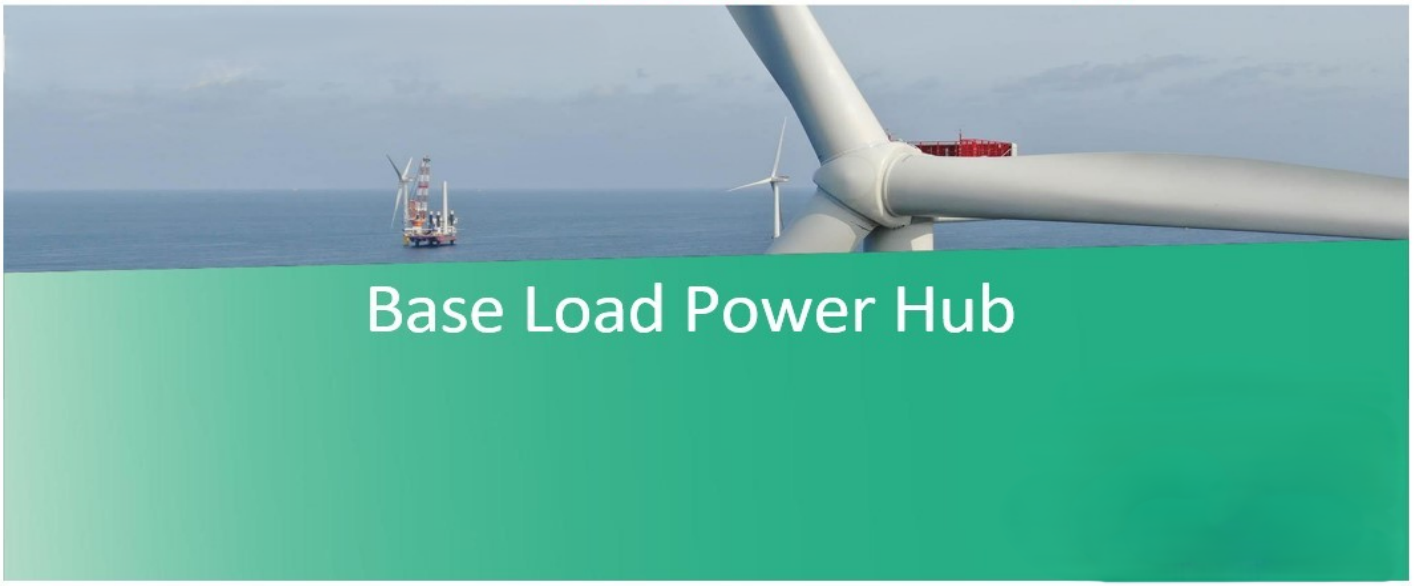
CROSSWIND

ROSETTI MARINO

PROVERUS

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



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM	84 Battery & No-Break System
SUBSYSTEM	84-20 AC 15 kVA UPS System (UP-200F4)

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

ROSETTI MARINO

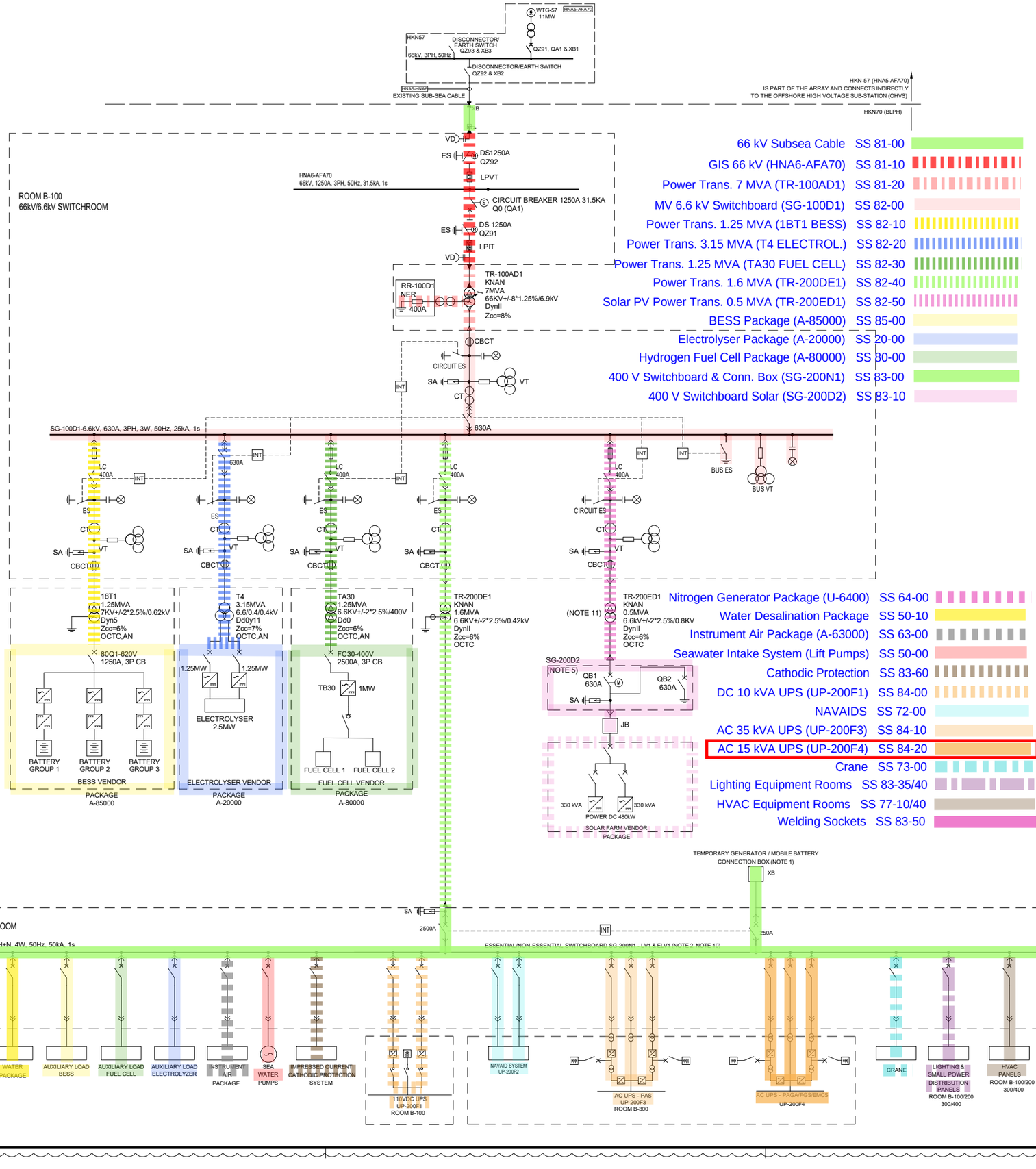
Sub System N°:	84-20	**Tick as appropriate**	ONSHORE	OK
Description:	AC 15 kVA UPS System (UP-200F4)		OFFSHORE	

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

	Contractor Commissioning Site Leader	Company Commissioning Site Leader
Name	Anthony Iveson	Martin Taylor
Date	2025-04-25	2025-04-27
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-25T12:24:48.173Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-27T16:13:05.673Z

Section 1 SUB-SYSTEM DEFINITION

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



66 kV Subsea Cable	SS 81-00	
GIS 66 kV (HNA6-AFA70)	SS 81-10	
Power Trans. 7 MVA (TR-100AD1)	SS 81-20	
MV 6.6 kV Switchboard (SG-100D1)	SS 82-00	
Power Trans. 1.25 MVA (1BT1 BESS)	SS 82-10	
Power Trans. 3.15 MVA (T4 ELECTROL.)	SS 82-20	
Power Trans. 1.25 MVA (TA30 FUEL CELL)	SS 82-30	
Power Trans. 1.6 MVA (TR-200DE1)	SS 82-40	
Solar PV Power Trans. 0.5 MVA (TR-200ED1)	SS 82-50	
BESS Package (A-85000)	SS 85-00	
Electrolyser Package (A-20000)	SS 20-00	
Hydrogen Fuel Cell Package (A-80000)	SS 80-00	
400 V Switchboard & Conn. Box (SG-200N1)	SS 83-00	
400 V Switchboard Solar (SG-200D2)	SS 83-10	
Nitrogen Generator Package (U-6400)	SS 64-00	
Water Desalination Package	SS 50-10	
Instrument Air Package (A-63000)	SS 63-00	
Seawater Intake System (Lift Pumps)	SS 50-00	
Cathodic Protection	SS 83-60	
DC 10 kVA UPS (UP-200F1)	SS 84-00	
NAVAIDS	SS 72-00	
AC 35 kVA UPS (UP-200F3)	SS 84-10	
AC 15 kVA UPS (UP-200F4)	SS 84-20	
Crane	SS 73-00	
Lighting Equipment Rooms	SS 83-35/40	
HVAC Equipment Rooms	SS 77-10/40	
Welding Sockets	SS 83-50	

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

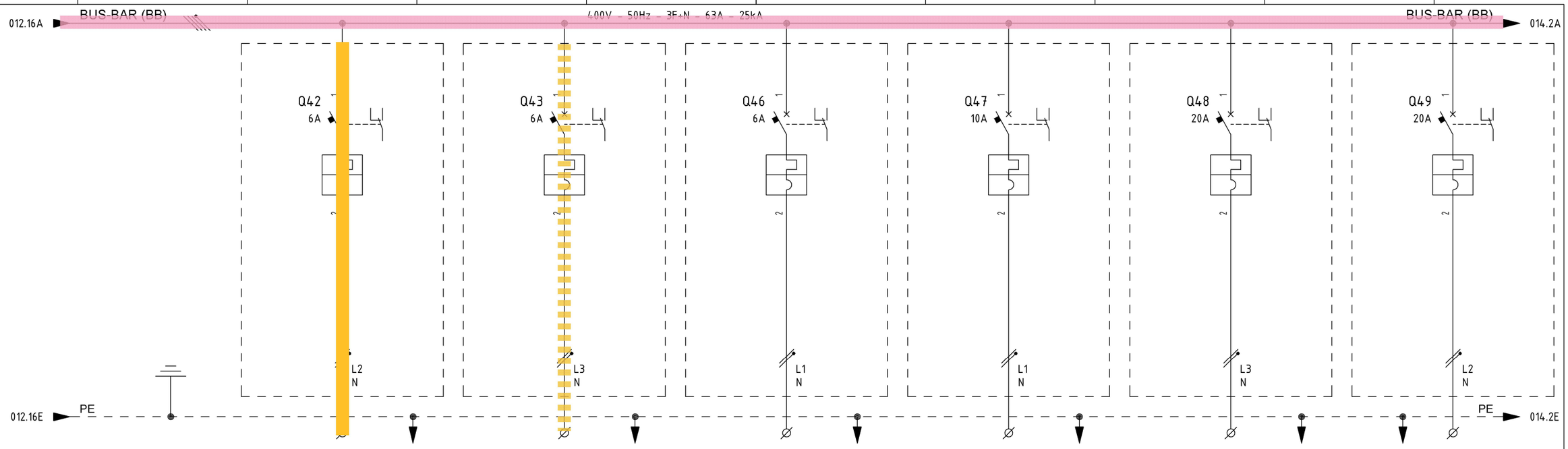
TITLE :

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	
CUBICLE			3	+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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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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)

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

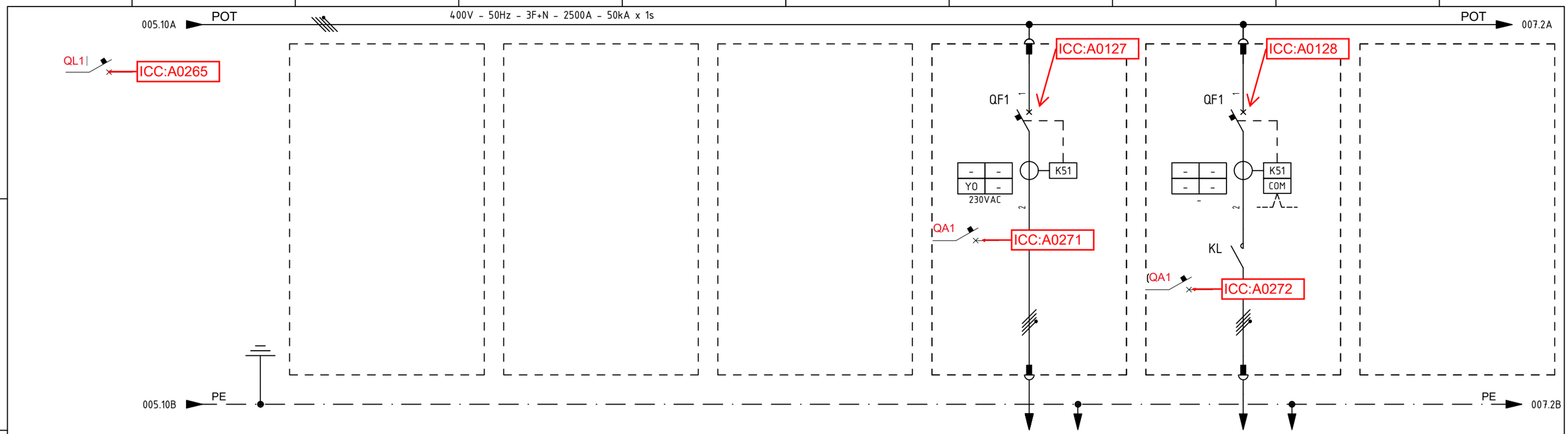
DRAWING NO. 1723002197-EL-DG-00013

SHEET 013

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM			1			-	UP-200F4	SPARE	
UTILITY			2	INCOMING TRANSFORMER AUXILIARY CONTROL		FUTURE	AC UPS F&G - 8 H UP-200F4 - BYPASS	SPARE	
COLUMN/CUBICLE			3	A2 / +01	A2 / +02	A2 / +03	A2 / +04	A2 / +05	
RATED POWER | RATED CURRENT			4/5			- | -	18 kW | 28.9 A	- kW | - A	
TYPICAL FUNCTIONAL			6				L1-63	LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	QV1			XT2S - 160	XT2S - 160	
	VERSION		8	QV1			4P - FIXED	4P - FIXED	
	TRIP UNITS		9	QV1			EKIP DIP LSIG (In = 63A)	EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10	QV1			50 kA	50 kA	
OVERLOAD	L	Range A	11	QV1			(0.4 - 1) x In	(0.4 - 1) x In	
		Range t	12	QV1			k/I^2	k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	QV1			(1 - 10) x In	(0.6 - 10) x In	
		Range t	14	QV1			0.05 - 0.4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	QV1			(1 - 10) x In	(1.5 - 10) x In	
		Range t	16	QV1			<= 0.02 sec	instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	QV1			(0.2 - 1) x In	(0.1 - 1) x In	
		Range t	18	QV1			0.1 - 0.8 sec	t=k / t=k/I^2	
CONTACTOR (ABB)			19	QV1			-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	QV1			-	-	
SURGE ARRESTER (DEHN)			21				-	-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22				-	-	
FUSE HOLDER (ITALWEBER)			23						
INDIRECT PROTECTION (ABB)			24	QV1			SUBSISTEM 84.20	SUBSISTEM 83.00	
VOLTMETER			25	QV1					
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	QV1			-	-	
	PERFORMANCE/CLASS		27	QV1			-	-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28				-	-	
	PERFORMANCE/CLASS		29				-	-	
LOCK-OUT RELAY (-)			30		83005-CEL		-	-	
POWER CONDUCTOR		mmq	31		83006-CEL		4G35	5G4	

