supply feeder arrangements.
PHASE 2 will prove correct:

- Voltage, frequency and phase sequence to the terminals of Incoming A&B (Rectifier) are according to specification.
- Powering of one unit at the time will show UPS 'A' in normal operation and UPS 'B' in stand-by and vice versa.
- Installation and functionality of Battery breakers
- Charging of batteries and batteries current
- Black start operation
- Output / Distribution as per specification

5.4.3.1 Verify UPS Unit 'A'

These steps are required for initial verification of the UPS Unit 'A'.

The following power supplies are available:

- Auxiliaries power supply from DP-200N1
- Main power supplies from SG-200N1

Step	Description	Result	Verified by	Date
SS 84-10 UPS SYSTEM INITIAL VERIFICATION				
1	Verify all metallic parts are correctly earthed as per engineering documentation	ok		
2	Verify that all UPS internal circuit breakers and fuses are in the close / on position and UPS healthy with no alarms	ok		
3	Verify that the battery cut-off breaker Q0 related to Battery Bank is in the close / on position	ok		

Step	Description	Result	Verified by	Date
4	Verify and confirm availability of temporary power supply on main input terminals	Ok		05/11

5.4.3.2 Verify UPS UNIT 'B'

These steps are required for initial verification of the UPS Unit 'B'.

The following power supplies are available:
- Auxiliaries power supply from DP-200N1
- Main power supplies from SG-200N1

Step	Description	Result	Verified by	Date
SS 84-10 UPS SYSTEM INITIAL VERIFICATION				
5	Verify all metallic parts are correctly earthed as per engineering documentation	Ok		05/11/2024
6	Verify that all UPS internal circuit breakers and fuses are in the close / on position	Ok		05/11/2024
7	Verify and confirm availability of temporary power supply on main input terminals	Ok		05/11/2024

Step	Description	Result	Verified by	Date
UPS 'A' & 'B' Functional test				
1.	Confirm that main breaker QF1 on both Incoming A & B are CLOSED (A7/+03 SG200N1) & (A7/+04 SG200N1)	Ok	[signature]	05/11/2024
2.	Confirm that Battery bank is powered ON, and Battery MCCB box is overridden from ESD (selector switch S2 in position Override) and breaker Q0 are CLOSED	Ok	[signature]	05/11/2024
3.	Confirm there is no alarms present on HMI A300 on UPS UP-200F1.	Ok	[signature]	05/11/2024
4.	Breaker status: UPS 'A' Q1 – CLOSED UPS 'B' Q1 – CLOSED UPS 'A' Q2 – CLOSED UPS 'B' Q2 – CLOSED UPS 'A' Q3 – CLOSED UPS 'A' & UPS 'B' Q0 - CLOSED	Ok	[signature]	05/11/2024
RECTIFIER A1 OF UPS 'A' MAINS FAILURE.				
This check is performed for one unit at a time, starting with unit 'A'. Afterwards unit 'A' is in standby and unit 'B' is in normal operation, with load connected of 10kVA.				
5.	Open the MCCB in A7/+03 of SG-200N1 SWBD	Ok	[signature]	05/11/2024
6.	Check the incoming AC voltage on terminals X1: 1U,1V,1W. (Expected Value 0 V) Vin =.....0 V.....V Check the incoming AC current through UPS 'A' control panel HMI -A300 (Expected value 0 A): Ain = ...0.....A Check the DC voltage in output on terminals X6: (Expected Value 110V) Vout= .....121..... V Check the output DC current through UPS 'A' control panel HMI -A300 (Expect Value Equal to 0 % of Nominal Current): Aout=.....0.....A	Ok	[signature]	05/11/2024

Step	Description	Result	Verified by	Date
RECTIFIER A1 OF UPS 'A' MAINS RETURN				
7.	Close the MCCB in A7/+03 of SG-200N1 SWBD	ok	[signature]	
8.	Check the incoming AC voltage on terminals X1: 1U,1V,1W. (Expected Value 400 V) Vin = 400 V Check the incoming AC current through UPS 'A' control panel HMI -A300 (Expected value Equal to 50% of Nominal Current): Ain = 12,5 A Check the DC voltage in output on terminals X6: U,V,W (Expected Value 110V) Vout= 121 V Check the output AC current through UPS 'A' control panel HMI -A300 (Expect Value Equal to 50% of Nominal Current): Aout= 12,5 A	ok	[signature]	

PARALLEL OPERATION UPS 'A' and UPS 'B' Switching OFF UPS 'B' via MCCB of SG200N1				
9.	Open MCB of A7/+04 of the UPS 'B' in SG-200N1	ok	[signature]	06/11
10.	Verify UPS 'A' takes over 100% Load via HMI - A300: AC Load voltage and DC load current on display.	ok	[signature]	
RECTIFIER A1 OF UPS 'B' MAINS FAILURE				
11.	This check is performed for one unit at a time, starting with unit A. Afterwards unit B is in standby and unit A is in normal operation, with load connected of 10kVA.	ok	[signature]	
12.	Open the MCCB in A7/+04 of SG-200N1 SWBD	ok	[signature]	

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13.	Check the incoming AC voltage on terminals X1: 2U,2V,2W.(Expected Value 0 V) Vin =.....Ø..... V Check the incoming AC current through UPS 'A' control panel HMI -A300 (Expected value 0 A) : Ain = ..Ø.....A Check the DC voltage in output on terminals X6: (Expected Value 110V) Vout= ..121..... V Check the output AC current through UPS 'B' control panel HMI -A300 (Expect Value Equal to 0% of Nominal Current): Aout=.....Ø.....A	Ok	[signature]	06/11/2024
RECTIFIER A1 OF UPS 'B' MAINS RETURN				
14.	Close the MCB in A7/+04 of SG-200N1 SWBD	Ok	[signature]	06/11/2024
15.	Check the incoming AC voltage on terminals X1: 2U,2V,2W. (Expected Value 400 V) Vin =.....400.....V Check the incoming AC current through UPS 'B' control panel HMI -A300 (Expected value 50% of nominal current A) : Ain = ...17,5.....A Check the DC voltage in output on terminals X6: (Expected Value 110V) Vout= ...121..... V Check the output DC current through UPS 'A' control panel HMI -A300 (Expect Value Equal to 50% of Nominal Current): Aout=....17,5.....A	Ok	[signature]	06/11/2024

PARALLEL OPERATION UPS 'A' AND UPS 'B' Switching OFF UPS 'A' via MCCB of SG200N1				
16.	Open MCCB of A7/+03 of the UPS 'A' in SG-200N1	Ok	[signature]	06/11/2024
17.	Verify UPS 'B' takes over 100% Load via HMI-A300: DC Load voltage and DC load current on display.	Ok	[signature]	06/11/2024
UPS 'A' RESTORATION				
18.	Close MCCB of A7/+03 of the UPS'A' in SG200N1	Ok	[signature]	06/11/2024
PARALLEL OPERATION UPS 'A' AND UPS 'B' Switching OFF UPS 'B' via MCCB of SG200N1				
19.	Open MCCB of A7/+04 of the UPS 'B' in SG-200N1	Ok	[signature]	06/11/2024
20.	Verify UPS 'A' takes over 100% Load via HMI-A300: DC Load voltage and DC load current	Ok	[signature]	06/11/2024
UPS'B' RESTORATION				
21.	Close MCCB of A7/+04 of the UPS'B' in SG200N1	Ok	[signature]	06/11/2024

5.4.3.3 Black Start Operation

Step	Description	Result	Verified by	Date
Black Start				
With Black Start it is possible to energize the system with only the batteries when the rectifier mains supply is unavailable. UPS is switched OFF at start of this test.				
Verification for system status				
1.	Verify that Rectifier mains breaker(s) Q1 (UPS A and UPS B) for Incoming 1 and Incoming 2 are in: Open position The rectifier main supplies are not available.	Ok	[signature]	06/11/2024

Step	Description	Result	Verified by	Date
2.	Verify that Q2 output interrupters (UPS A and B) and internal battery cut-off breaker Q3 (UPS A) are in: Open position	Ok		06/11/2024
3.	Measure and record battery bank terminal voltages, confirm suitability to perform Black Start procedure, minimum voltage ideally ≥120 V: Battery Bank: V	ok		06/11/2024
4.	Verify that Output breaker(s) Q10, Q11, Q12, Q13, Q14, Q15,Q16 are in: Open position Consumers must be volt free	Ok		06/11/2024
Black Start procedure				
IMPORTANT: The DC capacitors must be charged before connecting the UPS to the batteries.				
5.	BLACK START UPS 'A' With reference to battery cut off breaker enclosure **(CB-200F1)** locate the following: - Selector switch S1 ON-OFF - Selector switch S2 NORMAL-OVERRIDE	ok		06/11/2024
6.	Rotate selector switch S2 from position NORMAL to position OVERRIDE (ESD healthy signal not available).	Ok		06/11/2024
7.	In order to proceed with the UPS internal energization sequence, it is necessary to now close external battery cut-off breaker Q0. UPS 'A' & UPS 'B' Q0 - CLOSED	Ok		06/11/2024
8.	Rotate the selector switch S1 from position OFF to position ON (shunt resistor internally connected to enable pre-charging of UPS capacitors)	Ok		06/11/2024
9.	Confirm power up of UPS 'A' controller HMI - A300 within 10 seconds of rotated selector switch S1 to ON position	Ok		06/11/2024
10.	When, and only when the controller HMI -A300 will be powered up proceed to close battery cut off breaker Q0.	Ok		06/11/2024
11.	Rotate the selector switch S1 from position ON to position OFF.	OK		06/11/2024

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Step	Description	Result	Verified by	Date
12.	The DC output voltage is available for essential loads (N.B. Autonomy will be limited to the residual charge remaining on the battery bank, it is important to re-energize the incoming AC main UPS incoming power supplies as possible). Proceed to close the followings MCBs: Q10, Q11, Q12, Q13,Q14,Q15,Q16.	Ok		06/11/2024
13.	Once essential loads will be operational and platform operational status normal it will be possible to reset the black start scenario.	Ok		06/11/2024
14.	Verify the main AC incoming power supply of UPS 'A' from SG-200N1 A7/+03.	ok		06/11/2024
15.	Verify that UPS 'A' Q1 incoming circuit breaker is in: Close position	ok		06/11/2024
16.	Check the Display Controller A300 is functioning and rated incoming input voltage visible	ok		06/11/2024
17.	Verify that UPS 'A' Q2 output circuit breaker is in: Close position	ok		06/11/2024
18.	Verify on Display Controller A300 all system voltages are correct, and battery bank is under charge.	Ok		06/11/2024
19.	Verify the main AC incoming power supply of UPS 'B' from SG-200N1 A7/+04.	ok		06/11/2024
20.	Verify that UPS 'B' Q1 incoming circuit breaker is in: Close position	Ok		06/11/2024
21.	Check the Display Controller A300 is functioning and rated incoming input voltage visible	Ok		06/11/2024
22.	Verify that UPS 'B' Q2 output circuit breaker is in: Close position	ok		06/11/2024
23.	Verify on Display Controller A300 all system voltages are correct, parallel operation with UPS 'A' is confirmed together with the equal power supply to final loads and battery bank 50%/50%.	Ok		06/11/2024
24.	With reference the battery cut off breaker enclosure **CB-200F1** rotate the selector switch as follows: -Selector switch S2 NORMAL position	Ok		06/11/2024
25.	The battery cut off breaker should remain closed and connected as per normal UPS operation.	Ok		06/11/2024

5.4.3.4 OTP Worksite Phase 2 Tests Notes and Remarks

5.4.3.5 OTP Worksite Phase 2 - Tests Certifying Authority Table of Attendances

Name and Surname	Certifying Authority	Position	Signature

5.4.3.6 OTP WORKSITE Phase 2 - Tests Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature
MARIAN CZECZOTT	ROSETTI M.	LEAD ELECTRICAL COMMISSIONING	
GERRY McCANN	CROSSWIND	COMMISSIONING ENG	
ANTHONY IVESON	ROSETTI MARINO	COMM MGR.	

OBSERVED BY

5.4.4 OTP Steps WORKSITE - PHASE 3

It is foreseen that previous chapters are successfully performed.

All systems fed from SWBD SG-200N1 and from DB DP-200N1 are available and ready to work, all necessary tests are performed and accepted for those systems.
All Cables are pulled up, tested and temporary power supply is completed and available.
LV Power Distribution Switchboards and Distribution Boards is working in normal operation and no alarm pending.

In the following steps will be defined the tests of all signals from/to UPS and SIS hardwired and via Modbus TCP-IP between PCS and UPS.

All I/O signals were tested and recorded through dedicated ITR-B precommissioning check sheets.
Verify and confirm that all related check sheets have been performed successfully.

5.4.5 Test Preparation

Verification of systems UPS UP-200F1.
All systems and subsystems involved in this procedure must be ready for commissioning and available.

To perform the signals test is mandatory that PCS Cabinet – Modbus TCP-IP network system - are already energized, available and ready to work.

To test all signals, refer to specific electrical pre-commissioning check sheets, they will be used for the specific validation of all I/O signals.

5.4.5.1 UPS UP-200F1 - I/O Instrumental I/O list

To test all signals, refer to specific electrical pre-commissioning check sheets, they will be the specific functioning of all I/O.

Following I/O signals groups List to be verified.

This I/O list concern the alarm, feedback and command reading.

Cabinet	FROM	SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	~~TERMINALS~~ TAG	Note
BOX BATTERY	SIS (ESD)	Disconnect DC UPS UP-200F1 Battery A	DO	XS008A	0 TRIP
UPSA/B		Battery room fan fault-charge inhibit	DO	X4/1-2	0 INIBIT

XS009

Step	Description	Result	Verified by	Date
1	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list Correct and positive results..... ☑	OK		03/03

5.4.5.2 UPS UP-200F1 - I/O Modbus TCP-IP list

With reference all register Modbus TPC-IP for PCS system, it attached the Modbus status list

- ***Register tables***

Alarm and event table:

Modbus Register (nMbHR)	Jbus Register (nJbR)	aRN (hex)	Variable	Range
40,002	1	0x1	High Mains Voltage	
40,003	2	0x2	Low Mains Voltage	DM
40,004	3	0x3	Charger Failure	
40,005	4	0x4	High Battery Voltage	
40,006	5	0x5	Low Battery Voltage	DM
40,007	6	0x6	High DC Voltage	
40,008	7	0x7	Low DC Voltage	DM
40,009	8	0x8	Ground Fault +	
40,010	9	0x9	Ground Fault -	
40,011	10	0xa	Spare 1 Q1 OPEN	DM
40,012	11	0xb	Spare 2	
40,013	12	0xc	Spare 3	
40,014	13	0xd	Spare 4	
40,015	14	0xe	Spare 5	
40,016	15	0xf	Spare 6	
40,017	16	0x10	Spare 7	
40,018	17	0x11	Spare 8	
40,019	18	0x12	Charger Current Limit Indicator	
40,020	19	0x13	Battery Current Limit Indicator	
40,021	20	0x14	High Charger Current	DM
40,022	21	0x15	High Battery Current	
40,023	22	0x16	High Temperature	
40,024	23	0x17	Temperature Sensor Error	
40,025	24	0x18	Internal Communication Error	DM DM 0 = No alarm, 1 = Alarm
40,026	25	0x19	Battery Test Fail	
40,027	26	0x1a	Battery Test Aborted	
40,028	27	0x1b	High Battery Temperature	
40,029	28	0x1c	High Float Current	
40,030	29	0x1d	Long Charge Time	
40,031	30	0x1e	No Power Supply Voltage	
40,032	31	0x1f	Battery in Operation	
40,033	32	0x20	Battery Symmetry Fault	

Table 5: Modbus TCP-IP PCS

Measurements and status:

Modbus Register (nMbHR)	Modbus register (nJbR)	aRN (hex)	Variable	Range
40,100	99	0x63	Mains Voltage	VAC / 10
40,101	100	0x64	Battery Voltage	VDC / 10
40,102	101	0x65	Load Voltage	VDC / 10
40,103	102	0x66	Charger Current	Positive Amps / 10
40,104	103	0x67	Battery Current	Signed Amps / 10
40,105	104	0x68	Ambient Temperature	Signed Celsius
40,106	105	0x69	Battery Temperature	Signed Celsius
40,107	106	0x6a	Battery Symmetry Voltage	VDC/10
40,108	107	0x6b	Common Alarm Relay	0: negated, 1: asserted
40,109	108	0x6c	Earth Fault Impedance	Signed earth fault in k-Ohm/10
40,110	109	0x6d	Charge Status	0: Float 1: Highrate 2: Commissioning 3: Battery test 4: Charger Off
40,111	110	0x6e	Remaining Charge Time	Minutes
40,112	111	0x6f	AhMeter	%
40,113	112	0x70	Equation 1	16-bit signed integer value of equation result this result is multiplied by a factor defined by EQ configuration parameter 'ModbusMultiplier ' , rounded to nearest integer value and clamped to [-32,768, 32,767]
40,114	113	0x71	Equation 2	
40,115	114	0x72	Equation 3	
40,116	115	0x73	Equation 4	
40,117	116	0x74	Equation 5	
40,118	117	0x75	Equation 6	
40,119	118	0x76	Equation 7	
40,120	119	0x77	Equation 8	
40,121	120	0x78	Equation 9	
40,122	121	0x79	Equation 10	
40,123	122	0x7a	Equation 11	
40,124	123	0x7b	Equation 12	
40,125	124	0x7c	Equation 13	
40,126	125	0x7d	Equation 14	
40,127	126	0x7e	Equation 15	
40,128	127	0x7f	Equation 16	

All holding registers in this table have a read-only access.

Table 6: Modbus Measure TCP-IP PCS

Step	Description	Result	Verified by	Date
2	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list Correct and positive results. ..... ☑	OK		03/03

5.4.5.3 OTP WORKSITE Phase 3 - Tests Notes and Remarks

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5.4.5.4 OTP WORKSITE Phase 3 - Tests Certifying Authority Table of Attendances

Name and Surname	Certifying Authority	Position	Signature

5.4.5.5 OTP WORKSITE Phase 3 - Tests Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature
KRISTIAN CORTELLANI	ROSETTI M	LEAD ELE COMMISSIONING	
DAVE MOSCROPE	CW	OPERATIONS ENG	
ANTHONY IVESON	ROSETTI MARINO	COMM. MGR	

SEE ATTACHED I/O LIST MARKED UP

5.5 Post-test Conditions

All the electrical contacts which were disconnected for the testing purposes must be reconnected.
After functional tests have been completed, system / sub-systems are left in healthy and safety condition and that they are operational.

5.6 Reinstatement and Preservation Tasks

Generally, the system/ sub-system shall be reinstated at its initial condition; and the following activities must be carried out as minimum:

- all inhibition done for the test shall be removed (as per Inhibit / Override List)
- all equipment/devices shall be returned in healthy functional conditions.

NOTE : all preservation routines identified and required will be included in relevant Preservation ITR within the Proverlis Completions System.

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6 OTP AT OFFSHORE SITE

6.1 Planning and Manpower

6.1.1 Offshore Site overview

It is expected that all precommissioning tests, systems energization and commissioning steps will have been successfully performed during the Onshore Phases.
Consequently, during the offshore SITE phase, the respective systems will be inspected prior to re-energization. No additional test steps will be required on these items of equipment, correct operation and functioning will be verified.

6.1.2 Planned tasks with estimated manpower

Estimated manpower for the entire duration of the Test:
- 1 E&I commissioning superintendent
- 1 E&I commissioning supervisor from Contractor
- 1 E&I commissioning technicians from Contractor

6.1.3 Test duration estimate

The test duration should be as follows:
- 0,5 days approx.

If necessary, the estimated time can be extended to complete all required pre-commissioning and commissioning activities.

6.1.4 Vendor Assistance

- Not applicable

6.1.5 Items Postponed to C&E OTP

- Not Applicable

6.1.6 HOLDS

- Not Applicable

6.2 OTP Test Requirements – Offshore SITE

6.2.1 Pre-Commissioning Achievement

- Not applicable

6.2.2 Commissioning Achievement

The commissioning achievement will be the successful operation, functionality and safeguarding test of Power distribution System LV, installed and put in operation during the WORKSITE phase:

The successful commissioning result, achieved during the WORKSITE commissioning phase for the functionality and safeguard of the UPS system, will allow for a smoother commissioning phase of the offshore SITE.
The systems and subsystems involved:
- 88-00: Earthing System
- 84-00: UPS System UP-200F1

- 83-00: 400V Switchboard SG-200N1
- 83-20: 400V Distribution board DP-200N1
- 79-00: SIS (ESD)
- 87-10: Process Control System (PCS)
- 86-00: Data Network - MODBU RTU Network Switchboard Medium Voltage and Low Voltage

6.2.3 Status of Required Associated Subsystems

The systems involved has been already energized and commissioned in WORKSITE Phase

6.2.4 Special Tools & Test Equipment

The following special tool and Test Equipment are required (see vendor document 1723002197-EL-LIS-00053):

- Voltage, frequency, continuity tester (Multimeter)
- Phases sequence tester
- Portable

TESTING & MEASUREMENT INSTRUMENT USED			
Type	Serial N.	Calibration certificate	Validity

6.2.5 Consumable List

- Not applicable

6.2.6 Commissioning Spare Parts

Reference is made to 3W document 1723002197-COM-LIS-00052 "Commissioning and operation Spare Parts Index Register" regarding the LV SWBD e DB commissioning spare parts are indicated in the document 1723002197-COM-LIS-00052 "Commissioning and operation Spare Parts Index Register".

6.2.7 Temporary Facilities

- Not applicable

6.3 OTP Description – SITE

In SITE (offshore) phase the first energization of main SWBD SG-200N1 will be done feeding the drawer A2/+08 via Temporary Diesel Generator and will be performed all steps starting with first energization.
NOTE: When it's confirmed the availability of permanent 66kV high voltage, the temporary power supply from the Temporary Diesel Generator will be removed. A final check on the correct functioning of the UPS system will be performed when BLPH will be energized via the permanent high voltage supply.

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6.3.1 OTP Test Preparation

Step	Description	Result	Verified by	Date
1	System Ready for Operation(from WORKSItE Phase) (RFO) Certificate is issued and approved.			
2	No blocking punch list items are outstanding against the system to be commissioned.			
3	System(s), (de)isolations as per LOTO procedure enclosed within commissioning Work Permits procedures prepared and approved			
4	Verify and confirm that all steps performed at WORKSITE of this procedure are completed without any pending issues that would prevent from proceeding with the offshore SITE PROCEDURE			
5	All personnel involved in the implementation of this procedure are familiar with this procedure as well as with associated safety requirements (Toolbox Talk to be conducted before initiation of activities).			
6	A final walkdown after hook-up of the system has been completed, any preservation items have been removed and to ensure that the system and the area are ready for energization for following items: UP-200F1 230V DC UPS SG-200N1 Main Switchboard DP-200N1 Distribution board			
7	Check that areas are free for work and escape routes are clear of any obstructions.			
8	Ensure that proper communications have been established between parties involved in the implementation of the procedure.			
9	Verify availability of test equipment and consumables as per chapters 6.2.4.			
10	Verify and confirm that the Temporary Diesel Generator is ready to start, that the diesel fuel tank is full.			
11	All personnel have been duly notified during dedicated daily SIMOPS meetings that the system(s) is ready for commissioning.			

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6.3.2 Electrical Preparation

Step	Description	Result	Verified by	Date
12	No blocking punch list items are outstanding against the system to be commissioned.			
13	Review and confirm no changes are required to be performed on existing protection settings.			
14	Verify and confirm that the Temporary Diesel Generator power cables connections have been tested with correct phase rotation before sail away. Perform walk down on Diesel Generator for a final check before energization			

6.3.3 Mechanical Preparation

Not applicable.

6.3.4 Instrument Preparation

Step	Description	Result	Verified by	Date
15	No blocking punch list items are outstanding against the system to be commissioned.			
16	Verify that all relevant associated control and protection systems / subsystems are ready.			
17	Verify as relevant Inhibit and Override list has been prepared and validated (as per JSA).			

6.3.5 Piping Preparation

Not applicable

6.3.6 Additional Discipline Preparation

Not applicable.

6.4 OTP Test Steps – Offshore SITE

The previous chapters must be successfully performed prior to commissioning of the UPS System.

In the next steps, the functionality of the UPS system will be tested:

- SS 84-00:110V UPS SYSTEM

6.4.1 Test Preparation

Verification of system and subsystem UPS.
Conduct system walkdown and thorough visual inspection of all related components.
Confirm no impediment to proceed with energization.

6.4.2 Energization of UPS UP-200F3.

Step	Description	Result	Verified by	Date
UPS 'A' & 'B' Energization				
1	Confirm that diesel generator power supply is energized to upstream switchboard SG-200N1. A7/+03-line A A7/+04-line B			
2	Set the load interrupter switch Q1 to the "OFF" position			
3	Connect the mains voltage for the rectifier.			
4	Set the load interrupter switch Q1 to the "ON" position.			
5	Check the battery cut off breaker voltage and polarity			
6	Locate selector switch S2			
7	Rotate selector switch S2 from position NORMAL to position OVERRIDE (ESD healthy signal not available at this time).			
8	Verify the main AC incoming power supply of UPS 'A' from SG-200N1 A7/+03			
9	Verify that UPS 'A' Q1 incoming circuit breaker is in: **Close position**			
10	Verify that UPS 'A' Q2, Q3 ,Q0 cut off circuit breakers are in: **Close position**			
11	Verify the main AC incoming power supply of UPS 'B' from SG-200N1 A7/+04			
12	Verify that UPS 'B' Q2 circuit breaker is in: **Close position**			
13	The first and second UPS units are now in operation, repeat the above STEPS to start the second UPS unit.			
14	Proceed to close on board MCBs to energize BLPH essential loads.			

Step	Description	Result	Verified by	Date
15	Once ESD protection system will be operational, deactivate battery cut-off breakers override via switch S2, consequently confirm correct UPS start-up with out any alarms.			

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6.4.3 OTP SITE Tests Notes and Remarks

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6.4.4 OTP SITE Tests Certifying Authority Table of Attendances

Name and Surname	Certifying Authority	Position	Signature

6.4.5 OTP SITE - Tests Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature

6.5 Post-test Conditions

All the electrical contacts which were disconnected for the testing purposes must be reconnected.
After functional tests have been completed, system / sub-systems are left in healthy and safety condition and that they are operational.

6.6 Reinstatement tasks

Generally, the system/ sub-system shall be reinstated at its initial condition; and the following activities must be carried out as minimum:

- all inhibition done for the test shall be removed (as per Inhibit / Override List)
- all equipment/devices shall be returned in healthy functional conditions.

7 APPENDICES

7.1 Vendor SAT Procedure

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Base Load Power Hub (BLPH)

DC UPS - SITE ACCEPTANCE TEST PROCEDURE / PRE-COMMISSIONING / COMMISSIONING PROCEDURES

Document Number: 1724000372-QC-PRO-00018

Document Class: 2

01	31/01/2025	Accepted for Construction (AFC)	DA	DA	AD
00	21/10/2024	Issue for Review (IFR)	DA	DA	AD
Rev.	Date	Description	Prepared	Reviewed	Approved

3W power | a company of AEG POWER SOLUTIONS

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Revision / Change Log

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

HOLDS LIST

No.	Description
1	
2	
3	
4	

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Base Load Power Hub (BLPH)

DC UPS - TAG: UP-200F1

SITE ACCEPTANCE TEST / PRE-COMMISSIONING / COMMISSIONING PROCEDURE

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AEG POWER SOLUTIONS

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

Project name: Hollandse Kust Noord (HKN) wind farm	Order-No.: 4400007525

Configuration and Serial No.: **Installed:**

UP-200F1-A - Protect RCS TPRe 110V-100A - Serial No.: TPRE - 3855/01 ☑

UP-200F1-B - Protect RCS TPRe 110V-100A - Serial No.: TPRE - 3855/02 ☑

CB-200F1 - Battery Fuse Box 125A - Serial No.: ☑

BA-200F1 - Battery 110V-150Ah 9 x FLG12-150 ☑

Participants:	Company:	Date / Signature:
1. Anthony Nelson	Rosetti Marino	
2. Krzysztof Ostrycki	Rosetti Marino	
3. MATTIA GIROTTI	ROSETTI MARINO	
4. DAVIDE ZUCCONELLI	ROSETTI MARINO	
5.		

Remark:

Site Acceptance Test must be performed by a skilled AEG technician.

Josè Cuneo	Rev. 00	Cassina de' Pecchi	21.10.2024

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

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Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

1. Informations and Basic Datas:

SCOPE This procedure describes the methods for checking the DC UPS system, once installed on site, to ensure that it works correctly and it meets the operational requirements
REFERENCE DOCUMENTS 1724000372-EL-DA-00003 DC UPS - GENERAL ARRANGEMENT 1724000372-EL-DG-00006 DC UPS - SINGLE LINE DIAGRAM 1724000372-EL-DG-00008 DC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE 1724000372-EL-DG-00010 DC UPS - BATTERY LAYOUT AND INTERCONNECTION
TESTING EQUIPMENT & ACCESSORIES Digital Multimeter, Clamp-meter and Dummy Load

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

CHARGER A

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) 2,28 Charge voltage (V) 13,5

Output current (A) 100 Battery current limit (A) 100

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

CHARGER B

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) 2,28 Charge voltage (V) 13,5

Output current (A) 100 Battery current limit (A) 100

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

BATTERY

BATTERY

Type PLG-12-150 Capacity (Ah) 120,7 Number of strings / cells 9

Autonomy 30 MIN @ Load 10 kVA

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

2. Visual Inspection

1) Visual Check	Check
• Equipment installation aspects and details	✓
• Cleanliness of cabinets (internally and externally)	✓
• Fuses and Circuit breakers rating and related connection cables	✓
• Control switches and push-buttons	✓
• Components identification	✓
• Alarms identification	✓
• All connections fully tightened	✓
• Grounding connection	✓
• All labels correct	✓
2) Pre-Energization Check	
• Electronic cards and related connections	✓
• Relays	✓
• Cooling fans	✓
• Wiring and plugs connections	✓
• Fuses and fuse alarm contacts	✓
• Instruments	✓
• Power switches, circuit breakers and contacts	✓
• Marking of components	✓
• Cable polarity marking	✓
• Input phase marking	✓

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

3. Starting

Rectifier start	Result
Input phase sequence	OK CW
Float voltage correct setting	OK
High-rate voltage correct setting	OK

Starting procedure

Initial state : Charger is OFF
Input circuit breaker Q1 is open
Output switch (Q2) and battery switch (Q3) are open

Starting : Close output switch Q2
Charger is powered ON by closing the input circuit breaker Q1
Then close battery switch Q3
Only the charger subject to the test is ON
The mains is adjusted to its nominal value

Shut-down procedure

Initial state : Charger is ON
Input circuit breaker Q1 is closed
Output switch (Q2) and battery switch (Q3) are closed

Shut-down : Open input circuit breaker Q1
Charger is powered OFF
Then open the output switch Q2
The load is still connected to the battery through the switch Q3
Open the battery protection breaker (if the battery is connected)
Open the battery switch Q3

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

4. Functional tests:

Initial state : Charger is OFF
Input circuit breaker Q1 is open
Output switch (Q2) and battery switch (Q3) are open

Starting : Close output switch Q2
Charger is powered ON by closing the input circuit breaker Q1
Then close battery switch Q3
Only the charger subject to the test is ON
The mains is adjusted to its nominal value

Test description : The load is applied through a dummy load
The input and output electrical values shall remain within the acceptance criteria
The tests are done in floating and high rate mode

Rectifier and load output voltage : CHARGER 1

Mode	Rectifier output power	AC mains voltage	Rectifier output current	Rectifier output voltage to obtain (VBAT)	Measured rectifier output voltage	Load output voltage to obtain (VBAT-V21)	Measured load output voltage	Conformity (Yes/No)
Floating	100%	3x400Vac	10A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	Ok
High rate	100%	3x400Vac	10A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	Ok

(*) The rectifier voltage shall be corrected with the temperature compensation ratio if applicable.

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

Rectifier and load output voltage : CHARGER 2

Mode	Rectifier output power	AC mains voltage	Rectifier output current	Rectifier output voltage to obtain (VBAT)	Measured rectifier output voltage	Load output voltage to obtain (VBAT-V21)	Measured load output voltage	Conformity (Yes/No)
Floating	100%	3x400Vac	100A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	OK
High rate	100%	3x400Vac	100A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	OK

(*) The rectifier voltage shall be corrected with the temperature compensation ratio if applicable.

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

Parallel Operation (load transfer test)

Initial state : Both chargers are OFF
Input breakers (Q1) are open
Output switches (Q2) and battery switch (Q3) are open

Starting : Close output switches Q2
Chargers are powered ON by closing input breakers Q1
Battery switch Q3 remains open to simulate the worst condition (no battery)
The 2x chargers are now working and connected in parallel (floating mode)
The load is adjusted to 100% of the system nominal load
The mains is adjusted to its nominal value

Test description : To initiate the load transfer from redundant chargers to one charger, the relevant charger is stopped from mains
To initiate the load transfer to initial state, the relevant charger is turned ON from mains

Load transfer between the 2 chargers

Test	*Load transfer to charger 2*	*Recovery to initial state*	*Load transfer to charger 1*	*Recovery to initial state*
Acceptance criteria	No load supply interruption, the second charger takes 100% of the load	No load supply interruption. Return to dual redundant mode	No load supply interruption, the second charger takes 100% of the load	No load supply interruption. Return to dual redundant mode
Conclusion the test (OK/NOK)	Ok	Ok	Ok	Ok

Load sharing between the 2 chargers

Switching ON CHARGER 1 and CHARGER 2
Load sharing approx. 50%

Parallel operation with load sharing 50% of CHARGER 1 and CHARGER 2

Result: Ok

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

5. MODBUS Adapter

Incorporates Tests for:
MODBUS Adapter

Test to be performed for chosen failure messages, status messages and measuring values.