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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

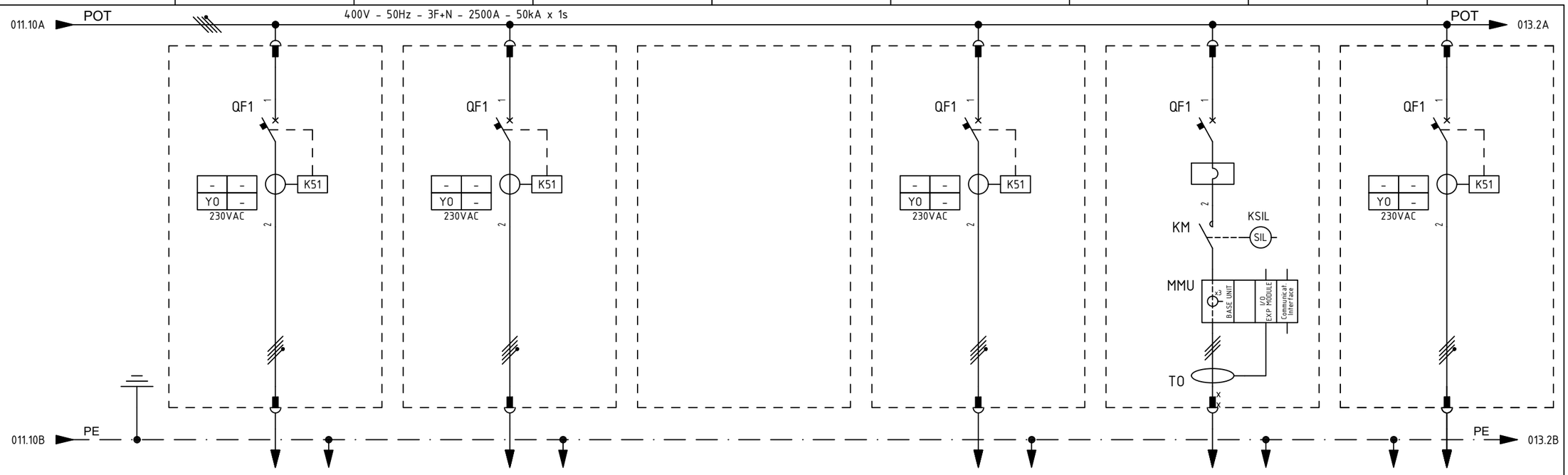
DRAWING NO. 1723002197-EL-DG-00011

SHEET 006

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM			1	UP-200F4	UP-200F4		ESW-200N1	PM-50001 A	UP-200F3
UTILITY			2	AC UPS F&G - 8 H UP-200F4 - LINE A	AC UPS F&G - 8h UP-200F4 - LINE B		WELDING SOCKETS (TOP DECK)	SEA WATER PUMP A	AC UPS PAS - 30 min. UP-200F3 - BYPASS
COLUMN/CUBICLE			3	A6 / +05	A6 / +06		A6 / +08	A7 / +01	A7 / +02
RATED POWER | RATED CURRENT			4/5	18 kW | 28.9 A	18 kW | 28.9 A		69.84 kW | 126.15 A	6.1 kW | 11.0 A	36 kW | 57.8 A
TYPICAL FUNCTIONAL			6	L1-63	L1-63		L2-160	M1-6	L1-100
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160		XT4S - 250	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED		4P - FIXED	3P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)		EKIP DIP LSIG (In = 160A)	MA (In = 20A)	EKIP DIP LSIG (In = 100A)
	Icu	KA	10	50 kA	50kA		50kA	-	50 kA
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
		Range t	12	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
		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
INST. SHORT-CIRCUIT	I	Range A	15	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In	(6 - 14) x I	(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
		Range t	18	0.1 - 0.8 sec	0.1 - 0.8 sec		0.1 - 0.8 sec	-	0.1 - 0.8 sec
CONTACTOR (ABB)			19	-	-		-	AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-		-	UMC100.3 UC (0.24 - 63A)	-
SURGE ARRESTER (DEHN)			21	-	-		-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-		-	-	-
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 84.20	SUBSISTEM 84.20		SUBSISTEM 83.50	SUBSISTEM 50.00	SUBSISTEM 84.10
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	4G35	4G35		5G50	4G4	4G35

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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)
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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

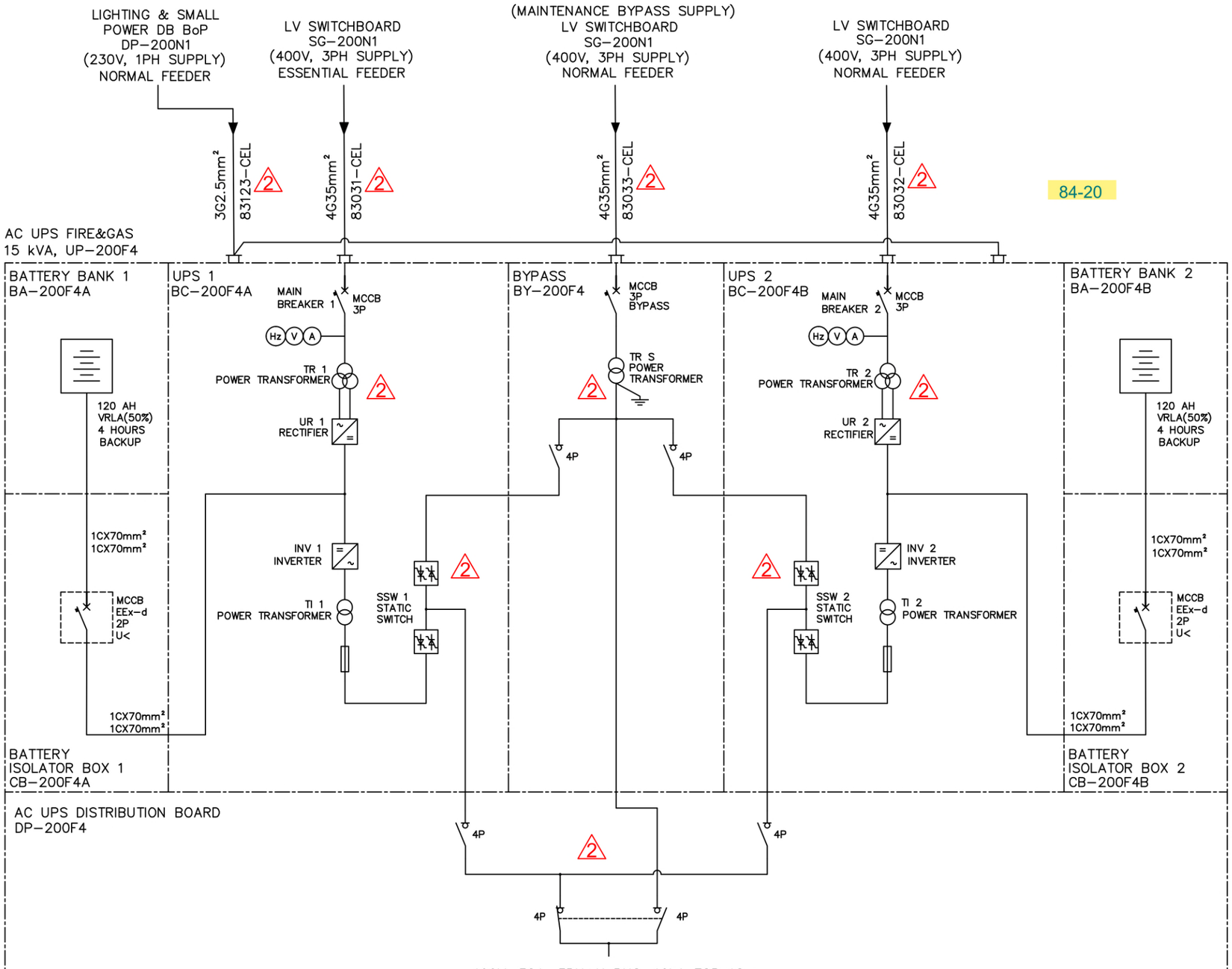
DRAWING NO. 1723002197-EL-DG-00011

SHEET 012

REV. 03

F.to UNI A3: 420mmx297mm

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



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/09/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	12/04/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	14/02/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL SINGLE LINE DIAGRAMS AC UPS SYSTEMS
AC UPS – FIRE & GAS SINGLE LINE DIAGRAM (UP–200F4)

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

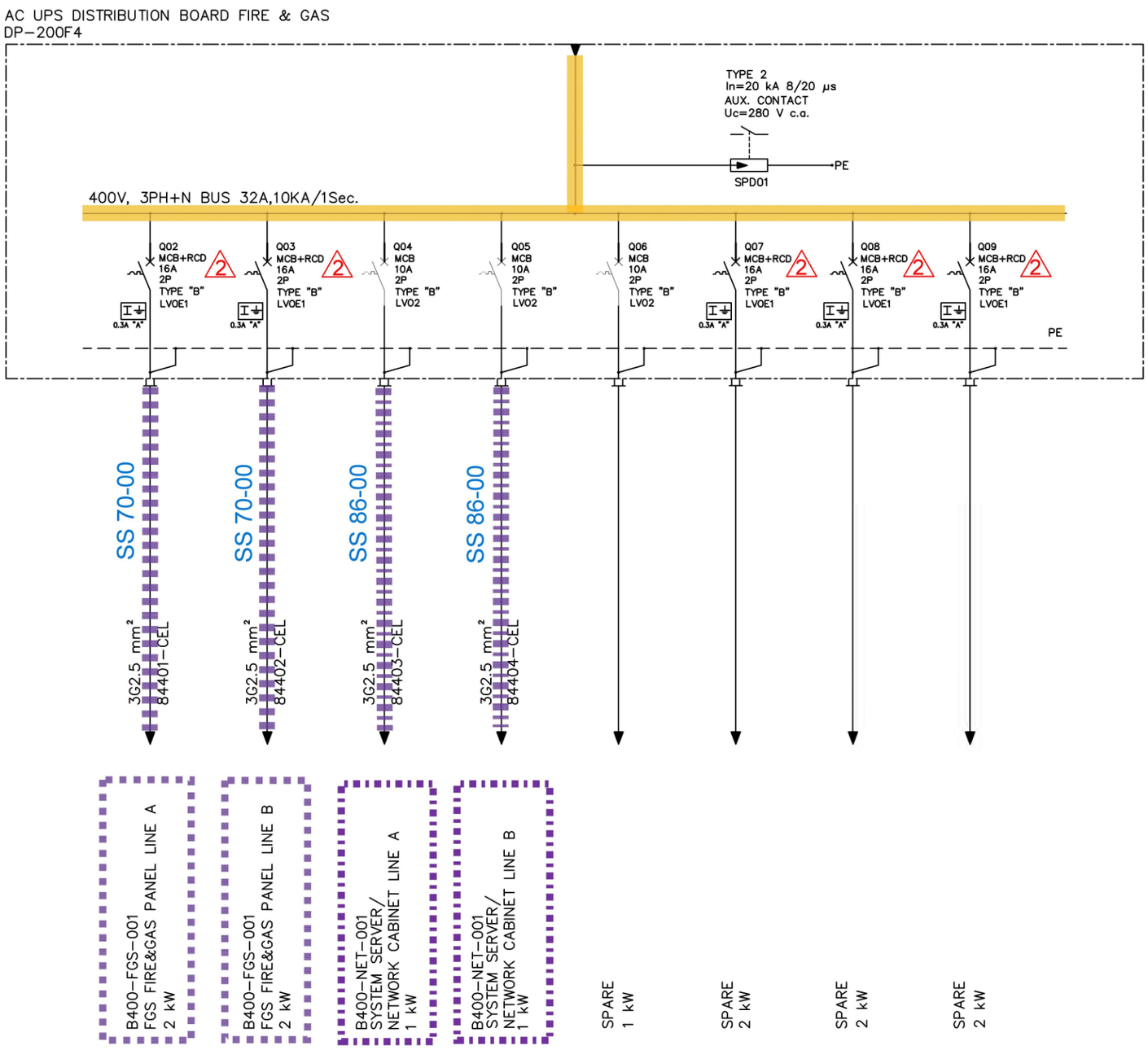
A3 | DRAWING NO. 123A90–DDL–EL–DG–20160 | SHEET 006 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90–DDL–EL–DG–20160 Rev. 02

AC UPS – FIRE & GAS SINGLE LINE DIAGRAM (UP–200F4) DISTRIBUTION BOARD DETAILS

84-20



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/09/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	12/04/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	14/02/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL SINGLE LINE DIAGRAMS AC UPS SYSTEMS
AC UPS DISTRIBUTION BOARD FIRE & GAS (UP–200F4)

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

SCALE : 1:X

A3

DRAWING NO. 123A90–DDL–EL–DG–20160

SHEET 007

REV. 02

File Name : 123A90–DDL–EL–DG–20160 Rev. 02

F.to UNI A3: 420mmx297mm

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:	2		Issued on:	2025-04-23	
System:	84	/	Battery & No-Break System		
SubSystem:	84-20	/	AC 15 kVA UPS System (UP-200F4)		

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 2025-04-24T08:45:35.746Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-25T11:13:07.924Z

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20 & process: COMM

Electrical	84-20 AC 15 kVA UPS System (UP-200F4)

ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A2/+04-QF1	DRAWER UPS F&G - BYPASS - A2/+04-QF1	ONSHORE	C10002818	FP00	100	2024-11-12	RFO 2
		ONSHORE	C10002819	FTR-2	100	2024-09-20	RFO 2
		ONSHORE	C10002820	FTR-6	100	2024-10-03	RFO 2
		ONSHORE	C10003009	FTR-5	100	2025-04-22	RFO 2
A6/+05-QF1	DRAWER UPS F&G - LINE A - A6/+05-QF1	ONSHORE	C10002821	FP00	100	2024-11-12	RFO 2
		ONSHORE	C10002822	FTR-2	100	2024-09-20	RFO 2
		ONSHORE	C10002823	FTR-6	100	2024-10-02	RFO 2
		ONSHORE	C10003010	FTR-5	100	2025-04-22	RFO 2
A6/+06-QF1	DRAWER UPS F&G - LINE B - A6/+06-QF1	ONSHORE	C10002824	FP00	100	2024-11-12	RFO 2
		ONSHORE	C10002825	FTR-2	100	2024-09-20	RFO 2
		ONSHORE	C10002826	FTR-6	100	2024-10-02	RFO 2
		ONSHORE	C10003011	FTR-5	100	2025-04-22	RFO 2
BA-200F4A	Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	ONSHORE	C10002831	FTR-3	100	2024-11-18	RFO 2
BA-200F4A-C	UPS F&G - BA-200F4A-C	ONSHORE	C10002829	FTR-4	100	2024-11-18	RFO 2
BA-200F4A-D	UPS F&G - BA-200F4A-D	ONSHORE	C10002830	FTR-4	100	2024-11-18	RFO 2
BA-200F4B	Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	ONSHORE	C10002834	FTR-3	100	2024-11-19	RFO 2
BA-200F4B-C	UPS F&G - BA-200F4B-C	ONSHORE	C10002832	FTR-4	100	2024-11-18	RFO 2
BA-200F4B-D	UPS F&G - BA-200F4B-D	ONSHORE	C10002833	FTR-4	100	2024-11-18	RFO 2
CB-200F4A-Q2	BATTERY CUTOFF UPS F&G - CB-200F4A-Q2	ONSHORE	C10002815	FTR-2	100	2024-11-14	RFO 2
CB-200F4B-Q2	BATTERY CUTOFF UPS F&G - CB-200F4B-Q2	ONSHORE	C10002816	FTR-2	100	2024-11-14	RFO 2
DP-200N1-Q42	BREAKER AUX UPS F&G - DP-200N1-Q42	ONSHORE	C10002817	FTR-2	100	2024-10-28	RFO 2
UP-200F4	AC UPS 15 kVA Redundant System with By-Pass	ONSHORE	C10002827	FP16A	100	2025-03-12	RFO 2
		ONSHORE	C10002828	FTR-6	100	2025-03-12	RFO 2
UP-200F4-QF33	SPARE	ONSHORE	C10004589	FTR-2	100	2024-11-14	RFO 2
UP-200F4-QF34	SPARE	ONSHORE	C10004590	FTR-2	100	2024-11-14	RFO 2
UP-200F4-QF35	SPARE	ONSHORE	C10004591	FTR-2	100	2024-11-14	RFO 2
UP-200F4-QF38	SPARE	ONSHORE	C10004594	FTR-2	100	2024-11-14	RFO 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20 & process: COMM

Instrumental	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
84-XS-008A	DISCONNECT AC UPS UP-200F4 BATTERIES A	ONSHORE	C10003815	FJ01D	100	2025-01-28	RFO 2
84-XS-008B	DISCONNECT AC UPS UP-200F4 BATTERIES B	ONSHORE	C10003814	FJ01D	100	2025-01-28	RFO 2
84-XS-011	INHIBIT. BATTERY CHARGING AC UPS UP-200F4 BATTERIES	ONSHORE	C10003811	FJ01D	100	2025-01-28	RFO 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20 & process: COMM

Miscellaneous	84-20 AC 15 kVA UPS System (UP-200F4)

ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03060	OTP -UPS System UP-200F4 15kVA	ONSHORE	C10004629	5300	100	2025-04-23	-
		OFFSHORE	C10004950	5300	0	-	-

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-20 AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000248	B	83033-CEL C10000558	Missing cable tags on internal and external side of MCT	-		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000249	B	83033-CEL C10000558	Plastic cable ties to be replaced on external routing	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000250	B	83033-CEL C10000558	Missing identification number of terminal strip X10 inside the UP-200F4	-		Gtangianu 2024-10-24	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000251	B	83033-CEL C10000558	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2024-12-23	Ecarotenuto 2024-12-23	2024-12-23
C30000264	B	83123-CEL C10002109	Plastic cable ties to be replaced on external routing.	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000265	B	83123-CEL C10002109	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
C30000266	B	83123-CEL C10002109	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000278	B	84410-CEC C10002345	Missing all core identification tag on terminals inside BC-200F4A	-		Gtangianu 2024-10-25	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000280	B	84410-CEC C10002345	Cable to be fixed with cable ties on all routing	-		Gtangianu 2024-10-29	2024-11-23	Lmussi 2024-11-23	2024-11-23

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System
SUBSYSTEM 84-20 AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000308	B	83031-CEL C10000556	Plastic cable ties to be replaced on external routing	.		Gtangianu 2024-11-04	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000309	B	83031-CEL C10000556	Missing cable tags on internal and external side of MCT	.		Gtangianu 2024-11-04	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000310	B	83031-CEL C10000556	Identification tag of wire are wrong or missing inside SG-200N1 (A6/+05)	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000311	B	83032-CEL C10000557	Identification tag of wire are wrong or missing inside SG-200N1 (A6/+06)	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000312	B	83032-CEL C10000557	Missing cable tags on internal and external side of MCT	.		Gtangianu 2024-11-04	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000313	B	83032-CEL C10000557	Plastic cable ties to be replaced on external routing	.		Gtangianu 2024-11-04	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000314	B	CB-200F4B C10000858	Missing thermo shrink on internal earthing connections	.		Gtangianu 2024-11-04	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000315	B	CB-200F4A C10000857	Traffolyte tag "S2" is damaged.	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000316	B	CB-200F4A C10000857	Missing thermo shrink on internal earthing connections	.		Gtangianu 2024-11-04	2025-03-06	Gtangianu 2025-03-06	2025-03-06

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System
SUBSYSTEM 84-20 AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000317	B	BA-200F4B C10000851	Missing tag on battery bank	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000318	B	84411-CEC C10002346	Missing identification tag of wire inside BC-200F4B	.		Gtangianu 2024-11-04	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000319	B	84411-CEC C10002346	Missing cable tags on internal and external side of BC-200F4B	.		Gtangianu 2024-11-04	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000320	B	BA-200F4A C10000850	Missing tag on battery bank	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000321	B	83032-CEL C10000557	Identification tag on terminal strip X1 inside UP-200F4, are not as per drawing. (4U/4V/4W are indicated instead of 3U/3V/3W)_ one is	.		Gtangianu 2024-11-04	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000322	B	83031-CEL C10000556	inside UP-200F4 the Identification tag on terminal strip (X1 and 1W) are missing.	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000323	B	UP-200F4 C10000872	The panel needs to be cleaned.	.		Gtangianu 2024-11-04	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000325	B	CB-200F4A C10000857	Terminal X1 and X2 are different from drawing 172400372-EL-DG-00011. They are UKH 95 instead of UKH70. (see attached photo)	.		Ecarotenuto 2024-11-05	2024-11-26	Ecarotenuto 2024-11-26	2024-11-26
C30000326	B	CB-200F4B C10000858	Terminal X1 and X2 are different from drawing 172400372-EL-DG-00011. They are UKH 95 instead of UKH70. (see attached photo)	.		Ecarotenuto 2024-11-05	2024-11-26	Ecarotenuto 2024-11-26	2024-11-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-20	AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000675	B	84411-CEL-2-PC10000652	Fixing bolts of BTM are of various sizes. They needs to be replaced as per drawing. See attached Photo.	.		Gtangianu 2024-11-20	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000676	B	84411-CEL-2-NC10000653	Fixing bolts of BTM are of various sizes. They needs to be replaced as per drawing. See attached Photo.	.		Gtangianu 2024-11-20	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-20	AC 15 kVA UPS System (UP-200F4)

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000793	B	UP-200F4/B400 -NET-001.01 C10004372	Identification cable tag missing inside UP-200F4 connection.	.		Gtangianu 2024-11-22	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30000794	B	UP-200F4/B400 -NET-001.02 C10004373	Identification cable tag missing inside UP-200F4 connection.	.		Gtangianu 2024-11-22	2025-02-21	Gtangianu 2025-02-21	2025-02-21

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-20 AC 15 kVA UPS System (UP-200F4)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000882	B	C-CB-200F4A/B 400-SIS-001 C10000199	Missing cable tag outside B-400-SIS-001 panel	.		Pschintu 2024-11-25	2024-12-11	Pschintu 2024-12-11	2024-12-11
C30000900	B	C-CB-200F4B/B 400-SIS-001 C10000200	Missing cable tag outside B-400-SIS-001 panel	.		Pschintu 2024-11-25	2025-01-07	Gtangianu 2025-01-07	2025-01-07
C30001059	B	C-UP-200F4/B4 00-SIS-001 C10000201	Missing SS cable tag	.		Pschintu 2024-11-30	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30001060	B	C-UP-200F4/B4 00-SIS-001 C10000201	Missing core identification tag by UP-200F4 side	.		Pschintu 2024-11-30	2025-03-06	Gtangianu 2025-03-06	2025-03-06

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

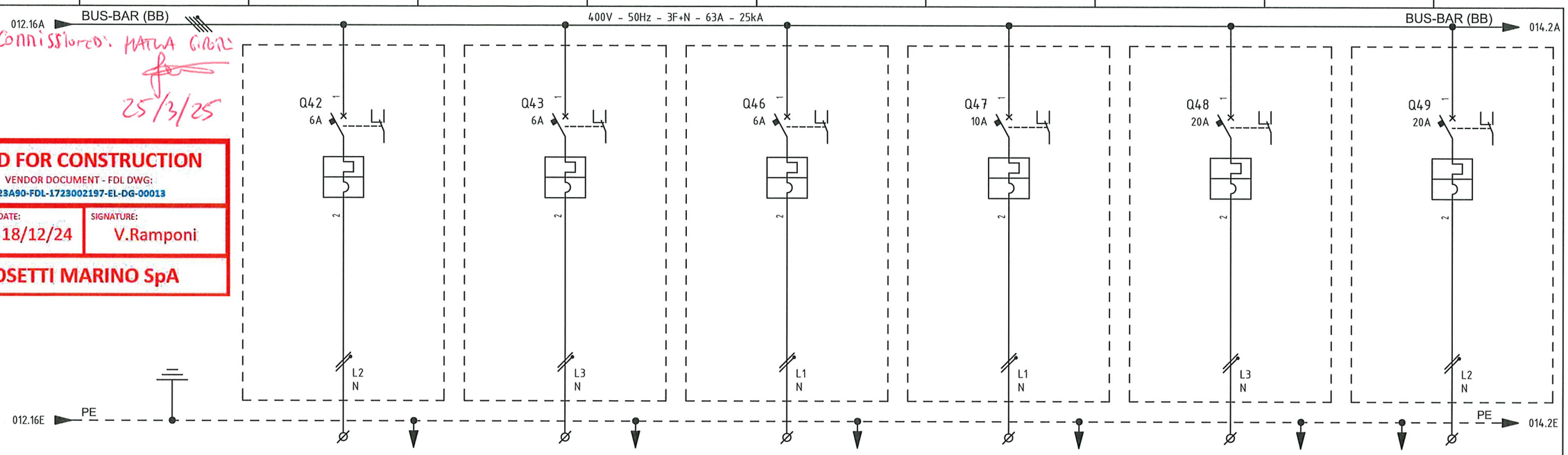
AS Commissioned. NATALIA GIBIL
25/3/25

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

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AUXILIARY
From Lighting & Small Power DB BOP DP-200N1 (Cubicle 33-Q42)
100-240V/N/PE~50/60Hz

back-up fuse gG10A 3G2.5mm2

LINE A
From LV Switchgear SG 200N1 (Cubicle A5/35)
Mains
400V;3/PE~50Hz

gG63A 4G35mm2

From LV Switchgear SG 200N1 (Cubicle A2/04)
Bypass mains
400V;3/PE~50Hz

gG63A 4G35mm2

LINE B
From LV Switchgear SG 200N1 (Cubicle A5/06)
Mains
400V;3/PE~50Hz

gG63A 4G35mm2

Not included in the AEG shipment

Code	Description
Q1	Rectifier input mains breaker
T40	Rectifier input isolation transformer
A1	Rectifier
A2	Inverter
T1	Inverter output isolation transformer
A3-A4	Static by-pass switch
A18	Display control module
A85	Heater
H1	Light

+MBC1
BY-200F4
Bypass-Trafoschrank mit HU 20 kVA
1000007883.030
10009759

-X1 1U,1V,1W,PE
-X10 U,V,W,PE
-X13 U,N,PE
-X14 U,N
-X1 3U,3V,3W,PE
-Q10 L=50/35A I=0,5kA Icu=50kA
-T8 400V/400V 20kVA
-A85
-H1
-Q28.1 NC
-Q28.2 NC
-X1 2U,2V,2W,PE
-X4 1U,1V,1W,1N,PE
-X4 2U,2V,2W,2N,PE
-X1 4U,4V,4W,PE

+UPS1
BC-200F4A
Protect 8.33 20-400-234-400
1000007888.080
10009759

+UPS2
BC-200F4B
Protect 8.33 20-400-234-400
1000007888.380
10009759

-X13 U,N,PE
-X14 U,N
-E1-X1 U,V,W,PE
-E4-X4 U,V,W,N,PE
-A85
-H1
-Q1 L=100/85A I=1,0kA Icu=50kA
-T40
-A1 REC
-A2 INV
-T1
-F1,-F2,-F3
-A3 SBS
-A4
-A18 Display
-A20 Parallel Adapter
INV CAN -X3 1-3 → 203/1:6
INV Sync -X5 1:4 → 205/1:6
-L11,-L12,-L13 Parallel preventive choke coil
-A12,-A13 Remote signaling
-A24.1 BLÜ-PRO -F91
-A24.2 BLÜ-PRO -F92
-A24.3 BLÜ-PRO -F93
-E2-X2 L-,L+,PE
-X15 2,3
-X130 1,2
-E3-X3 U,V,W,N,PE
-X2 1L+,1L-,PE
-X91 1M
-X92 1M
-X93 1M
-X5 1U,1V,1W,1N,PE
-X2 2L+,2L-,PE
-X15 4,5
-X91 2M
-X92 2M
-X93 2M
-X130 1,2,1PE
-X2 3L+,3L-,PE
-X15 6,7
-X91 3M
-X92 3M
-X93 3M
-X2 4L+,4L-,PE
-X15 8,9
-X91 4M
-X92 4M
-X93 4M
-X130 3,4,2PE
-X5 2U,2V,2W,2N,PE
-Q71 NC
-Q72 NC
-Q29 INV operation / Manual bypass
-F25
DP-200F4
-QF31 B16A 300mA
-QF35 B16A 300mA
-QF36 B10A
-QF38 B10A
5pc
3pc
-X31 U,N,PE
-X35 V,N,PE
-X36 W,N,PE
-X38 V,N,PE
Not included in the AEG shipment
max. gG10A
max. gG10A
Load 400/230V;3/N/PE~50Hz

+BFB1
CB-200F4A
Battery fuse box 200 A
*1
-Q2 L=200A
DC 216V max. 350W
2(1x70 mm2)

+BFB2
CB-200F4B
Battery fuse box 200 A
*1
-Q2 L=200A
DC 216V max. 350W
2(1x70 mm2)

+BAT1
BA-200F4A
Batteries installed on rack
3 x 18 x FTG 12-120
Battery voltage 216V
Battery capacity 360Ah
String 1
String 2
String 3
-R81

+BAT2
BA-200F4B
Batteries installed on rack
3 x 18 x FTG 12-120
Battery voltage 216V
Battery capacity 350Ah
String 1
String 2
String 3
-R81

*1 Attention! In the event of battery undervoltage < 130 V, the UPS automatically switches off battery isolator Q2.
If this happens, switch X15:3 must be switched into the open position (undervoltage trip blocked).
For restart, please refer to the chapter in the UPS operating instructions (charging the DC link capacitors) attached.
Unlock the tripped switch Q2 by switching to open position.
After charging the DC link capacitors, switch on Q2.
Attention! When the battery voltage reaches > 200 V, switch X15:3 must be switched back to the closed position.