Designation	Checked
MODBUS Adapter	✓

MODBUS parameter table:

Label Lang. 1	Function	Value	Delay	Rel #	Rel. Qty	R. Latch	Led #	D. Latch	ShtDwn	Common	Label Lang. 2	ModBus Reg
HIGH MAINS VOLTS	Alarm	460,0 VAC	4s	1	1	---	0	---	---	Yes	V RED AC ALTA	40002
LOW MAINS VOLTS	Alarm	340,0 VAC	4s	1	1	---	0	---	---	Yes	V RED AC BAJA	40003
CHARGER FAULT	Alarm	NA	30s	2	1	---	0	---	---	Yes	FALLO CARGADOR	40004
HIGH BATT.VOLTS	Alarm	141,0 VDC	30s	0	1	---	0	---	---	Yes	V MAX BATERIA	40005
LOW BATT.VOLTS	Alarm	117,0 VDC	30s	5	1	---	0	---	---	Yes	V MIN BATERIA	40006
HIGH DC VOLTAGE	Alarm	147,0 VDC	10s	3	1	Yes	0	Yes	Yes	Yes	V MAX DC	40007
LOW DC VOLTAGE	Alarm	111,0 VDC	10s	4	1	---	0	---	---	Yes	V MIN DC	40008
Q1 OPEN	Alarm	0	4s	0	1	---	0	---	---	Yes	Q1 ABIERTO	40011
CTRL FLOATING	Forced Float	0	0s	0	1	---	0	---	---	---	CTRL FLOATING	40012
GROUND FAULT -	Alarm	0	4s	7	1	---	0	---	---	Yes	FALLO TIERRA -	40014
GROUND FAULT +	Alarm	0	4s	6	1	---	0	---	---	Yes	FALLO TIERRA +	40015
DISTRIB FAILURE	Alarm	0	4s	0	1	---	0	---	---	Yes	FALLO DISTRIB	40016
BATT SYMM FAULT	Alarm	0	4s	0	1	---	0	---	---	Yes	FALLO SIM. BAT.	40017
VENTILATION FAIL	Alarm	0	4s	0	1	---	0	---	---	Yes	FALLO VENTIL.	40018
CHARGER CURR.LIM	Alarm	NA	30s	0	1	---	0	---	---	Yes	I LIMIT. RECTIF	40019
HIGH CHARGR CURR	Alarm	110,0 A	10s	0	1	Yes	0	Yes	Yes	Yes	I RECTIFIC ALTA	40021
HIGH BATT. CURR	Alarm	16,5 A	10s	0	1	---	0	---	---	Yes	I BATERIA ALTA	40022
HIGH TEMPERATURE	Alarm	NA	0s	0	1	---	0	---	---	Yes	TEMPERATURA ALTA	40023
TEMP SENSE ERROR	Alarm	NA	0s	0	1	---	0	---	---	Yes	FALLO SONDA TEMP	40024
INTERNAL CHECK	Alarm	NA	0s	0	1	---	0	---	---	Yes	VERIF. INTERNA	40025
HIGH BATT. TEMP.	Alarm	45 °C	30s	0	1	---	0	---	---	Yes	TEMP. BAT. ALTA	40028
LONG CHARGE TIME	Alarm	NA	0s	0	1	---	0	---	---	Yes	TEMP CARGA LARGO	40030
NO PS VOLTAGE	Alarm	NA	0s	0	1	---	0	---	---	Yes	SIN ALIMENTACION	40031
CTRL FLOATING	Forced Float	0	0s	0	1	---	0	---	---	---	CTRL FLOATING	40034
ESD STOP BOOST	Alarm	4096	1s	0	1	---	0	---	---	Yes	ESD STOP BOOST	40035

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

6. Alarm Test:

Description	*Relay*	*Display*	*LED Box*	*Result (OK/NOK/Not applicable)*	
				CH 1	CH 2
MAINS FAULT	Yes	Yes	n.a.	OK	
RECTIFIER FAULT	Yes	Yes	n.a.	OK	
HIGH VOLTAGE C.C (147 Vdc)	Yes	Yes	n.a.	OK	
LOW VOLTAGE D.C. (111 Vdc)	Yes	Yes	n.a.	OK	
BATTERY LOW VOLTAGE (117 Vdc)	Yes	Yes	n.a.	OK	
EARTH FAULT +	Yes	Yes	n.a.	OK	
EARTH FAULT -	Yes	Yes	n.a.	OK	
COMMON ALARM	Yes	Yes	n.a.	OK	

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

7. Battery test:

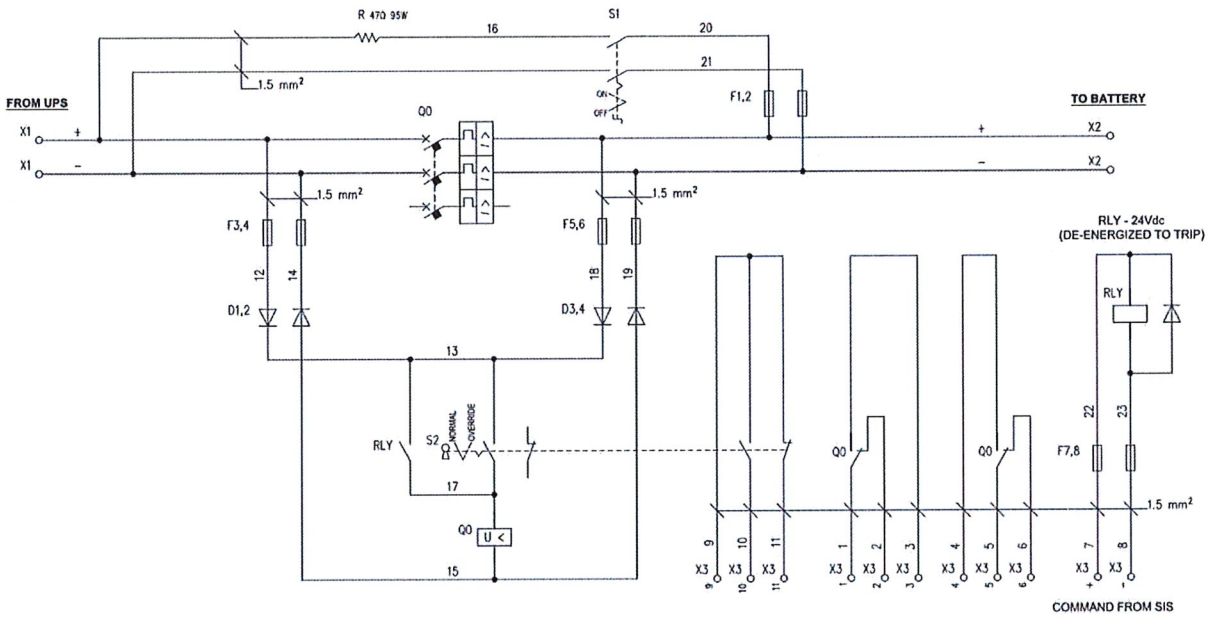
BATTERY		SHEET 1 REV.	OUR. RIF.:
		NR.:	
CUSTOMER: Rosetti Marino	DISCHARGE TEST (Capacity test)	BATTERY TYPE:	CAPACITY Ah
		ELECTROLYTE TYPE:	DENSITY:
Nr. of blocks	Type : *		

TIME (hour : min)	00:00	00:20	00:40	01:00	01:20	01:40	02:00	02:20	02:40	03:00	03:20	03:40	04:00	04:20	04:40	05:00
BLOCK N°	BLOCK / VOLTAGE															
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
TEMP. ELE. °C																

TIME (hour : min)	05:00	05:20	05:40	06:00	06:20	06:40	07:00	07:20	07:40	08:00	08:20	08:40	09:00	09:20	09:40	10:00
BLOCK N°	BLOCK / VOLTAGE															
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
TEMP. ELE. °C																

* SEE THE ITR's B IN PROVERCIS.
REF.: C1000 2792

8. Black start procedure validation test:



Black Start procedure

The target is to allow the energization of the loads from the battery, while the battery charger being still de-energized.

- The operator shall put the selector S2 on "override" position (contact closed)
- The operator shall close the selector S1 to pre-charge the charger output DC capacitors
- Once the charger DC capacitors are charged and the voltage across Q0 power contacts is close to 0V (and at least >80% of the system DC nominal voltage), the operator shall close the breaker Q0
- The operator shall open the selector S1
- The site safety and SCADA systems restart and the RLY relay is automatically energized when all safety conditions are fulfilled. The charger is energized through its AC supply and then it can restart
- The operator shall put the selector S2 on "normal" position (contact open)
- The system returns to normal working conditions

Designation	Checked
BLACK START procedure	✓

7.2 Proverlis Summary System Reports

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CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00

Electrical	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
83034-CEL	LV Switchgear / DC Battery System - Switchgears Control - Feeder A	ONSHORE	C10000559	CPX09	100	2024-10-24	RFC 2
83035-CEL	LV Switchgear / DC Battery System - Switchgears Control - Feeder B	ONSHORE	C10000560	CPX09	100	2024-10-24	RFC 2
83124-CEL	Lighting & Small Power DB BoP / DC BATTERY SYSTEM AUXILIARY	ONSHORE	C10002110	CPX09	100	2024-10-24	RFC 2
84110-CEC	Isolation Battery Box for DC UPS 10 kVA / DC UPS 10 kVA Redundant System	ONSHORE	C10002341	CPX10	100	2024-10-30	RFC 2
84111-CEC	Isolation Battery Box for DC UPS 10 kVA / DC UPS 10 kVA Redundant System	ONSHORE	C10002342	CPX10	100	2024-10-25	RFC 2
84111-CEL-1-N	DC UPS - Charger / DC UPS - Battery Isolator	ONSHORE	C10000659	CPX09	100	2024-10-25	RFC 2
84111-CEL-1-P	DC UPS - Charger / DC UPS - Battery Isolator	ONSHORE	C10000658	CPX09	100	2024-10-25	RFC 2
84111-CEL-2-N	DC UPS - Battery Isolator / DC UPS - Battery	ONSHORE	C10000661	CPX09	100	2024-10-25	RFC 2
84111-CEL-2-P	DC UPS - Battery Isolator / DC UPS - Battery	ONSHORE	C10000660	CPX09	100	2024-10-25	RFC 2
A7/+03-QF1	DRAWER INCOMER A UPS - A7/+03-QF1	ONSHORE	C10002782	FP00	100	2024-11-08	-
		ONSHORE	C10002783	FTR-2	100	2024-09-20	-
		ONSHORE	C10002784	FTR-6	100	2024-10-02	-
		ONSHORE	C10003004	FTR-5	0	-	-
A7/+04-QF1	DRAWER INCOMER B UPS - A7/+04-QF1	ONSHORE	C10002785	FP00	100	2024-11-08	-
		ONSHORE	C10002786	FTR-2	100	2024-09-20	-
		ONSHORE	C10002787	FTR-6	100	2024-10-02	-
		ONSHORE	C10003005	FTR-5	0	-	-
BA-200F1	Battery Bank for DC UPS 10 kVA	ONSHORE	C10000846	CPX17	100	2024-10-30	RFC 2
		ONSHORE	C10002794	FTR-3	100	2024-11-18	-
BA-200F1-C	UPS DC - BA-200F1-C	ONSHORE	C10002792	FTR-4	100	2024-11-12	-
BA-200F1-D	UPS DC - BA-200F1-D	ONSHORE	C10002793	FTR-4	100	2024-11-12	-
CB-200F1	Isolator Battery Box for DC UPS 10 kVA	ONSHORE	C10000853	CPX00	100	2024-10-30	RFC 2
CB-200F1-QB	BATTERY CUTOFF UPS DC - CB-200F1-QB	ONSHORE	C10002788	FTR-2	100	2024-11-08	-
DP-200N1-Q43	BREAKER AUX UPS DC - DP-200N1-Q43	ONSHORE	C10002789	FTR-2	100	2024-10-28	-
UP-200F1	DC UPS 10 kVA Redundant System	ONSHORE	C10000870	CPX16	100	2024-10-30	RFC 2
		ONSHORE	C10002790	FP16B	100	2025-03-12	-
		ONSHORE	C10002791	FTR-6	100	2025-03-12	-
UP-200F1-Q14	SPARE	ONSHORE	C10004595	FTR-2	100	2024-11-08	-
UP-200F1-Q15	SPARE	ONSHORE	C10004596	FTR-2	100	2024-11-08	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00

Electrical	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
UP-200F1-Q16	SPARE	ONSHORE	C10004597	FTR-2	100	2024-11-08	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00

Instrumental	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
84-XS-006	DISCONNECT DC UPS (B-100 CONTAINER)	ONSHORE	C10003818	FJ01D	100	2025-01-28	-
84-XS-009	INHIBIT. BATTERY CHARGING B-100	ONSHORE	C10003813	FJ01D	100	2025-01-28	-
C-CB-200F1/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	ONSHORE	C10000192	CJX10	100	2024-11-25	RFC 2
C-UP-200F1/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	ONSHORE	C10000193	CJX10	100	2024-11-30	RFC 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00

Telecom	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
UP-200F1/B400-NET-001.01	COMMUNICATION / EMCS SYSTEM	ONSHORE	C10004368	CIX09	100	2024-11-22	RFC 2
UP-200F1/B400-NET-001.02	COMMUNICATION / EMCS SYSTEM	ONSHORE	C10004369	CIX09	100	2024-11-22	RFC 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-00

Miscellaneous	84-00 DC 10 kVA UPS System (UP-200F1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03050	OTP - UPS System UP-200F1 10kVA	ONSHORE	C10004627	5300	99	-	-

7.3 Equipment Related Technical Queries

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7.4 As Built Documentation

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7.5 Management of Change – Summary Table of Tasks and Details of Affected Related Documentation

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Zucconelli Davide (ERM)

Da: Ken Rose <ken.rose@kbr.com>
Inviato: martedì 4 febbraio 2025 16:32
A: Madaschi Andrea (Rosetti)
Cc: Giunchi Claudia (Rosetti)
Oggetto: RE: [External] 123A90 - CW - DC UPS voltage output range

Proprietary \ Company Highly Confidential

Hi Andrea,

As discussed in our meeting yesterday, I support Solution B for the 110VDC UPS system in the HV Switchroom for the following reasons:

1. Autonomy time is ~ 2hrs – this meets the project specification on 60mins (min)
2. UPS can support load on 3.6kVA for duration
3. Max. battery voltage is 121V DC which is suitable for switchgear
4. End of discharge voltage is 99V (110V -10%) which is acceptable

This solution also does not impact project timing – the additional battery block can be used s spare.

Hope that answers your queries.

Best Regards

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Integrated Solutions International
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Mobile: +44 7552 823 512
Ken.Rose@kbr.com

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Reg. Office: Hill Park Court, Springfield Drive, Leatherhead, Surrey, KT22 7NL

We deliver science, technology and engineering solutions to governments and companies around the world.

From: Madaschi Andrea (Rosetti) <Andrea.Madaschi@rosetti.it>
Sent: Tuesday, January 28, 2025 4:45 PM
To: Ken Rose <ken.rose@kbr.com>
Subject: [External] 123A90 - CW - DC UPS voltage output range

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Ken,
referring to the DC UPS as you know, currently we have installed and connect only 9 battery blocks instead of how engineered (10 battery blocks).

This happened because the voltage output from the DC UPS system to the loads is not in the range 110V ±10%. During this time, we investigated with Vendor all possible solutions to have correct range and load consumption. Below you an find the possibilities that we received from AEG:

Solution A

1) Install 10 battery blocks
    - Autonomy time ~2 hours and 15min @3.6kVA of Load
2) Install a **DC Voltage Dropper or DC/DC Converter** to reduce the output voltage range
    - There is no space inside the DC UPS panel so it is needed to install another small cabinet [600(L)x800(W)x1300(H)] in B100 container
    - For installing this new cabinet (IP43), it is needed to:
        - remove the current floor arrangement
        - weld counter frame to the structure of the container, already painted, (as per other cabinet already present) in order to fix the new cabinet
        - adding a small vertical cable tray/ladder from Top of the cabinet to main cable way
        - pulling the cables (power and control) between DC UPS cabinet and this new cabinet
3) desk relocation nearest to the EST direction door, with the risk to occupy the maintenance area required by IMESA in front SG-100D1
4) preliminary delivery time (not confirmed from Vendor factory) is 14-18 weeks, plus the shipment and the working time for installation.
5) DC UPS cabinet modification

<u>NOTE= if solution is pursued, we estimate to STOP all activity in order to install and test new cabinet, especially the Commissioning.</u>

Solution B

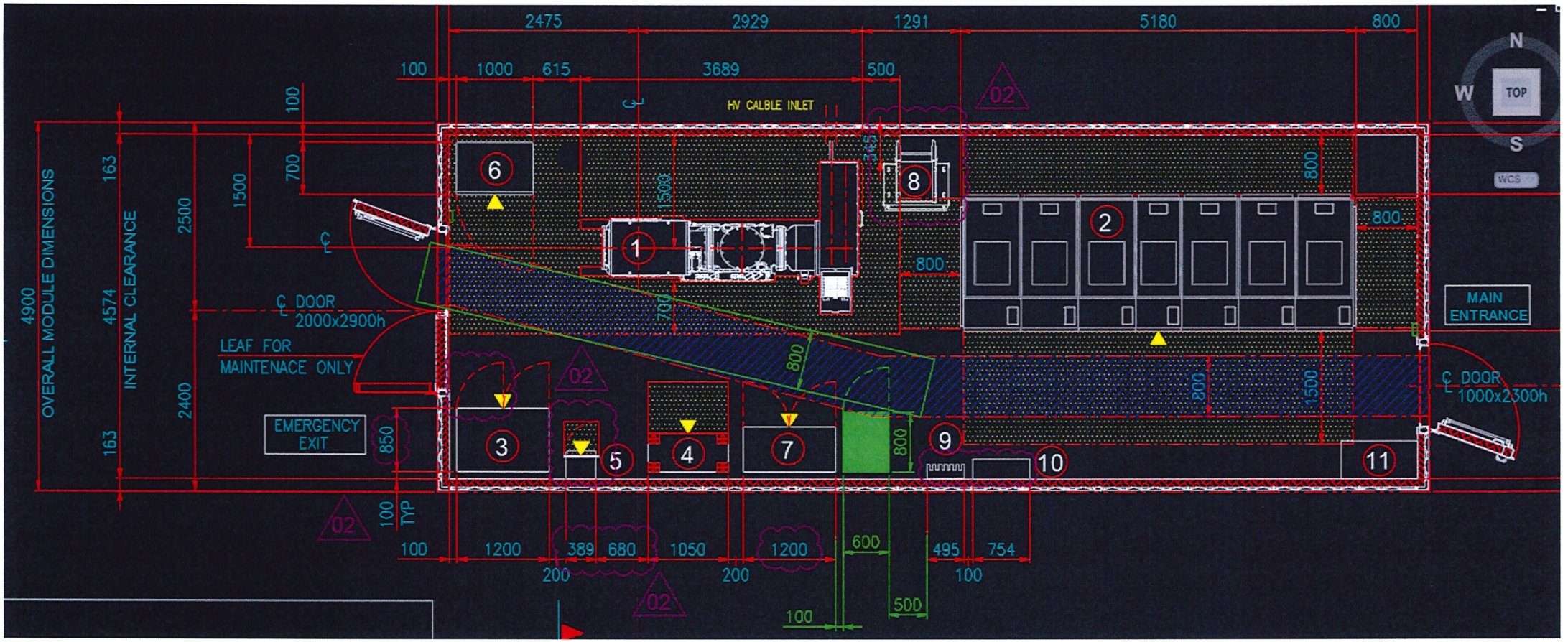
1) maintain 9 battery blocks
    - autonomy time ~2 hours @3.6kVA of Load
2) with this configuration:
    - using the minimum charging voltage given on the manufacturer's datasheet (13.5 Vblock), the maximum battery voltage is 121.5V (or about 121V as a few tenths of volt are lost in the cable).
    - battery sizing provides an end discharge voltage of 1.83 Vcell and therefore in total 99V (as 110V-10%)
        - NOTE: each block has 6 cells

In my opinion, at this point of time of the project, the best solution is to go on with Solution B that will not impact our activities. We can also consider the not installed battery block as a spare part to be used in case of any damage.

Here attach you can find:

- battery block data sheet → *FAAM_FLG_12_150_Battery__datasheet*
- updated calculation with 9 battery blocks @ 3.6kVA → *Calcolo IEEE 485__3600Wh*
- evaluation of new cabinet (green) location → *123A90-DDL-EL-DL-20104_20250128* (here below the snapshot)

I remain available for any discussion on.
Thank you for your cooperation
BR,
Andrea


2475
2929
1291
5180
800
100
1000
615
3689
500
HV CALBLE INLET
02
N
W
TOP
S
WCS
OVERALL MODULE DIMENSIONS
4900
INTERNAL CLEARANCE
4574
163
2500
2400
1500
700
100
C DOOR
2000x2900h
LEAF FOR
MAINTENACE ONLY
EMERGENCY
EXIT
850
MAIN
ENTRANCE
C DOOR
1000x2300h
1500
800
600
495
754
389
680
1050
1200
200
100
500
TYP
1
2
3
4
5
6
7
8
9
10
11

7.6 ANNEX CHARGE-DISCHARGE BATTERY RECORDS

7.6.1 ANNEX 001 12h CAPACITY CHARGE TEST RECORD

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F1 10kVA

UP-200F1 [ANNEX001]

SUBSYSTEM 84-00: BATTERY FIRST CHARGE RECORD SHEET DURATION 12HOURS

BATTERY RACK UPS-BAT-1 | 12h CAPACITY CHARGE TEST RECORD

N° Hours	0,00	0,30	1,00	1,30	2,00	2,30	3,00	3,30	4,00	4,30	5,00	5,30	6,00	6,30	7,00	7,30	8,00	8,30	9,00	9,30	10,00	10,30	11,00	11,30	12,00	Note:
Time (hh:mm)																										
Charge Voltage (V)																										14,4 V ÷ 15,0 V at 20°C
Charge Current (A)																										INITIAL CHARGING CURRENT < 45A
Ambient Temp. (°C)																										
Battery Cell Temp. (°C)																										
Battery N°	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	
4																										FAAM BATTERY, TYPE FLG 12-150 A
5																										FAAM BATTERY, TYPE FLG 12-150 A
6																										FAAM BATTERY, TYPE FLG 12-150 A
7																										FAAM BATTERY, TYPE FLG 12-150 A
8																										FAAM BATTERY, TYPE FLG 12-150 A
9																										FAAM BATTERY, TYPE FLG 12-150 A
10																										FAAM BATTERY, TYPE FLG 12-150 A
TERMINAL VOLT. n.1°n.10																										FAAM BATTERY, TYPE FLG 12-150 A

Pagina 1

Table 7: DATA RECORD SHEET CHARGE BATTERY BANK

7.6.2 ANNEX 002 BEFORE DISCHARGE

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F1 10kVA

UP-200F1 [ANNEX 002]

SUBSYSTEM 84-00: BATTERY CHARGE / DISCHARGE RECORD SHEET

EQUIPMENT	BATTERY RACK UP-200F1	TEST MEASUREMENT:	ANNEX XX: BEFORE DISCHARGE

BATTERY BANK TERMINAL VOLTAGE

AMBIENT TEMPERATURE .....°C BATTERY TEMPERATURE .....°C

CELL N°	TAG UTILITY / TYPE	MANIFACTURER	MODEL	LOCATION	VOLTAGE (V)	DATE	TIME	REMARKS
1	FAAM,TYPE FLG 12-150 Ah							
2	FAAM,TYPE FLG 12-150 Ah							
3	FAAM,TYPE FLG 12-150 Ah							
4	FAAM,TYPE FLG 12-150 Ah							
5	FAAM,TYPE FLG 12-150 Ah							
6	FAAM,TYPE FLG 12-150 Ah							
7	FAAM,TYPE FLG 12-150 Ah							
8	FAAM,TYPE FLG 12-150 Ah							
9	FAAM,TYPE FLG 12-150 Ah							
10	FAAM,TYPE FLG 12-150 Ah							

Pagina 1

Table 8: DATA RECORD SHEET BEFORE DISCHARGE BATTERY BANK

7.6.3 ANNEX 003 BATTERY DISCHARGE TEST RECORD WITH APPLIED LOAD RESISTIVE BANK

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F1 10kVA

UPS UP-200F1 [ANNEX 003]
SUBSYSTEM 84-00: BATTERY DISCHARGE RECORD SHEET

ROSETTI MARINO

	BATTERY RACK' UPS-BAT-1													10h CAPACITY DISCHARGE TEST RECORD WITH APPLIED RESISTIVE LOAD BANK							
N° Hours	0,00	0,30	1,00	1,30	2,00	2,30	3,00	3,30	4,00	4,30	5,00	5,30	6,00	6,30	7,00	7,30	8,00	8,30	9,00	9,30	10,00	Note:
Time (hh:mm)																						
Discharge Power (W)																						179W .....W
Discharge Current (A)																						13,50A .....A
Ambient Temp. (°C)																						
Battery Cell Temp. (°C)																						
Battery Cell N°	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	
1																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						

Pagina 1

Table 9: DATA RECORD SHEET DISCHARGE BATTERY BANK

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)

Base Load Power Hub (BLPH)

DC UPS - SITE ACCEPTANCE TEST PROCEDURE / PRE-COMMISSIONING / COMMISSIONING PROCEDURES

Document Number: 1724000372-QC-PRO-00018

Document Class: 2

01	31/01/2025	Accepted for Construction (AFC)	DA	DA	AD
00	21/10/2024	Issue for Review (IFR)	DA	DA	AD
Rev.	Date	Description	Prepared	Reviewed	Approved

3W power | a company of AEG POWER SOLUTIONS

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Revision / Change Log

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

HOLDS LIST

No.	Description
1	
2	
3	
4	

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Description	Sheet
COVER	1
REVISION / CHANGE LOG	2
HOLDS LIST	2
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DC UPS - TAG: UP-200F1	4

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Base Load Power Hub (BLPH)

DC UPS - TAG: UP-200F1

SITE ACCEPTANCE TEST / PRE-COMMISSIONING / COMMISSIONING PROCEDURE

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AEG POWER SOLUTIONS

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

Project name: Hollandse Kust Noord (HKN) wind farm	Order-No.: 4400007525

Configuration and Serial No.: **Installed:**

UP-200F1-A - Protect RCS TPRe 110V-100A - Serial No.: TPRE - 3855/01 ☑

UP-200F1-B - Protect RCS TPRe 110V-100A - Serial No.: TPRE - 3855/02 ☑

CB-200F1 - Battery Fuse Box 125A - Serial No.: ☑

BA-200F1 - Battery 110V-150Ah 9 x FLG12-150 ☑

Participants:	Company:	Date / Signature:
1. Anthony Nelson	Rosetti Marino	
2. Krzysztof Ostrycki	Rosetti Marino	
3. MATTIA GIROTTI	ROSETTI MARINO	
4. DAVIDE ZUCCONELLI	ROSETTI MARINO	
5.		

Remark:

Site Acceptance Test must be performed by a skilled AEG technician.

Josè Cuneo	Rev. 00	Cassina de' Pecchi	21.10.2024

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

Content:

1. Informations and Basic Datas: 3
2. Visual Inspection 5
3. Starting 6
4. Functional tests: 7
5. MODBUS Adapter 10
6. Alarm Test: 11
7. Battery test: 12
8. Black start procedure validation test: 13

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

1. Informations and Basic Datas:

SCOPE This procedure describes the methods for checking the DC UPS system, once installed on site, to ensure that it works correctly and it meets the operational requirements
REFERENCE DOCUMENTS 1724000372-EL-DA-00003 DC UPS - GENERAL ARRANGEMENT 1724000372-EL-DG-00006 DC UPS - SINGLE LINE DIAGRAM 1724000372-EL-DG-00008 DC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE 1724000372-EL-DG-00010 DC UPS - BATTERY LAYOUT AND INTERCONNECTION
TESTING EQUIPMENT & ACCESSORIES Digital Multimeter, Clamp-meter and Dummy Load

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

CHARGER A

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) 2,28 Charge voltage (V) 13,5

Output current (A) 100 Battery current limit (A) 100

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

CHARGER B

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) 2,28 Charge voltage (V) 13,5

Output current (A) 100 Battery current limit (A) 100

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

BATTERY

BATTERY

Type PLG-12-150 Capacity (Ah) 120,7 Number of strings / cells 9

Autonomy 30 MIN @ Load 10 kVA

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

2. Visual Inspection

1) Visual Check	Check
• Equipment installation aspects and details	✓
• Cleanliness of cabinets (internally and externally)	✓
• Fuses and Circuit breakers rating and related connection cables	✓
• Control switches and push-buttons	✓
• Components identification	✓
• Alarms identification	✓
• All connections fully tightened	✓
• Grounding connection	✓
• All labels correct	✓
2) Pre-Energization Check	
• Electronic cards and related connections	✓
• Relays	✓
• Cooling fans	✓
• Wiring and plugs connections	✓
• Fuses and fuse alarm contacts	✓
• Instruments	✓
• Power switches, circuit breakers and contacts	✓
• Marking of components	✓
• Cable polarity marking	✓
• Input phase marking	✓

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

3. Starting

Rectifier start	Result
Input phase sequence	OK CW
Float voltage correct setting	OK
High-rate voltage correct setting	OK

Starting procedure

Initial state : Charger is OFF
Input circuit breaker Q1 is open
Output switch (Q2) and battery switch (Q3) are open

Starting : Close output switch Q2
Charger is powered ON by closing the input circuit breaker Q1
Then close battery switch Q3
Only the charger subject to the test is ON
The mains is adjusted to its nominal value

Shut-down procedure

Initial state : Charger is ON
Input circuit breaker Q1 is closed
Output switch (Q2) and battery switch (Q3) are closed

Shut-down : Open input circuit breaker Q1
Charger is powered OFF
Then open the output switch Q2
The load is still connected to the battery through the switch Q3
Open the battery protection breaker (if the battery is connected)
Open the battery switch Q3

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

4. Functional tests:

Initial state : Charger is OFF
Input circuit breaker Q1 is open
Output switch (Q2) and battery switch (Q3) are open

Starting : Close output switch Q2
Charger is powered ON by closing the input circuit breaker Q1
Then close battery switch Q3
Only the charger subject to the test is ON
The mains is adjusted to its nominal value

Test description : The load is applied through a dummy load
The input and output electrical values shall remain within the acceptance criteria
The tests are done in floating and high rate mode

Rectifier and load output voltage : CHARGER 1

Mode	Rectifier output power	AC mains voltage	Rectifier output current	Rectifier output voltage to obtain (VBAT)	Measured rectifier output voltage	Load output voltage to obtain (VBAT-V21)	Measured load output voltage	Conformity (Yes/No)
Floating	100%	3x400Vac	10A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	Ok
High rate	100%	3x400Vac	10A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	Ok

(*) The rectifier voltage shall be corrected with the temperature compensation ratio if applicable.

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

Rectifier and load output voltage : CHARGER 2

Mode	Rectifier output power	AC mains voltage	Rectifier output current	Rectifier output voltage to obtain (VBAT)	Measured rectifier output voltage	Load output voltage to obtain (VBAT-V21)	Measured load output voltage	Conformity (Yes/No)
Floating	100%	3x400Vac	100A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	OK
High rate	100%	3x400Vac	100A	~~136,8V~~ +/-1%	120,3 V	~~136,1V~~+/-1%	120,3 V	OK

(*) The rectifier voltage shall be corrected with the temperature compensation ratio if applicable.

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

Parallel Operation (load transfer test)

Initial state : Both chargers are OFF
Input breakers (Q1) are open
Output switches (Q2) and battery switch (Q3) are open

Starting : Close output switches Q2
Chargers are powered ON by closing input breakers Q1
Battery switch Q3 remains open to simulate the worst condition (no battery)
The 2x chargers are now working and connected in parallel (floating mode)
The load is adjusted to 100% of the system nominal load
The mains is adjusted to its nominal value

Test description : To initiate the load transfer from redundant chargers to one charger, the relevant charger is stopped from mains
To initiate the load transfer to initial state, the relevant charger is turned ON from mains

Load transfer between the 2 chargers

Test	*Load transfer to charger 2*	*Recovery to initial state*	*Load transfer to charger 1*	*Recovery to initial state*
Acceptance criteria	No load supply interruption, the second charger takes 100% of the load	No load supply interruption. Return to dual redundant mode	No load supply interruption, the second charger takes 100% of the load	No load supply interruption. Return to dual redundant mode
Conclusion the test (OK/NOK)	Ok	Ok	Ok	Ok

Load sharing between the 2 chargers

Switching ON CHARGER 1 and CHARGER 2
Load sharing approx. 50%

Parallel operation with load sharing 50% of CHARGER 1 and CHARGER 2

Result: Ok

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

5. MODBUS Adapter

Incorporates Tests for:
MODBUS Adapter

Test to be performed for chosen failure messages, status messages and measuring values.

Designation	Checked
MODBUS Adapter	✓

MODBUS parameter table:

Label Lang. 1	Function	Value	Delay	Rel #	Rel. Qty	R. Latch	Led #	D. Latch	ShtDwn	Common	Label Lang. 2	ModBus Reg
HIGH MAINS VOLTS	Alarm	460,0 VAC	4s	1	1	---	0	---	---	Yes	V RED AC ALTA	40002
LOW MAINS VOLTS	Alarm	340,0 VAC	4s	1	1	---	0	---	---	Yes	V RED AC BAJA	40003
CHARGER FAULT	Alarm	NA	30s	2	1	---	0	---	---	Yes	FALLO CARGADOR	40004
HIGH BATT.VOLTS	Alarm	141,0 VDC	30s	0	1	---	0	---	---	Yes	V MAX BATERIA	40005
LOW BATT.VOLTS	Alarm	117,0 VDC	30s	5	1	---	0	---	---	Yes	V MIN BATERIA	40006
HIGH DC VOLTAGE	Alarm	147,0 VDC	10s	3	1	Yes	0	Yes	Yes	Yes	V MAX DC	40007
LOW DC VOLTAGE	Alarm	111,0 VDC	10s	4	1	---	0	---	---	Yes	V MIN DC	40008
Q1 OPEN	Alarm	0	4s	0	1	---	0	---	---	Yes	Q1 ABIERTO	40011
CTRL FLOATING	Forced Float	0	0s	0	1	---	0	---	---	---	CTRL FLOATING	40012
GROUND FAULT -	Alarm	0	4s	7	1	---	0	---	---	Yes	FALLO TIERRA -	40014
GROUND FAULT +	Alarm	0	4s	6	1	---	0	---	---	Yes	FALLO TIERRA +	40015
DISTRIB FAILURE	Alarm	0	4s	0	1	---	0	---	---	Yes	FALLO DISTRIB	40016
BATT SYMM FAULT	Alarm	0	4s	0	1	---	0	---	---	Yes	FALLO SIM. BAT.	40017
VENTILATION FAIL	Alarm	0	4s	0	1	---	0	---	---	Yes	FALLO VENTIL.	40018
CHARGER CURR.LIM	Alarm	NA	30s	0	1	---	0	---	---	Yes	I LIMIT. RECTIF	40019
HIGH CHARGR CURR	Alarm	110,0 A	10s	0	1	Yes	0	Yes	Yes	Yes	I RECTIFIC ALTA	40021
HIGH BATT. CURR	Alarm	16,5 A	10s	0	1	---	0	---	---	Yes	I BATERIA ALTA	40022
HIGH TEMPERATURE	Alarm	NA	0s	0	1	---	0	---	---	Yes	TEMPERATURA ALTA	40023
TEMP SENSE ERROR	Alarm	NA	0s	0	1	---	0	---	---	Yes	FALLO SONDA TEMP	40024
INTERNAL CHECK	Alarm	NA	0s	0	1	---	0	---	---	Yes	VERIF. INTERNA	40025
HIGH BATT. TEMP.	Alarm	45 °C	30s	0	1	---	0	---	---	Yes	TEMP. BAT. ALTA	40028
LONG CHARGE TIME	Alarm	NA	0s	0	1	---	0	---	---	Yes	TEMP CARGA LARGO	40030
NO PS VOLTAGE	Alarm	NA	0s	0	1	---	0	---	---	Yes	SIN ALIMENTACION	40031
CTRL FLOATING	Forced Float	0	0s	0	1	---	0	---	---	---	CTRL FLOATING	40034
ESD STOP BOOST	Alarm	4096	1s	0	1	---	0	---	---	Yes	ESD STOP BOOST	40035

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

6. Alarm Test:

Description	*Relay*	*Display*	*LED Box*	*Result (OK/NOK/Not applicable)*	
				CH 1	CH 2
MAINS FAULT	Yes	Yes	n.a.	OK	
RECTIFIER FAULT	Yes	Yes	n.a.	OK	
HIGH VOLTAGE C.C (147 Vdc)	Yes	Yes	n.a.	OK	
LOW VOLTAGE D.C. (111 Vdc)	Yes	Yes	n.a.	OK	
BATTERY LOW VOLTAGE (117 Vdc)	Yes	Yes	n.a.	OK	
EARTH FAULT +	Yes	Yes	n.a.	OK	
EARTH FAULT -	Yes	Yes	n.a.	OK	
COMMON ALARM	Yes	Yes	n.a.	OK	

Site Acceptance Test Report		Document-No.: 14189_SAT_1_00
Type:	DC UPS System	Tag No.: UP-200F1

7. Battery test:

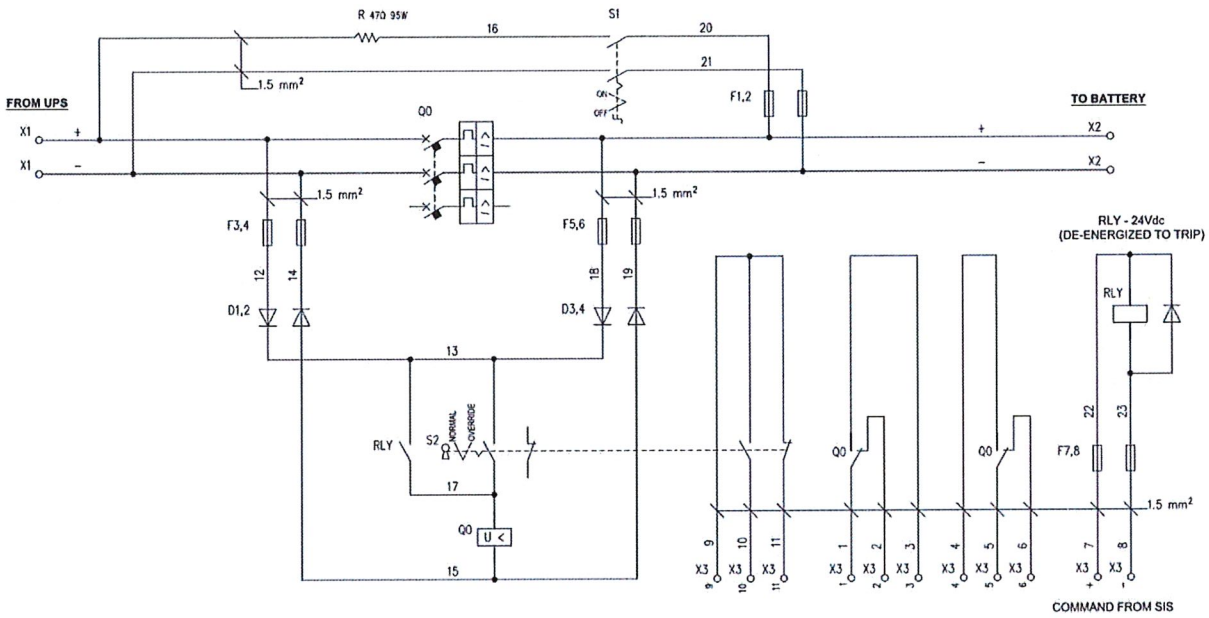
BATTERY		SHEET 1 REV.	OUR. RIF.:
		NR.:	
CUSTOMER: Rosetti Marino	DISCHARGE TEST (Capacity test)	BATTERY TYPE:	CAPACITY Ah
		ELECTROLYTE TYPE:	DENSITY:
Nr. of blocks	Type : *		

TIME (hour : min)	00:00	00:20	00:40	01:00	01:20	01:40	02:00	02:20	02:40	03:00	03:20	03:40	04:00	04:20	04:40	05:00
BLOCK N°	BLOCK / VOLTAGE															
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
TEMP. ELE. °C																

TIME (hour : min)	05:00	05:20	05:40	06:00	06:20	06:40	07:00	07:20	07:40	08:00	08:20	08:40	09:00	09:20	09:40	10:00
BLOCK N°	BLOCK / VOLTAGE															
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
TEMP. ELE. °C																

* SEE THE ITR's B IN PROVERCIS.
REF.: C1000 2792

8. Black start procedure validation test:



Black Start procedure

The target is to allow the energization of the loads from the battery, while the battery charger being still de-energized.

- The operator shall put the selector S2 on "override" position (contact closed)
- The operator shall close the selector S1 to pre-charge the charger output DC capacitors
- Once the charger DC capacitors are charged and the voltage across Q0 power contacts is close to 0V (and at least >80% of the system DC nominal voltage), the operator shall close the breaker Q0
- The operator shall open the selector S1
- The site safety and SCADA systems restart and the RLY relay is automatically energized when all safety conditions are fulfilled. The charger is energized through its AC supply and then it can restart
- The operator shall put the selector S2 on "normal" position (contact open)
- The system returns to normal working conditions

Designation	Checked
BLACK START procedure	✓

Section 7.3 Vendor Spares & Special Tools lists references

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	COMMISSIONING AND 2-YEARS SPARE PARTS LIST				
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°	1724000372-EL-LIS-00026	Rev.: ISSUED FOR REVIEW (IFR)	Rev. Date: 00 - 10/10/2024	Status: IFR	Class: 2

The equipment consists of the following units/components

1	Tag no.	UP-200F3 A/B	UP-200F4 A/B	UP-200F1 A/B		
2	Tag description	PROTECT 8.33 S10 40KVA IP43	PROTECT 8.33 S10 20KVA IP43	PROTECT RCS TPRE 110V-100A		
3	Manufacturer model/type no.	PROTECT 8.33 S10 40KVA	PROTECT 8.33 S10 20KVA	PROTECT RCS TPRE 110V-100A		
4	Manufacturer serial no.					
5	No. of units	2	2	2		
6	Quantity of parts FITTED / INSTALLED per unit/component	18	18	-	-	-
		8	8	-	-	-
		2	2	-	-	-
		2	2	-	-	-
		2	2	-	-	-
		2	2	-	-	-
		2	2	-	-	-
		2	2	-	-	-
		-	-	32	-	-
		-	-	8	-	-
		-	-	2	-	-
		-	-	2	-	-

Supplier:	AEG POWER SOLUTIONS / 3W POWER S.p.A.																											
Address:	VIA ROMA 108 CASSINA DE' PECCHI (MI) ITALY																											
PO Number:	1724000372 123A90A																											
PO description:	AC AND DC UPS SYSTEMS																											
Supplier telephone no:	+39 348 1567 197																											
E-mail:	alberto.dall_asta@aegps.com																											
Contact name:	Mr. ALBERTO DALL'ASTA																											
Contact mobile no:																												
WEBSITE	www.aegps.com																											
General Information:																												

	MATERIALS DATA																						Commissioning spares	2 Years spares	
Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certificate Type (if applicable)	Certificate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Quantity ordered	Quantity ordered	Remarks
			Project Datasheet no.	Project Detail dwg. no.	Item ref.																	
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	36	FUSE 6,3 X 32 F5A 500VAC	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	FUSE	-		5								40000167	40000167	AEG POWER SOLUTIONS	20	-	REF: A8-A92.1-F1/F2/F3 - A8-A92.2-F1/F2/F3/F6/F7/F8
2	16	G-FUSE 6,3 X 32 F4A 440V KTA/UL	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	FUSE	-		5								40000185	40000185	AEG POWER SOLUTIONS	20	-	REF: A8-A92.1-F4/F5 - A8-A92.2-F4/F5
3	4	FUSE 6,3 X 32 T8A 500VAC KTA	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	FUSE	-		5								40003889	40003889	AEG POWER SOLUTIONS	20	-	REF: A8-A92.1-F6
4	4	G-FUSE 6,3 X 32 M2A 500V	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	FUSE	-		5								40007485	40007485	AEG POWER SOLUTIONS	20	-	REF: A8-A92.1-F9
5	4	619 ADD. REMOTE SIGNAL. OPTION-2 F UPS	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	BOARD	-		5								20001839	20001839	AEG POWER SOLUTIONS	-	2	REF: A13
6	4	261 SBS INTERFACE P8 3-PHASE	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	BOARD	-		5								20000239	20000239	AEG POWER SOLUTIONS	-	2	REF: A16
7	4	261 INVERTER INTERFACE P8 3-PHASE	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	BOARD	-		5								20000240	20000240	AEG POWER SOLUTIONS	-	2	REF: A17
8	4	261 RECTIFIER INTERFACE P8	1724000372-EL-DS-00005	1724000372-EL-DG-00009	-	BOARD	-		5								20000235	20000235	AEG POWER SOLUTIONS	-	2	REF: A20
9	32	FUSE CER. 5 X 20 T3,15A 250VAC	1724000372-EL-DS-00005	1724000372-EL-DG-00008	-	FUSE	-		5								ES274292	ES274292	AEG POWER SOLUTIONS	10	-	REF: A30-F1/F5/F12/F13/F22/F23/F31/F73/F100
10	8	CYL. FUSE 5 X 20 2,5A SP 380V S	1724000372-EL-DS-00005	1724000372-EL-DG-00008	-	FUSE	-		5								ES213368	ES213368	AEG POWER SOLUTIONS	10	-	REF: F25/F32
11	2	PCB EQUIP. GCAU V3 VERNISH	1724000372-EL-DS-00005	1724000372-EL-DG-00008	-	BOARD	-		5								ES272500	ES272500	AEG POWER SOLUTIONS	-	1	REF: A1
12	2	PCB RELAY PROTECT RCS VARNISH	1724000372-EL-DS-00005	1724000372-EL-DG-00008	-	BOARD	-		5								ES228540	ES228540	AEG POWER SOLUTIONS	-	1	REF: CR1-A5
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						

Section 7.4 Vendor Data / Operations / Maintenance Manuals References

1 2 3 4 5 6 7 8 9 10

A

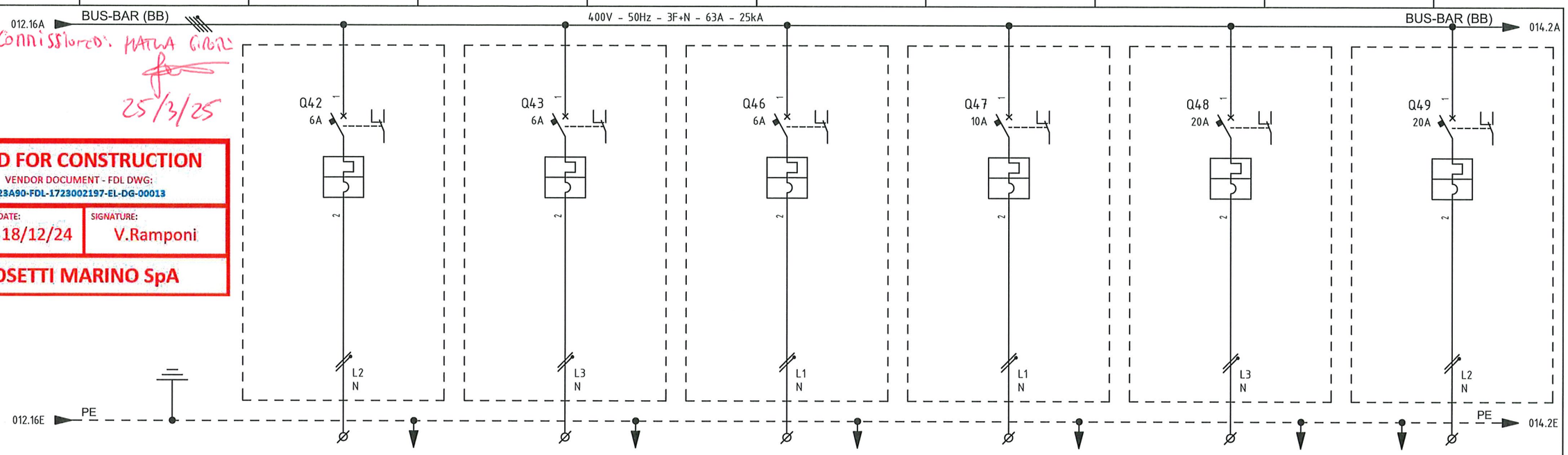
AS Commissioned. NATALIA GIBIL
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1723002197-EL-DG-00013

REV.:	DATE:	SIGNATURE:
4_A	18/12/24	V.Ramponi

ROSETTI MARINO SpA

B



C

ITEM			1	UP-200F4		UP-200F1		-		-		-		-	
UTILITY			2	AC UPS F&G AUXILIARY		DC BATTERY SYSTEM AUXILIARY		INS CABINET - SPARE AUXILIARY		SPARE		SPARE		SPARE	
CUBICLE			3	+03		+03		+03		+03		+03		+03	
RATED POWER	RATED CURRENT		4/5	0.2 KW	0.82 A	0.2 KW	0.82 A	0.5 KW	2.72 A	1 KW	5.43 A	3 KW	16.3 A	3 KW	16.3 A
TYPICAL FUNCTIONAL			6	-		-		-		-		-		-	
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6		S302P-C6		S302P-C6		S302P-C10		S302P-C20		S302P-C20	
	VERSION		8	2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE	
	TRIP UNITS		9	In=6A - Curve C		In=6A - Curve C		In=6A - Curve C		In=10A - Curve C		In=20A - Curve C		In=20A - Curve C	
	Icu	KA	10	25kA		25kA		25kA		25kA		25kA		25kA	
OVERLOAD	L	Range A	11	-		-		-		-		-		-	
		Range t	12	-		-		-		-		-		-	
SEL. SHORT-CIRCUIT	S	Range A	13	-		-		-		-		-		-	
		Range t	14	-		-		-		-		-		-	
INST. SHORT-CIRCUIT	I	Range A	15	-		-		-		-		-		-	
		Range t	16	-		-		-		-		-		-	
EARTH FAULT PROTECTION	G	Range A	17	-		-		-		-		-		-	
		Range t	18	-		-		-		-		-		-	
CONTACTOR (ABB)			19	-		-		-		-		-		-	
THERMAL OVERLOAD RELAY (ABB)			20	-		-		-		-		-		-	
SURGE ARRESTERS (DHENN)			21	-		-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-		-	
FUSE HOLDER (ABB)			23	-		-		-		-		-		-	
TWILIGHT SWITCH (ABB)			24	-		-		-		-		-		-	
VOLTMETER (FRER)			25	-		-		-		-		-		-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-		-	
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 6		SCREW / 6	
POWER CONDUCTOR		mm²	31	3G2.5		3G2.5		3G2.5		-		-		-	

D

E

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231298/SD/13
Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
4	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
3	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
2	24/04/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	15/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	08/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "DP-200N1"
SINGLE LINE DIAGRAM
Single Line Drawing

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

SCALE : NTS

A3

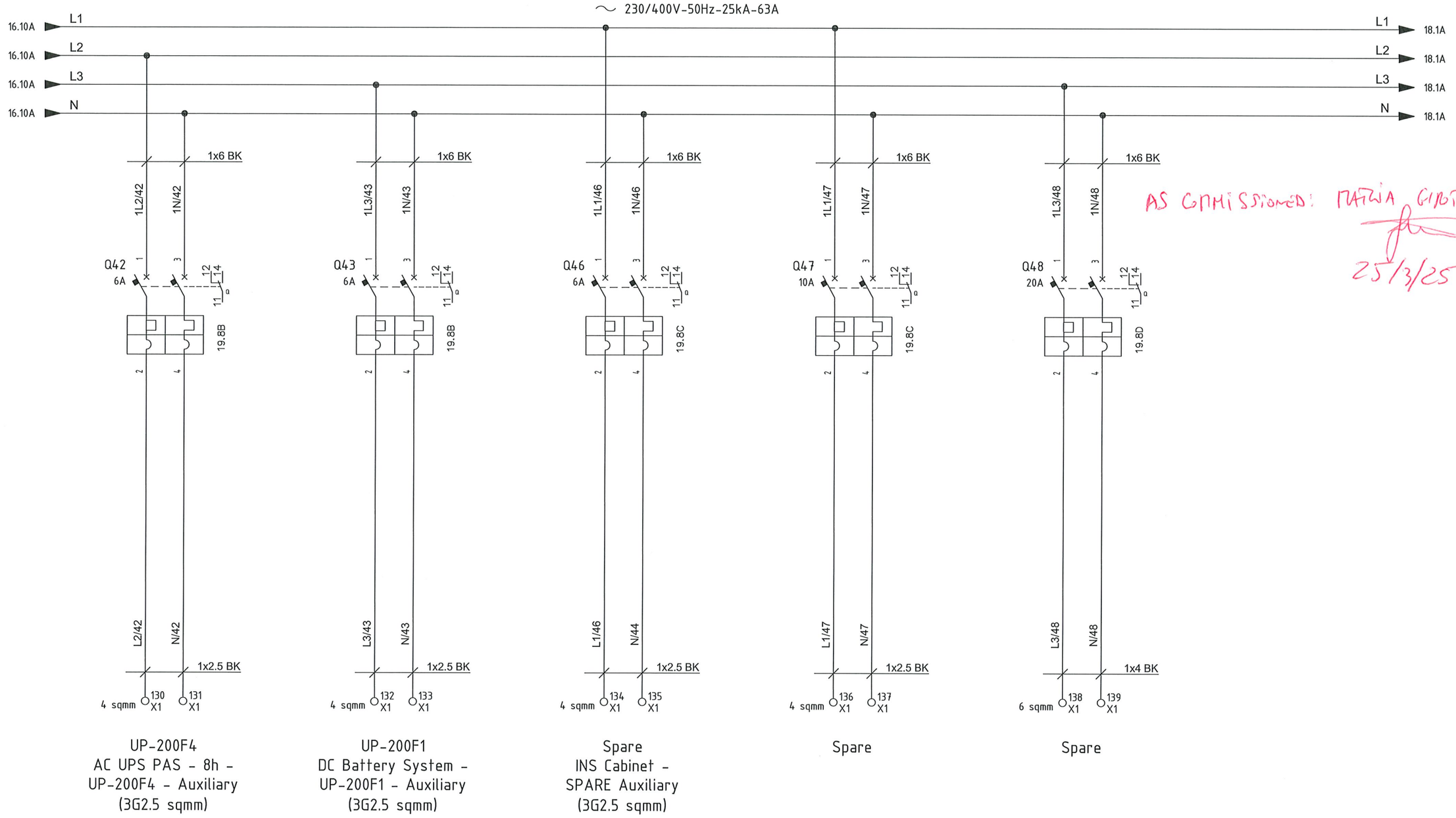
DRAWING NO. 1723002197-EL-DG-00013

SHEET 013

REV. 04

File Name : 1723002197-EL-DG-00013 Rev. 04

F.to UNI A3: 420mmx297mm



AS COMMISSIONED: MATTIA GIBOLI 25/3/25

UP-200F4
AC UPS PAS - 8h -
UP-200F4 - Auxiliary
(3G2.5 sqmm)

UP-200F1
DC Battery System -
UP-200F1 - Auxiliary
(3G2.5 sqmm)

Spare
INS Cabinet -
SPARE Auxiliary
(3G2.5 sqmm)

Spare

Spare

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00033
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=
+
DWG n° : 231298/SD/33
Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	12/03/2025	Santinelli	Flamminio	Sigismondi	Replaced Twiligh Switch TW1
2	19/08/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
0	29/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "DP-200N1"
LV SWBD FUNCTIONAL DIAGRAMS
Functional Drawing

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

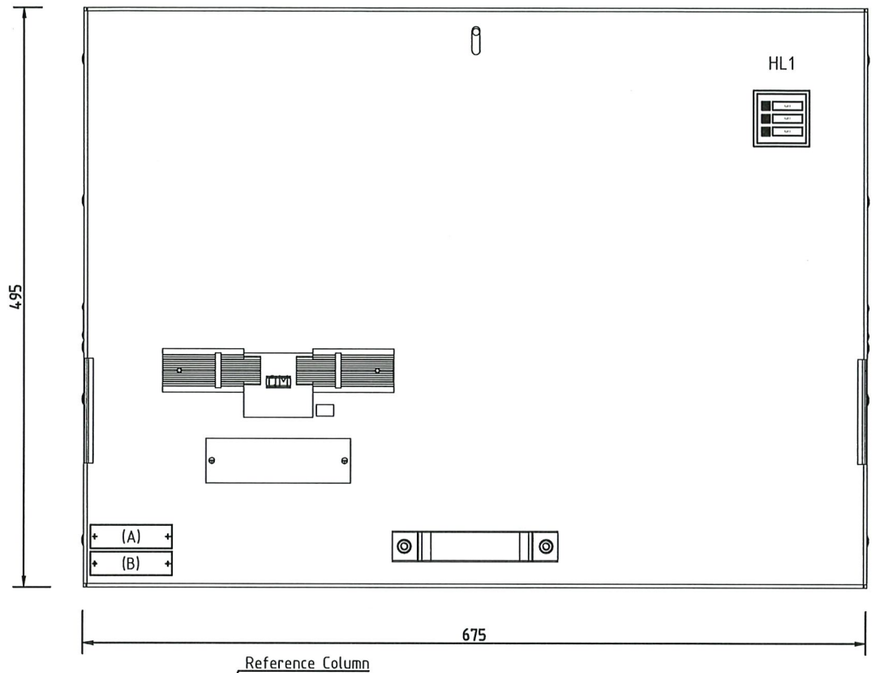
A3 | DRAWING NO. 1723002197-EL-DG-00033 | SHEET 1.7 | REV. 03

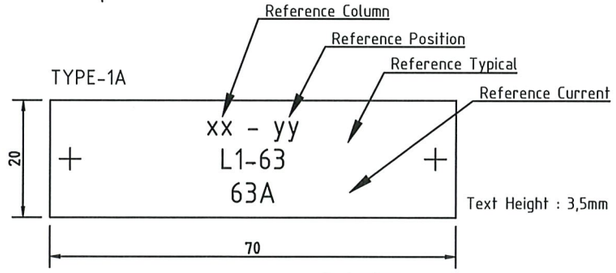
F.to UNI A3: 420mmx297mm

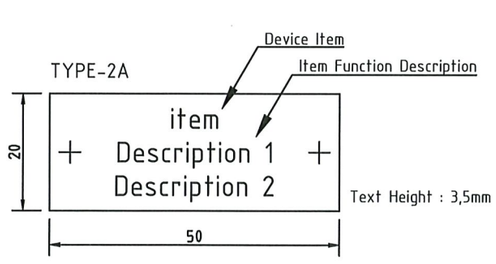
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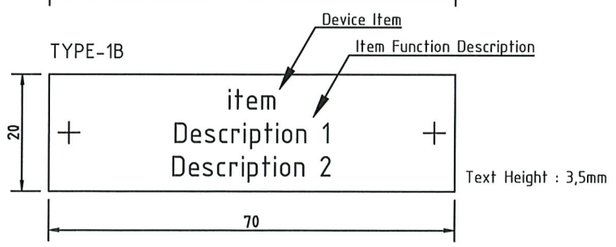
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "L2-n"









NOTE :

A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

B) USER name plate (type-1B), with :
- Item User [to see SLD diagrams]
- User Description [to see SLD diagrams]

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker	Signalling	NO plate
HL1	Multiled	Signalling	NO plate

NO MARK UP
AS COMMISSIONED: MATIA GIROTTI
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Door Front Lay-Out - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 024 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

USERS LEGEND

TYPICAL : LINE FEEDER "L1-n" & "L2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	UP-200F4	AC UPS F&G - 8H UP-200F4 - BYPASS	A2 / +04	63A	L1-63
2	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 - LINE A	A3 / +01	100A	L1-100
3	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 - LINE B	A4 / +01	100A	L1-100
4	UP-200F4	AC UPS F&G - 8H UP-200F4 - LINE A	A6 / +05	63A	L1-63
5	UP-200F4	AC UPS F&G - 8H UP-200F4 - LINE B	A6 / +06	63A	L1-63
6	ESW-200N1	WELDING SOCKETS (TOP DECK)	A6 / +08	160A	L2-160
7	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 (BYPASS)	A7 / +02	100A	L1-100
8	UP-200F1	DC BATTERY SYSTEM SWTG CONTROL - FEEDER A	A7 / +03	63A	L1-63
9	UP-200F1	DC BATTERY SYSTEM SWTG CONTROL - FEEDER B	A7 / +04	63A	L1-63
10	UP-200F2	NAVAID SYSTEM FEEDER A	A7 / +05	63A	L1-63
11	UP-200F2	NAVAID SYSTEM FEEDER B	A7 / +06	63A	L1-63
12	ESW-200N2	WELDING SOCKETS (LOWER DECK)	A7 / +08	160A	L2-160

NO MARK UP
AS COMMISSIONED: MATTIA GIRETTI
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Users Legend - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 025 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

ITEMS ACRONYM

TYPICAL : LINE FEEDER "L1-n" & "L2-n"

Composition of Typical :

L-x = Common Parts
L1-"nn" or L2-"nn"= Specific Parts

Example for Composition of L1-63:
- to take "L-x" plus "L1-63"

Example for Composition of L2-160:
- to take "L-x" plus "L2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	L-x	L1-40 (In=40A) (Current Trip Unit)	L1-63 (In=63A) (Current Trip Unit)	L1-100 (In=100A) (Current Trip Unit)	L2-160 (In=160A) (Current Trip Unit)	
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
L1-40	X	X				
L1-63	X		X			
L1-100	X			X		
L2-160	X				X	

NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
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0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

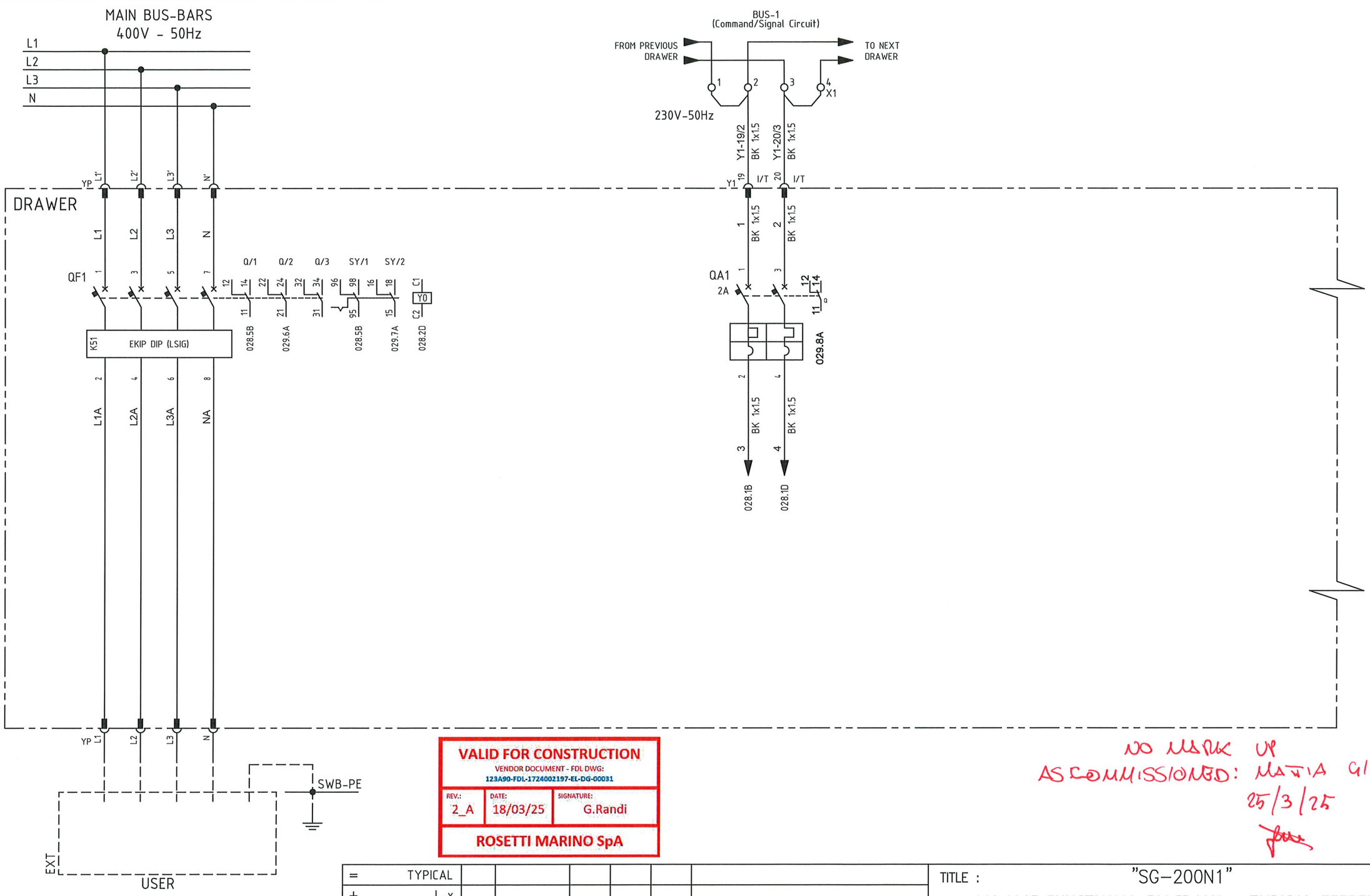
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 026 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

NO MARK UP
AS COMMISSIONED: MATIA GIROTTI
25/3/25

=	TYPICAL
+	L-x
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 027

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
25/3/25

EXT

9 X1 — 10 X1 — Y1-17/10 BK 1x1.5 — Y1 17 I/T
11 X1 — 12 X1 — Y1-18/11 BK 1x1.5 — 18 I/T
22 T — 21 I/T

027.6C 3 230V-50Hz

3 /.//

QF1 027.1B — 11 Q 12 14
QF1 027.1B — 96 98 SY 95

5 BK 1x1.5
6 BK 1x1.5
7 BK 1x1.5
8 BK 1x1.5
9 BK 1x1.5

HL1 230VAC — 1 2 3 4 — DOMO
L1 GR — CIRCUIT BREAKER OPEN
L2 RD — CIRCUIT BREAKER CLOSE
L3 AM — FEEDER TRIPPED

C1 — YO — C2
QF1 027.1B

KA1 A1 A2

027.6C 4 /.// 4

DRAWER ON TEST

029.7A 11 12 14 21 22 24 31 32 34 41 42 44

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
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0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

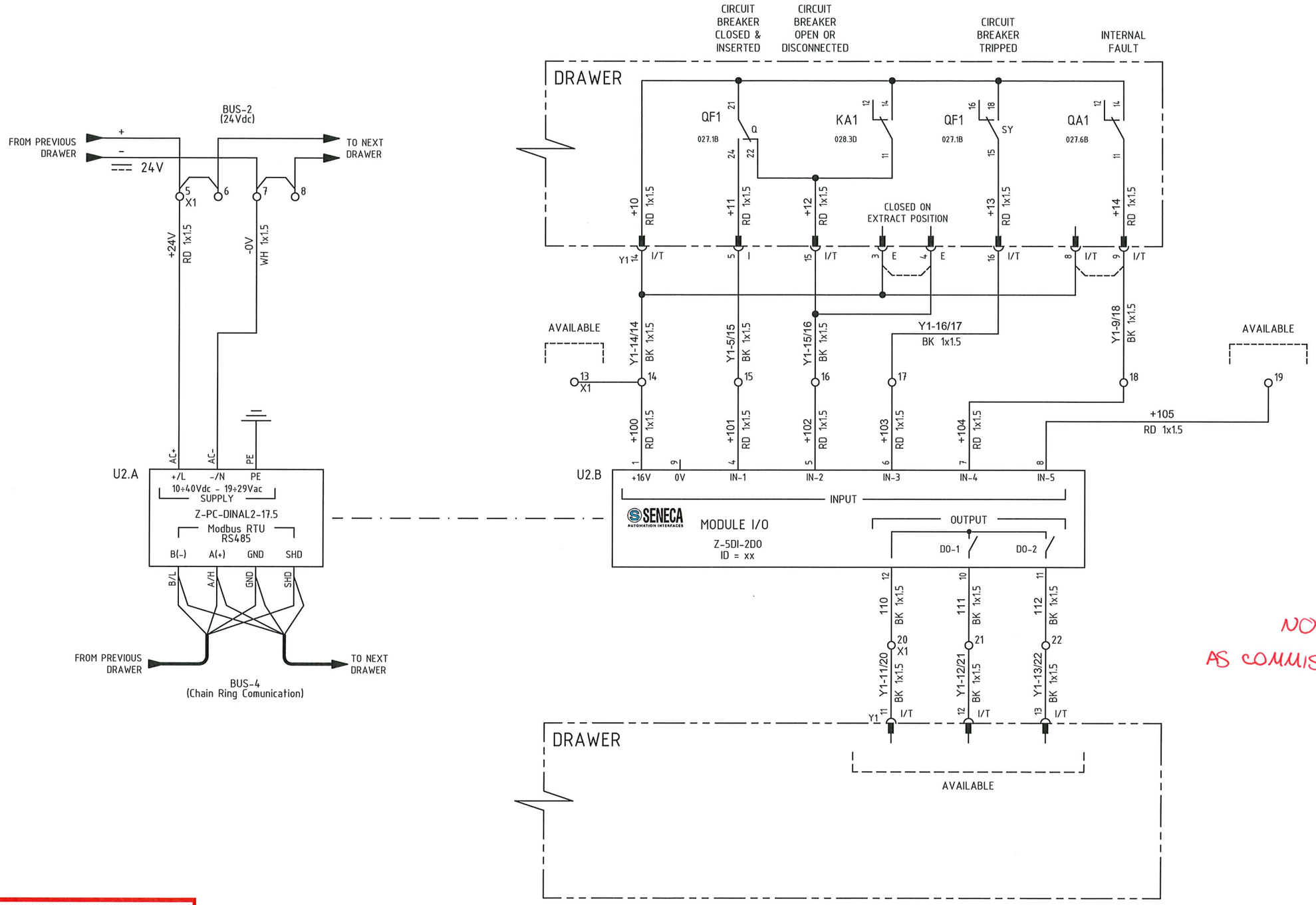
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 028 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
\+ L-x

DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
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TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