*2 Connection cables are not included.

NO MARK UP
AS COMMISSIONED : MATIA GIROW
24/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00009

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

ROSETTI MARINO SpA

~~NO MARK UP AS COMMISSIONED : MATIA GIROW 25/3/25~~

01	1111111111253	13.08.2024	Rossetti MAR	Editor	EEC	ROSETTI MARINO Motorship Kyma Hybrid (400) wind farm	AEG	System 23 kVA
02	1111111111289	27.08.2024	Rossetti MAR	Checked	C.Spica			System diagram
Rev	Alterations	Date	Name	Appr.	Name			1000007888_080 en

CAE EPLAN Electric P8

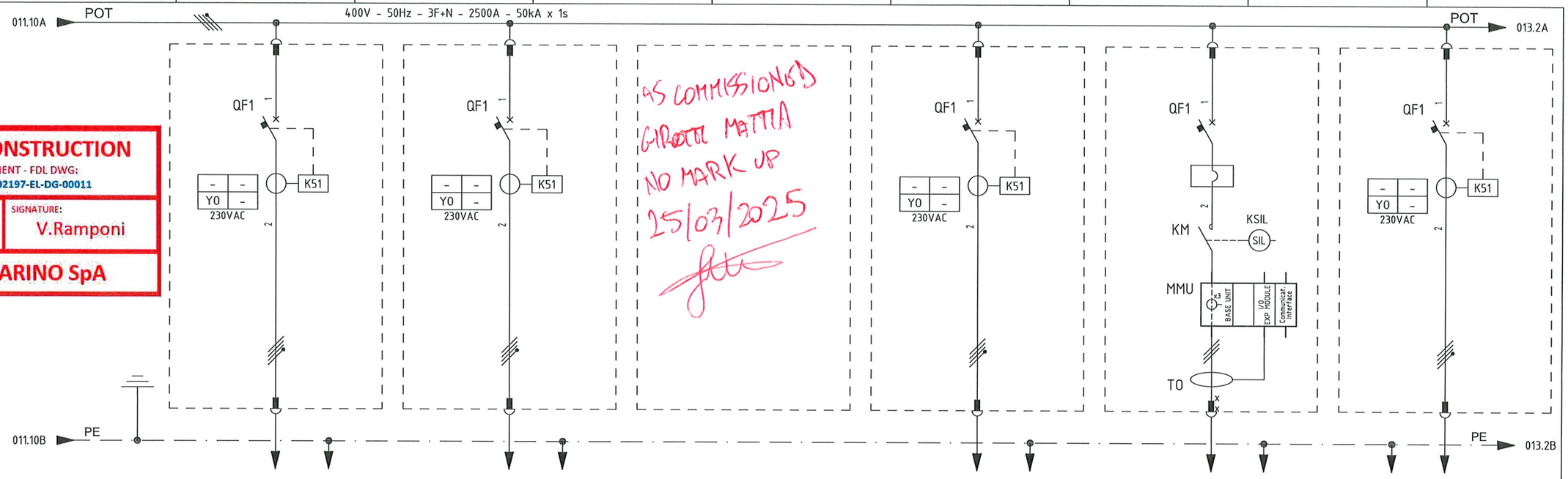
1000007888_080

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-200F4	UP-200F4	ESW-200N1	PM-50001 A	UP-200F3
UTILITY			2	AC UPS F&G - 8 H UP-200F4 - LINE A	AC UPS F&G - 8h UP-200F4 - LINE B	WELDING SOCKETS (TOP DECK)	SEA WATER PUMP A	AC UPS PAS - 30 min. UP-200F3 - BYPASS
COLUMN/CUBICLE			3	A6 / +05	A6 / +06	A6 / +08	A7 / +01	A7 / +02
RATED POWER | RATED CURRENT			4/5	18 kW | 28.9 A	18 kW | 28.9 A	69.84 kW | 126.15 A	6.1 kW | 11.0 A	36 kW | 57.8 A
TYPICAL FUNCTIONAL			6	L1-63	L1-63	L2-160	M1-6	L1-100
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160	XT4S - 250	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	3P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 160A)	MA (In = 20A)	EKIP DIP LSIG (In = 100A)
	Icu	KA	10	50 kA	50kA	50kA	-	50 kA
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
		Range t	12	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
		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
INST. SHORT-CIRCUIT	I	Range A	15	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(6 - 14) x I	(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
		Range t	18	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec	-	0.1 - 0.8 sec
CONTACTOR (ABB)			19	-	-	-	AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	UMC100.3 UC (0.24 - 63A)	-
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	4G35	4G35	5G50	4G4	4G35

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

IMESA ELECTRICAL ENGINEERING

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 012

REV. 04

F.to UNI A3: 420mmx297mm

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

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-20 AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000248	B	83033-CEL C10000558	Missing cable tags on internal and external side of MCT	-		Gtangianu 2024-10-24	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000249	B	83033-CEL C10000558	Plastic cable ties to be replaced on external routing	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000250	B	83033-CEL C10000558	Missing identification number of terminal strip X10 inside the UP-200F4	-		Gtangianu 2024-10-24	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000251	B	83033-CEL C10000558	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2024-12-23	Ecarotenuto 2024-12-23	2024-12-23
C30000264	B	83123-CEL C10002109	Plastic cable ties to be replaced on external routing.	-		Gtangianu 2024-10-24	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000265	B	83123-CEL C10002109	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
C30000266	B	83123-CEL C10002109	Wrong core identification tag on both cable's termination	-		Gtangianu 2024-10-24	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000278	B	84410-CEC C10002345	Missing all core identification tag on terminals inside BC-200F4A	-		Gtangianu 2024-10-25	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000280	B	84410-CEC C10002345	Cable to be fixed with cable ties on all routing	-		Gtangianu 2024-10-29	2024-11-23	Lmussi 2024-11-23	2024-11-23

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-20	AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000308	B	83031-CEL C10000556	Plastic cable ties to be replaced on external routing	.		Gtangianu 2024-11-04	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000309	B	83031-CEL C10000556	Missing cable tags on internal and external side of MCT	.		Gtangianu 2024-11-04	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000310	B	83031-CEL C10000556	Identification tag of wire are wrong or missing inside SG-200N1 (A6/+05)	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000311	B	83032-CEL C10000557	Identification tag of wire are wrong or missing inside SG-200N1 (A6/+06)	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000312	B	83032-CEL C10000557	Missing cable tags on internal and external side of MCT	.		Gtangianu 2024-11-04	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30000313	B	83032-CEL C10000557	Plastic cable ties to be replaced on external routing	.		Gtangianu 2024-11-04	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000314	B	CB-200F4B C10000858	Missing thermo shrink on internal earthing connections	.		Gtangianu 2024-11-04	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000315	B	CB-200F4A C10000857	Traffolyte tag "S2" is damaged.	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000316	B	CB-200F4A C10000857	Missing thermo shrink on internal earthing connections	.		Gtangianu 2024-11-04	2025-03-06	Gtangianu 2025-03-06	2025-03-06

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-20 AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000317	B	BA-200F4B C10000851	Missing tag on battery bank	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000318	B	84411-CEC C10002346	Missing identification tag of wire inside BC-200F4B	.		Gtangianu 2024-11-04	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000319	B	84411-CEC C10002346	Missing cable tags on internal and external side of BC-200F4B	.		Gtangianu 2024-11-04	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000320	B	BA-200F4A C10000850	Missing tag on battery bank	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000321	B	83032-CEL C10000557	Identification tag on terminal strip X1 inside UP-200F4, are not as per drawing. (4U/4V/4W are indicated instead of 3U/3V/3W)_ one is	.		Gtangianu 2024-11-04	2025-03-06	Gtangianu 2025-03-06	2025-03-06
C30000322	B	83031-CEL C10000556	inside UP-200F4 the Identification tag on terminal strip (X1 and 1W) are missing.	.		Gtangianu 2024-11-04	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000323	B	UP-200F4 C10000872	The panel needs to be cleaned.	.		Gtangianu 2024-11-04	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000325	B	CB-200F4A C10000857	Terminal X1 and X2 are different from drawing 172400372-EL-DG-00011. They are UKH 95 instead of UKH70. (see attached photo)	.		Ecarotenuto 2024-11-05	2024-11-26	Ecarotenuto 2024-11-26	2024-11-26
C30000326	B	CB-200F4B C10000858	Terminal X1 and X2 are different from drawing 172400372-EL-DG-00011. They are UKH 95 instead of UKH70. (see attached photo)	.		Ecarotenuto 2024-11-05	2024-11-26	Ecarotenuto 2024-11-26	2024-11-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-20	AC 15 kVA UPS System (UP-200F4)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000675	B	84411-CEL-2-PC10000652	Fixing bolts of BTM are of various sizes. They needs to be replaced as per drawing. See attached Photo.	.		Gtangianu 2024-11-20	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14
C30000676	B	84411-CEL-2-NC10000653	Fixing bolts of BTM are of various sizes. They needs to be replaced as per drawing. See attached Photo.	.		Gtangianu 2024-11-20	2024-12-14	Ecarotenuto 2024-12-14	2024-12-14

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	84	Battery & No-Break System
SUBSYSTEM	84-20	AC 15 kVA UPS System (UP-200F4)

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000793	B	UP-200F4/B400 -NET-001.01 C10004372	Identification cable tag missing inside UP-200F4 connection.	.		Gtangianu 2024-11-22	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30000794	B	UP-200F4/B400 -NET-001.02 C10004373	Identification cable tag missing inside UP-200F4 connection.	.		Gtangianu 2024-11-22	2025-02-21	Gtangianu 2025-02-21	2025-02-21

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 84 Battery & No-Break System

SUBSYSTEM 84-20 AC 15 kVA UPS System (UP-200F4)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000882	B	C-CB-200F4A/B 400-SIS-001 C10000199	Missing cable tag outside B-400-SIS-001 panel	.		Pschintu 2024-11-25	2024-12-11	Pschintu 2024-12-11	2024-12-11
C30000900	B	C-CB-200F4B/B 400-SIS-001 C10000200	Missing cable tag outside B-400-SIS-001 panel	.		Pschintu 2024-11-25	2025-01-07	Gtangianu 2025-01-07	2025-01-07
C30001059	B	C-UP-200F4/B4 00-SIS-001 C10000201	Missing SS cable tag	.		Pschintu 2024-11-30	2025-01-31	Gtangianu 2025-01-31	2025-01-31
C30001060	B	C-UP-200F4/B4 00-SIS-001 C10000201	Missing core identification tag by UP-200F4 side	.		Pschintu 2024-11-30	2025-03-06	Gtangianu 2025-03-06	2025-03-06

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000278

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002345	1.4 Discipline	Electrical
1.2 Item	84410-CEC		Isolator Battery Box for AC UPS 15 kVA / AC UPS 15 kVA Redundant System with By-Pass
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Missing all core identification tag on terminals inside BC-200F4A

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: Luca Mussi

Date: 2024-11-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

84411-CEL-2-N
84410-CEC
CB-200F4B/B400-SIS-001

84411-CEL-2-P
84411-CEL-2-P/X2/+
84410-CEC
X3

84403-CEL
84411-CEL-1-P
83033-CEL
84411-CEL-1-N
84411-CEC
84410-CEC
83123-CEL

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000280

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002345	1.4 Discipline	Electrical
1.2 Item	84410-CEC		Isolator Battery Box for AC UPS 15 kVA / AC UPS 15 kVA Redundant System with By-Pass
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Cable to be fixed with cable ties on all routing

Name: Giovanni Tangianu

Date: 2024-10-29

Signature:

3 - DEFECT ASSESSMENT

-

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-10-29
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:

84403-CEL
84411-CEL-1-P
84411-CEC
84410-CEC
83123-CEL
84401-CF

84404-CEL
84401-CEI
84412-CEL-1-P
83031-CEI







ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000308

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000556	1.4 Discipline	Electrical
1.2 Item	83031-CEL		LV Switchgear / AC UPS F&G - 8h - Line A
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Plastic cable ties to be replaced on external routing

Name: Giovanni Tangianu

Date: 2024-11-04

Signature:

3 - DEFECT ASSESSMENT

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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	2024-11-04
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

C30000309

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000556	1.4 Discipline	Electrical
1.2 Item	83031-CEL	LV Switchgear / AC UPS F&G - 8h - Line A	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Missing cable tags on internal and external side of MCT

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000310

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000556	1.4 Discipline	Electrical
1.2 Item	83031-CEL	LV Switchgear / AC UPS F&G - 8h - Line A	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Identification tag of wire are wrong or missing inside SG-200N1 (A6/+05)

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Changed.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000311

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000557	1.4 Discipline	Electrical
1.2 Item	83032-CEL	LV Switchgear / AC UPS F&G - 8h - Line B	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Identification tag of wire are wrong or missing inside SG-200N1 (A6/+06)

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

changed.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000312

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000557	1.4 Discipline	Electrical
1.2 Item	83032-CEL		LV Switchgear / AC UPS F&G - 8h - Line B
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Missing cable tags on internal and external side of MCT

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000313

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000557	1.4 Discipline	Electrical
1.2 Item	83032-CEL		LV Switchgear / AC UPS F&G - 8h - Line B
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Plastic cable ties to be replaced on external routing

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000314

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000858	1.4 Discipline	Electrical
1.2 Item	CB-200F4B	Isolator Battery Box for AC UPS 15 kVA	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Missing thermo shrink on internal earthing connections

Name: Giovanni Tangianu
Date: 2024-11-04
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	2024-11-04
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Punch accepted by RM (Rosetti Marino).

Name: Giovanni Tangianu
Date: 2025-03-06
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000315

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000857	1.4 Discipline	Electrical
1.2 Item	CB-200F4A	Isolator Battery Box for AC UPS 15 kVA	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Traffolyte tag "S2" is damaged.

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

replace.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000316

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000857	1.4 Discipline	Electrical
1.2 Item	CB-200F4A	Isolator Battery Box for AC UPS 15 kVA	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Missing thermo shrink on internal earthing connections

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Punch accepted by RM (Rosetti Marino).