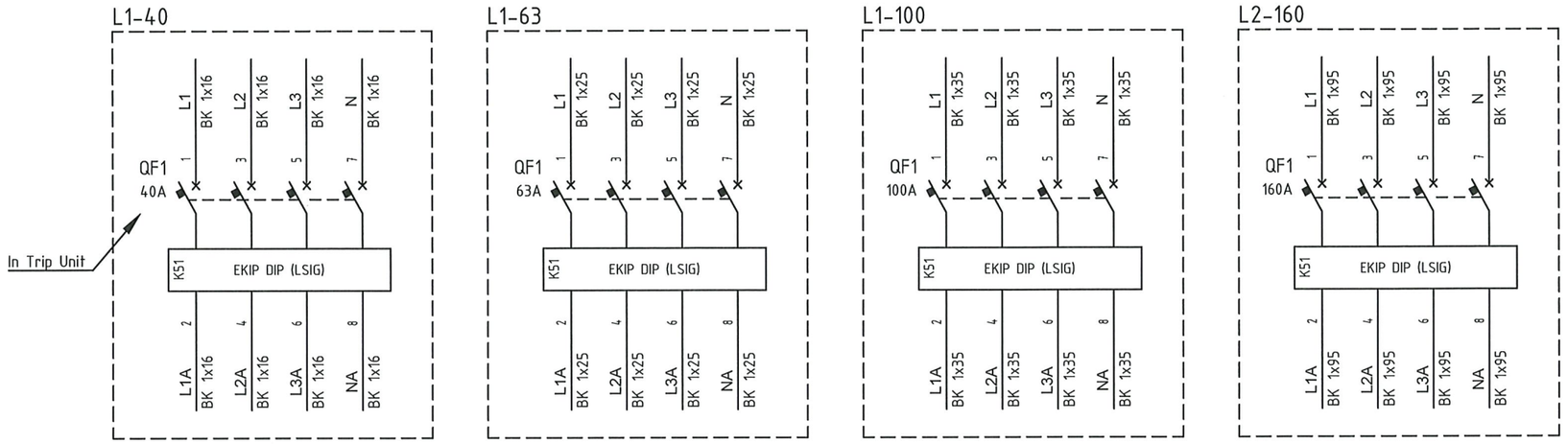
A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 029 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

SPECIFIC PARTS

TYPICAL : LINE FEEDER "L1-n" & "L2-n"



NO MARK UP
AS COMMISSIONED: MATIA GIROTTI.
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
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TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 030 | REV. 02

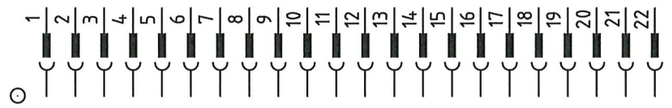
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

AUXILIARY SOCKET

136450/001 (PF – 1 pcs) + 136458/004 (PM – 1 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
JUMP			●	●				●	●													
RACKED–OUT			X	X				X	X													
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			029.6B	029.7B	029.6B			029.8B	029.8B		029.7D	029.7D	029.8D	029.5B	029.6B	029.7B	028.2B	028.3B	027.6A	027.6A	028.4B	028.3B



← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION

← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION

← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION

← CROS-REFERENCE USED PIN

TYPICAL - L-x - Y1

NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
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0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG–200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197–EL–DG–00031 | SHEET 031 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197–EL–DG–00031 Rev. 02

TYPICAL - L-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	027.5A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	027.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	027.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	027.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	029.2A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	029.2A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	029.2A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	029.3A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	028.2A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	028.2A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	028.3A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	028.3A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	029.4B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	029.5B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	029.6B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	029.6B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	029.7B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	029.8B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	029.9B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	029.7D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	029.7D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	029.8D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

NO MARK UP
AS COMMISSIONED: MARIA GIROT.
25/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 032 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	028	ML22/483L230STLTTR	1	MULTILED 48x48 - 3 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL L-x
KA1	028	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL L-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL L-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL L-x
QA1	027	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL L-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL L-x
U2.A	029	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL L-x
U2.B	029	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL L-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL L-x
		HD400GR_	14	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL L-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL L-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL L-x
		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL L-x

NO MARK UP
AS COMMISSIONED : MATIA GIROTTI
25/3/25

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	XT2S40LSIG4	1	XT2S 160 Ekip LSIG In=40A 4p F F	ABB	TYPICAL L1-40
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L1-40
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	XT2S63LSIG4	1	XT2S 160 Ekip LSIG In=63A 4p F F	ABB	TYPICAL L1-63
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L1-63
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	XT2S100LSIG4	1	XT2S 160 Ekip LSIG In=100A 4p F F	ABB	TYPICAL L1-100
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L1-100
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L1-100

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
QF1	030	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL L2-160
		1SDA067536R1	1	SG.EL.Ekip LSIG In=160A XT4 4p	ABB	TYPICAL L2-160
		1SDA066436R1	1	AUX-C 3Q+2SY 250Vac/dc XT2-XT4 F/P	ABB	TYPICAL L2-160
		1SDA066325R1	1	SOR-C XT1..XT4 F/P 220-240Vac-220-250Vdc	ABB	TYPICAL L2-160

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ L-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 033 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	DC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE INCLUDING EQUIPMENTS LIST & BILL OF MATERIAL	Sheet 1 of 53 Date: 06/10/2024 Rev: 03

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Base Load Power Hub (BLPH)

DC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE INCLUDING EQUIPMENTS LIST & BILL OF MATERIAL

Document Number: 1724000372-EL-DG-00008

Document Class: 2

RLMU LIST

REV. 03A: Sheets 12, 22

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VENDOR DOCUMENT - FDL DWG:
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03	06/10/2024	Accepted for Construction (AFC)	DA	DA	AD
02	26/07/2024	Accepted for Construction (AFC)	DA	DA	AD
01	20/05/2024	Issue for Review (IFR)	DA	DA	AD
00	05/04/2024	Issue for Review (IFR)	DA	DA	AD
Rev.	Date	Description	Prepared	Reviewed	Approved

3W power | a company of AEG POWER SOLUTIONS

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File: 1724000372-EL-DG-00008_03

Revision / Change Log

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

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HOLDS LIST

No.	Description
1	
2	
3	
4	

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Document Title:	DC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE INCLUDING EQUIPMENTS LIST & BILL OF MATERIAL	Sheet 3 of 53 Date: 06/10/2024 Rev: 03

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POWER SOLUTIONS

Manufacturer (company)	AEG Power Solutions Iberica S.A.
Manufacturer (address)	Albert Einstein 31 Parque Tecnológico de Álava 01510 Vitoria-Gasteiz Spain
Phone	+34 945 214110 www.aegps.es +34 945 214165 servicios.iberica@aegps.com

AEG N°	ES521464
Customer	3W POWER S.P.A.
Project name	Hollandse Kust Noord (HKN) wind farm

Installation	
Systems Type	2xTPRe 110V 100A
Battery	10x FLG12-150 (60 Cells) (NON SUPPLIED)

Revision	01	Checked by :	JOP
Created on	21/03/2024	from	EBM
Changed by	22/07/2024	from	

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ES521464

				Date	21/03/2024	3W POWER S.P.A. Hollandse Kust Noord (HKN) wind farm	AEG POWER SOLUTIONS	Title page / cover sheet
				Editor	EBM			
01		22/07/2024	eva.beitia	Checked	JOP			
Stat	Alteration	Date	Name	Standard				

1724000372-EL-DG-00008

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		EAB	2/ 3		Table of contents	3/49			
		EAB	3/ 3		Table of contents	4/49		22/07/2024	eva.beitia
		EPZ	1/ 4		Symbols used	5/49			
		EPZ	2/ 4		Symbols used	6/49			
		EPZ	3/ 4		Symbols used	7/49			
		EPZ	4/ 4		Symbols used	8/49			
System									
		EFA	1/ 1		Single-line	9/49			
		EDA	1/ 1		Electrical characteristic	10/49	01	22/07/2024	eva.beitia
		MTB	1/ 1		Dimensional drawing	11/49			
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		EMA1	1/ 2		Interconnections	12/49	01	22/07/2024	eva.beitia
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		EFS	4/ 13		Filtering	17/49	01	22/07/2024	eva.beitia
		EFS	5/ 13		DC output	18/49			
		EFS	6/ 13		Distribution	19/49	01	22/07/2024	eva.beitia
		EFS	7/ 13		Distribution	20/49			
		EFS	8/ 13		Distribution	21/49			
		EFS	9/ 13		Battery	22/49	01	22/07/2024	eva.beitia
		EFS	10/ 13		Control Unit	23/49	01	22/07/2024	eva.beitia

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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	REC2								
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			Editor	EBM	Hollandse Kust Noord (HKN) wind farm
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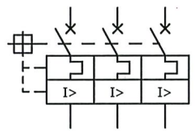
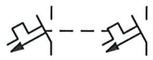
				Date	21/03/2024	3W POWER S.P.A.	AEG POWER SOLUTIONS	Table of contents	=
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IEC_symbol

Symbol

NO contact 	Female pin of a plug connection with direct connection point 	Circuit breaker, two-pole, form 2 
NC contact	Plug of a plug connection with direct connection point	Terminal with 2 connection points
Electromechanical operating device, general / relay coil 	Capacitor, polarized (electrolytic capacitor) 	
Fused terminal	Change-over contact with break point (2-path) 	Terminal with 6 connection points without saddle jumper connection points 
Fuse, single-pole, general 	Change-over contact with break point (3-path) 	Power circuit breaker, three-pole (L-, I-characteristic) 
Resistor, general	Terminal	
Circuit breaker, two-pole 	NC temperature switch 	
AC motor 	Heating element with PE 	

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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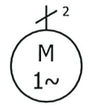
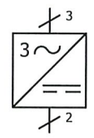
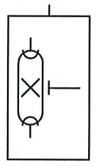
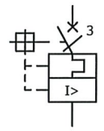
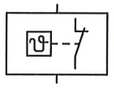
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IEC_single_symbol

Symbol

Semiconductor diode, general 	AC motor, without PE, with straight connection point 	
Thermocouple 	Circuit breaker, two-pole, form 2 	
Fuse circuit breaker, single-pole 	Terminal	
3Ph Bridge Rectifier 		
Fluorescent lamp with PE 	Power circuit breaker, three-pole (L-, I-characteristic) 	
Capacitor, polarized (electrolytic capacitor) 		
NC temperature switch 		
Heating element with PE 		

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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IEC_AEGPSI_symbol

Symbol

Cable, wire	Fuse	
0.5mm² Wire	Shunt	
Power interconnection Supplied	Fuse-holder 1	
Power interconnection not supplied	BUSBAR	
Load switch disconnector, three-pole;rotary handle	Filter single-phase	
Ferrita	Filter three-phase	
Semipack SKKT	Three-phase transformer	
Fuse switch disconnector, three-pole	Fuse holder Terminal	

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Hollandse Kust Noord (HKN) wind farm

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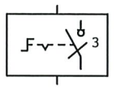
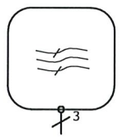
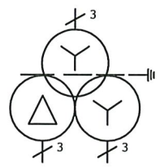
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IEC_AEGPSI_single_symbol

Symbol

Load switch disconnector, three-pole;rotary handle 		
SHUNT 		
Filter three-phase 		
Three-phase transformer 		

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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+REC1
UP-200F1 A

MAINS
3x400Vac 50Hz -50kA

-X1 L1
70 mm²
4G16 mm2
unamoured cable

-Z1
0/450V
L1;L2;L3;PE

-Q1
50A

-M1/2
220-240 Vca
50-60Hz
FAN

-T1
110V/100A
019.6KVA

-PR2
-PR2-TH1 THERMOSTAT 100º
-PR2-TH2 THERMOSTAT 90º
-PR2-A2 TPC

-PR1
-PR1-TH1 THERMOSTAT 100º
-PR1-TH2 THERMOSTAT 90º
-PR1-A2 TPC

-A320 INTERFACE

Charger
100A 12Pulses

-R2 100mV 130A
-C1 3x6800µF 160V Filtering 1%
-F1 NH00 125A
-V21 100A
-Q2 160A

SD1 / (+BAT-SD1 /1.8)

-A1
GCAU
CONTROL UNIT

-A5.1 Relays → -CR1-X5
-A71
-A300 DISPLAY
-A73 MODBUS-TCP/IP
-A8 Isolated
-A310 KEY PAD
-KF PSR-SCP- 24DC / SIL3

AUXILIARY SUPPLY
230Vac-50Hz

-X7 L/N
6 mm²
3G2.5 mm2
unamoured cable

-Q6 02A-C
-H3
-Q7 02A-C
-THF4 0/60ºC
-E50 100W

-X8 4 mm² CHARGERS INTERCONNECTION
2,5 mm²

-R3 100mV 130A
-Q3 160A
BATTERY 110Vdc
-X3 +/- 70 mm²
Battery symmetry
-X31 +/- 4 mm²
-A10 BATTERY SIMMETRY FAULT

-L+/- 2P 125A BUS BAR 110 VDC

FOR COMM. PURPOSE ONLY
DC / DC

-Z2 400V

INTERCONNECTION
50 mm²
-X6

-Q10 50A-C
CP-100F1 DC CONTROL 66kV G/S LINE A-5.2KW
-X2 1+/1- 16 mm²
3G16 mm2 amoured cable (+REC1-A1 /1.4) / SD1

-Q11 20A-C
CP-100F1 DC CONTROL 66kV G/S LINE B-2KW
-X2 2+/2- 16 mm²
3G16 mm2 amoured cable (+REC2-A1 /1.4) / SD2

-Q12 16A-C
SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE A-1KW
-X2 3+/3- 16 mm²
3G16 mm2 amoured cable

-Q13 16A-C
SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE B-1KW
-X2 4+/4- 16 mm²
3G16 mm2 amoured cable

-Q14 50A-C
SPARE 5,5KW
-X2 5+/5- 16 mm²

-Q15 20A-C
SPARE 2KW
-X2 6+/6- 16 mm²

-Q16 16A-C
SPARE 1KW
-X2 7+/7- 16 mm²

-F10/F11 DEHNguard
-A21 EARTH +/-

+BP BATTERY PROTECTION
2 (1x25) mm2
-F100 Plastic box 80*80

+BAT
-SD1
-SD2

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25/03/2025

+REC2
UP-200F1 B

MAINS
3x400Vac 50Hz -50kA
-X1 L1
70 mm²
4G16 mm2
unamoured cable
-Z1 0/450V
L1;L2;L3;PE
-Q1 50A
-M1/2 220-240 Vca 50-60Hz FAN
-T1 110V/100A 019.6KVA
-PR2 -PR2-TH1 THERMOSTAT 100º -PR2-TH2 THERMOSTAT 90º -PR2-A2 TPC
-PR1 -PR1-TH1 THERMOSTAT 100º -PR1-TH2 THERMOSTAT 90º -PR1-A2 TPC
-A320 INTERFACE
Charger
100A 12Pulses
-R2 100mV 130A
-C1 3x6800µF 160V Filtering 1%
-F1 NH00 125A
-V21 100A
-Q2 160A
SD2 / (+BAT-SD2 /1.8)
-A1 GCAU CONTROL UNIT
-A5.1 Relays → -CR1-X5
-A71
-A300 DISPLAY
-A73 MODBUS-TCP/IP
-A8 Isolated
-A310 KEY PAD
A8 / (+REC2-X8 /1.4)
AUXILIARY SUPPLY
230Vac-50Hz
-X7 L/N
6 mm²
-Q6 02A-C
-H3
-Q7 02A-C
-THF4 0/60ºC
-E50 100W
2,5 mm²
-X8 4 mm² CHARGERS INTERCONNECTION
-A8 (+REC1-CR1-J13:1 /1.4)
INTERCONNECTION
PH4 35 mm²
-X6 50 mm²
-A10 BATTERY SIMMETRY FAULT
Battery symmetry
-X31 +/- 4 mm²
2,5 mm²

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00008

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Stat	Alteration	Date	Name		
				Date	21/03/2024
				Editor	EBM
				Checked	JOP
				Standard	

3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Single-line
System

1724000372-EL-DG-00006

ES521464 en

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+
& EFA

A3

Sheet 1
Sheets 1

8 / 47

ES521464

AEGPS_DOC_REV01
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Type 2xTPRe 110V 100A Battery 10x FLG12-150 (60 Cells) (NON SUPPLIED) Mains AC 3x400Vac 50Hz

SETTINGS	20°C		TEMPERATURE COMPENSATION
FLOATING CHARGE	2,25	V/cel	X
HIGH RATE CHARGE	2,30	V/cel	

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
25/03/2025

WIRING

CABLE LABELLING : Standard AEG PS

CABLE TYPE : Standard AEG PS

SECTION SEE WIRING SCHEMATIC

This system includes some components which must be replaced periodically. The average life time of these components is provided in parts list section of this document. Please contact your nearest customer service location for more information

FITRAGE	1%
PROTECTION WITH DOOR OPEN	IP 20
PROTECTION WITH DOOR CLOSED	IP 43
ELECTRONIC BOARDS VARNISHED	
COMPONENTS LABEL	Engraved indivual labels

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VENDOR DOCUMENT - FDL DWG:
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RELAY CHARACTERISTICS

Common alarm (GCAU card) : 250VAC/5A

24Vdc	48Vdc	110Vdc	220Vdc
6A	1,2A	0,3A	0,1A

Relay Alarm (Relay PCB) : 250VAC/5A

24Vdc	48Vdc	110Vdc	220Vdc
8A	2A	0,5A	0,4A

Legend

Power Control

0.5 mm²

Interconnections

Provided

Not Supplied

Power Control

ES521464

				Date	21/03/2024	3W POWER S.P.A.	Electrical characteristic
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm	
01		22/07/2024	eva.beitia	Checked	JOP		System
Stat	Alteration	Date	Name	Standard			

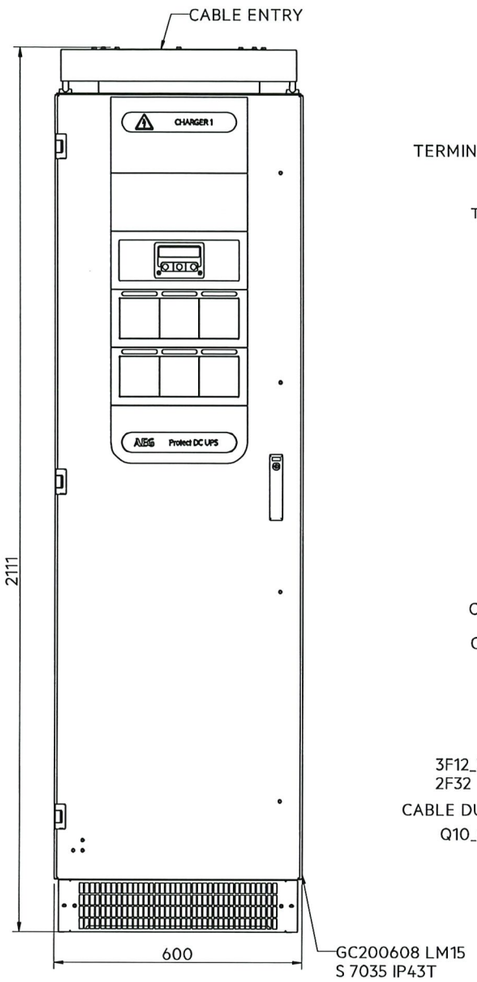
AEG POWER SOLUTIONS

ES521464 en

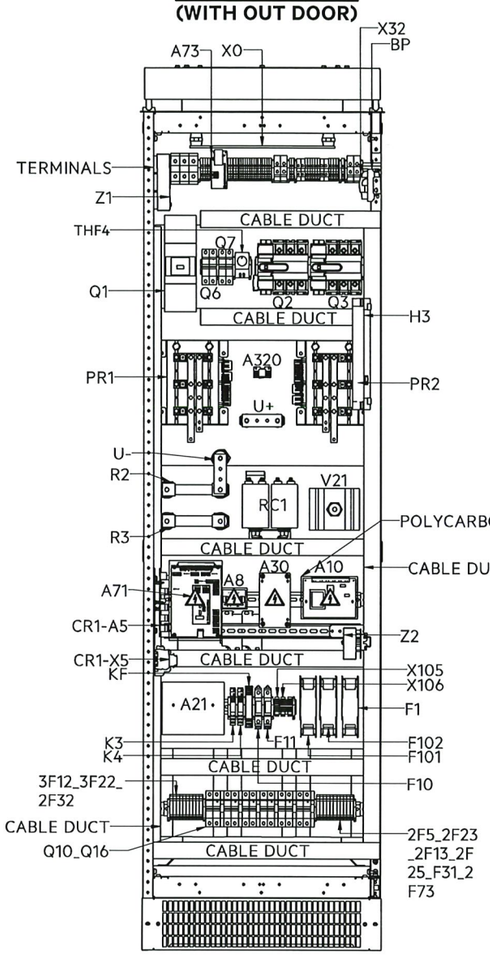
= System
+ 10 / 49
& EDA
A3
Sheet 1
Sheets 1

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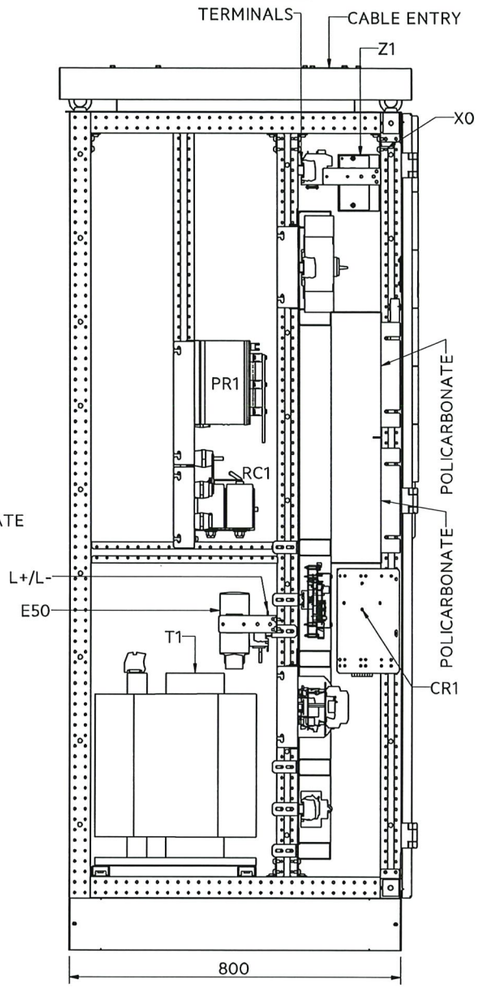
FRONT VIEW



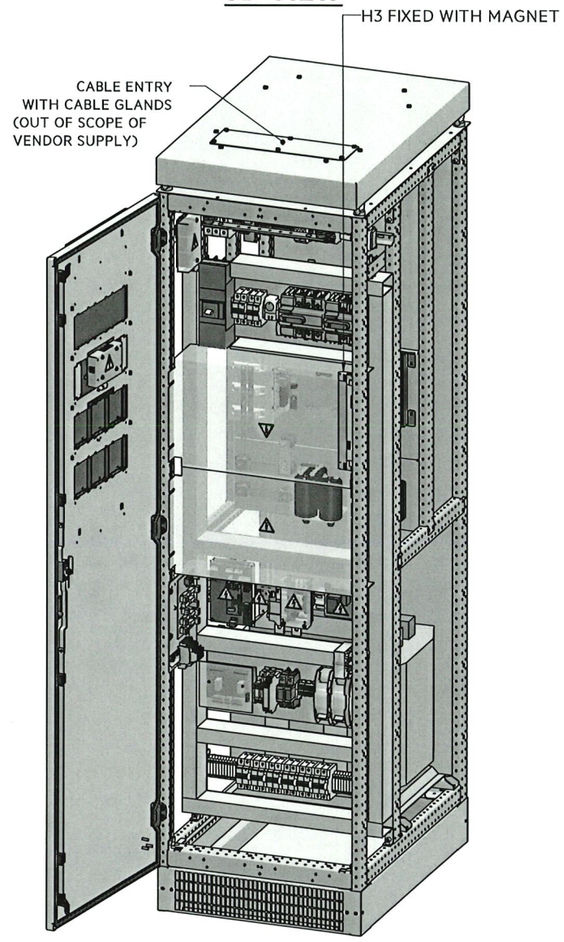
FRONT VIEW
(WITH OUT DOOR)



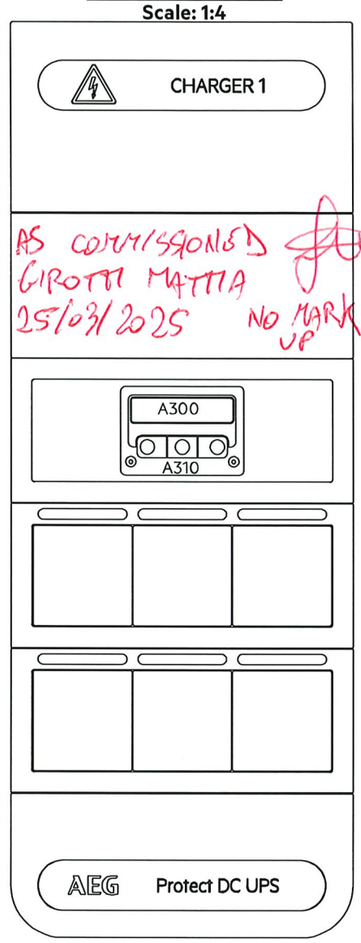
SIDE VIEW



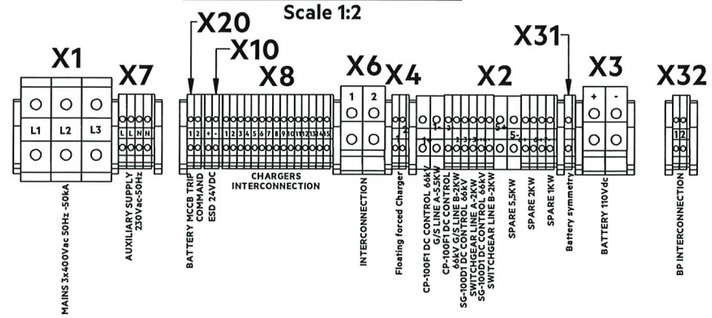
3D VIEW



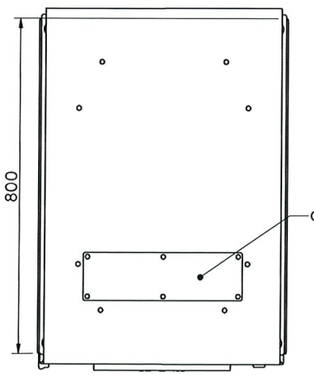
DOOR DETAIL
Scale: 1:4



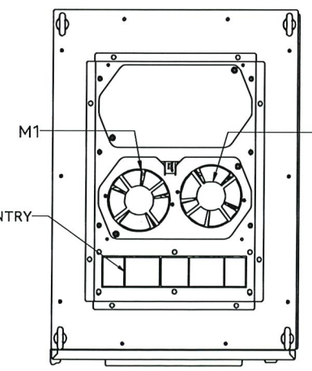
TERMINALS DETAIL
Scale 1:2



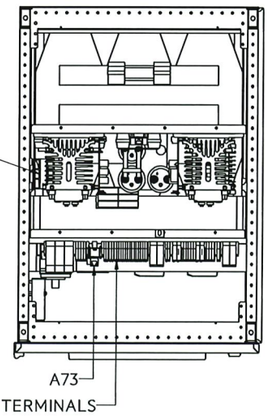
TOP VIEW



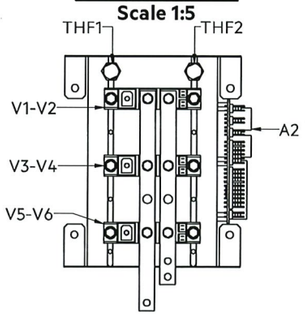
TOP VIEW
(FANS DETAIL)



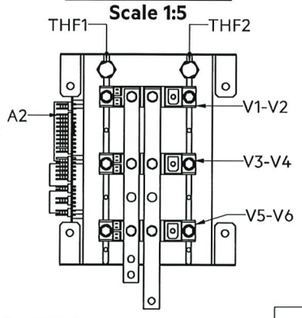
TOP VIEW
(WITHOUT ROOF)



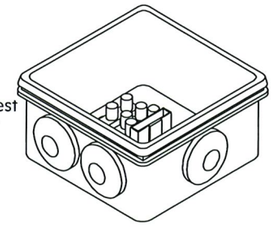
PR1 DETAIL
Scale 1:5



PR2 DETAIL
Scale 1:5



F100 DETAIL



Place the box the closest possible to the battery

Escala / *Scale*: 1:10					
Tol. Gen. / *Gen. Tol.*: ISO 2768-mK					
Dibujado / *Drawn* 22/05/2024 Por / *By* EAA	Rev *Issue*	Fecha *Date*	Dib. *Drawn*	Revisado *Checked*	
Verificado / *Checked* 22/05/2024 Por / *By* EBM					

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REV.:	DATE:	SIGNATURE:
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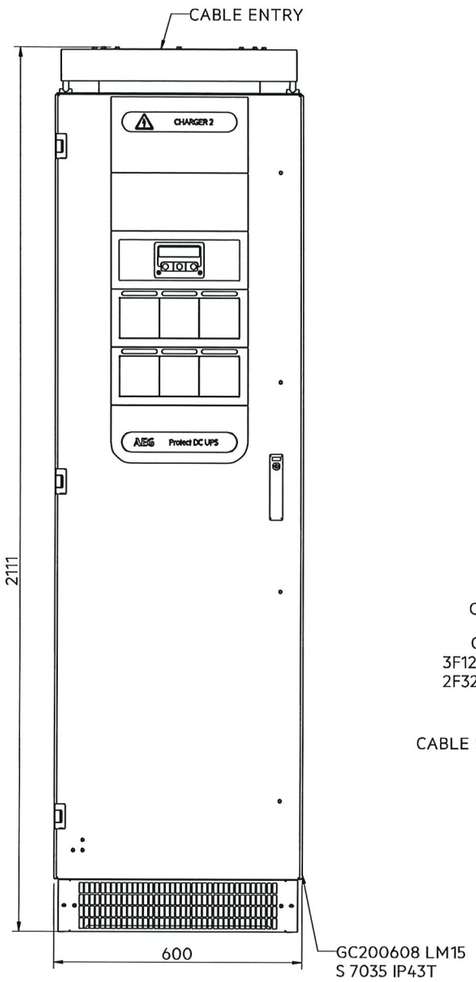
ROSETTI MARINO SpA

Denominación / *Description*:
DC UPS UP-200F1 CHARGER-A
1724000372-EL-DA-00003

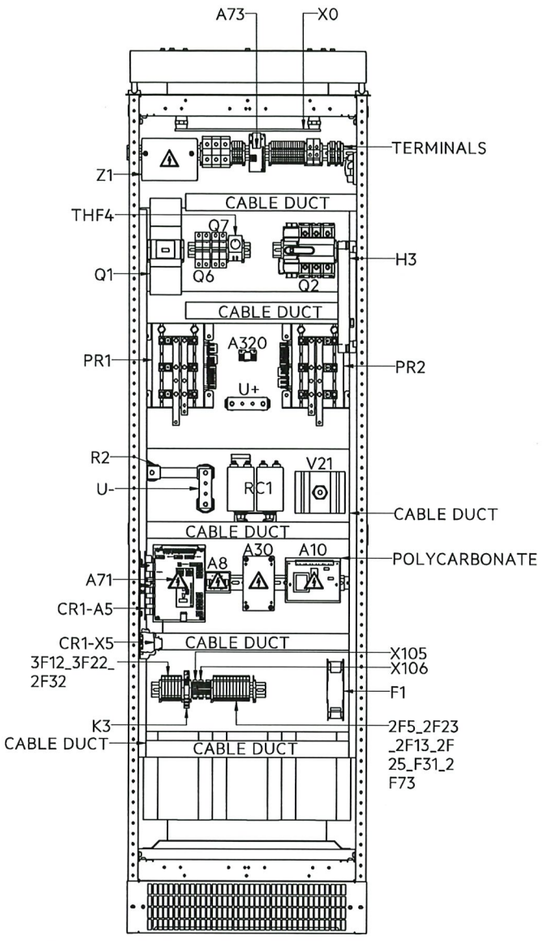
Formato/ *Format*: A2	Rev/*Issue*
Hoja / *Sheet*: 1/4	00

Los productos fabricados en este documento cumplen de acuerdo con la direc... 2002/95 / EC - Products manufactured according to this document must be compliant with RoHS 2002/95/EC

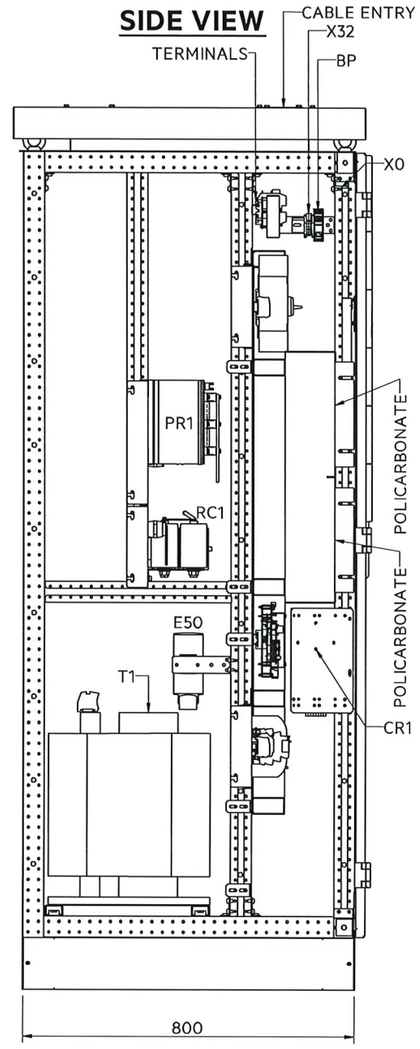
FRONT VIEW



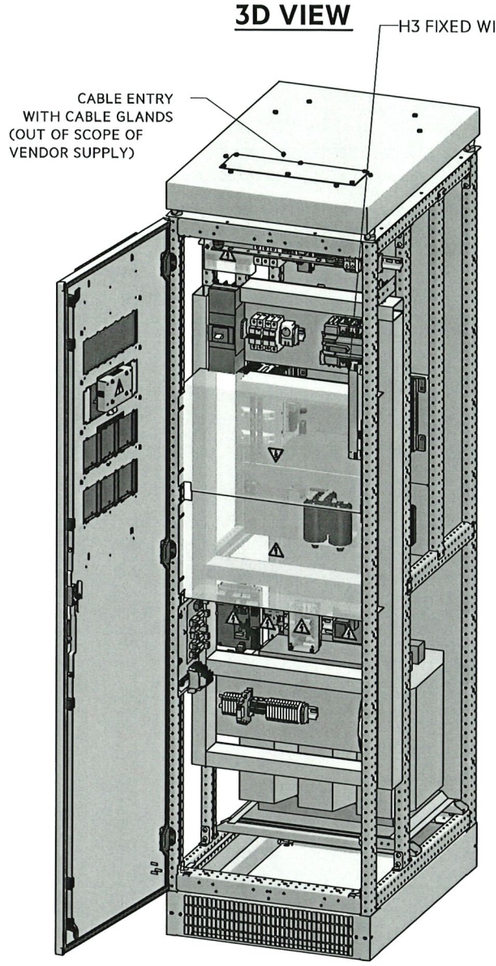
FRONT VIEW
(WITH OUT DOOR)



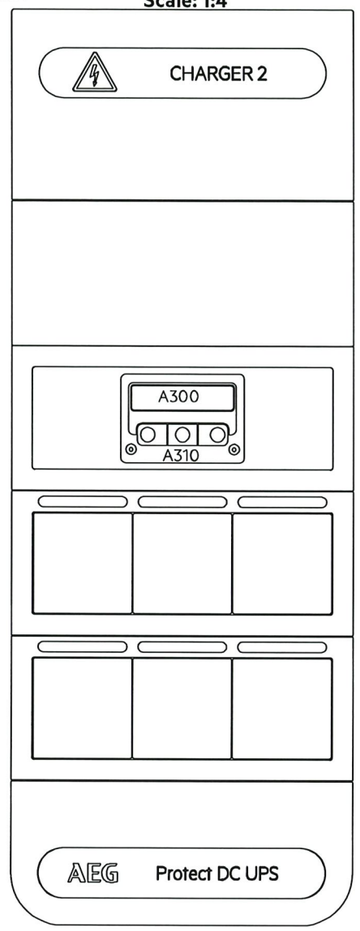
SIDE VIEW



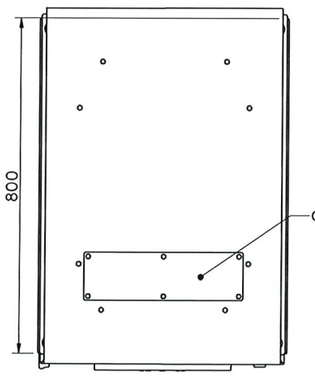
3D VIEW



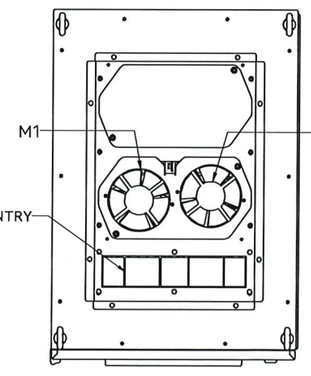
DOOR DETAIL
Scale: 1:4



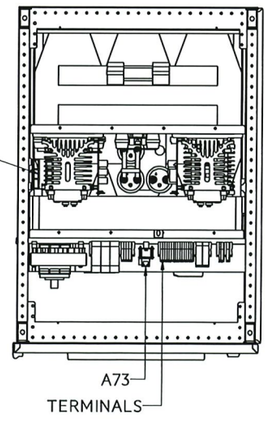
TOP VIEW



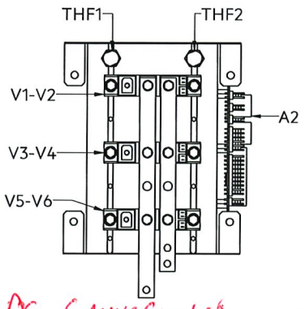
TOP VIEW
(FANS DETAIL)



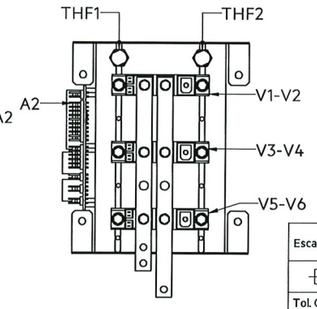
TOP VIEW
(WITHOUT ROOF)



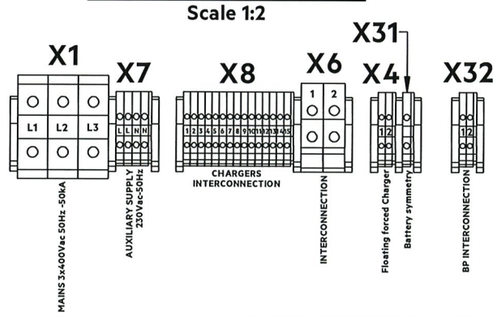
PR1 DETAIL
Scale 1:5



PR2 DETAIL
Scale 1:5



TERMINALS DETAIL
Scale 1:2



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GIPOTTI MATTIA
NO MARK UP
25/03/2025

Escala / *Scale*: 1:10					
Tol. Gen. / *Gen. Tol.*: ISO 2768-mK					
Dibujado / *Drawn* 27/05/2024	Rev *Issue*	Fecha *Date*	Dib. *Drawn*	Revisado *Checked*	
Por / *By* EAA					
Verificado / *Checked* 27/05/2024					
Por / *By* EBM					

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01510
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123A90-FDL-1724000372-EL-DG-00008

REV.:	DATE:	SIGNATURE:
3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

Denominación / *Description*:
DC UPS UP-200F1 CHARGER-B
1724000372-EL-DA-00003

Formato/ *Format*: A2	Rev/*Issue*
Hoja / *Sheet*: 1/4	00

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Interconnections list

Source	Number From Cable: Wire Number Location	Cross-section	Cable type		Length	Target	Provided
+REC1-F100 (+REC1&EFS/9.6) Source terminal	F100⇔BAT:MP					(+REC1&EFS/9.8) +REC1-BAT:MP Target terminal	NO
+REC1-X6:2 (+REC1&EFS/5.5) Source terminal: CORD END TERMINAL 50mm²	X6:2⇔X6:2	PH4 35 mm²	HV HFFR	BLACK	5	(+REC2&EFS/5.6) +REC2-X6:2 Target terminal: CORD END TERMINAL 50mm²	YES
+REC1-X6:1 (+REC1&EFS/5.5) Source terminal: CORD END TERMINAL 35mm²	X6:1⇔X6:1	PH4 35 mm²	HV HFFR	BLACK	5	(+REC2&EFS/5.6) +REC2-X6:1 Target terminal: CORD END TERMINAL 35mm²	YES
+REC1-X7:L (+REC1&EFS/13.2) Source terminal: CORD END TERMINAL 2,5mm²	X7:L⇔X7:L	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/10.2) +REC2-X7:L Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X7:N (+REC1&EFS/13.2) Source terminal: CORD END TERMINAL 2,5mm²	X7:N⇔X7:N	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/10.2) +REC2-X7:N Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:7 (+REC1&EFS/6.2) Source terminal: CORD END TERMINAL 2,5mm²	X8:7⇔X8:7	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:7 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:6 (+REC1&EFS/6.2) Source terminal: CORD END TERMINAL 2,5mm²	X8:6⇔X8:6	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:6 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:5 (+REC1&EFS/6.2) Source terminal: CORD END TERMINAL 2,5mm²	X8:5⇔X8:5	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:5 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:14 (+REC1&EFS/6.4) Source terminal: CORD END TERMINAL 2,5mm²	X8:14⇔X8:14	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:14 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:15 (+REC1&EFS/6.4) Source terminal: CORD END TERMINAL 2,5mm²	X8:15⇔X8:15	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:15 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:10 (+REC1&EFS/8.5) Source terminal: CORD END TERMINAL 2,5mm²	X8:10⇔X8:10	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:10 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:11 (+REC1&EFS/8.5) Source terminal: CORD END TERMINAL 2,5mm²	X8:11⇔X8:11	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:11 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:9 (+REC1&EFS/9.2) Source terminal: CORD END TERMINAL 2,5mm²	X8:9⇔X8:9	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.3) +REC2-X8:9 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:8 (+REC1&EFS/9.2) Source terminal: CORD END TERMINAL 2,5mm²	X8:8⇔X8:8	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.4) +REC2-X8:8 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:13 (+REC1&EFS/9.5) Source terminal: CORD END TERMINAL 2,5mm²	X8:13⇔X8:13	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/6.5) +REC2-X8:13 Target terminal: CORD END TERMINAL 2,5mm²	YES

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3_A	15/11/24	G.Randi

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GIROTTI MATTIA
NO MARK UP
25/03/2025

				Date	21/03/2024
				Editor	EBM
01		22/07/2024	eva.beitia	Checked	JOP
Stat	Alteration	Date	Name	Standard	

3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Interconnections
Interconnections
System

ES521464 en

= System
+ INT
& EMA1

A3

Sheet 1
Sheets 2

ES521464

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Interconnections list

Source	Number From Cable: Wire Number Location	Cross-section	Cable type	Length	Target	Provided
+REC1-X8:12 (+REC1&EFS/9.5) Source terminal: CORD END TERMINAL 2,5mm²	X8:12⇔X8:12	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/6.5) +REC2-X8:12 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:4 (+REC1&EFS/10.7) Source terminal: CORD END TERMINAL 2,5mm²	X8:4⇔X8:1	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:1 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:3 (+REC1&EFS/10.7) Source terminal: CORD END TERMINAL 2,5mm²	X8:3⇔X8:2	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:2 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:2 (+REC1&EFS/10.7) Source terminal: CORD END TERMINAL 2,5mm²	X8:2⇔X8:3	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:3 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X8:1 (+REC1&EFS/10.7) Source terminal: CORD END TERMINAL 2,5mm²	X8:1⇔X8:4	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/7.7) +REC2-X8:4 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X31 (+REC1&EFS/9.6) Source terminal:	X31⇔F100					(+REC1&EFS/9.6) +REC1-F100 Target terminal:	NO
+REC1-X31 (+REC1&EFS/9.6) Source terminal: CORD END TERMINAL 2,5mm²	X31⇔X31	2,5 mm²	H07Z1-K	BLACK	5	(+REC2&EFS/6.6) +REC2-X31 Target terminal: CORD END TERMINAL 2,5mm²	YES
+REC1-X32:2 (+REC1&EFS/10.8) Source terminal:	X32:2⇔X30:2					(+REC1&EFS/9.6) +BP-X30:2 Target terminal:	NO
+REC1-X32:1 (+REC1&EFS/10.8) Source terminal:	X32:1⇔X30:1					(+REC1&EFS/9.6) +BP-X30:1 Target terminal:	NO
+REC2-X32:2 (+REC2&EFS/7.8) Source terminal:	X32:2⇔X30:4					(+REC1&EFS/9.6) +BP-X30:4 Target terminal:	NO
+REC2-X32:1 (+REC2&EFS/7.8) Source terminal:	X32:1⇔X30:3					(+REC1&EFS/9.6) +BP-X30:3 Target terminal:	NO

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GIROTTI MATTIA
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25/03/2025

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ROSETTI MARINO SpA

				Date	21/03/2024	3W POWER S.P.A.	AEG POWER SOLUTIONS	Interconnections Interconnections System
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm		
01		22/07/2024	eva.beitia	Checked	JOP			
Stat	Alteration	Date	Name	Standard				

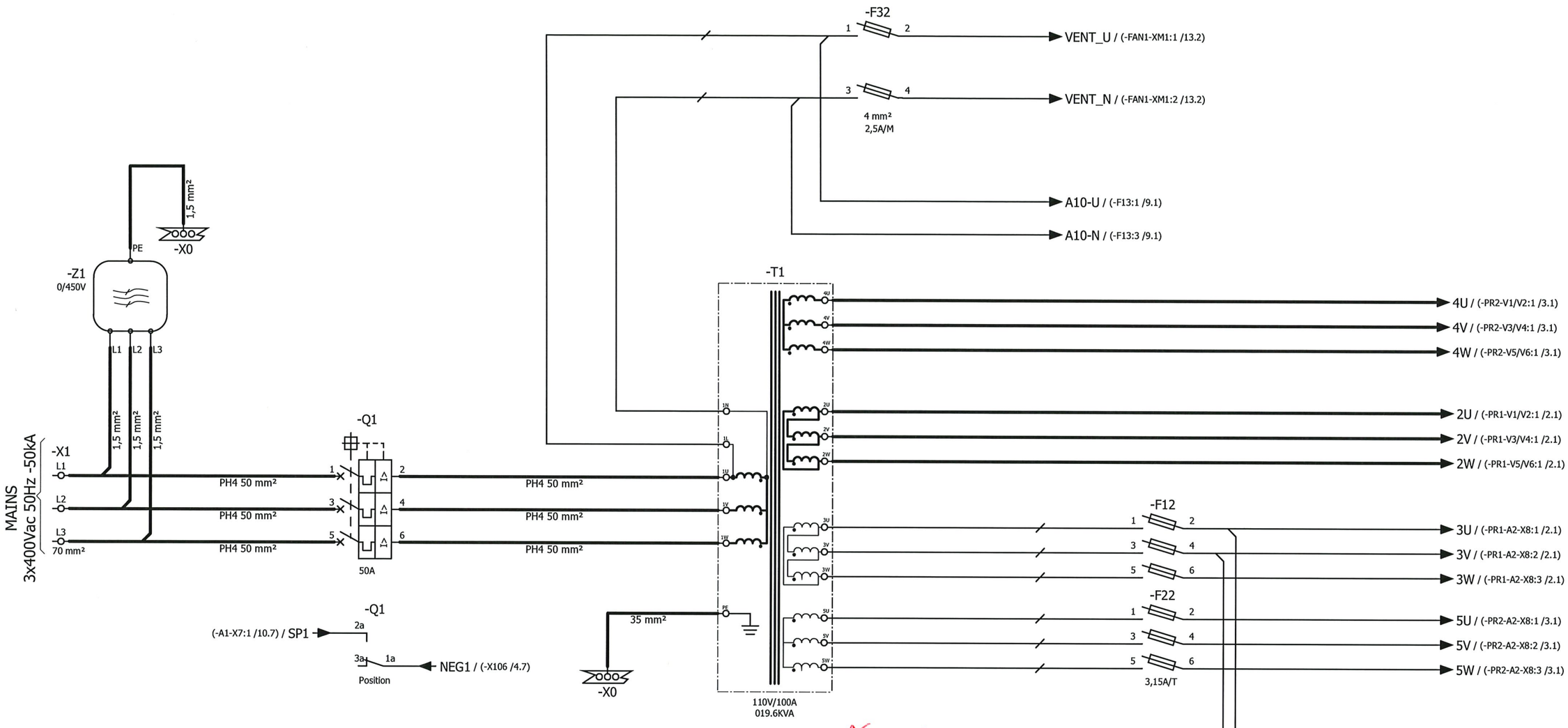
ES521464 en | A3 | = System | + INT 13 / 49 | & EE1A1 | Sheet 2 | Sheets 2

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Main supply
Rectifier 1
System

ES521464 en

= System
+ REC1
& EFS

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Sheet 1
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-PR1
75A 6P

-V1/V2
90A
1600V
V1R
V1P
V2R
V2P

-V3/V4
90A
1600V

-V5/V6
90A
1600V

(-T1:2U /1.8) / 2U
(-T1:2V /1.8) / 2V
(-T1:2W /1.8) / 2W
PH4 16 mm²

-(+)
-(-)
PH4 25 mm²

PR1+ / (-U+ /4.1)
R2(1) / (-PR2-(-) /3.8)
R2M+ / (-A1-X5:3 /10.4)
R2M- / (-A1-X5:4 /10.4)
REC- / (-U- /4.1)
R2(2) / (-PR2-A2-X2:1 /3.8)

-R2
100mV
130A

-U-
(/4.2)
(/5.1)

-W10
0,15 m
21x0,5mm²
Carta disparo
tiristores

-W20
8x0,5
(-F12:2 /1.8) / 3U
(-F12:4 /1.8) / 3V
(-F12:6 /1.8) / 3W

-W11
(/2.6)
(/3.6)
0,8 m
6x0,5

X8 AC POWER SUPPLY
X2 AC AC AC
X4 X3
X5 X3
X6 X3
X2 DC DC PG + - 0V
FAN 24 (-)
FAN 24 (+)
(60° C)
X1

-A2
(+&EFA/1.3)
(/11.1)
TRIGGER BOARD
TPC

JT1

-THF2
90°C
-W11
(/2.5)
6x0,5
90° TEMP PR2 / (3.7)

-THF1
100°C
100° TEMP PR2 / (3.7)

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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Rectifier
Rectifier 1
System

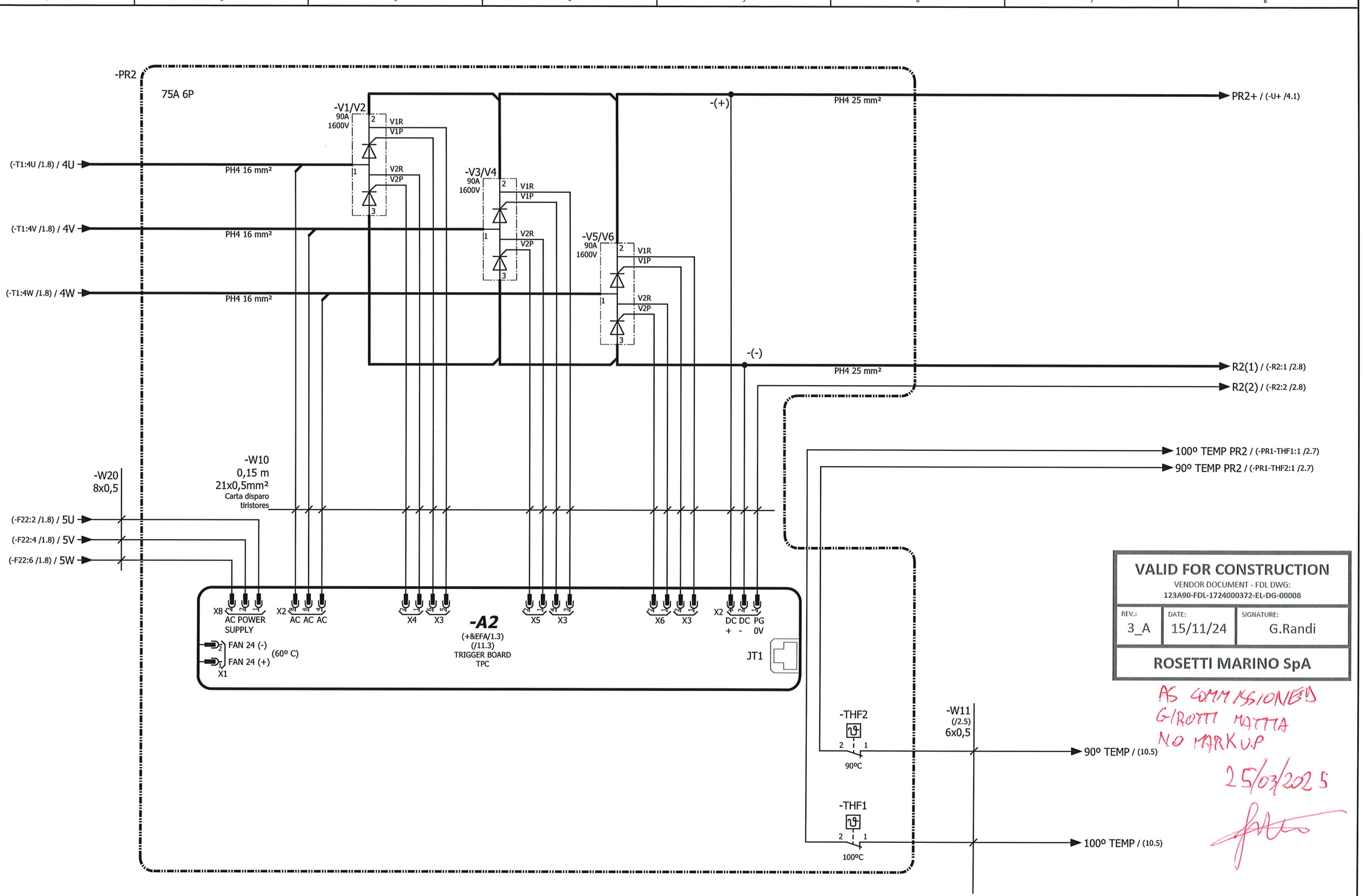
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+ REC1
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Rectifier
Rectifier 1
System

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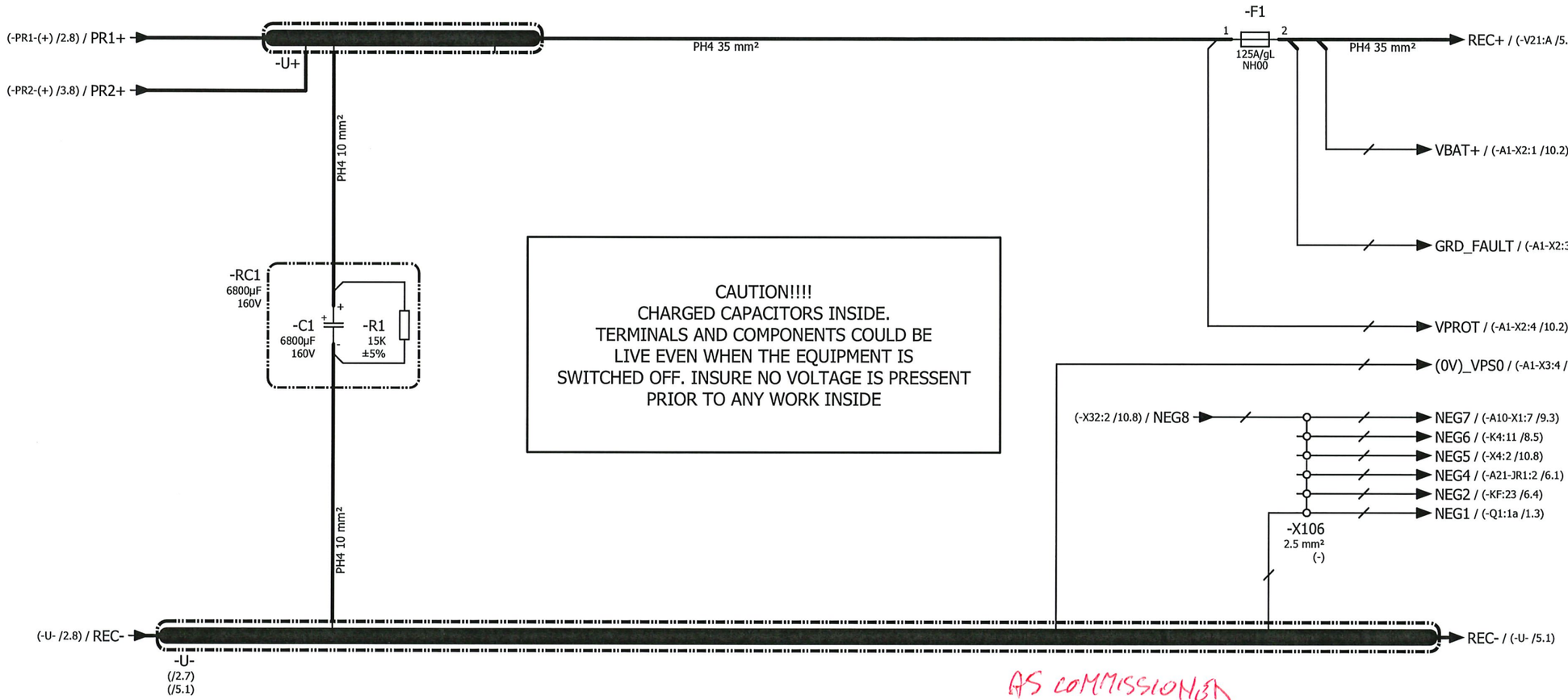
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CAUTION!!!!
CHARGED CAPACITORS INSIDE.
TERMINALS AND COMPONENTS COULD BE
LIVE EVEN WHEN THE EQUIPMENT IS
SWITCHED OFF. INSURE NO VOLTAGE IS PRESSENT
PRIOR TO ANY WORK INSIDE

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Filtering
Rectifier 1
System

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VPS+ / (-A1-X3:1 /10.3)

-X105
2.5 mm²
(+)

-V21
100A

(-F1:2 /4.7) / REC+

PH4 35 mm²

PH4 35 mm²
-Q2

-VL_LOAD+ / (-A1-X2:2 /10.2)

PH4 35 mm²

PH4 35 mm²

1000V - 160A
(/5.4)
(/10.6)

DC
DC

BUS(+) / (-L+-BUS(+) /6.1)

BUS(-) / (-L--BUS(-) /6.1)

1,5 mm²
1,5 mm²
L2
L1
-Z2
400V
PE
1,5 mm²
-X0

PH4 35 mm²
PH4 35 mm²
PH4 35 mm²
PH4 35 mm²

BAT+ / (-Q3:1 /9.1)

BAT- / (-R3:1 /9.1)

-F25
5x20
2,5A/M

-K3
(/10.4)
(/10.4)

-Q2
(/5.5)
(/10.6)

(-F73:3 /10.5) / NCS_12V
(-F73:1 /10.5) / NCS_0V
12VDC ISO

-A30 VOLTAGE CONVERTER

Input
J9:1
J9:2
J9:3
J9:4
J9:5
J9:6

3,15A/T
-F1

J12B:2 -
J12B:1 +12V Iso
J12:2 -
J12:1 +12V Iso

J11C:2 -
J11C:1 +12V
J11B:2 -
J11B:1 +12V
J11:2 -
J11:1 +12V
J10B:2 -
J10B:1 +24V
J10:2 -
J10:1 +24V

INTERCONNECTION
-X6

(+REC2-X6:1 +REC2/5.7) / +REC2-INT(+)
(+REC2-X6:2 +REC2/5.7) / +REC2-INT(-)
Int
PH4 35 mm²
50 mm²

(-U- /4.7) / REC-
-U-
(/2.7)
(/4.2)

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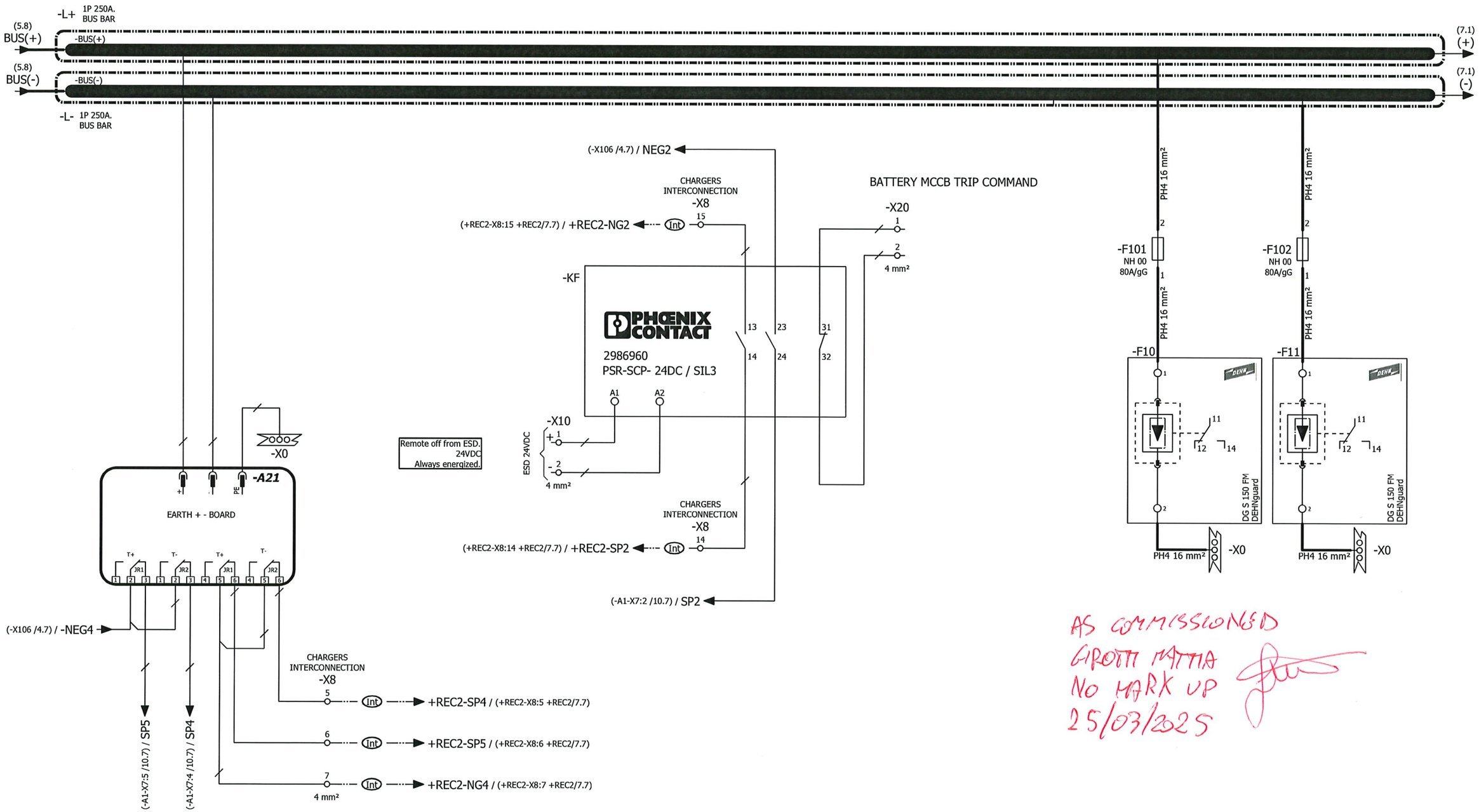
DC output
Rectifier 1
System

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Distributior
Rectifier 1
System

= Systerr
+ REC1
& EFS

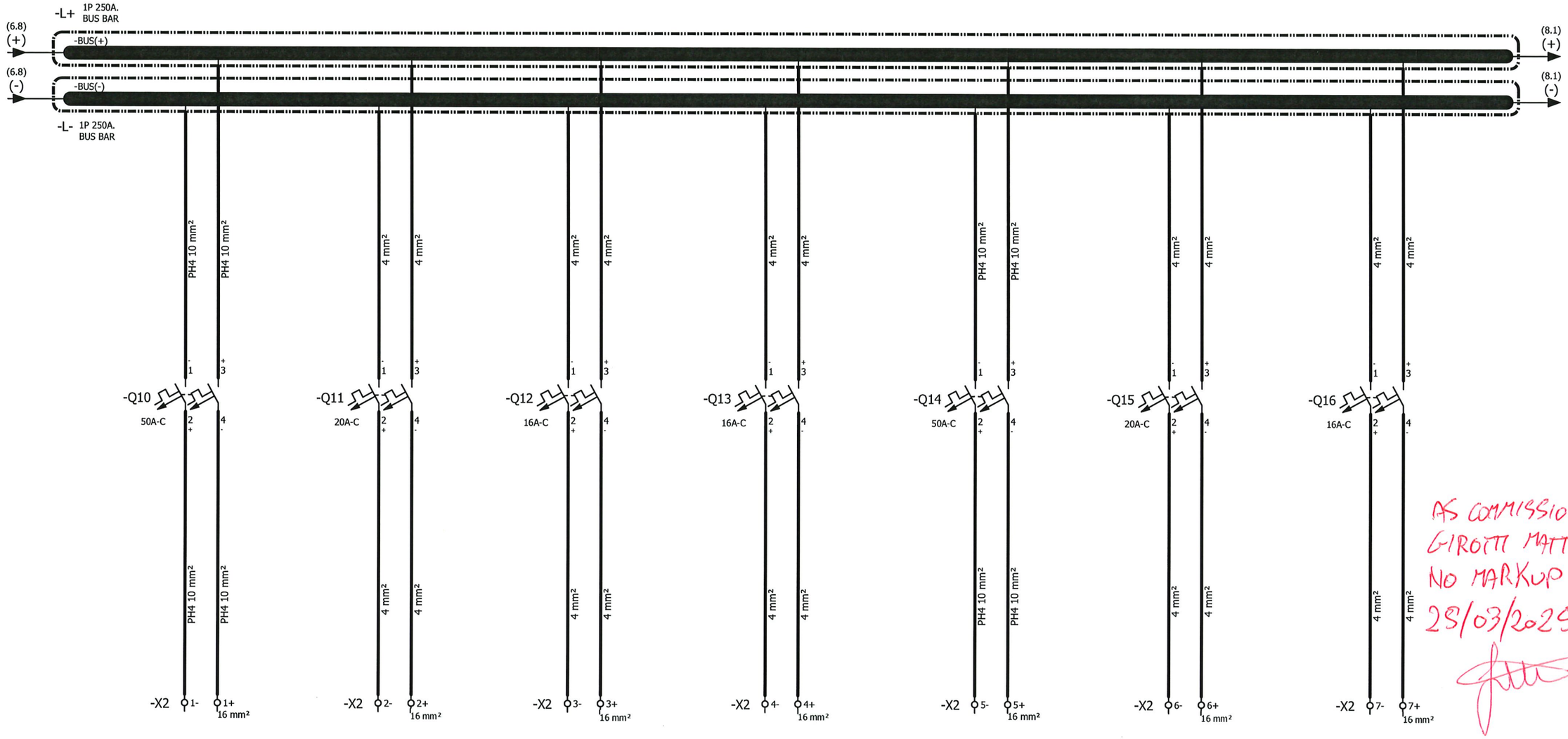
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	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
SUPPLIED FROM	-Q10	-Q11	-Q12	-Q13	-Q14	-Q15	-Q16
RATING	50A-C	20A-C	16A-C	16A-C	50A-C	20A-C	16A-C
MAXIMUM CROSS-SECTION	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²	16 mm²
AUXILIARY CONTACT	98 96 95 (/8.5)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)	98 96 95 (/8.4)
FUNCTION	CP-100F1 DC CONTROL 66kV G/S LINE A-5.2KW	CP-100F1 DC CONTROL 66kV G/S LINE B-2KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE A-1KW	SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE B-1KW	SPARE 5,5KW	SPARE 2KW	SPARE 1KW