Name: Giovanni Tangianu

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000317

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000851	1.4 Discipline	Electrical
1.2 Item	BA-200F4B		Battery Rack GEL VRLA-20Y for AC UPS 15 kVA
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Missing tag on battery bank

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000318

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002346	1.4 Discipline	Electrical
1.2 Item	84411-CEC		Isolator Battery Box for AC UPS 15 kVA / AC UPS 15 kVA Redundant System with By-Pass
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Missing identification tag of wire inside BC-200F4B

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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:


8411-CEC
C-CB-200F-1/B400-SIS-001
X3

84403-CEL
84411-CEL-1-P
83033-CEL
84411-CEL-1-N
84411-CEC
84410-CEC
83123-CEL

84411-CEC
CB-200F4A/B400-SIS-001

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000319

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002346	1.4 Discipline	Electrical
1.2 Item	84411-CEC		Isolator Battery Box for AC UPS 15 kVA / AC UPS 15 kVA Redundant System with By-Pass
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Missing cable tags on internal and external side of BC-200F4B

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000320

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000850	1.4 Discipline	Electrical
1.2 Item	BA-200F4A		Battery Rack GEL VRLA-20Y for AC UPS 15 kVA
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Missing tag on battery bank

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000321

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000557	1.4 Discipline	Electrical
1.2 Item	83032-CEL		LV Switchgear / AC UPS F&G - 8h - Line B
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Identification tag on terminal strip X1 inside UP-200F4, are not as per drawing. (4U/4V/4W are indicated instead of 3U/3V/3W)_ one is missing _ See attached photo

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Punch accepted by RM (Rosetti Marino).

Name: Giovanni Tangianu

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

4U/X1/L1/1/6/0.2/CE1
4V/X1/L2/1/6/0.2/CE1
4W/X1/L3/1/6/0.2/CE1
4
U
4
V
4
W
X
1
4
U
4
V
4
W

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000322

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000556	1.4 Discipline	Electrical
1.2 Item	83031-CEL	LV Switchgear / AC UPS F&G - 8h - Line A	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

inside UP-200F4 the Identification tag on terminal strip (X1 and 1W) are missing.

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000323

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000872	1.4 Discipline	Electrical
1.2 Item	UP-200F4	AC UPS 15 kVA Redundant System with By-Pass	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

The panel needs to be cleaned.

Name: Giovanni Tangianu

Date: 2024-11-04

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	2024-11-04
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

C30000325

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000857	1.4 Discipline	Electrical
1.2 Item	CB-200F4A	Isolator Battery Box for AC UPS 15 kVA	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Terminal X1 and X2 are different from drawing 172400372-EL-DG-00011. They are UKH 95 instead of UKH70. (see attached photo)

Name: Eleonora Carotenuto
Date: 2024-11-05
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

RLMU done by ENG

Name: Eleonora Carotenuto
Date: 2024-11-26
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

MODEL C-225 REV.1

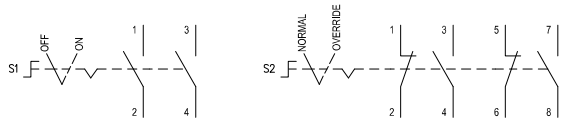
BATTERY PROTECTION BOX

CB-200F4 A/B

GENERAL NOTES:

-ENCLOSURE: EJBC-5
-MATERIAL: COPPER FREE ALUMINIUM ALLOY
-EXTERNAL PAINTING: RAL7035
-INTERNAL PAINTING: /
-ALL DIMENSION ARE IN mm
-WEIGHT: ≈57kg

SELECTOR SWITCHES DETAIL



TRUE TABLE

POSITION	CONTACT	
	1-2	3-4
OFF	O	O
ON	X	X

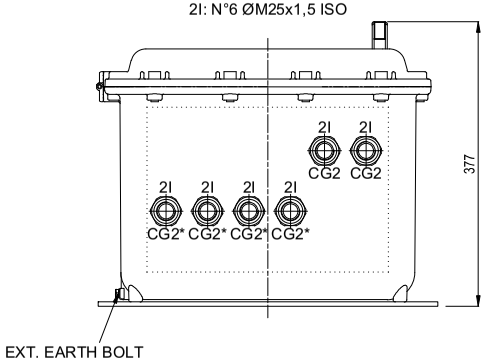
O	CONTACT OPEN
X	CONTACT CLOSED

TRUE TABLE

POSITION	CONTACT			
	1-2	3-4	5-6	7-8
NORMAL	X	O	X	O
OVERRIDE	O	X	O	X

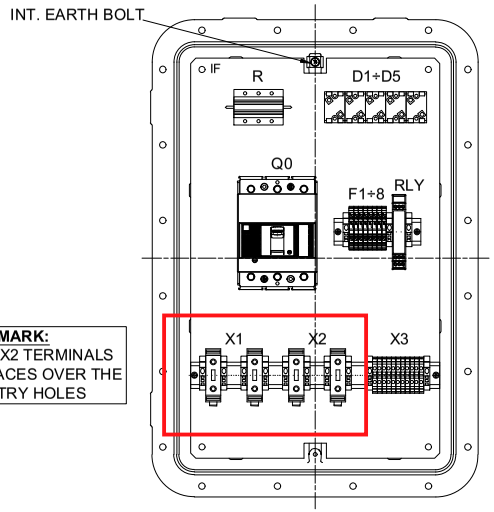
O	CONTACT OPEN
X	CONTACT CLOSED

BOTTOM VIEW
2I: N°6 ØM25x1,5 ISO



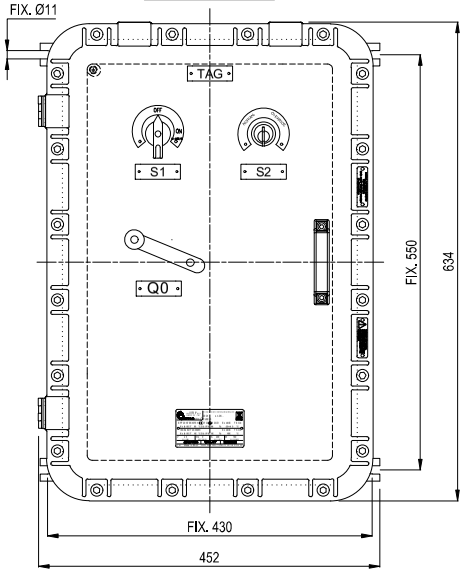
N°	Q.TY	CODE	DESCRIPTION
IF	1	BFE-5	ALUMINIUM INTERNAL FRAME
X1	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X2	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X3	11	UT4	PHOENIX TERMINALS SUITABLE FOR 4mm² CABLE
Q0	1	XT3N200TMD3	ABB XT3 MCCB, 3P, 200A, 36kA
	1	1SDA066399R1	220-240Vac/dc UNDERVOLTAGE 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
CG2*	4	NEV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR ARMORED CABLE Øint. 11-20mm Øext. 20-27,5mm, ARMOR THICKNESS 0,2-1,6mm
CG2	2	NAV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR NOT-ARMORED CABLE Ø11-20mm

INTERNAL VIEW

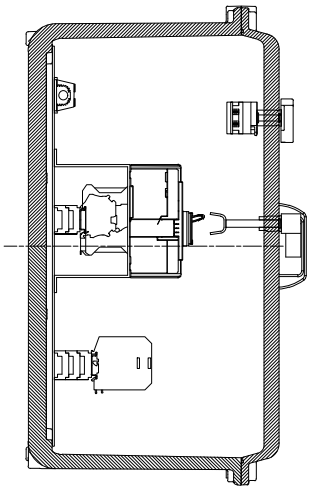


REMARK:
X1/X2 TERMINALS PLACES OVER THE ENTRY HOLES

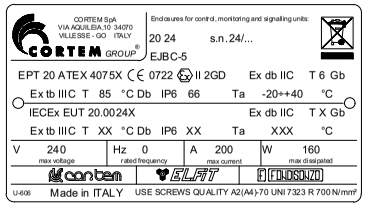
EXTERNAL VIEW



INT. LEFT SIDE VIEW



CERTIFICATE NAMEPLATE



TAG NAMEPLATE
MATERIAL: TRAPHOLITE
DIMENSIONS: 60X20
BLACK TEXT ON WHITE BACKGROUND

N°	TAG N°
TAG	CB-200F4 A
	CB-200F4 B
	CB-200F3 A
	CB-200F3 B
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: AC UPS - TAG: UP-200F4
001 EJBC-5/C2401778/10.
ITEM 10
EXT/INT. LAYOUT

CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 1 NEXT 2
TOT. 4

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Smart Professional R. 2012

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000326

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000858	1.4 Discipline	Electrical
1.2 Item	CB-200F4B	Isolator Battery Box for AC UPS 15 kVA	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Terminal X1 and X2 are different from drawing 172400372-EL-DG-00011. They are UKH 95 instead of UKH70. (see attached photo)

Name: Eleonora Carotenuto
Date: 2024-11-05
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

RLMU done by ENG

Name: Eleonora Carotenuto
Date: 2024-11-26
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

MODEL C-225 REV.1

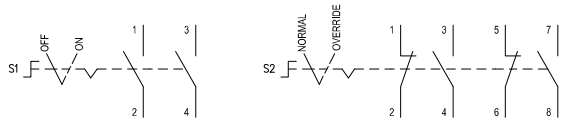
BATTERY PROTECTION BOX

CB-200F4 A/B

GENERAL NOTES:

-ENCLOSURE: EJBC-5
-MATERIAL: COPPER FREE ALUMINIUM ALLOY
-EXTERNAL PAINTING: RAL7035
-INTERNAL PAINTING: /
-ALL DIMENSION ARE IN mm
-WEIGHT: ≈57kg

SELECTOR SWITCHES DETAIL



TRUE TABLE

POSITION	CONTACT	
	1-2	3-4
OFF	O	O
ON	X	X

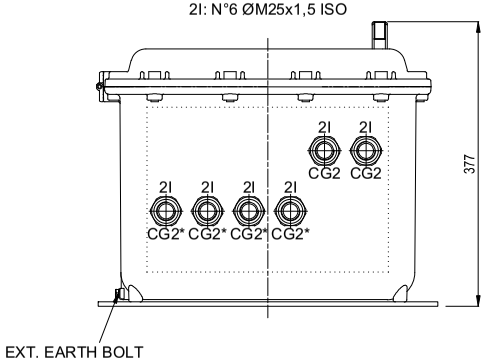
O	CONTACT OPEN
X	CONTACT CLOSED

TRUE TABLE

POSITION	CONTACT			
	1-2	3-4	5-6	7-8
NORMAL	X	O	X	O
OVERRIDE	O	X	O	X

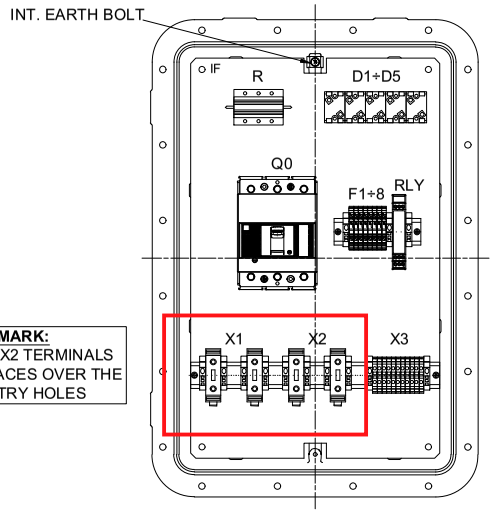
O	CONTACT OPEN
X	CONTACT CLOSED

BOTTOM VIEW
2I: N°6 ØM25x1,5 ISO



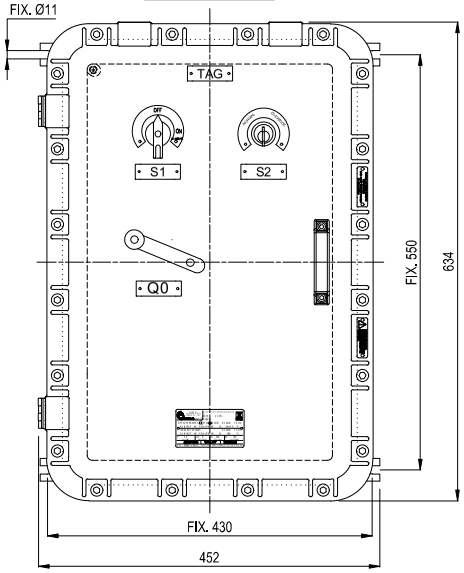
N°	Q.TY	CODE	DESCRIPTION
IF	1	BFE-5	ALUMINIUM INTERNAL FRAME
X1	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X2	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X3	11	UT4	PHOENIX TERMINALS SUITABLE FOR 4mm² CABLE
Q0	1	XT3N200TMD3	ABB XT3 MCCB, 3P, 200A, 36kA
	1	1SDA066399R1	220-240Vac/dc UNDERVOLTAGE 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
CG2*	4	NEV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR ARMORED CABLE Øint. 11-20mm Øext. 20-27,5mm, ARMOR THICKNESS 0,2-1,6mm
CG2	2	NAV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR NOT-ARMORED CABLE Ø11-20mm

INTERNAL VIEW

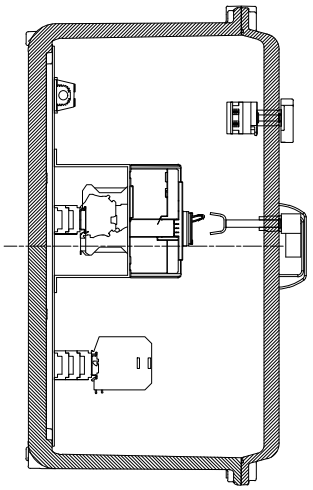


REMARK:
X1/X2 TERMINALS PLACES OVER THE ENTRY HOLES

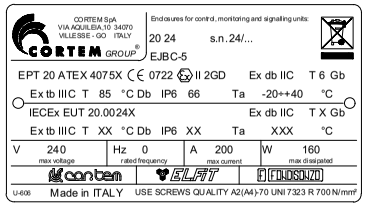
EXTERNAL VIEW



INT. LEFT SIDE VIEW



CERTIFICATE NAMEPLATE



TAG NAMEPLATE
MATERIAL: TRAPHOLITE
DIMENSIONS: 60X20
BLACK TEXT ON WHITE BACKGROUND

N°	TAG N°
TAG	CB-200F4 A
	CB-200F4 B
	CB-200F3 A
	CB-200F3 B
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: AC UPS - TAG: UP-200F4
001 EJBC-5/C2401778/10.
ITEM 10
EXT/INT. LAYOUT

CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 1 NEXT 2
TOT. 4

THIS DRAWING IS PROPERTY OF CORTEM SPA AND IT CANNOT BE REPRODUCED WITHOUT CORTEM'S AUTHORIZATION

Smart Professional R. 2012

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000675

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000652	1.4 Discipline	Electrical
1.2 Item	84411-CEL-2-P		AC UPS F&G - Battery Isolator-A / AC UPS F&G - Battery-A
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Fixing bolts of BTM are of various sizes. They needs to be replaced as per drawing.
See attached Photo.