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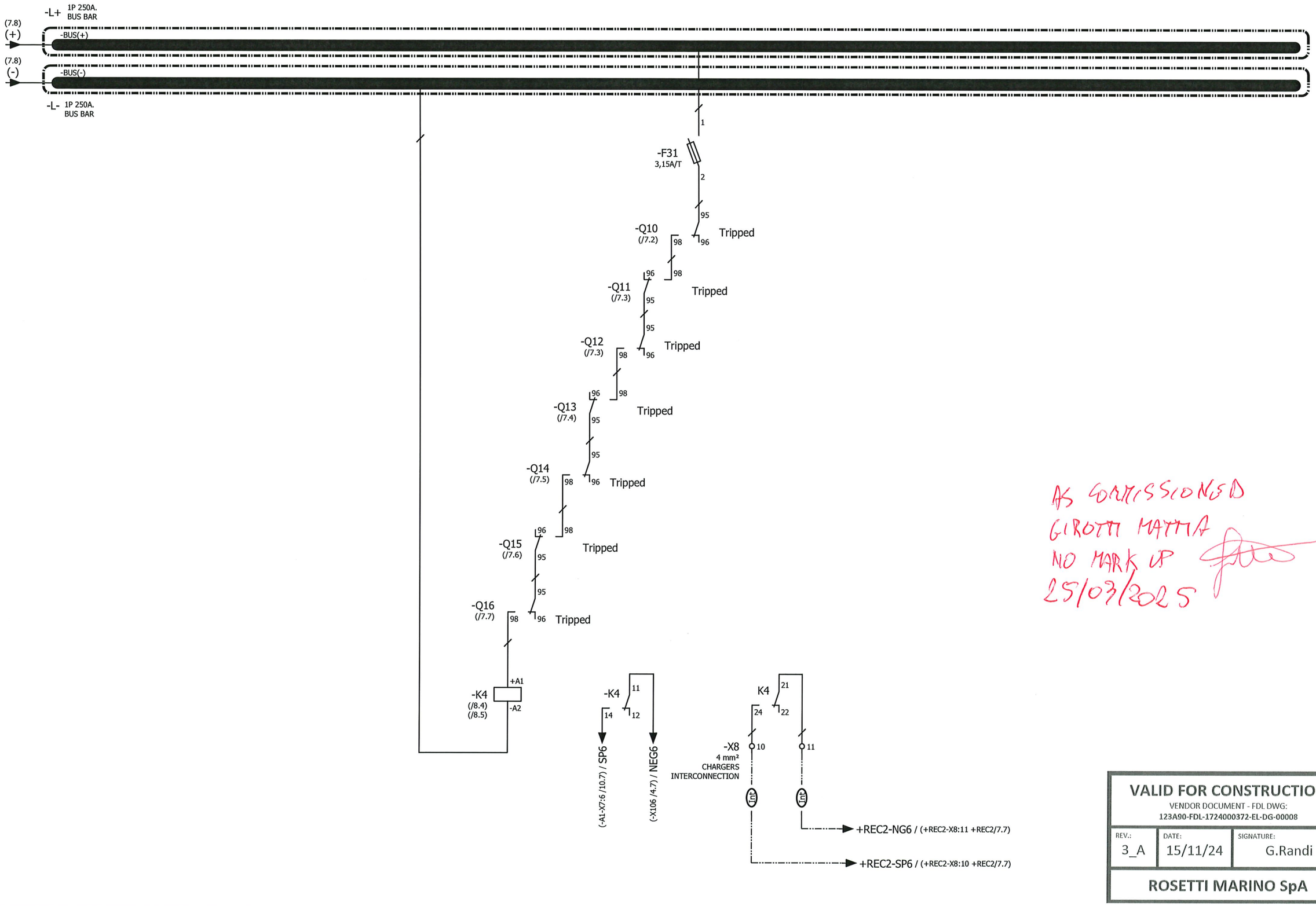
Distribution
Rectifier 1
System

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Distribution
Rectifier 1
System

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(-L+-BUS(+) /5.7) / BAT+

(-L--BUS(-) /5.7) / BAT-

-R3
100mV
130A
1 2 3 4

PH4 35 mm²

(-K3:24 /10.4) / R3M+

(-K3:14 /10.4) / R3M-

CHARGERS INTERCONNECTION
-X8

(+REC2-X8:8 +REC2/7.4) / +REC2-R3M+ — Int — 8

(+REC2-X8:9 +REC2/7.3) / +REC2-R3M- — Int — 9
4 mm²

PH4 35 mm²
-Q3
1 2 3 4 5 6
1000V - 160A

BATTERY 110Vdc
-X3
+ — Int
PH4 35 mm²
- — Int
PH4 35 mm²
50 mm²

+BP
(+&EFA/1.7)
BATTERY PROTECTION

BATTERY 110Vdc
BATTERY PROTECTION
NON SUPPLIED BY AEG PS
BATTERY 110Vdc

(-X32:1 /10.8) / SP8 — Int — 1
(-X32:2 /10.8) / NG8 — Int — 2
(+REC2-X32:1 +REC2/7.8) / +REC2-SP8 — Int — 3
(+REC2-X32:2 +REC2/7.8) / +REC2-NG8 — Int — 4

+ — Int
- — Int

-BAT
10x FLG12-150 (60 Cells)
(+)
MP
(-)

-A10
(+&EFA/1.6)

F13
(-F32:1 /1.6) / A10-U — 1 — 3,15A/T — 2 — X1 17
(-F32:3 /1.6) / A10-N — 3 — 3,15A/T 5x20 — 4 — X1 15

BATTERY SYMMETRY FAILURE

X1 3 1 5 — F23 1 2 3,15A/T; 3 4 3,15A/T 5x20 — X1 + -

X1 7 8 9 13 12 11

SP7 / (-A1-X7:7 /10.7)
NEG7 / (-X106 /4.7)

Battery symmetry
-X31
6 mm²
Int
max 10 mts
Plastic box 80*80
-F100
3.15A
max 10 mts
Int

Int → +REC2-BATT_SYMM / (+REC2-X31 +REC2/6.7)

CHARGERS INTERCONNECTION
-X8
12 — Int → +REC2-BATT_+ / (+REC2-X8:12 +REC2/6.6)
13 — Int → +REC2-BATT_- / (+REC2-X8:13 +REC2/6.6)
4 mm²

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Battery
Rectifier 1
System

= System
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1	2	3	4	5	6	7	8

-A1
(/11.2)
GCAU
CONTROL UNIT

A10

VBAT+ / (-F1:2 /4.7)
VL_LOAD+ / (-Q2:4 /5.6)
GRD_FAULT / (-F1:2 /4.7)
VPROT / (-F1:1 /4.7)
VPS+ / (-X105 /5.4)
(0V)_VPS0 / (-U- /4.7)
R3M- / (-R3:3 /9.2)
R3M+ / (-R3:4 /9.2)
R2M- / (-R2:3 /2.8)
R2M+ / (-R2:4 /2.8)
-K3
-K3
100º TEMP / (-PR2-THF1:1 /3.7)
90º TEMP / (-PR2-THF2:1 /3.7)
-W20
8x0,5
6U / (-F12:2 /1.8)
6V / (-F12:4 /1.8)
-Q2
(/5.5)
(/5.4)
-F5
3,15A/T
5x20

X1 Thyristor driving gate 1 / Thyristor driving cathode 1 / Thyristor driving gate 2 / Thyristor driving cathode 2
X2 Battery voltage measurement and charger regulation / Load voltage measurement / Ground fault dectection positive connection / Capacitor over voltage protection / Battery symmetry measurement
X3 Positive DC bus power supply / Low Voltage Disconnection contactor output / Negative DC bus power supply
X4 Relay shown in alarm status
X5 Battery shunt positive line / Battery shunt negative line / Charger shunt positive line / Charger shunt negative line
X6 Analog spare input positive line (0-10V) / Analog spare input negative line (0-10V)
X8 Dual Highrate (shared or parallel) / Feedback // High rate / Shutdown for bridge temperature security / Bridge temperature alarm
X9 Alternative power supply (20VAC) / Fan command (+24V)
X10 12V extern power supply + / Gnd & extern power supply -
X11 DIN-Signal C096MS-4,4C1-2
J1 J2 J3 J4 J5 J7

-A8
Isolated
REMOTE (cross)
+12V
0V
J1
J2

CHARGERS INTERCONNECTION
-X8
Int +REC2-A / (+REC2-X8:4 +REC2/7.7)
Int +REC2-B / (+REC2-X8:3 +REC2/7.7)
Int +REC2-C / (+REC2-X8:2 +REC2/7.7)
Int +REC2-D / (+REC2-X8:1 +REC2/7.7)
4 mm² 2,5 mm²

BP INTERCONNECTION
-X32
SP8 / (+BP-X30:1 /9.6)
NG8 / (+BP-X30:2 /9.6
NEG8 / (-X106 /4.6)

X7
Q1 OPEN — SP1 / (-Q1:2a /1.2)
REMOTE OFF INHIBITION — SP2 / (-KF:24 /6.4)
Digital spare input 3
GROUND FAULT - — SP4 / (-A21-JR2:3 /6.2)
GROUND FAULT + — SP5 / (-A21-JR1:3 /6.2)
DISTRIBUTION FAILURE — SP6 / (-K4:14 /8.4)
BATT.SYMM.FAULT — SP7 / (-A10-X1:8 /9.3)
VENTILATION FAILURE

Floating forced Charger -X4
Normally closed
(-X106 /4.7) / NEG5
Stop boost charging in case of HVAC failure
(open de contact)

-A71
EXTERN COMMUNICATION
H1
EIA232 J2
EIA485 J3

-J8

-A73
NCS-TCP/IP
PT3 PT4
PT1 PT2
MODBUS-TCP/IP I4
EIA232
+12V
0V
H1

-F73
3,15A/T
5x20
NCS_0V / (-A30-J12:2 /5.2)
NCS_12V / (-A30-J12:1 /5.2)

-X
UMK-RJ45/S/8PTDA
-A7
-J16
CAT6A
MODBUS TCP/IP

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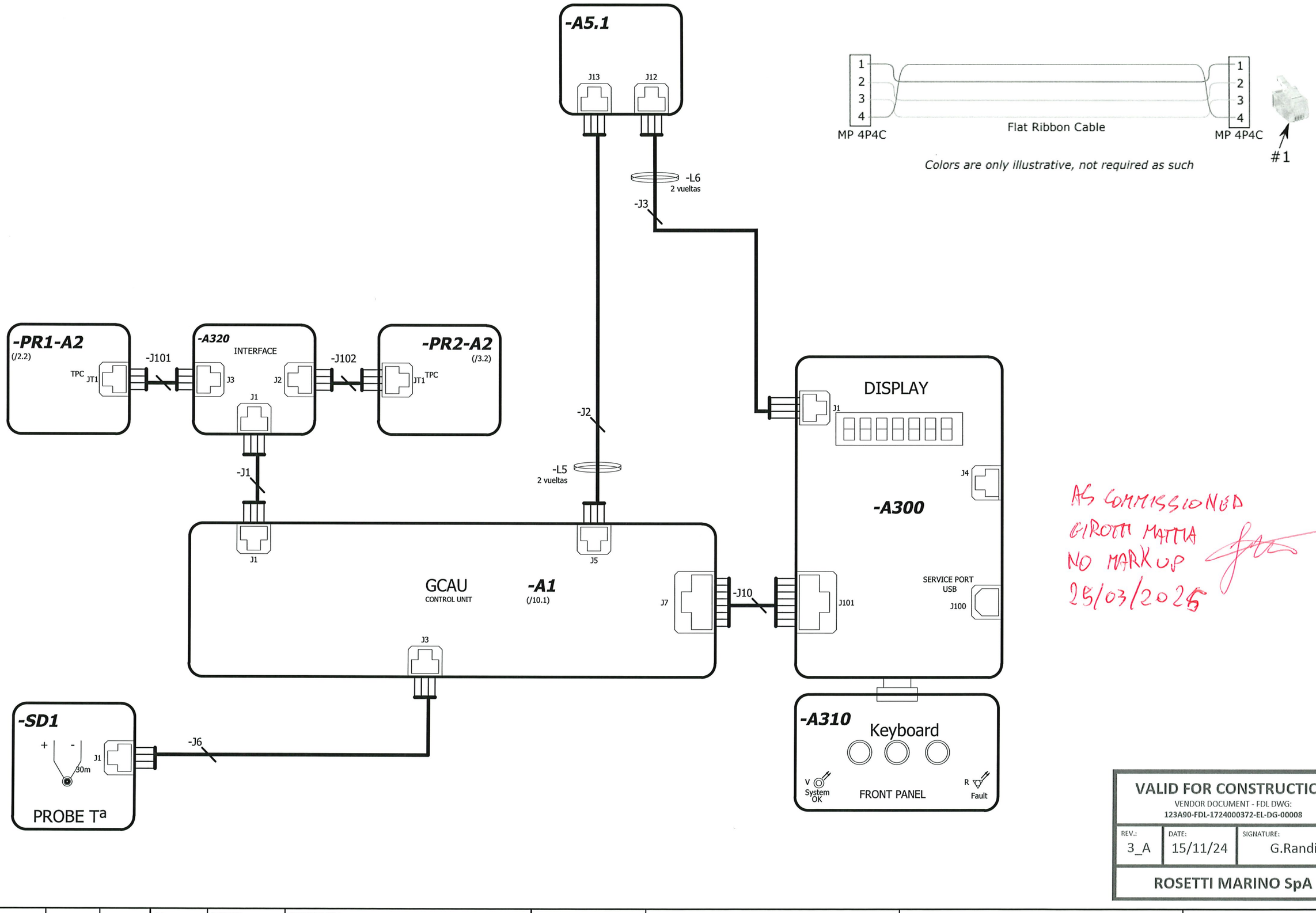
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Hollandse Kust Noord (HKN) wind farm

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PCB´s I2C communication buses
Rectifier 1
System

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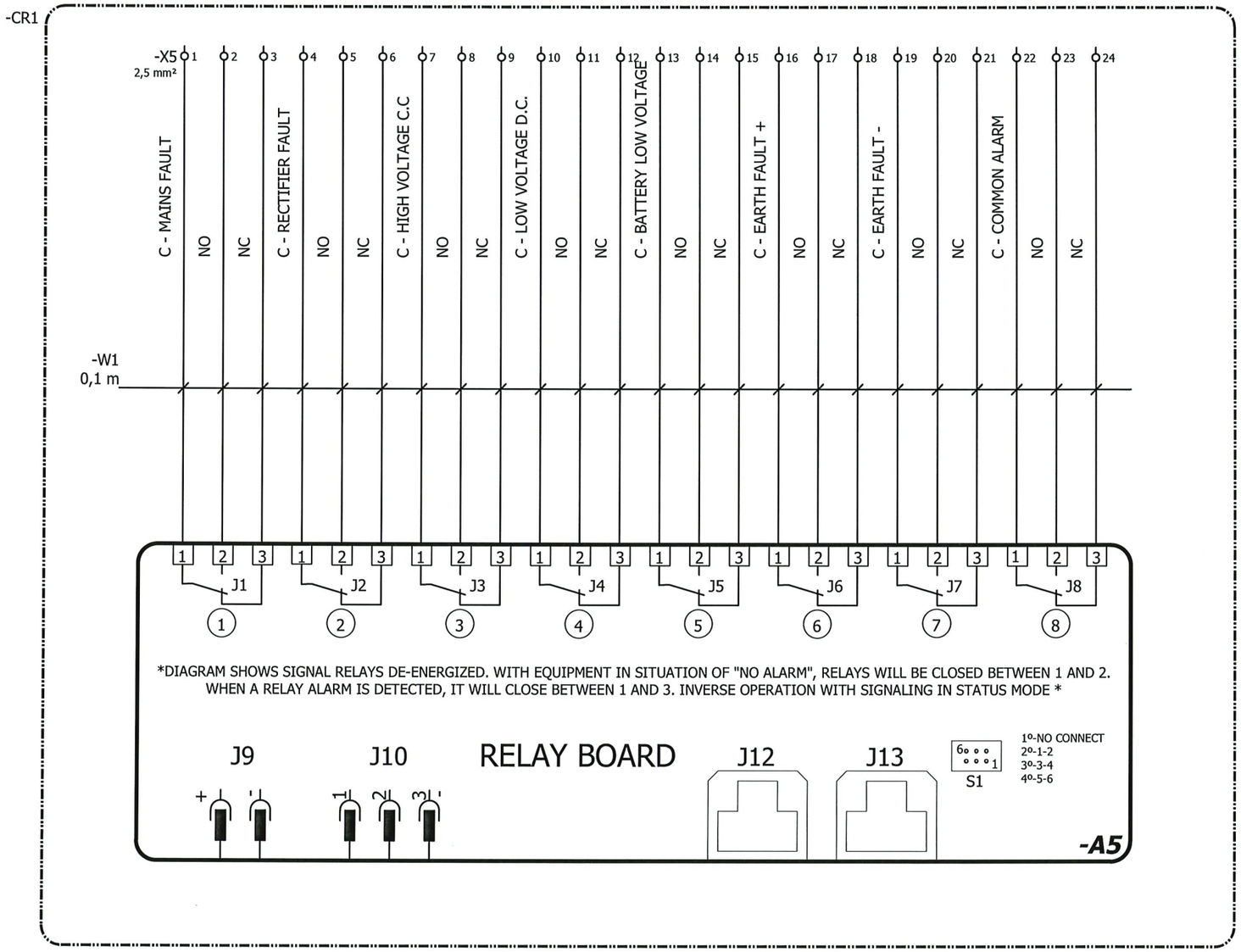
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				Date	21/03/2024	3W POWER S.P.A.	
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm	
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				Standard			

AEG POWER SOLUTIONS

Relay board
Rectifier 1
System

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= System
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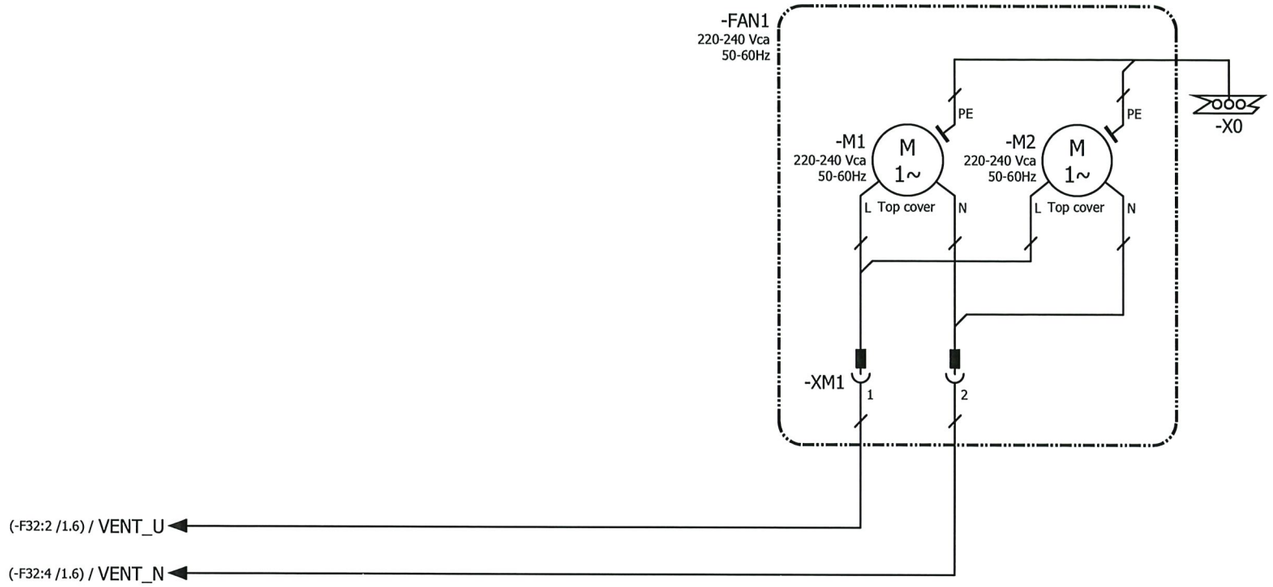
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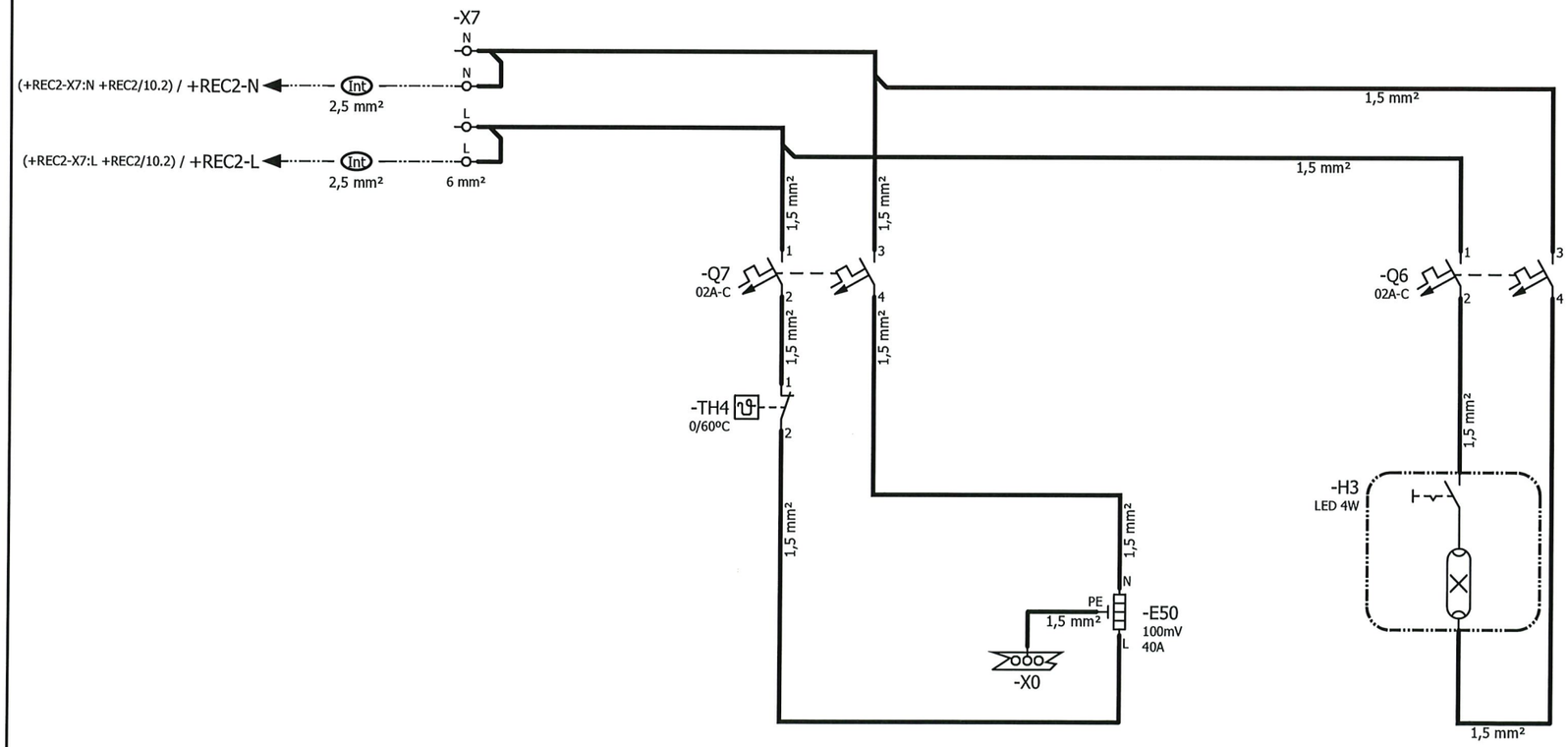
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AUXILIARY SUPPLY 230Vac-50Hz



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			Date 21/03/2024
			Editor EBM
			Checked JOP
			Standard

3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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Cabinet accesories
Rectifier 1
System

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Terminal diagram

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=System+REC1-X1

PART N° 229170

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X1 (&EFS/1.1)	L1		16 mm²	70 mm²	SCREW TYPE	L1	MAINS 3x400Vac 50Hz -50kA
-X1 (&EFS/1.1)	L2		16 mm²	70 mm²	SCREW TYPE	L2	=
-X1 (&EFS/1.1)	L3		16 mm²	70 mm²	SCREW TYPE	L3	=

=System+REC1-X2

PART N° 229106

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X2 (&EFS/7.2)	1+		0.5 mm²	16 mm²	SCREW TYPE		CP-100F1 DC CONTROL 66kV G/S LINE A-5.2KW
-X2 (&EFS/7.2)	1-		0.5 mm²	16 mm²	SCREW TYPE		=
-X2 (&EFS/7.3)	2+		0.2 mm²	6 mm²	SCREW TYPE		CP-100F1 DC CONTROL 66kV G/S LINE B-2KW
-X2 (&EFS/7.3)	2-		0.2 mm²	6 mm²	SCREW TYPE		=
-X2 (&EFS/7.4)	3+		0.2 mm²	6 mm²	SCREW TYPE		SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE A-1KW
-X2 (&EFS/7.3)	3-		0.2 mm²	6 mm²	SCREW TYPE		=
-X2 (&EFS/7.5)	4+		0.2 mm²	6 mm²	SCREW TYPE		SG-100D1 DC CONTROL 6,6kV SWITCHGEAR LINE B-1KW
-X2 (&EFS/7.4)	4-		0.2 mm²	6 mm²	SCREW TYPE		=
-X2 (&EFS/7.6)	5+		0.5 mm²	16 mm²	SCREW TYPE		SPARE 5,5KW
-X2 (&EFS/7.5)	5-		0.5 mm²	16 mm²	SCREW TYPE		=
-X2 (&EFS/7.6)	6+		0.2 mm²	6 mm²	SCREW TYPE		SPARE 2KW
-X2 (&EFS/7.6)	6-		0.2 mm²	6 mm²	SCREW TYPE		=

=System+REC1-X2

PART N° 229106

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X2 (&EFS/7.7)	7+		0.2 mm²	6 mm²	SCREW TYPE		SPARE 1KW
-X2 (&EFS/7.7)	7-		0.2 mm²	6 mm²	SCREW TYPE		=

=System+REC1-X3

PART N° ES273150

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X3 (&EFS/9.6)	+		1 mm²	50 mm²	SCREW TYPE	+	BATTERY 110Vdc
-X3 (&EFS/9.6)	-		1 mm²	50 mm²	SCREW TYPE	-	=

=System+REC1-X4

PART N° 229104

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X4 (&EFS/10.8)	1		0.22 mm²	4 mm²	SCREW TYPE	C	Floating forced Charger
-X4 (&EFS/10.8)	2		0.22 mm²	4 mm²	SCREW TYPE	NC	=

=System+REC1-X6

PART N° ES273150

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X6 (&EFS/5.5)	1		1 mm²	50 mm²	SCREW TYPE		INTERCONNECTION
-X6 (&EFS/5.5)	2		1 mm²	50 mm²	SCREW TYPE		=

=System+REC1-X7

PART N° 229106

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X7 (&EFS/13.2)	L		0.2 mm²	6 mm²	SCREW TYPE	L	AUXILIARY SUPPLY 230Vac-50Hz

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Terminal diagram
Rectifier 1
System

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Terminal diagram

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Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type	Function	
=System+REC1-X7						PART Nº 229106	
-X7 (&EFS/13.2)	L		0.2 mm²	6 mm²	SCREW TYPE	L	AUXILIARY SUPPLY 230Vac-50Hz
-X7 (&EFS/13.2)	N		0.2 mm²	6 mm²	SCREW TYPE	N	=
-X7 (&EFS/13.2)	N		0.2 mm²	6 mm²	SCREW TYPE	N	=

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type	Function	
=System+REC1-X8						PART Nº 229104	
-X8 (&EFS/10.7)	1		0.22 mm²	4 mm²	SCREW TYPE		CHARGERS INTERCONNECTION
-X8 (&EFS/10.7)	2		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/10.7)	3		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/10.7)	4		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/6.2)	5		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/6.2)	6		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/6.2)	7		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/9.2)	8		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/9.2)	9		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/8.5)	10		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/8.5)	11		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/9.5)	12		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/9.5)	13		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/6.4)	14		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/6.4)	15		0.22 mm²	4 mm²	SCREW TYPE		=

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type	Function	
=System+REC1-X10						PART Nº 229104	
-X10 (&EFS/6.4)	1		0.22 mm²	4 mm²	SCREW TYPE	+	ESD 24VDC
-X10 (&EFS/6.4)	2		0.22 mm²	4 mm²	SCREW TYPE	-	=

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type	Function	
=System+REC1-X20						PART Nº 229104	
-X20 (&EFS/6.5)	1		0.22 mm²	4 mm²	SCREW TYPE	NO	BATTERY MCCB TRIP COMMAND
-X20 (&EFS/6.5)	2		0.22 mm²	4 mm²	SCREW TYPE	C	=

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type	Function	
=System+REC1-X31						PART Nº 229106	
-X31 (&EFS/9.6)			0.2 mm²	6 mm²	SCREW TYPE		Battery symmetry

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type	Function	
=System+REC1-X32						PART Nº 229104	
-X32 (&EFS/10.8)	1		0.22 mm²	4 mm²	SCREW TYPE		BP INTERCONNECTION
-X32 (&EFS/10.8)	2		0.22 mm²	4 mm²	SCREW TYPE		=

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Terminal diagram
Rectifier 1
System

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Identifier	Quantity	AEG Part Number	Designation		AEG Recomended as Spare Part	Servicetime (Years)
A1	1	GC_ES272500	GCAU BOARD	GCAU	X	
A1-A71	1	ES416161	PCA COMMUNIC. EXT. GCAU 232/485		X	
A7	1	ES277921	ADAPTER		X	
A8	1	ES275962	ISOLATION BOARD		X	
A10	1	215293	BATTERY SIMETRY BOARD A10		X	
A21	1	GC_ES425889	EARTH FAULT BOARD		X	
A30	1	ES417940	CONVERTER BOARD		X	
A30-F1;F5;F12;F13;F22;F23;F31;F73;F100-F100	17	ES274292	FUSE	3,15A/T	X	
A73	1	GC_ES273626	PCA COMMUNIC. TCP/IP		X	
A300-A300	1	ES272501	DISPLAY		X	
A300-A310	1	211921	KEY PAD		X	
A320	1	ES416456	TPC INTERFACE BOARD		X	
CR1-A5	1	228540	RELAYS PCB EXT		X	
CR1-X5	16	221606	TRIPLE TERMINAL	2,5 mm²		
CR1-W1	1	ES275423	WIRES SET			
CR1-X5	1	221607	ENDPLATE			
E50-E1	1	220659	HEATING RESISTOR	100W		
F1;F101;F102	3	223181	FUSE HOLDER	NH 00		
F1	1	213381	FUSE	125A/gL	X	
F5;F13;F23;F25;F32;F73	6	ES417902	DOUBLE FUSE HOLDER	5x20		
F10;F11	2	228018	SURGE PROTECTION			
F12;F22	2	ES417903	TRIPLE FUSE HOLDER	5x20		

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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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Bill of materials
Rectifier 1
System

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Identifier	Quantity	AEG Part Number	Designation		AEG Recomended as Spare Part	Servicetime (Years)
F25;F32	4	213368	FUSE	2,5A/M	X	
F31	1	229134	FUSE HOLDER TERMINAL			
F31	1	229334	ENDPLATE			
F101;F102	2	ES275254	FUSE	80A/gL		
FAN1-M1;FAN1-M2	2	BMPU00287000	FAN	220-240 Vac 50-60Hz	X	5
H3	1	228099	LIGHTING SET	LED 4W		
J16	1	ES277638	ETHERNET CABLES	1m		
K3;K4	2	ES271165	AUXILIARY RELAY			
KF	1	ES274796	SECURITY RELAY			
L5;L6	2	228112	FERRITE			
L+;L-	2	226856	BUS	1P 250A.		
PR1-A2;PR2-A2	2	3TN21023AAAA	TPC BOARD		X	
PR1-V1/V2;PR1-V3/V4;PR1-V5/V6;PR2-V1/V2 PR2-V3/V4;PR2-V5/V6	6	214849	SEMIPACK 2 THYRISTORS	90A 1600V		
PR1-W10;PR2-W10	2	ES273576	WIRES SET			
PR1-THF1;PR2-THF1	2	ES212095	THERMOSTAT	100ºC		
PR1-THF2;PR2-THF2	2	ES215170	THERMOSTAT	90ºC		
Q1	1	ES272892	CIRCUIT BREAKER	50A		
Q1	1	BKD001036000	AUXILIARY CONTACT	Posición OF		
Q2;Q3	2	ES274517	DISCONNECTOR	1000V - 160A		
Q2	2	ES229261	AUXILIARY CONTACT			
Q6;Q7	2	224404	CIRCUIT BREAKER	2A-C		
Q10;Q14	2	ES271746	CIRCUIT BREAKER	50A-C		

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Identifier	Quantity	AEG Part Number	Designation		AEG Recomended as Spare Part	Servicetime (Years)
Q10...Q16	7	224157	AUXILIARY CONTACT			
Q11;Q15	2	ES272068	CIRCUIT BREAKER	20A-C		
Q12;Q13;Q16	3	ES271440	CIRCUIT BREAKER	16A-C		
R2;R3	2	212055	SHUNT	100mV 130A		
R2-1;R3-1	4	210012	INSULATOR			
RC1-1	3	ES229059	WASHER			
RC1-2	2	418226	TINNED COPPER CONNECTIONS			
RC1-3	1	213180	CAPACITOR METAL PLATE			
RC1-4;Z1;Z2	6	213787	ADAPTER		X	
RC1-C1	3	219804	CAPACITOR	6800µF 160V	X	7
RC1-R1	1	ES273618	RESISTANCE	15K ±5%		
SD1	1	ES272385	TEMPERATURE PROBE	30m		
T1	1	B00992740040	TRANSFORMER WITH CHOKE	110V/100A 019.6KVA		
TH4	1	220275	THERMOSTAT	0/60°C		
U+;U-	2	ES273807	TINNED COPPER CONNECTIONS			
V21	1	214872	DIODE	240A 1200V		
V21	2	216359	INSULATOR			
V21	1	410283	HEATSINK	L=100 mm		
W11	1	ES273652	WIRES SET			
X0	1	219059	TINNED COPPER CONNECTIONS			
X1	3	229170	GRAY TERMINAL	70 mm²		
X2	4	229116	GRAY TERMINAL	16 mm²		

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Rectifier 1
System

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Identifier	Quantity	AEG Part Number	Designation		AEG Recomended as Spare Part	Servicetime (Years)
X2;X7;X31	15	229106	GRAY TERMINAL	6 mm²		
X2;X4;X7;X8;X20;X31;X32	8	229304	ENDPLATE			
X3;X6	4	ES273150	GRAY TERMINAL	50 mm²		
X4;X8;X10;X20;X32	23	229104	GRAY TERMINAL	4 mm²		
X7	2	227799	JUMPER			
X105	1	ES277127	BUS			
X106	1	ES276860	BUS			
Z1	1	ES229868	PCA FILTER EMC	0/450V	X	
Z1	1	ES273041	PROTECTIÓN COVER		X	
Z2	1	ES229869	PCA FILTER EMC	400V	X	
Z2	1	ES228792	PROTECTIÓN COVER		X	

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Bill of materials
Rectifier 1
System

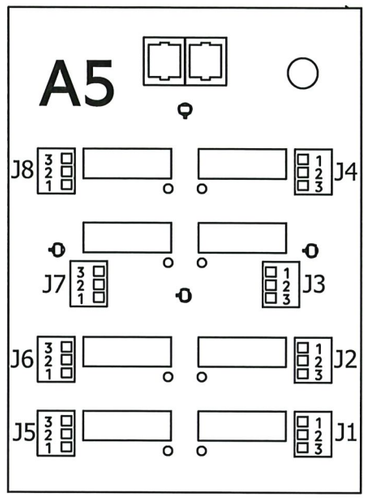
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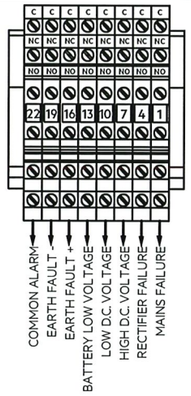
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Relay card detail

CR1



Terminal	Connection point type	Max section	4 mm²
	Screw type	Min section	0.2 mm²



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Hollandse Kust Noord (HKN) wind farm

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Relay card detail
Rectifier 1
System

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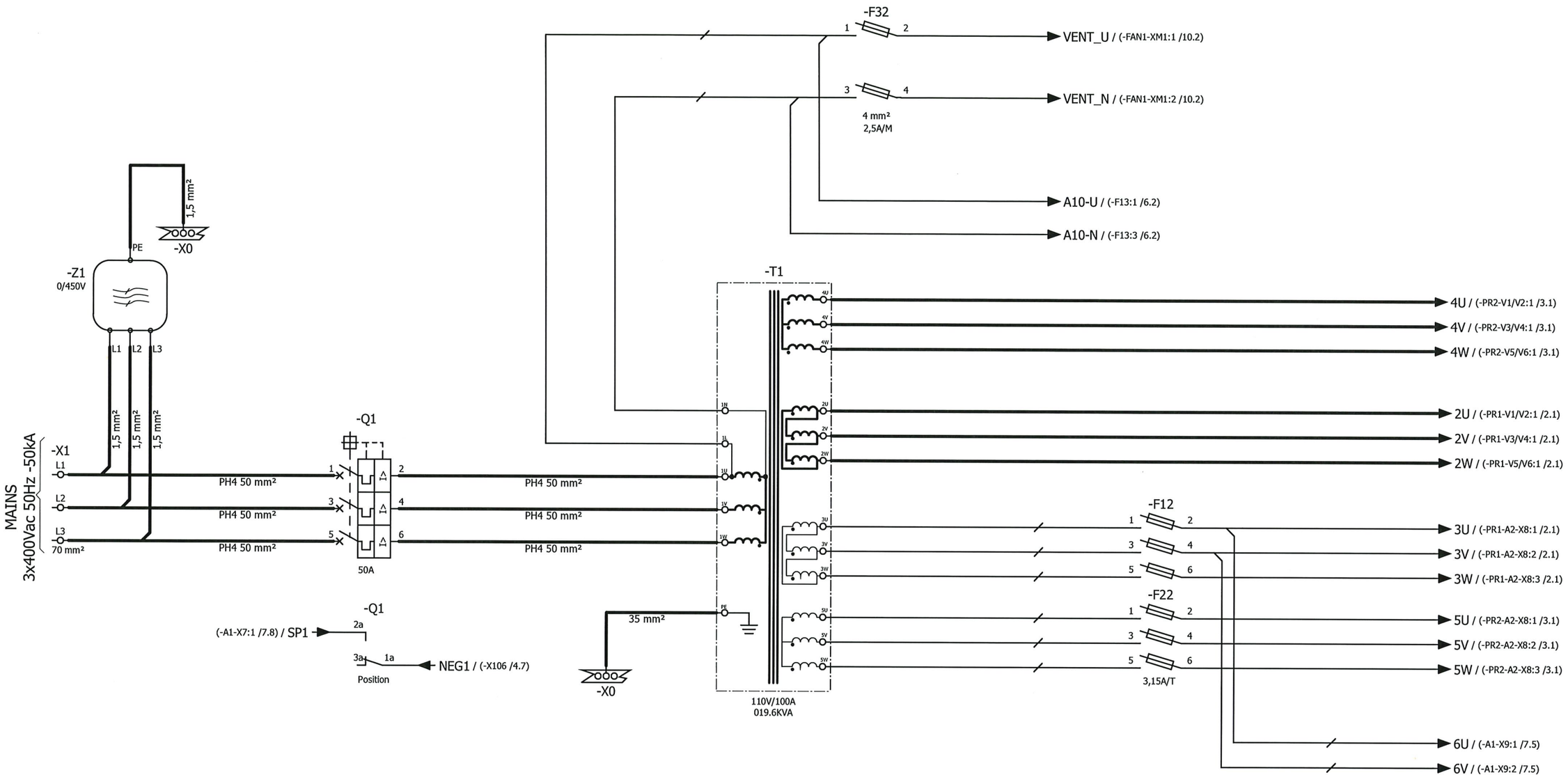
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Main supply
Rectifier 2
System

ES521464 en

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-PR1
75A 6P

-V1/V2
90A
1600V
V1R
V1P
V2R
V2P

-V3/V4
90A
1600V

-V5/V6
90A
1600V

(-T1:2U /1.8) / 2U
(-T1:2V /1.8) / 2V
(-T1:2W /1.8) / 2W
PH4 16 mm²

-(+)
PH4 25 mm²
PR1+ / (-U+ /4.1)
R2(1) / (-PR2-(-) /3.8)

R2M+ / (-A1-X5:3 /7.4)
R2M- / (-A1-X5:4 /7.4)

-R2
100mV
130A

-(-)
PH4 25 mm²
REC- / (-U- /4.1)
-U-
(/4.2)
(/5.1)
R2(2) / (-PR2-A2-X2:1 /3.8)

-W20
8x0,5
(-F12:2 /1.8) / 3U
(-F12:4 /1.8) / 3V
(-F12:6 /1.8) / 3W

-W10
0,15 m
21x0,5mm²
Carta disparo
tiristores

-W11
(/2.6)
(/3.6)
0,8 m
6x0,5

-W11
(/2.5)
6x0,5

X8 AC POWER SUPPLY
X2 AC AC AC
X4 X3
X5 X3
X6 X3
X2 DC DC PG + - 0V
FAN 24 (-)
FAN 24 (+)
X1
(60° C)

-A2
(+&EFA/1.3)
(/8.1)
TRIGGER BOARD
TPC

JT1

-THF2
90°C
90° TEMP PR2 / (3.7)

-THF1
100°C
100° TEMP PR2 / (3.7)

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-PR2
75A 6P

-V1/V2
90A
1600V
V1R
V1P
V2R
V2P

-V3/V4
90A
1600V
V1R
V1P
V2R
V2P

-V5/V6
90A
1600V
V1R
V1P
V2R
V2P

(-T1:4U /1.8) / 4U → PH4 16 mm²
(-T1:4V /1.8) / 4V → PH4 16 mm²
(-T1:4W /1.8) / 4W → PH4 16 mm²

-(+) → PH4 25 mm² → PR2+ / (-U+ /4.1)
-(-) → PH4 25 mm² → R2(1) / (-R2:1 /2.8)
R2(2) / (-R2:2 /2.8)

100° TEMP PR2 / (-PR1-THF1:1 /2.7)
90° TEMP PR2 / (-PR1-THF2:1 /2.7)

-W20
8x0,5
(-F22:2 /1.8) / 5U
(-F22:4 /1.8) / 5V
(-F22:6 /1.8) / 5W

-W10
0,15 m
21x0,5mm²
Carta disparo tiristores

X8 AC POWER SUPPLY
X2 AC AC AC
X4 X3
X5 X3
X6 X3
X2 DC DC PG + - 0V
FAN 24 (-)
FAN 24 (+)
(60° C)
X1

-A2
(+&EFA/1.3)
(/8.3)
TRIGGER BOARD
TPC

JT1

-THF2
90°C
-W11
(/2.5)
6x0,5
90° TEMP / (7.5)

-THF1
100°C
100° TEMP / (7.5)

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(-PR1-(+) /2.8) / PR1+

(-PR2-(+) /3.8) / PR2+

-U+

PH4 35 mm²

PH4 10 mm²

-RC1
6800µF
160V

-C1
6800µF
160V

-R1
15K
±5%

-F1
125A/gL
NH00

PH4 35 mm²

REC+ / (-V21:A /5.1)

VBAT+ / (-A1-X2:1 /7.2)

GRD_FAULT / (-A1-X2:3 /7.2)

VPROT / (-A1-X2:4 /7.2)

(0V)_VPS0 / (-A1-X3:4 /7.3)

CAUTION!!!!
CHARGED CAPACITORS INSIDE.
TERMINALS AND COMPONENTS COULD BE
LIVE EVEN WHEN THE EQUIPMENT IS
SWITCHED OFF. INSURE NO VOLTAGE IS PRESSENT
PRIOR TO ANY WORK INSIDE

(-X32:2 /7.8) / NEG8

NEG7 / (-A10-X1:7 /6.3)

NEG6 / (-X8:11 /7.8)

NEG5 / (-X4:2 /7.7)

NEG4 / (-X8:7 /7.8)

NEG2 / (-X8:15 /7.8)

NEG1 / (-Q1:1a /1.3)

-X106
2.5 mm²
(-)

PH4 10 mm²

(-U- /2.8) / REC-

REC- / (-U- /5.1)

-U-
(/2.7)
(/5.1)

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AEG POWER SOLUTIONS

Filtering
Rectifier 2
System

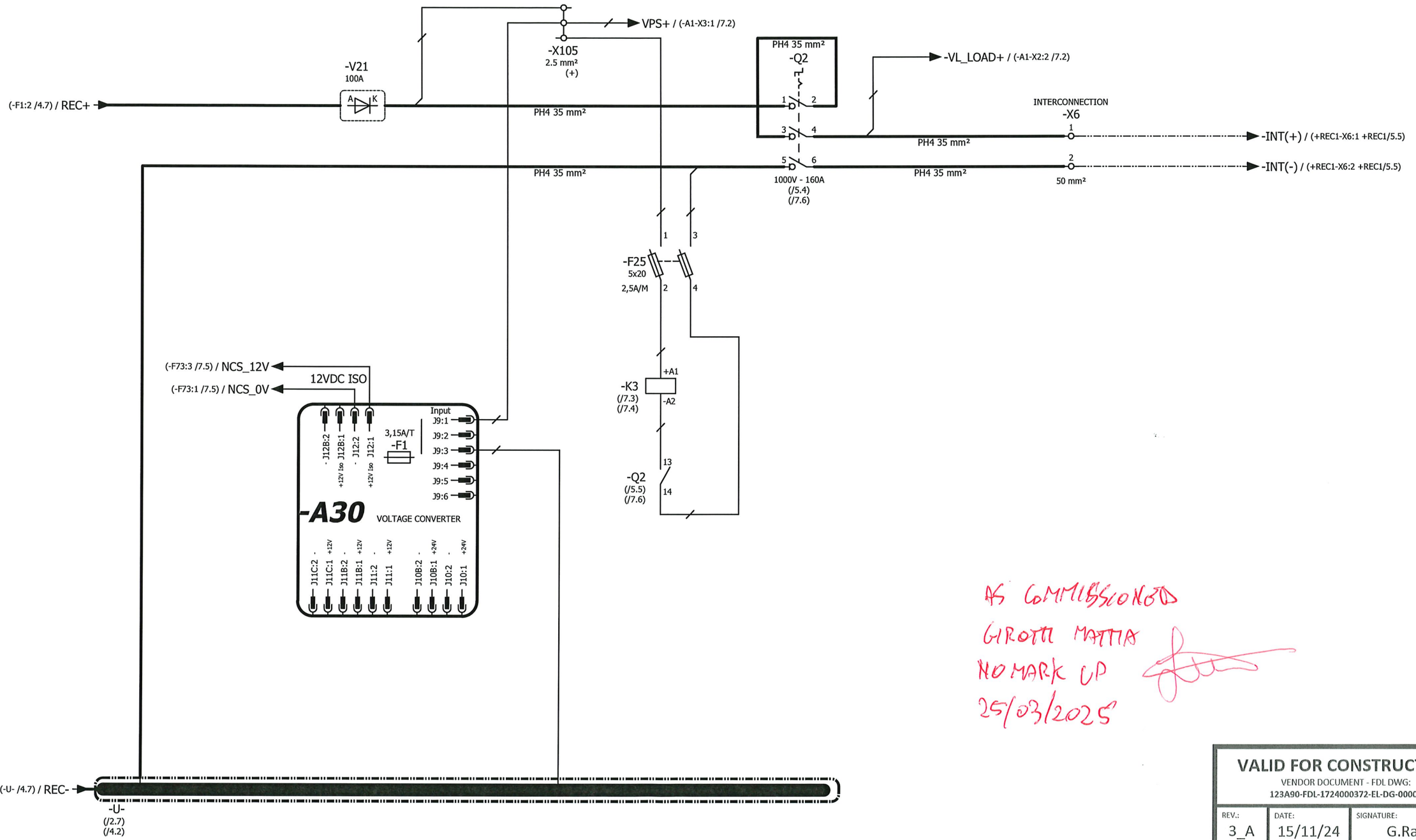
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= System
+ REC2
& EFS

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CHARGERS INTERCONNECTION
-X8
12 → -BATT_+ / (+REC1-X8:12 +REC1/9.5)
13 → -BATT_- / (+REC1-X8:13 +REC1/9.5)
4 mm²

-A10
(+&EFA/1.6)

F13
(-F32:1 /1.6) / A10-U → 1 → 2 → X1 L7 — 3,15A/T
(-F32:3 /1.6) / A10-N → 3 → 4 → X1 L5 — 3,15A/T 5x20

BATTERY SYMMETRY FAILURE

F23
3 → 1 → 2 — 3,15A/T
5 → 3 → 4 — 3,15A/T 5x20

X1 (7 8 9 | 13 12 11)

SP7 / (-A1-X7:7 /7.8)
NEG7 / (-X106 /4.7)

Battery symmetry
-X31
6 mm²
-BATT_SYMM / (+REC1-X31 +REC1/9.6)

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AEG POWER SOLUTIONS

Battery
Rectifier 2
System

= System
+ REC2
& EFS

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-A1
(/8.2)
GCAU
CONTROL UNIT

-A8
Isolated
REMOTE (cross)
J1
J2
+12V
0V

CHARGERS INTERCONNECTION -X8
+REC2-D / (+REC1-X8:4 +REC1/10.8)
+REC2-C / (+REC1-X8:3 +REC1/10.8)
+REC2-B / (+REC1-X8:2 +REC1/10.8)
+REC2-A / (+REC1-X8:1 +REC1/10.8)
4 mm²

BP INTERCONNECTION -X32
SP8 / (+BP-X30:3 +REC1/9.6)
NG8 / (+BP-X30:4 +REC1/9.6)

-X8 4 mm² CHARGERS INTERCONNECTION
SP4 / (+REC1-X8:5 +REC1/6.3)
SP5 / (+REC1-X8:6 +REC1/6.3)
NG4 / (+REC1-X8:7 +REC1/6.3)
SP6 / (+REC1-X8:10 +REC1/8.6)
NG6 / (+REC1-X8:11 +REC1/8.6)
SP2 / (+REC1-X8:14 +REC1/6.4)
NG2 / (+REC1-X8:15 +REC1/6.4)

VBAT+ / (-F1:2 /4.7)
VL_LOAD+ / (-Q2:4 /5.6)
GRD_FAULT / (-F1:2 /4.7)
VPROT / (-F1:1 /4.7)
VPS+ / (-X105 /5.4)
(0V)_VPS0 / (-U- /4.7)
R3M- / (+REC1-X8:9 +REC1/9.2)
R3M+ / (+REC1-X8:8 +REC1/9.2)
R2M- / (-R2:3 /2.8)
R2M+ / (-R2:4 /2.8)
100º TEMP / (-PR2-THF1:1 /3.7)
90º TEMP / (-PR2-THF2:1 /3.7)
6U / (-F12:2 /1.8)
6V / (-F12:4 /1.8)

-X8 CHARGERS INTERCONNECTION 4 mm²
-K3
-Q2 (/5.5) (/5.4)
-F5 3,15A/T 5x20
-W20 8x0,5

X1 Thyristor driving gate 1 / Thyristor driving cathode 1 / Thyristor driving gate 2 / Thyristor driving cathode 2
X2 Battery voltage measurement and charger regulation / Load voltage measurement / Ground fault detection positive connection / Capacitor over voltage protection / Battery symmetry measurement
X3 Positive DC bus power supply / Low Voltage Disconnection contactor output / Negative DC bus power supply
X4 Relay shown in alarm status
X5 Battery shunt positive line / Battery shunt negative line / Charger shunt positive line / Charger shunt negative line
X6 Analog spare input positive line (0-10V) / Analog spare input negative line (0-10V)
X8 Dual Highrate (shared or parallel) / Feedback // high rate / Shutdown for bridge temperature security / Bridge temperature alarm
X9 Alternative power supply (20VAC) / Fan command (+24V)
X10 12V extern power supply + / Gnd & extern power supply -

X7
Q1 OPEN → SP1 / (-Q1:2a /1.2)
REMOTE OFF INHIBITION
BATTERY PROTECTION
GROUND FAULT -
GROUND FAULT +
DISTRIBUTION FAILURE
BATT.SYMM.FAULT → SP7 / (-A10-X1:8 /6.3)
VENTILATION FAILURE

A10

-A71 EXTERN COMMUNICATION
H1
EIA232 J2
EIA485 J3
X11 DIN-Signal C096MS-4,4C1-2
J1 J2 J3 J4 J5 J7

-J8

-A73 NCS-TCP/IP
PT3 PT4 PT1 PT2
MODBUS-TCP/IP I4
EIA232 +12V 0V
H1
MODBUS TCP/IP

-F73 3,15A/T 5x20
NCS_0V / (-A30-J12:2 /5.2)
NCS_12V / (-A30-J12:1 /5.2)

-X UMK-RJ45/S/8PTDA -A7
-J16 CAT6A

Floating forced Charger -X4
Normally closed
(-X106 /4.7) / NEG5
Stop boost charging in case of HVAC failure (open de contact)

NEG8 / (-X106 /4.6)
NEG2 / (-X106 /4.7)
NEG4 / (-X106 /4.7)
NEG6 / (-X106 /4.7)

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AEG POWER SOLUTIONS

Control Unit
Rectifier 2
Syster

= System
+ REC2
& EFS

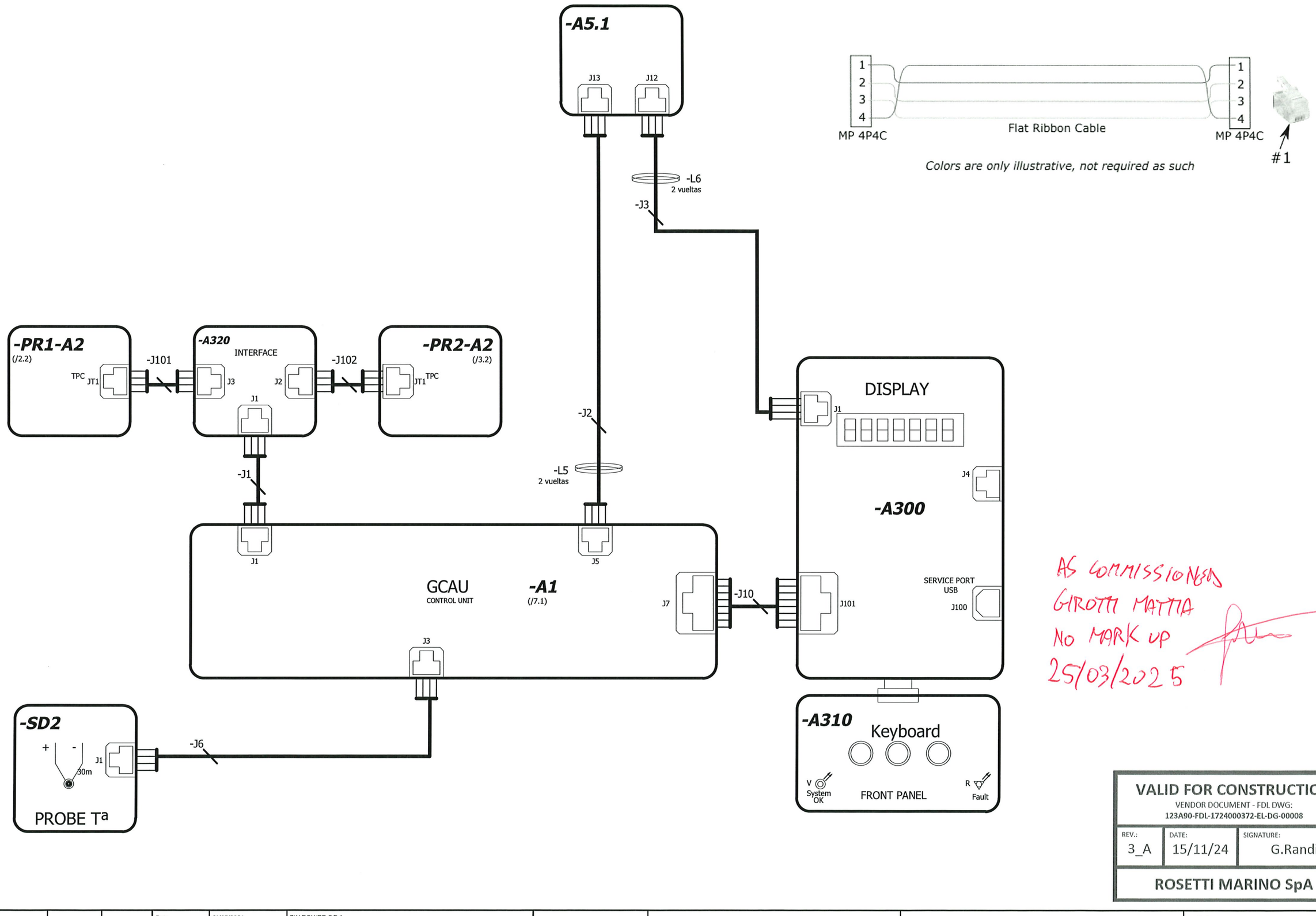
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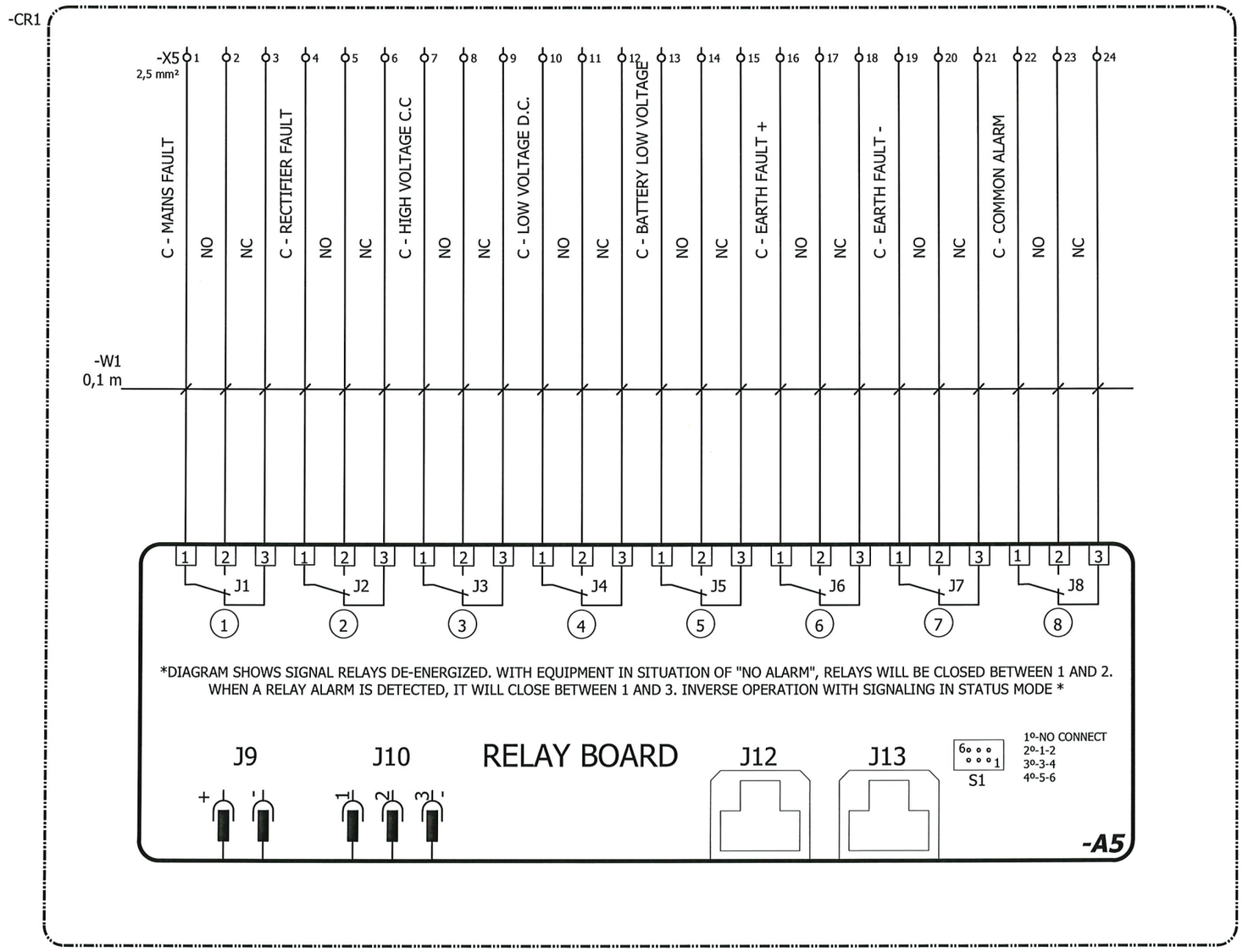
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AEG POWER SOLUTIONS

Relay board
Rectifier 2
System

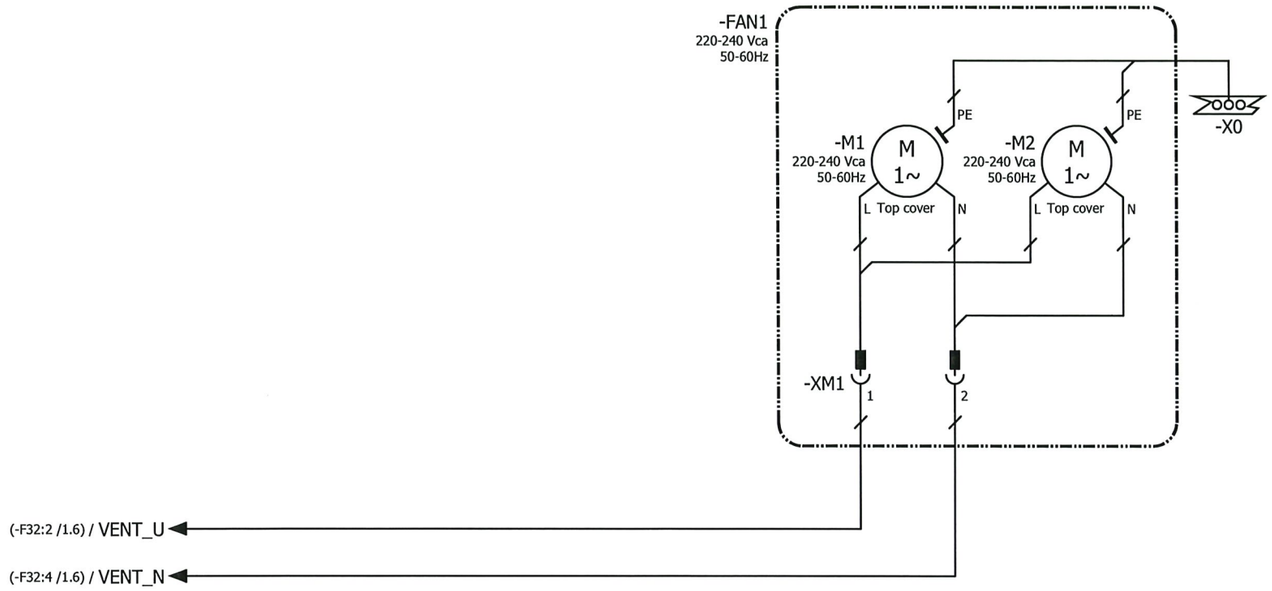
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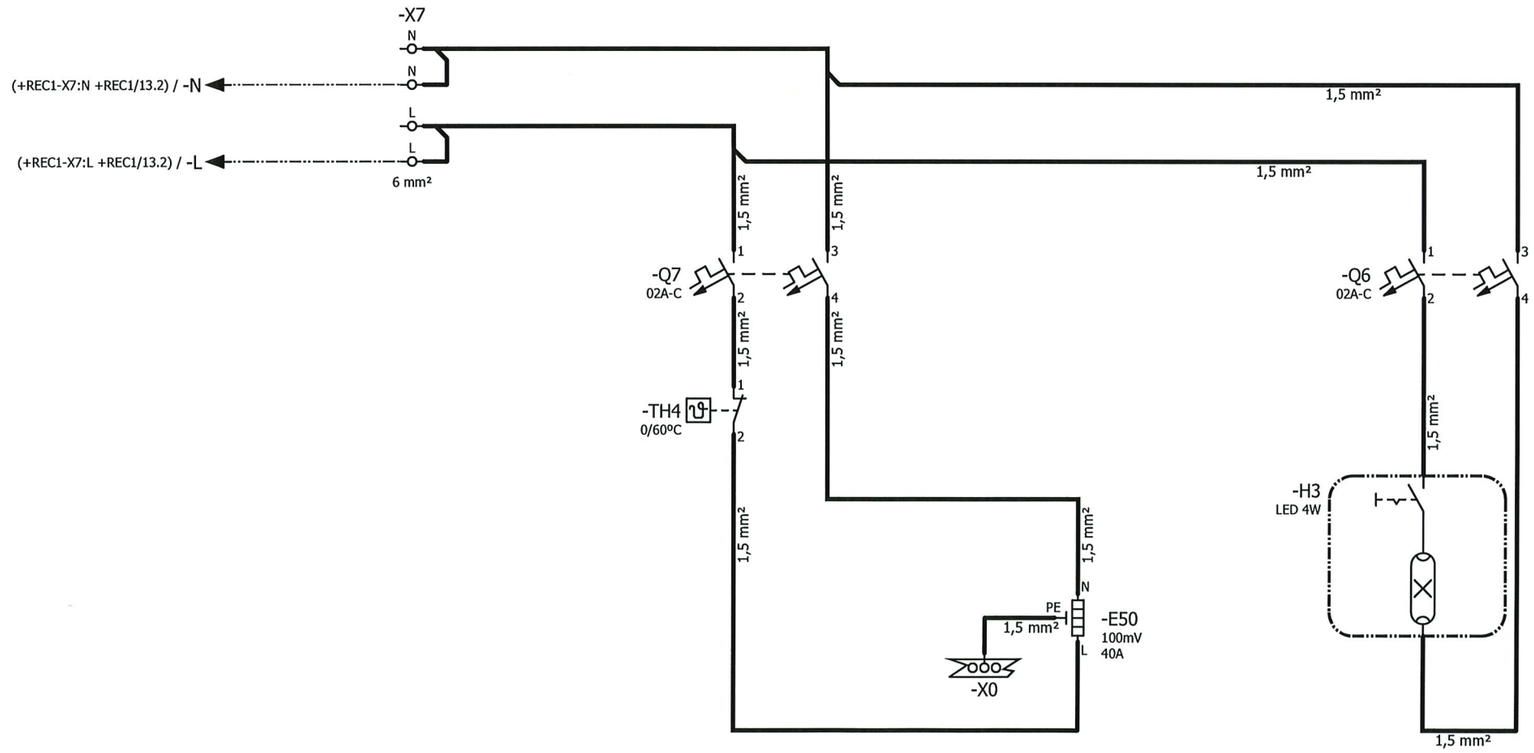
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AUXILIARY SUPPLY 230Vac-50Hz



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3W POWER S.P.A.
Hollandse Kust Noord (HKN) wind farm

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Cabinet accesories
Rectifier 2
System

= System
+ REC2
& EFS

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F13_T01.V02

Terminal diagram

=System+REC2-X1 — PART N°

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X1 (&EFS/1.1)	L1		16 mm²	70 mm²	SCREW TYPE	L1	MAINS 3x400Vac 50Hz -50kA
-X1 (&EFS/1.1)	L2		16 mm²	70 mm²	SCREW TYPE	L2	=
-X1 (&EFS/1.1)	L3		16 mm²	70 mm²	SCREW TYPE	L3	=

=System+REC2-X4 — PART N° 229104

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X4 (&EFS/7.7)	1		0.22 mm²	4 mm²	SCREW TYPE	C	Floating forced Charger
-X4 (&EFS/7.7)	2		0.22 mm²	4 mm²	SCREW TYPE	NC	=

=System+REC2-X6 — PART N° ES273150

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X6 (&EFS/5.6)	1		1 mm²	50 mm²	SCREW TYPE		INTERCONNECTION
-X6 (&EFS/5.6)	2		1 mm²	50 mm²	SCREW TYPE		=

=System+REC2-X7 — PART N°

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X7 (&EFS/10.2)	L		0.2 mm²	6 mm²	SCREW TYPE	L	AUXILIARY SUPPLY 230Vac-50Hz
-X7 (&EFS/10.2)	L		0.2 mm²	6 mm²	SCREW TYPE	L	=
-X7 (&EFS/10.2)	N		0.2 mm²	6 mm²	SCREW TYPE	N	=
-X7 (&EFS/10.2)	N		0.2 mm²	6 mm²	SCREW TYPE	N	=

=System+REC2-X8 — PART N° 229104

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X8 (&EFS/7.7)	1		0.22 mm²	4 mm²	SCREW TYPE		CHARGERS INTERCONNECTION
-X8 (&EFS/7.7)	2		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	3		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	4		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	5		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	6		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	7		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.4)	8		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.3)	9		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	10		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	11		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/6.5)	12		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/6.5)	13		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	14		0.22 mm²	4 mm²	SCREW TYPE		=
-X8 (&EFS/7.7)	15		0.22 mm²	4 mm²	SCREW TYPE		=

=System+REC2-X31 — PART N° 229106

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
-X31 (&EFS/6.6)			0.2 mm²	6 mm²	SCREW TYPE		Battery symmetry

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AEG POWER SOLUTIONS

Terminal diagram
Rectifier 2
System

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+ REC2 | 44 / 49
& EMA | A3 | Sheet 1 | Sheets 2

Terminal diagram

Nº Operating medium	Nº Terminal	Jumper connection	Min section	Max section	Connection point type		Function
=System+REC2-X32						PART Nº	229104
-X32 (&EFS/7.8)	1		0.22 mm²	4 mm²	SCREW TYPE		BP INTERCONNECTION
-X32 (&EFS/7.8)	2		0.22 mm²	4 mm²	SCREW TYPE		=

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Stat	Alteration	Date	Name	Standard			

AEG POWER SOLUTIONS

Terminal diagram
Rectifier 2
System

ES521464 en

= System
+ REC2
& EMA

A3

45 / 49
Sheet 2
Sheets 2

AEGPS_DOC_REV01
CAE EPLAN Electric P8
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Bill of materials

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00008

REV.:	DATE:	SIGNATURE:
3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
25/03/2025