Name: Giovanni Tangianu
Date: 2024-11-20
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	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

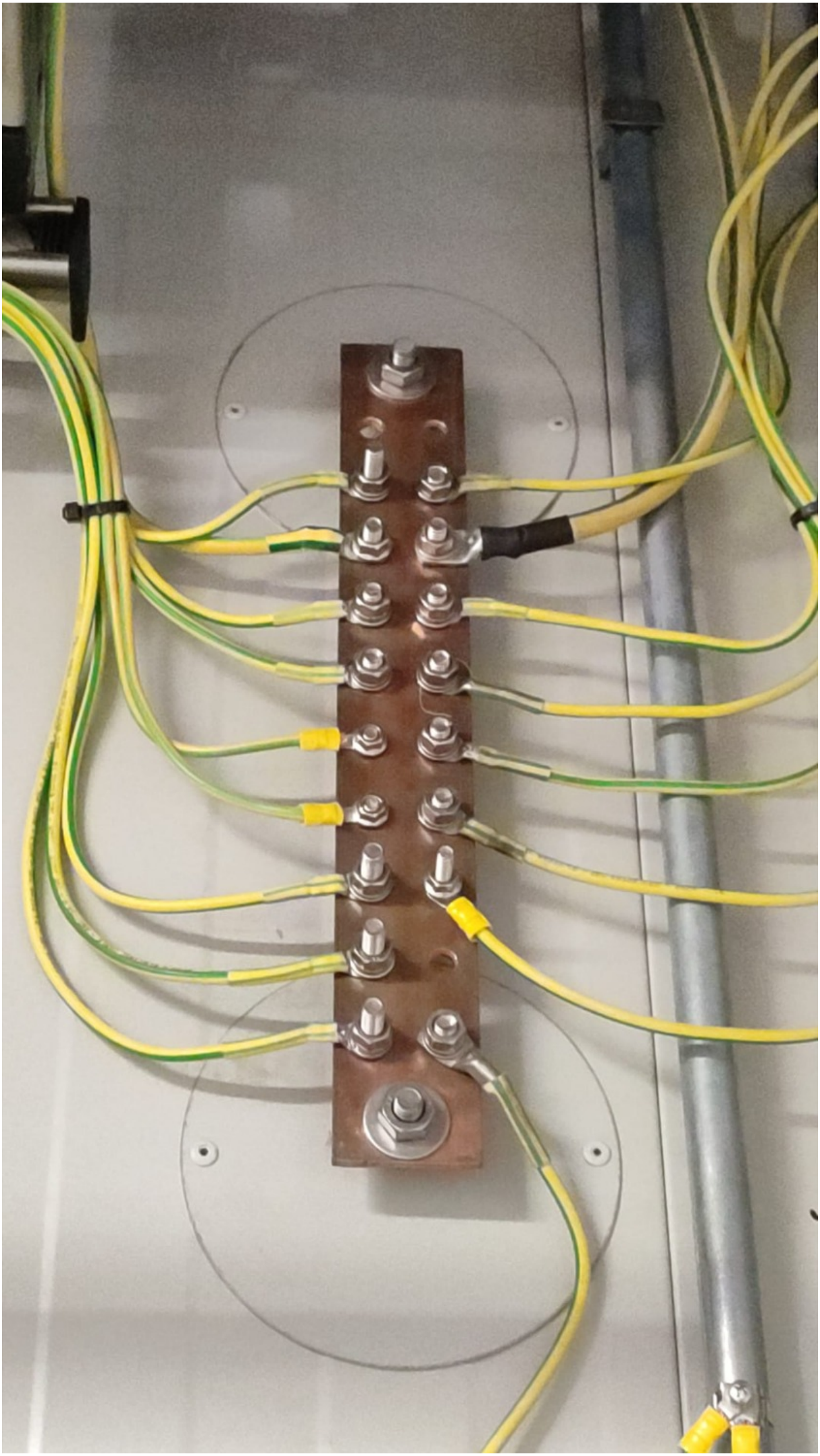
5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto
Date: 2024-12-14
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000676

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000653	1.4 Discipline	Electrical
1.2 Item	84411-CEL-2-N	AC UPS F&G - Battery Isolator-A / AC UPS F&G - Battery-A	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Fixing bolts of BTM are of various sizes. They needs to be replaced as per drawing.
See attached Photo.

Name: Giovanni Tangianu
Date: 2024-11-20
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	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto
Date: 2024-12-14
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000793

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004372	1.4 Discipline	Telecom
1.2 Item	UP-200F4/B400-NET-001.01	COMMUNICATION / EMCS SYSTEM	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Identification cable tag missing inside UP-200F4 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: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000794

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004373	1.4 Discipline	Telecom
1.2 Item	UP-200F4/B400-NET-001.02	COMMUNICATION / EMCS SYSTEM	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Identification cable tag missing inside UP-200F4 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: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000882

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000199	1.4 Discipline	Instrumental
1.2 Item	C-CB-200F4A/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

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: 2024-12-11

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000900

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000200	1.4 Discipline	Instrumental
1.2 Item	C-CB-200F4B/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

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

Installed.

Name: Giovanni Tangianu

Date: 2025-01-07

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001059

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000201	1.4 Discipline	Instrumental
1.2 Item	C-UP-200F4/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

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: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001060

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000201	1.4 Discipline	Instrumental
1.2 Item	C-UP-200F4/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

2 - OBSERVATION

Missing core identification tag by UP-200F4 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_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Punch accepted by RM (Rosetti Marino).

Name: Giovanni Tangianu

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000248

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000558	1.4 Discipline	Electrical
1.2 Item	83033-CEL		LV Switchgear / AC UPS F&G - 8h - Bypass
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

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

C30000249

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000558	1.4 Discipline	Electrical
1.2 Item	83033-CEL		LV Switchgear / AC UPS F&G - 8h - Bypass
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

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

C30000250

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000558	1.4 Discipline	Electrical
1.2 Item	83033-CEL		LV Switchgear / AC UPS F&G - 8h - Bypass
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

2 - OBSERVATION

Missing identification number of terminal strip X10 inside the UP-200F4

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

Punch accepted by RM (Rosetti Marino).

Name: Giovanni Tangianu

Date: 2025-03-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000251

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000558	1.4 Discipline	Electrical
1.2 Item	83033-CEL	LV Switchgear / AC UPS F&G - 8h - Bypass	
1.3 Subsystem	84-20	AC 15 kVA UPS System (UP-200F4)	

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: Eleonora Carotenuto

Date: 2024-12-23

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000264

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002109	1.4 Discipline	Electrical
1.2 Item	83123-CEL		Lighting & Small Power DB BoP / AC UPS F&G AUXILIARY
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

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

C30000265

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002109	1.4 Discipline	Electrical
1.2 Item	83123-CEL		Lighting & Small Power DB BoP / AC UPS F&G AUXILIARY
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

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

C30000266

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002109	1.4 Discipline	Electrical
1.2 Item	83123-CEL		Lighting & Small Power DB BoP / AC UPS F&G AUXILIARY
1.3 Subsystem	84-20		AC 15 kVA UPS System (UP-200F4)

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

Punch accepted by RM (Rosetti Marino).

Name: Giovanni Tangianu

Date: 2025-03-06

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: 84-20 & process: COMM & discipline : E

Electrical	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A2/+04-QF1	DRAWER UPS F&G - BYPASS - A2/+04-QF1	ONSHORE	C10002818	FP00	100	2024-11-12	RFO 2
		ONSHORE	C10002819	FTR-2	100	2024-09-20	RFO 2
		ONSHORE	C10002820	FTR-6	100	2024-10-03	RFO 2
		ONSHORE	C10003009	FTR-5	100	2025-04-22	RFO 2
A6/+05-QF1	DRAWER UPS F&G - LINE A - A6/+05-QF1	ONSHORE	C10002821	FP00	100	2024-11-12	RFO 2
		ONSHORE	C10002822	FTR-2	100	2024-09-20	RFO 2
		ONSHORE	C10002823	FTR-6	100	2024-10-02	RFO 2
		ONSHORE	C10003010	FTR-5	100	2025-04-22	RFO 2
A6/+06-QF1	DRAWER UPS F&G - LINE B - A6/+06-QF1	ONSHORE	C10002824	FP00	100	2024-11-12	RFO 2
		ONSHORE	C10002825	FTR-2	100	2024-09-20	RFO 2
		ONSHORE	C10002826	FTR-6	100	2024-10-02	RFO 2
		ONSHORE	C10003011	FTR-5	100	2025-04-22	RFO 2
BA-200F4A	Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	ONSHORE	C10002831	FTR-3	100	2024-11-18	RFO 2
BA-200F4A-C	UPS F&G - BA-200F4A-C	ONSHORE	C10002829	FTR-4	100	2024-11-18	RFO 2
BA-200F4A-D	UPS F&G - BA-200F4A-D	ONSHORE	C10002830	FTR-4	100	2024-11-18	RFO 2
BA-200F4B	Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	ONSHORE	C10002834	FTR-3	100	2024-11-19	RFO 2
BA-200F4B-C	UPS F&G - BA-200F4B-C	ONSHORE	C10002832	FTR-4	100	2024-11-18	RFO 2
BA-200F4B-D	UPS F&G - BA-200F4B-D	ONSHORE	C10002833	FTR-4	100	2024-11-18	RFO 2
CB-200F4A-Q2	BATTERY CUTOFF UPS F&G - CB-200F4A-Q2	ONSHORE	C10002815	FTR-2	100	2024-11-14	RFO 2
CB-200F4B-Q2	BATTERY CUTOFF UPS F&G - CB-200F4B-Q2	ONSHORE	C10002816	FTR-2	100	2024-11-14	RFO 2
DP-200N1-Q42	BREAKER AUX UPS F&G - DP-200N1-Q42	ONSHORE	C10002817	FTR-2	100	2024-10-28	RFO 2
UP-200F4	AC UPS 15 kVA Redundant System with By-Pass	ONSHORE	C10002827	FP16A	100	2025-03-12	RFO 2
		ONSHORE	C10002828	FTR-6	100	2025-03-12	RFO 2
UP-200F4-QF33	SPARE	ONSHORE	C10004589	FTR-2	100	2024-11-14	RFO 2
UP-200F4-QF34	SPARE	ONSHORE	C10004590	FTR-2	100	2024-11-14	RFO 2
UP-200F4-QF35	SPARE	ONSHORE	C10004591	FTR-2	100	2024-11-14	RFO 2
UP-200F4-QF38	SPARE	ONSHORE	C10004594	FTR-2	100	2024-11-14	RFO 2

ITEM	Tag	CB-200F4A-Q2	: BATTERY CUTOFF UPS F&G - CB-200F4A-Q2			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002815		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:	B300	Cubicle:	NA
Switchboard:	UP-200F4				

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	250A	NA	NA	FIXED	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 175	17140769	7715/24	10/07/2025

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	2024-11-12	2024-11-14	2024-11-14
Signature	Digitaly signed by Davide Zucconelli 2024-11-12T14:29:16.472Z	Digitaly signed by Kristian Castellani 2024-11-14T08:13:40.938Z	Digitaly signed by Witness waived 2024-11-14T08:39:28.597Z

ITEM	Tag	CB-200F4B-Q2	: BATTERY CUTOFF UPS F&G - CB-200F4B-Q2			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002816		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: B300	Cubicle: NA
Switchboard: UP-200F4		

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	250A	NA	NA	FIXED	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 175	17140769	7715/24	10/07/2025

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	2024-11-12	2024-11-14	2024-11-14
Signature	Digitaly signed by Davide Zucconelli 2024-11-12T14:29:44.041Z	Digitaly signed by Kristian Castellani 2024-11-14T08:14:24.512Z	Digitaly signed by Witness waived 2024-11-14T08:40:19.462Z

ITEM	Tag	DP-200N1-Q42	: BREAKER AUX UPS F&G - DP-200N1-Q42			Dwg	1723002197-EL-DG-00013
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002817		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	Time delay 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:

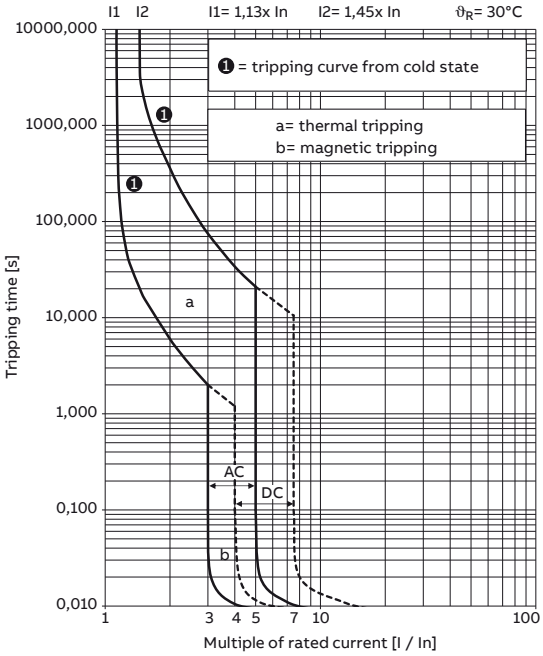
Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-28	2024-10-28	2024-10-28
Signature	Digitaly signed by Davide Zucconelli 2024-10-28T11:06:54.557Z	Digitaly signed by Kristian Castellani 2024-10-28T12:55:35.083Z	Digitaly signed by Witness waived 2024-10-28T13:27:09.921Z

Miniature Circuit breakers S300P

Tripping characteristics

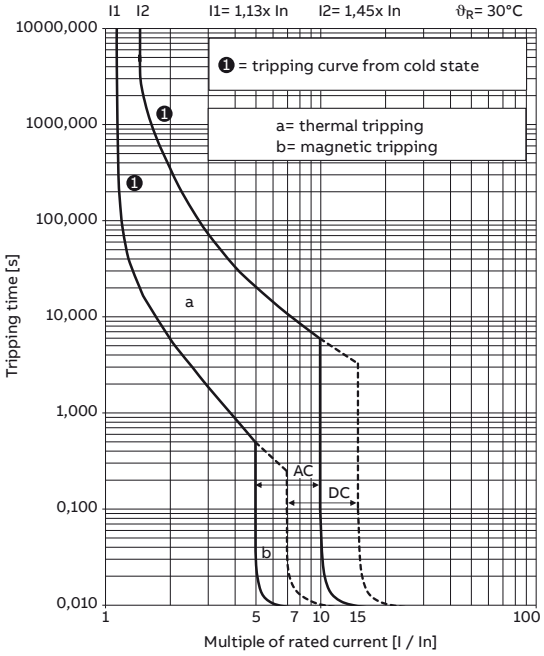
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



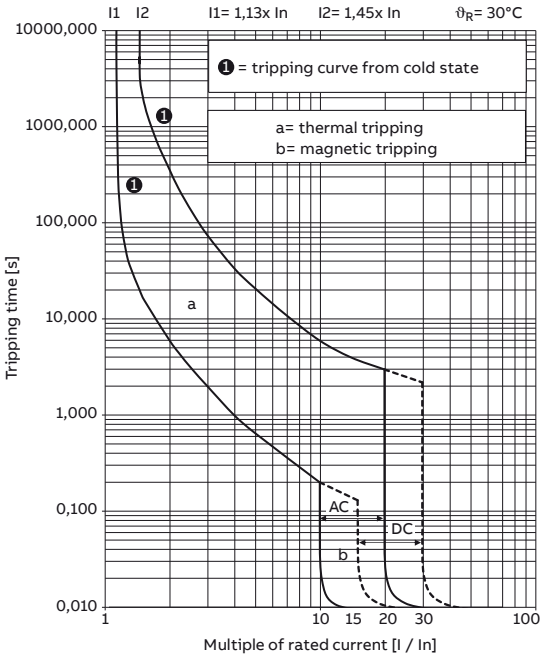
MCB Type S300P - C (5 ... 10 x I_n AC)

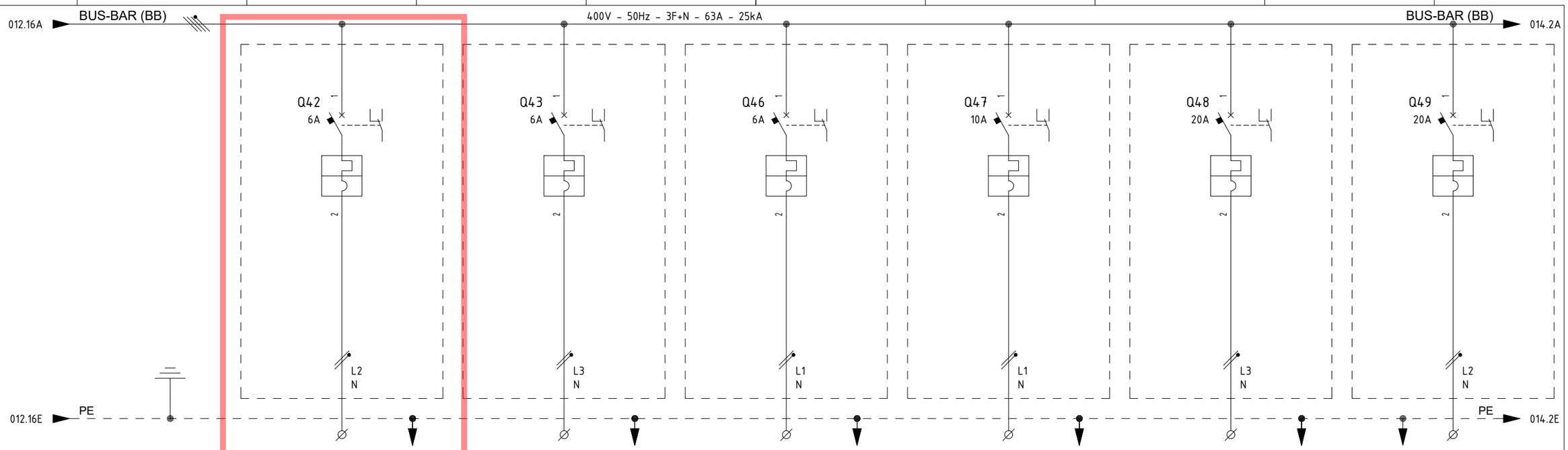
Tripping Characteristic IEC/EN 60898-1



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	-	-	-

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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)

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

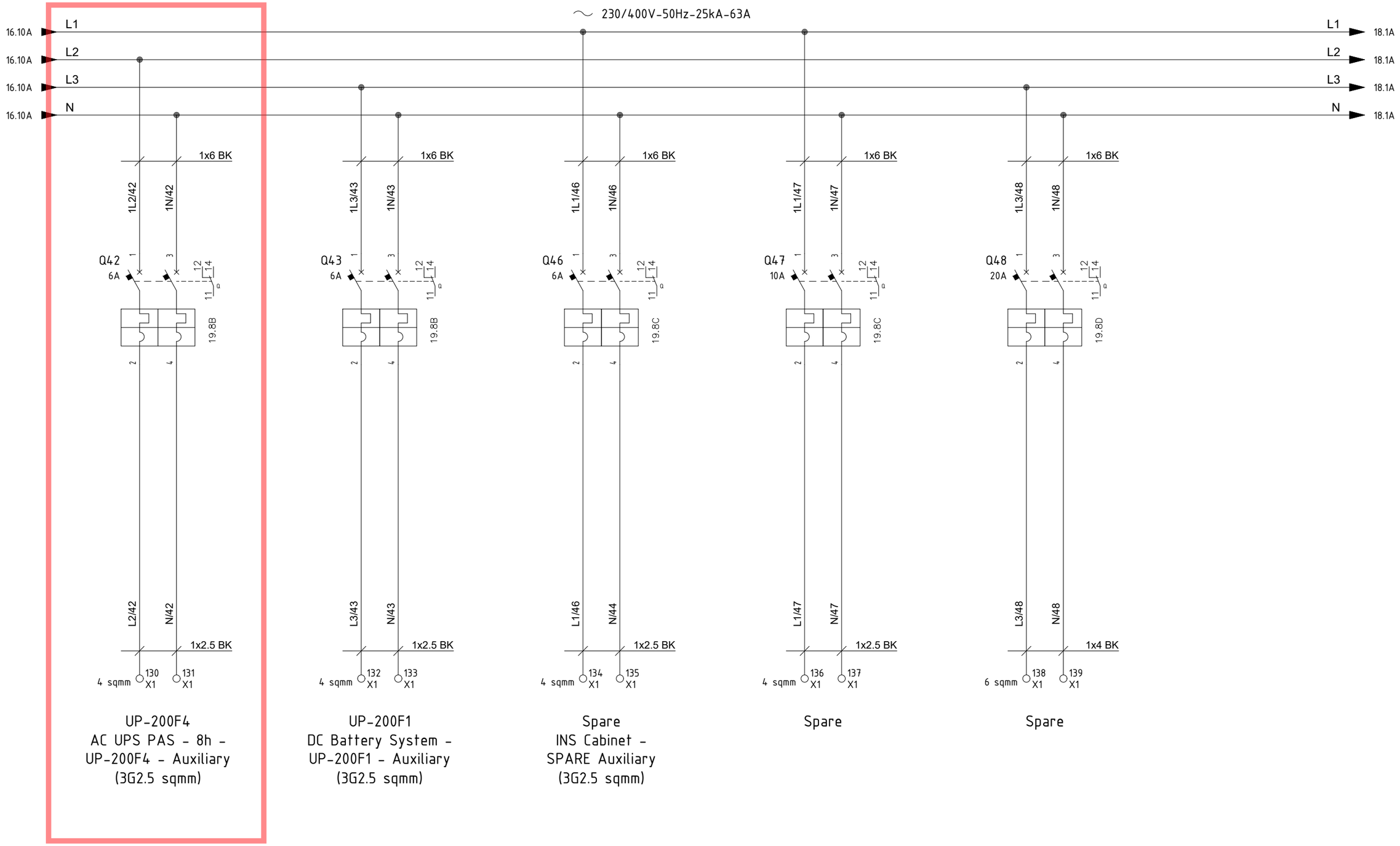
DRAWING NO. 1723002197-EL-DG-00013

SHEET 013

REV. 03

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

F.to UNI A3: 420mmx297mm



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)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231298/SD/33

Item n° : PF1002888/101

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	A2/+04-QF1	: DRAWER UPS F&G - BYPASS - A2/+04-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002818		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-A2+04-QF1
Breaker rating (A)	28.9A	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)	>1000	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	397	V	0.2 A	OK
11	Attach test procedure, if any				NA

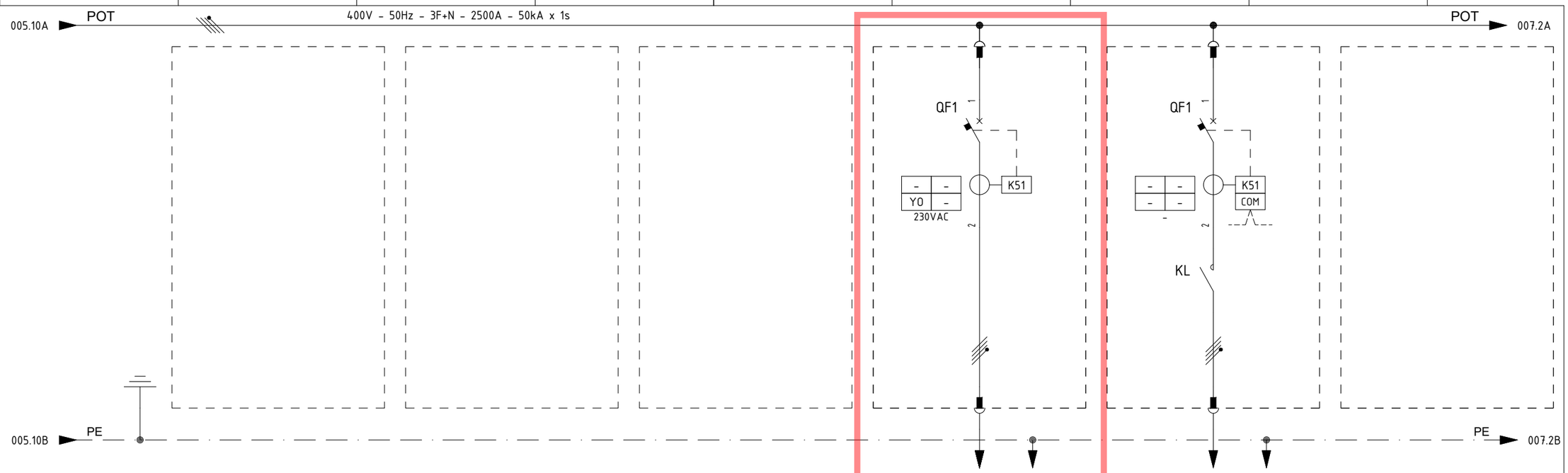
FUNCTION TEST REQUIREMENT	RESULT

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	Witness waived
Date	2024-11-12	2024-11-12	2024-11-12
Signature	Digitaly signed by Davide Zucconelli 2024-11-12T14:30:46.822Z	Digitaly signed by Kristian Castellani 2024-11-12T15:34:26.220Z	Digitaly signed by Witness waived 2024-11-12T16:00:55.244Z



ITEM			1				-	UP-200F4	SPARE	
UTILITY			2				FUTURE	AC UPS F&G - 8 H UP-200F4 - BYPASS	SPARE	
COLUMN/CUBICLE			3				A2 / +03	A2 / +04	A2 / +05	
RATED POWER | RATED CURRENT			4/5				- -	18 kW 28.9 A	- kW - A	
TYPICAL FUNCTIONAL			6					L1-63	LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7					XT2S - 160	XT2S - 160	
	VERSION		8					4P - FIXED	4P - FIXED	
	TRIP UNITS		9					EKIP DIP LSIG (In = 63A)	EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10					50 kA	50 kA	
OVERLOAD	L	Range A	11					(0.4 - 1) x In	(0.4 - 1) x In	
		Range t	12					k/I^2	k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13					(1 - 10) x In	(0.6 - 10) x In	
		Range t	14					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	(1.5 - 10) x In	
		Range t	16					<= 0.02 sec	instantaneous	
EARTH FAULT PROTECTION	G	Range A	17					(0.2 - 1) x In	(0.1 - 1) x In	
		Range t	18					0.1 - 0.8 sec	t=k / t=k/I^2	
CONTACTOR (ABB)			19					-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
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					4G35	5G4	

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

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)

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

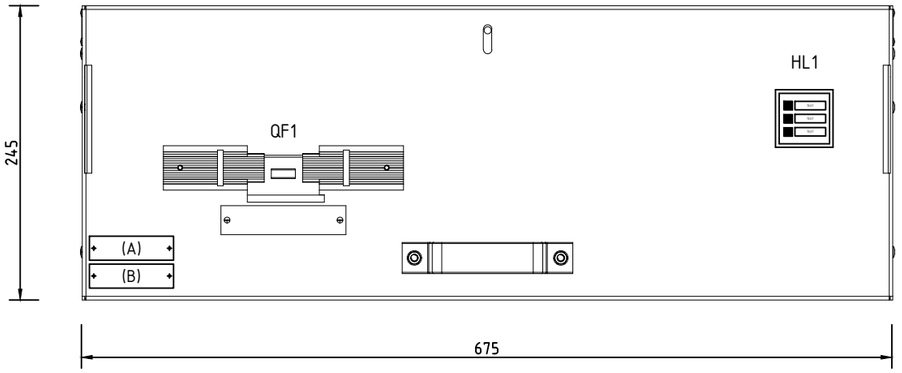
A3 | DRAWING NO. 1723002197-EL-DG-00011 | SHEET 006 | REV. 04

F.to UNI A3: 420mmx297mm

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

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "L1-n"

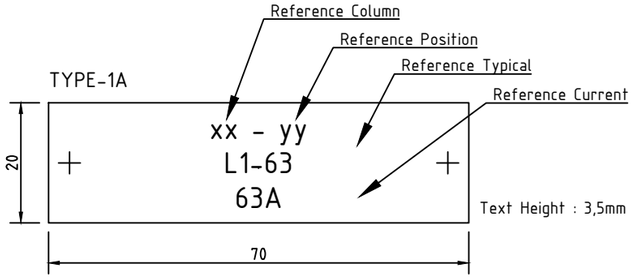


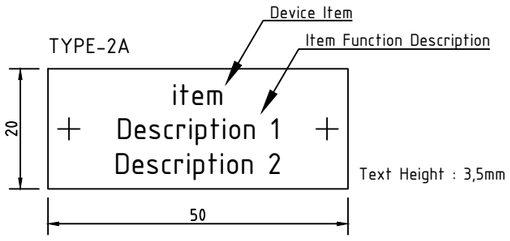
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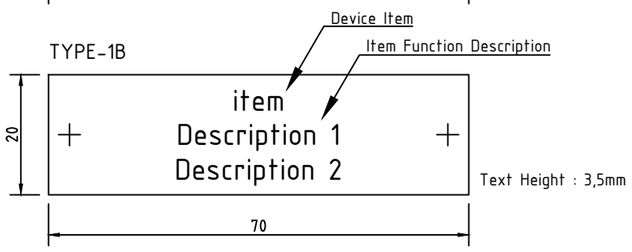
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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
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)

CROSSWIND

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

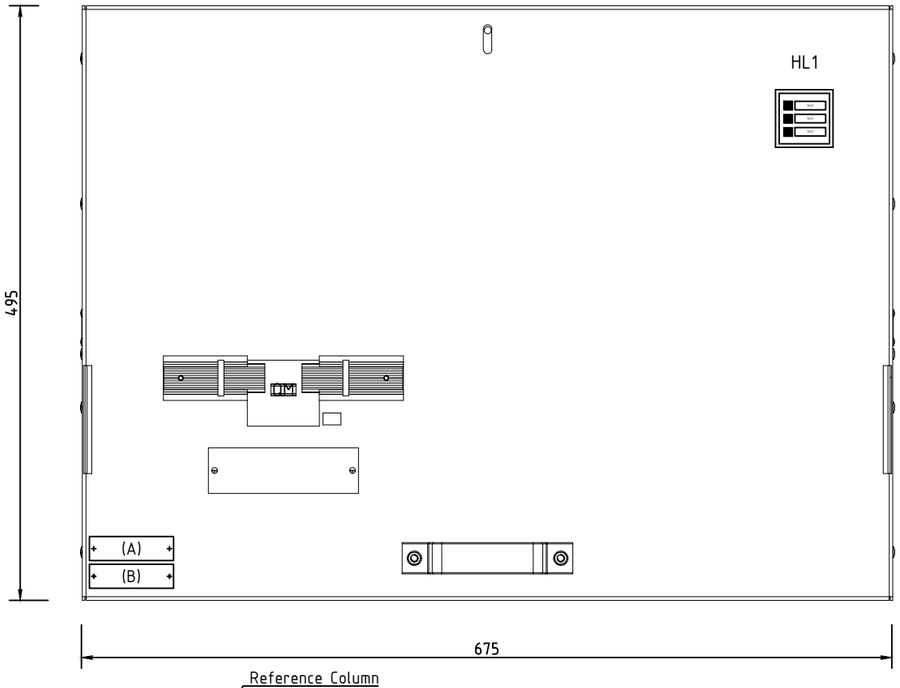
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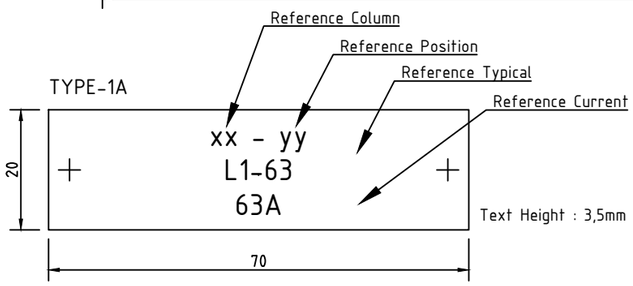
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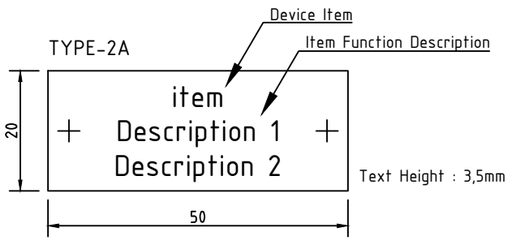
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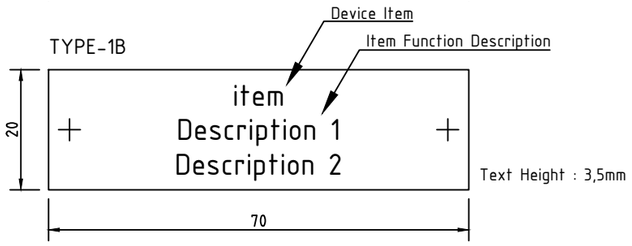
DOOR FRONT LAY-OUT

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

=	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)

CROSSWIND

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. 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

= 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)

CROSSWIND

ROSETTI MARINO

IMESA ELECTRICAL ENGINEERING

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	

=	TYPICAL					
+	L-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
		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)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

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

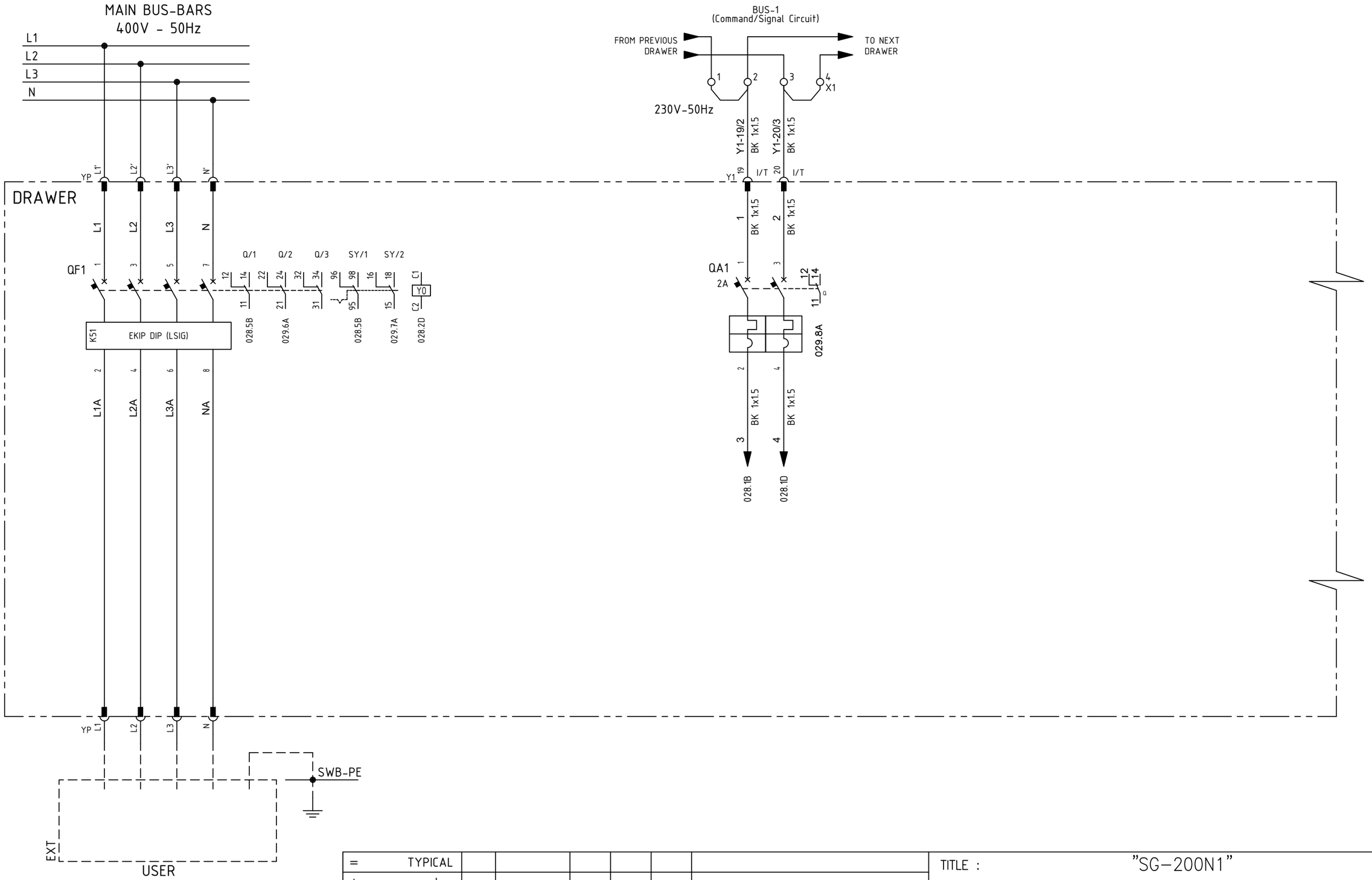
DRAWING NO. 1723002197-EL-DG-00031

SHEET 026

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



=	TYPICAL					
+	L-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
		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)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

CROSSWIND

IMESA ELECTRICAL ENGINEERING

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

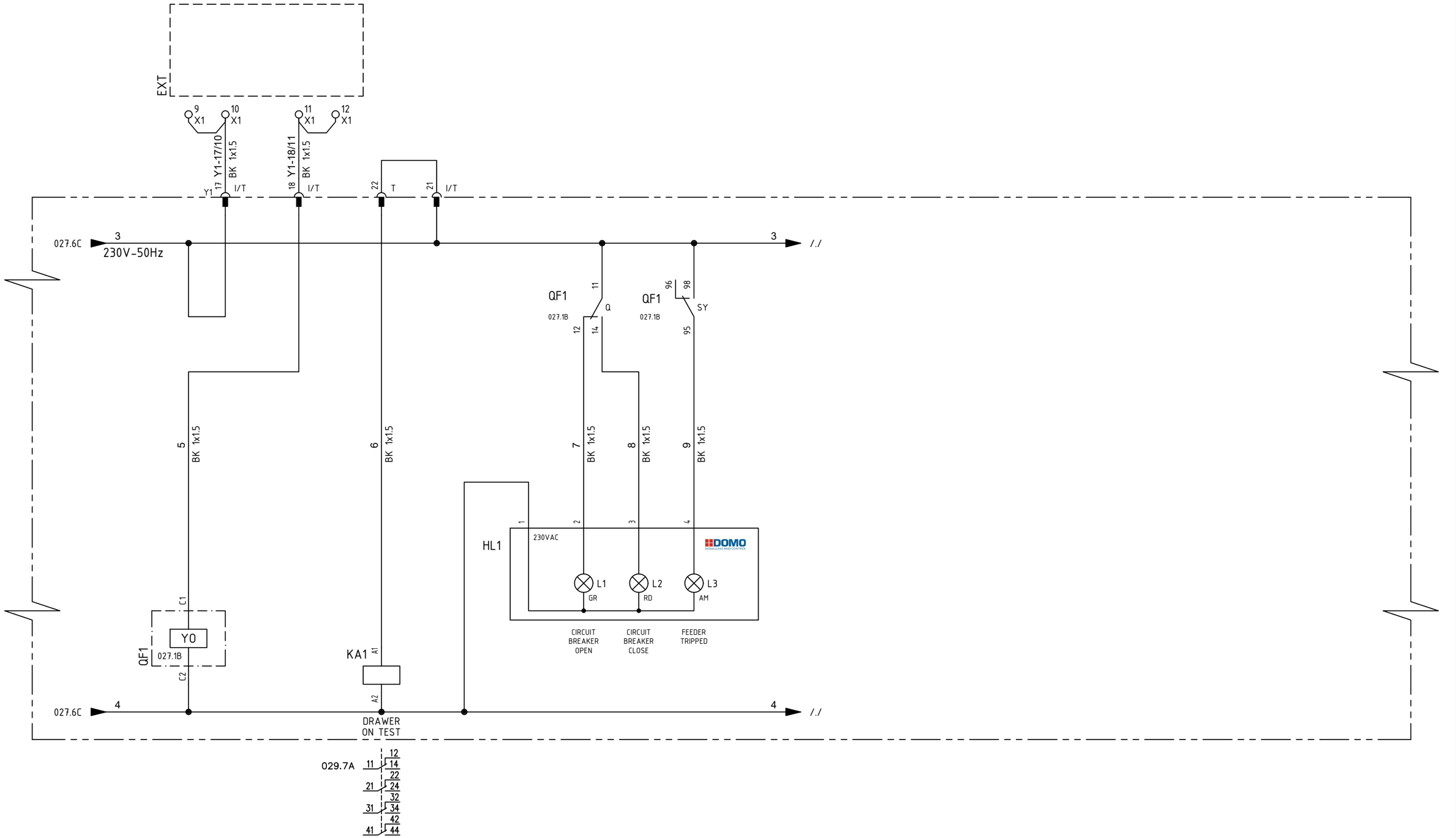
DRAWING NO. 1723002197-EL-DG-00031

SHEET 027

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



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

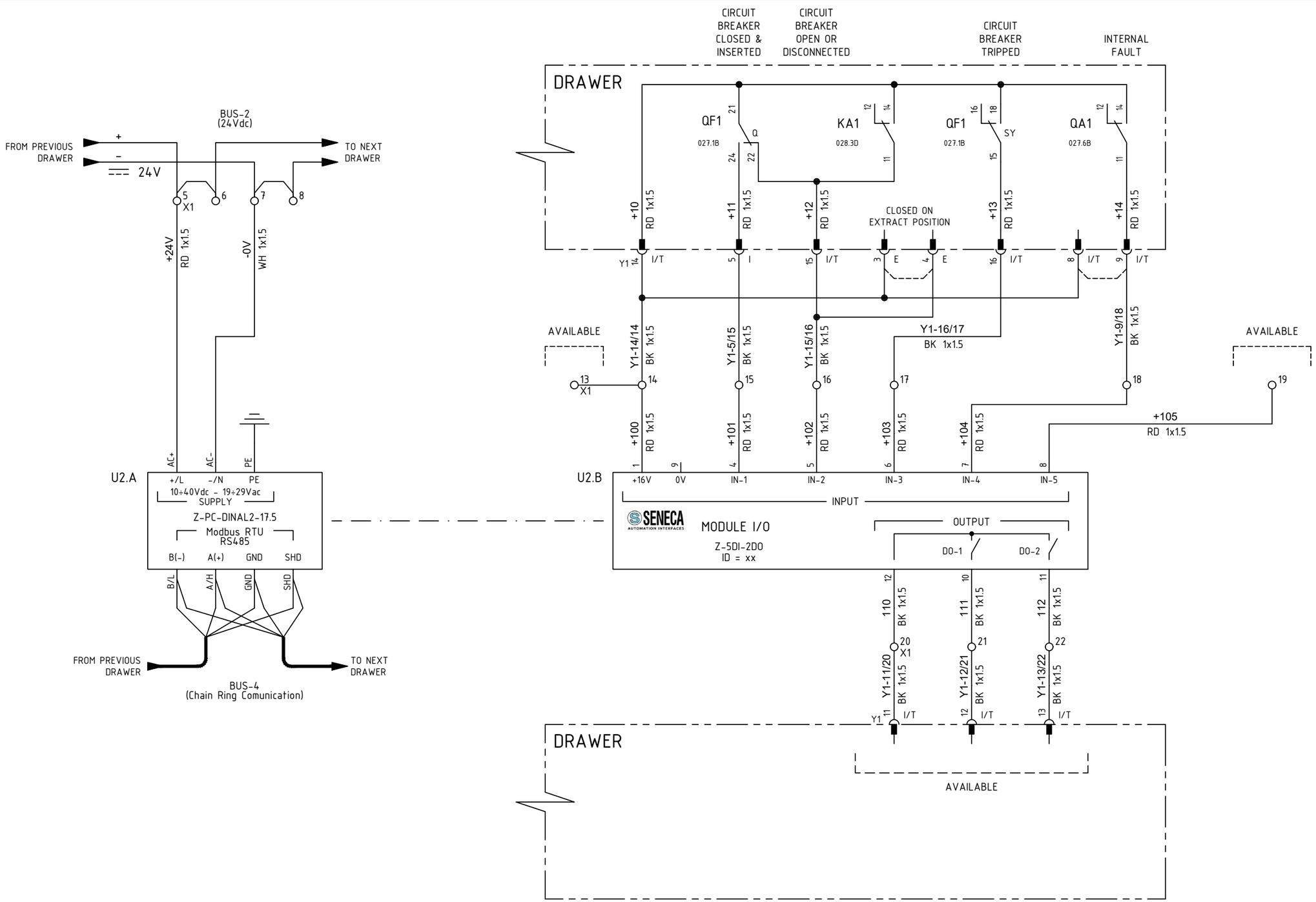
DRAWING NO. 1723002197-EL-DG-00031

SHEET 028

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



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