AEGPSI.V04

Identifier	Quantity	AEG Part Number	Designation		AEG Recomended as Spare Part	Servicetime (Years)
A1	1	GC_ES272500	GCAU BOARD	GCAU	X	
A1-A71	1	ES416161	PCA COMMUNIC. EXT. GCAU 232/485		X	
A7	1	ES277921	ADAPTER		X	
A8	1	ES275962	ISOLATION BOARD		X	
A10	1	215293	BATTERY SIMETRY BOARD A10		X	
A30	1	ES417940	CONVERTER BOARD		X	
A30-F1;F5;F12;F13;F22;F23;F73	15	ES274292	FUSE	3,15A/T	X	
A73	1	GC_ES273626	PCA COMMUNIC. TCP/IP		X	
A300-A300	1	ES272501	DISPLAY		X	
A300-A310	1	211921	KEY PAD		X	
A320	1	ES416456	TPC INTERFACE BOARD		X	
CR1-A5	1	228540	RELAYS PCB EXT		X	
CR1-X5	16	221606	TRIPLE TERMINAL	2,5 mm²		
CR1-W1	1	ES275423	WIRES SET			
CR1-X5	1	221607	ENDPLATE			
E50-E1	1	220659	HEATING RESISTOR	100W		
F1	1	223181	FUSE HOLDER	NH 00		
F1	1	213381	FUSE	125A/gL	X	
F5;F13;F23;F25;F32;F73	6	ES417902	DOUBLE FUSE HOLDER	5x20		
F12;F22	2	ES417903	TRIPLE FUSE HOLDER	5x20		
F25;F32	4	213368	FUSE	2,5A/M	X	
FAN1-M1;FAN1-M2	2	BMPU00287000	FAN	220-240 Vac 50-60Hz	X	5

ES521464

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ROSETTI MARINO SpA

AS COMMISSIONED 25/03/2025
GIROTTI MATTIA
NO MARK UP

AEGPSI.V04

Identifier	Quantity	AEG Part Number	Designation		AEG Recomended as Spare Part	Servicetime (Years)
H3	1	228099	LIGHTING SET	LED 4W		
J16	1	ES277638	ETHERNET CABLES	1m		
K3	1	ES271165	AUXILIARY RELAY			
L5;L6	2	228112	FERRITE			
PR1-A2;PR2-A2	2	3TN21023AAAA	TPC BOARD		X	
PR1-V1/V2;PR1-V3/V4;PR1-V5/V6;PR2-V1/V2 PR2-V3/V4;PR2-V5/V6	6	214849	SEMIPACK 2 THYRISTORS	90A 1600V		
PR1-W10;PR2-W10	2	ES273576	WIRES SET			
PR1-THF1;PR2-THF1	2	ES212095	THERMOSTAT	100ºC		
PR1-THF2;PR2-THF2	2	ES215170	THERMOSTAT	90ºC		
Q1	1	GC_ES272892	CIRCUIT BREAKER	50A		
Q1	1	BKD001036000	AUXILIARY CONTACT	Posición OF		
Q2	1	ES274517	DISCONNECTOR	1000V - 160A		
Q2	2	ES229261	AUXILIARY CONTACT			
Q6;Q7	2	224404	CIRCUIT BREAKER	2A-C		
R2	1	212055	SHUNT	100mV 130A		
R2-1	2	210012	INSULATOR			
RC1-1	3	ES229059	WASHER			
RC1-2	2	418226	TINNED COPPER CONNECTIONS			
RC1-3	1	213180	CAPACITOR METAL PLATE			
RC1-4;Z1	4	213787	ADAPTER		X	
RC1-C1	3	219804	CAPACITOR	6800µF 160V	X	7
RC1-R1	1	ES273618	RESISTANCE	15K ±5%		

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3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

AS COMMISSIONED 25/03/2025
GIROTTI MATTIA
NO MARK UP

AEGPSI.V04

Identifier	Quantity	AEG Part Number	Designation		AEG Recomended as Spare Part	Servicetime (Years)
SD2	1	ES272385	TEMPERATURE PROBE	30m		
T1	1	B00992740040	TRANSFORMER WITH CHOKE	110V/100A 019.6KVA		
TH4	1	220275	THERMOSTAT	0/60ºC		
U+;U-	2	ES273807	TINNED COPPER CONNECTIONS			
V21	1	214872	DIODE	240A 1200V		
V21	2	216359	INSULATOR			
V21	1	410283	HEATSINK	L=100 mm		
W11	1	ES273652	WIRES SET			
X0	1	219059	TINNED COPPER CONNECTIONS			
X1	3	229170	GRAY TERMINAL	70 mm²		
X4;X8;X32	19	229104	GRAY TERMINAL	4 mm²		
X4;X7;X8;X31;X32	5	229304	ENDPLATE			
X6	2	ES273150	GRAY TERMINAL	50 mm²		
X7;X31	5	229106	GRAY TERMINAL	6 mm²		
X7	2	227799	JUMPER			
X105	1	ES277127	BUS			
X106	1	ES276860	BUS			
Z1	1	ES229868	PCA FILTER EMC	0/450V	X	
Z1	1	ES273041	PROTECTIÓN COVER		X	

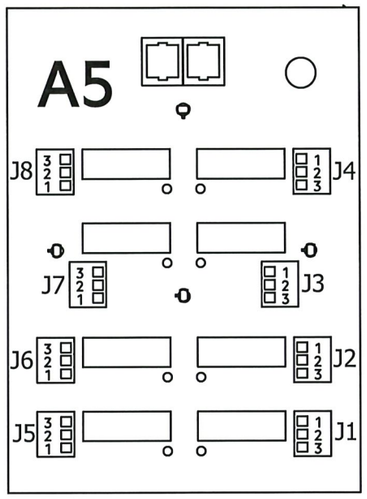
ES521464

				Date	21/03/2024	3W POWER S.P.A.	Bill of materials	= System
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm	Rectifier 2	+ REC2 48 / 49
01		22/07/2024	eva.beitia	Checked	JOP	AEG POWER SOLUTIONS	System	& EPBS A3 Sheet 3
Stat	Alteration	Date	Name	Standard			ES521464 e	Sheets 3

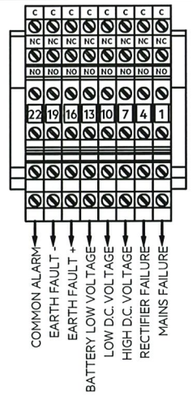
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Relay card detail

CR1



Terminal	Connection point type	Max section	4 mm²
	Screw type	Min section	0.2 mm²



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GIROTTI MATTIA
NO MARK UP
25/03/2025

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VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00008

REV.:	DATE:	SIGNATURE:
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ROSETTI MARINO SpA

				Date	21/03/2024	3W POWER S.P.A.	AEG POWER SOLUTIONS	Relay card detail
				Editor	EBM	Hollandse Kust Noord (HKN) wind farm		Rectifier 2
				Checked	JOP			System
Stat	Alteration	Date	Name	Standard				

= System				
+ REC2				49 / 49
& MTB	ES521464 en	A3	Sheet	1
			Sheets	1

ES521464

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	DC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 1 of 11 Date: 27/02/2025 Rev: 06

Base Load Power Hub (BLPH)

DC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM

Document Number: 1724000372-EL-DG-00010

Document Class: 2

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
26/03/2025

Rev.	Date	Description	Prepared	Reviewed	Approved
06	27/02/2025	As Built (ASB)	DA	DA	AD
05	17/12/2024	As Built (ASB)	DA	DA	AD
04	05/10/2024	Accepted for Construction (AFC)	DA	DA	AD
03	04/08/2024	Accepted for Construction (AFC)	DA	DA	AD
02	01/06/2024	Accepted for Construction (AFC)	DA	DA	AD
01	15/05/2024	Accepted for Construction (AFC)	DA	DA	AD
00	21/04/2024	Issue for Review (IFR)	DA	DA	AD

3W power | a company of AEG POWER SOLUTIONS

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File: 1724000372-EL-DG-00010_06

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	DC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 2 of 11 Date: 27/02/2025 Rev: 06

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)
04	Accepted for Construction (AFC)
05	As Built (ASB)
06	As Built (ASB)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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26/03/2025

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Table of contents

Description — Sheet

COVER 1

REVISION / CHANGE LOG 2

HOLDS LIST 2

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DC UPS - TAG: UP-200F1 - BATTERY PROTECTION BOX 7

DC UPS - TAG: UP-200F1 - BLACK START PROCEDURE 10

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26/03/2025

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Base Load Power Hub (BLPH)

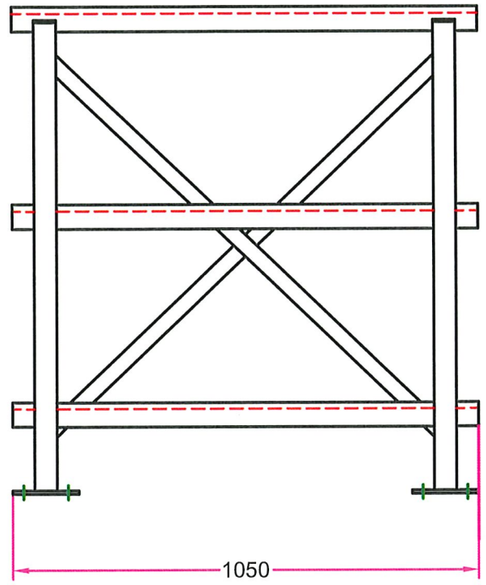
DC UPS - TAG: UP-200F1

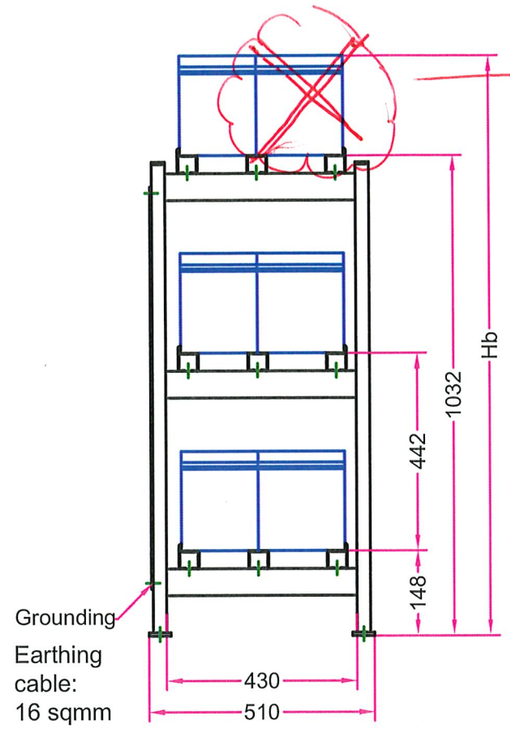
BATTERY LAYOUT AND INTERCONNECTION DIAGRAM

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26/03/2025

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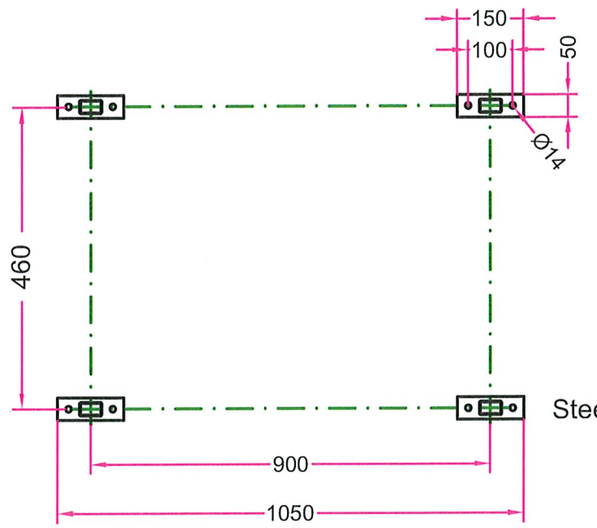
Battery Rack
BA-200F1





MARIA GIUSTI
26/3/25

Foot-Print:



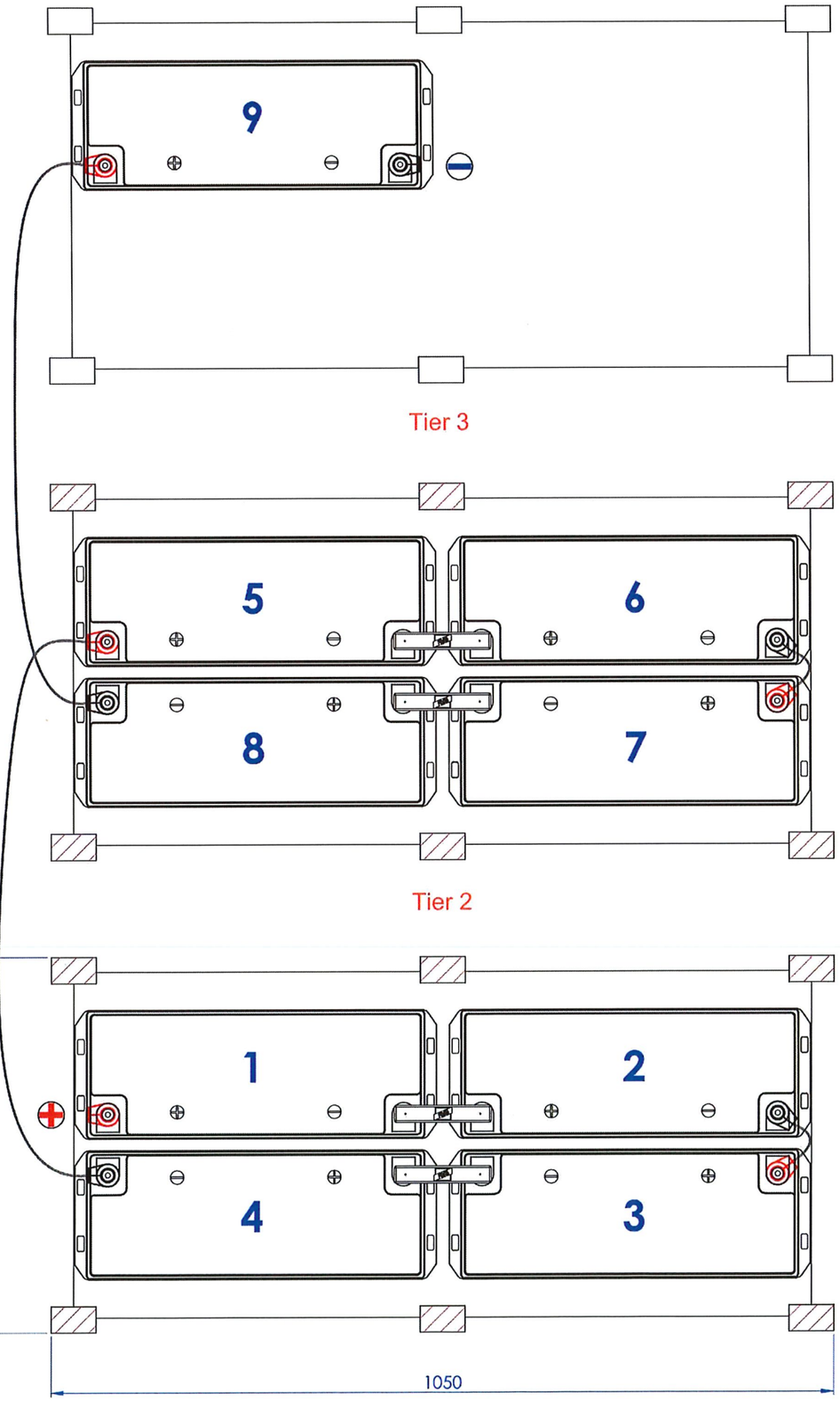
Steel made

AS COMMISSIONED
GIUSTI MARIA
MARK UP
26/03/2025

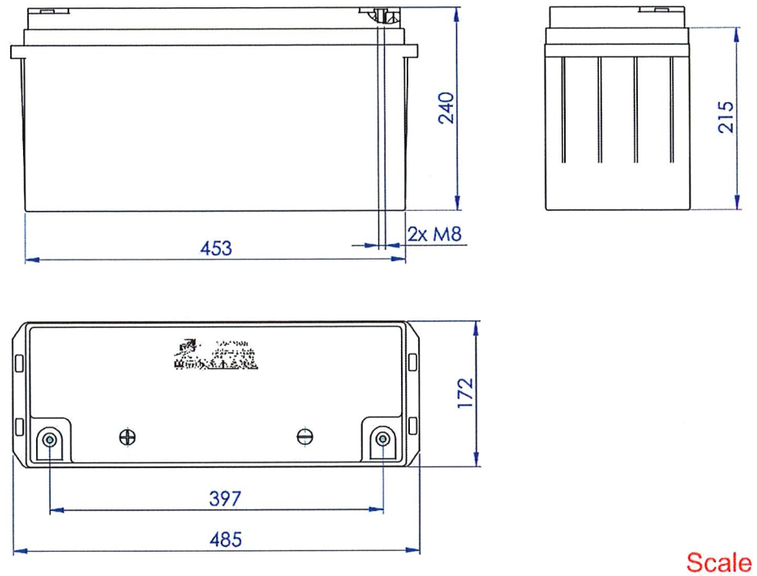
Rack weight : 44,4 kg
Battery weight : 475,0 kg
Total weight : 519,4 kg

Material:	S235 JR EN 10025 (St-37-2)		Date	Name	Checked	Execution: Rack, Standard	Drawing-/Article No: 3L2115	Rev: 00
Coating:	Plastic Coated		16/24	Riedel	St.Selig			
Tolerance:	DIN ISO 2768 "C"					Type: 3E-PGL 2-11 with FIX002		
Battery:			Scale: none			Production Details:	Welding execution according to	

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Battery block : FLG12-150



Scale 1:5

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NO MARK UP
26/03/2025

BILL OF MATERIALS	CODE	WEIGHT (kg)	Q.TY
CELL FLG 12-150	11000495	47,50	9
COPPER TIN STRIP FLL-FHP serie	41000222	0,04	4
CONNECTION AND AGM COVER CENTER DISTANCE 100	41000251	0,01	4
CELLS CONNECTION CABLE 50 mm	21000191	0,5	4 m
CABLE LUG F8 X 50	41005167	0,3	10
CABLE LUG COVER BLACK 50040	41000243	0,008	5
CABLE LUG COVER RED 50039	41000244	0,008	5

NOTE:

n.1 Battery block FLG 12-150
is supplied as spare part

NORMA UNI EN 22768-mk		475.24 kg	P. VECCHIARELLI
NORMA UNI ISO 1302			P. VECCHIARELLI
NORMA UNI ISO 1101	10 FLG12-150	47.50 kg	F. PAGLIARINI
1:5	A2	11000495	10/01/2024
		layout	1

FAAM

1724000372-EL-DG-00010

DC UPS 10kW - 9 x FLG 12-150

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Document Title:	DC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 7 of 11 Date: 27/02/2025 Rev: 06

Base Load Power Hub (BLPH)

DC UPS - TAG: UP-200F1

BATTERY PROTECTION BOX

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26/03/2025

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MODEL C-225 REV.1

GENERAL NOTES:

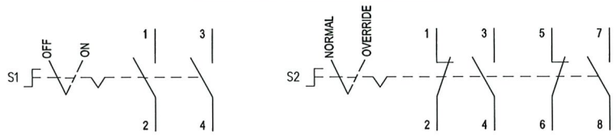
AS COMMISSIONED: MATTIA GRATTON 26/3/25 NO MARK UP

-ENCLOSURE: EJBC-5
-MATERIAL: COPPER FREE ALUMINIUM ALLOY
-EXTERNAL PAINTING: RAL7035
-INTERNAL PAINTING: /
-ALL DIMENSION ARE IN mm
-WEIGHT: ≈55kg

BATTERY PROTECTION BOX

CB-200F1

SELECTOR SWITCHES DETAIL



TRUE TABLE

POSITION	CONTACT	
	1-2	3-4
OFF	O	O
ON	X	X

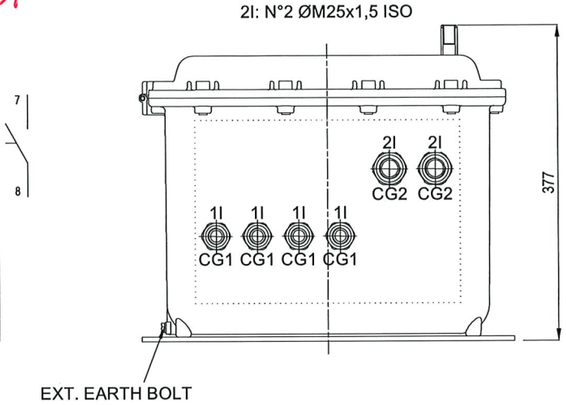
O	CONTACT OPEN
X	CONTACT CLOSED

TRUE TABLE

POSITION	CONTACT			
	1-2	3-4	5-6	7-8
NORMAL	X	O	X	O
OVERRIDE	O	X	O	X

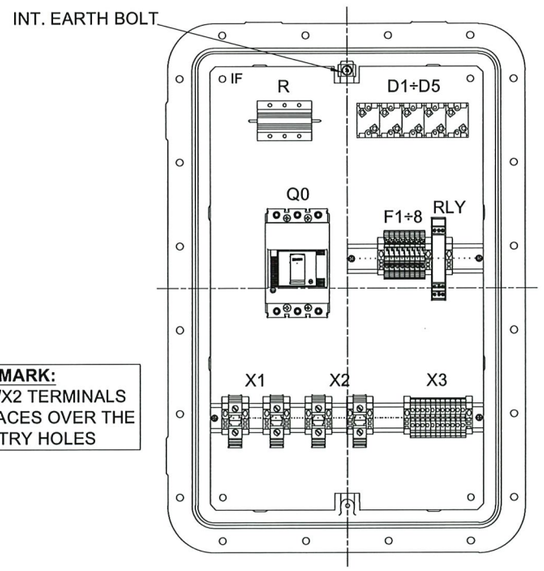
O	CONTACT OPEN
X	CONTACT CLOSED

BOTTOM VIEW
1I: N°4 ØM20x1,5 ISO
2I: N°2 ØM25x1,5 ISO



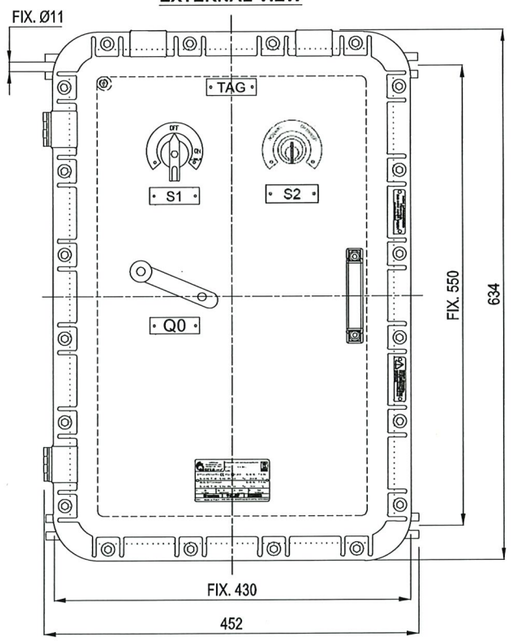
N°	Q.TY	CODE	DESCRIPTION
IF	1	BFE-5	ALUMINIUM INTERNAL FRAME
X1	2	UT35	PHOENIX TERMINALS SUITABLE FOR 35mm² CABLE
X2	2	UT35	PHOENIX TERMINALS SUITABLE FOR 35mm² CABLE
X3	11	UT4	PHOENIX TERMINALS SUITABLE FOR 4mm² CABLE
Q0	1	XT1B125TMD3	ABB XT1 MCCB, 3P, 125A, 18kA
	1	1SDA066399R1	220-240Vac/dc UNDERVOLTAGE RELEASE COIL
	2	1SDA066423R1	2NO AS PER TBE AUX CONTACTS FREE VOLTAGE
	1	M-0439/V1 + M-1044	PADLOCKABLE EXTERNAL HANDLE
F1,F2	2	UT4-HESI	PHOENIX FUSE HOLDER TERMINALS SUITABLE FOR 4mm² CABLE WITH 4A FUSE
	2	FUS5X20/4	
F3÷F8	6	UT4-HESI	PHOENIX FUSE HOLDER TERMINALS SUITABLE FOR 4mm² CABLE WITH 2,5A FUSE
	6	FUS5X20/2,5	
RLY	1	PHO2986575	PHOENIX SECURITY RELAY, 24Vcc, 3 EXCHANGE CONTACTS
R	1	RS1752429	47Ω RESISTOR, 95W, NOT ADJUSTABLE
D1÷D5	5	RS3959141	40A, 1000V, DIODES
S1	1	A2-10E/R	SELECTOR SWITCH, 2P, 16A, SCHEME I "OFF-ON"
	1	M-0553	EXTERNAL HANDLE
S2	1	WS2-10E/R	SELECTOR SWITCH, 4P, 16A, SCHEME 2Z "NORMAL-OVERRIDE"
	1	M-093/CF	KEY LOCK EXTERNAL HANDLE
CG1	4	NEV20IB	NICKEL PLATED BRASS CABLE GLANDS ØM20 FOR ARMORED CABLE Øint. 6,5-14mm Øext. 12,5-21mm, ARMOR THICKNESS 0,2-1,4mm
CG2	2	NAV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR NOT-ARMORED CABLE Ø11-20mm

INTERNAL VIEW

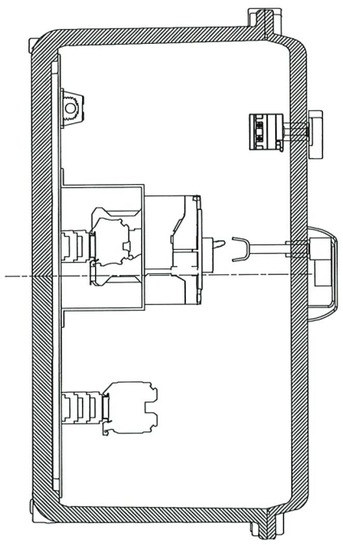


REMARK:
X1/X2 TERMINALS PLACES OVER THE ENTRY HOLES

EXTERNAL VIEW



INT. LEFT SIDE VIEW



CERTIFICATE NAMEPLATE



TAG NAMEPLATE
MATERIAL: TRAPHOLITE
DIMENSIONS: 60X20
BLACK TEXT ON WHITE BACKGROUND

N°	TAG N°
TAG	CB-200F1
S1	S1
S2	S2
Q0	Q0

REV.	DATE	PREP'D	CHK'D	APP'D	DESCRIPTION
1	24/05/2024	GRATTON	GIUSTI	GRATTON	MODIFIED AND REISSUED FOR APPROVAL
0	13/05/2024	BOGAR	GIUSTI	GRATTON	ISSUED FOR APPROVAL

DRAWING TITLE: DC UPS - TAG: UP-200F1
002 EJBC-5/C2401778/20.
ITEM 20
EXT/INT. LAYOUT

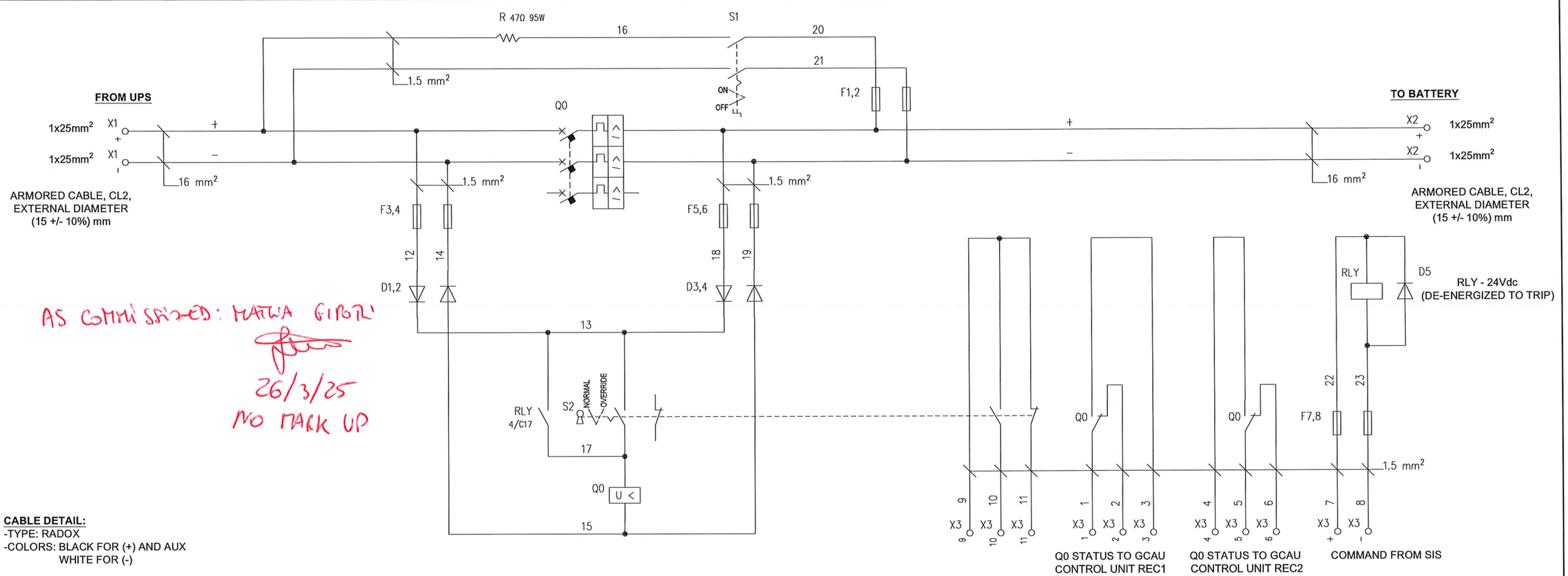
CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 3 NEXT 4
TOT. 4

CORTEM GROUP
contem
FONDISONZO
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MODEL C-225 REV.1



AS COMMISSIONED: MATTIA GIROLI
26/3/25
NO MARK UP

CABLE DETAIL:
-TYPE: RADOX
-COLORS: BLACK FOR (+) AND AUX
WHITE FOR (-)

CIRCUIT	DESCRIPTION		F3,4		Q0		F5,6		F1,2						F7,8			
	NUMBER																	
	PHASE	POWER kW	+ -		+ -		+ -		+ -						+ -			
SWITCH	MANUFACTURER				ABB													
	TYPE				XT3N200TMD3													
	POLE N.	In A			3	125												
	Idn A	CURVE																
	Pdi kA	JUNCTION BOX N°			36kA													
FUSE	TYPE		FUS5X20				FUS5X20		FUS5X20						FUS5X20			
	CURRENT A		2,5				2,5		4						2,5			
CONTACTOR	TYPE																	
	In A	Pn kW																
THERMAL RELAY	TYPE																	
	CURRENT A																	
TERMINALS CABLES	TERMINAL TYPE										UT		UT		UT			
	TERMINAL SECTION mm²										4		4		4			
	TERMINAL NUMBER																	
	CABLE SECTION mm²																	

REV.	DATE	PREP'D	CHK'D	APP'D	DESCRIPTION
1	24/05/2024	GRATTON	GIUSTI	GRATTON	MODIFIED AND REISSUED FOR APPROVAL
0	13/05/2024	BOGAR	GIUSTI	GRATTON	ISSUED FOR APPROVAL

DRAWING TITLE: DC UPS - TAG: UP-200F1
002 EJBC-5/C2401778/20.
ITEM 20
INTERNAL WIRING

CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 2 NEXT 3
TOT. 4

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CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	DC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 10 of 11 Date: 27/02/2025 Rev: 06

Base Load Power Hub (BLPH)

DC UPS - TAG: UP-200F1

BLACK START PROCEDURE

AS COMMISSIONED: MATTIA GIROTTI

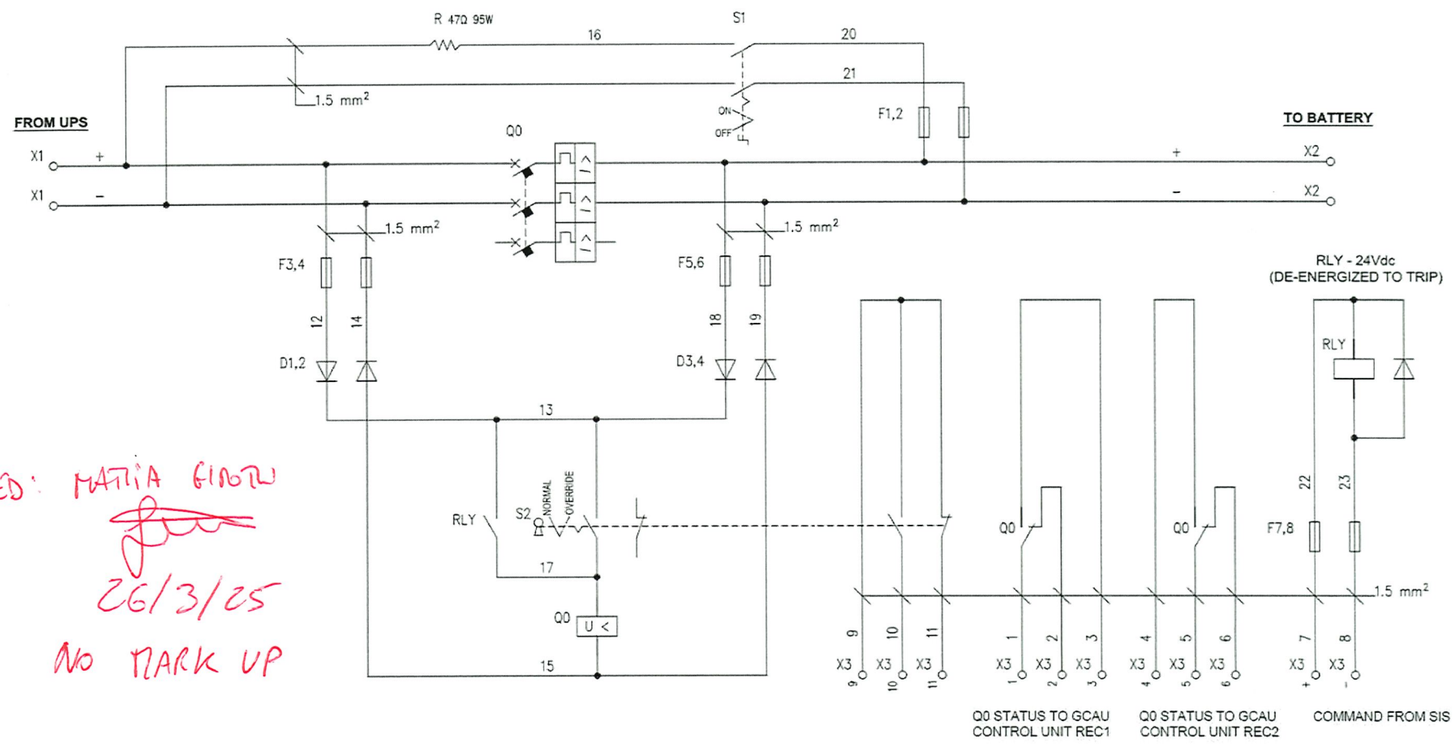
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BLACK START PROCEDURE



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Black Start procedure

The target is to allow the energization of the loads from the battery, while the battery charger being still de-energized.

- The operator shall put the selector S2 on "override" position (contact closed)
- The operator shall close the selector S1 to pre-charge the charger output DC capacitors
- Once the charger DC capacitors are charged and the voltage across Q0 power contacts is close to 0V (and at least >80% of the system DC nominal voltage), the operator shall close the breaker Q0
- The operator shall open the selector S1
- The site safety and SCADA systems restart and the RLY relay is automatically energized when all safety conditions are fulfilled. The charger is energized through its AC supply and then it can restart
- The operator shall put the selector S2 on "normal" position (contact open)
- The system returns to normal working conditions

Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE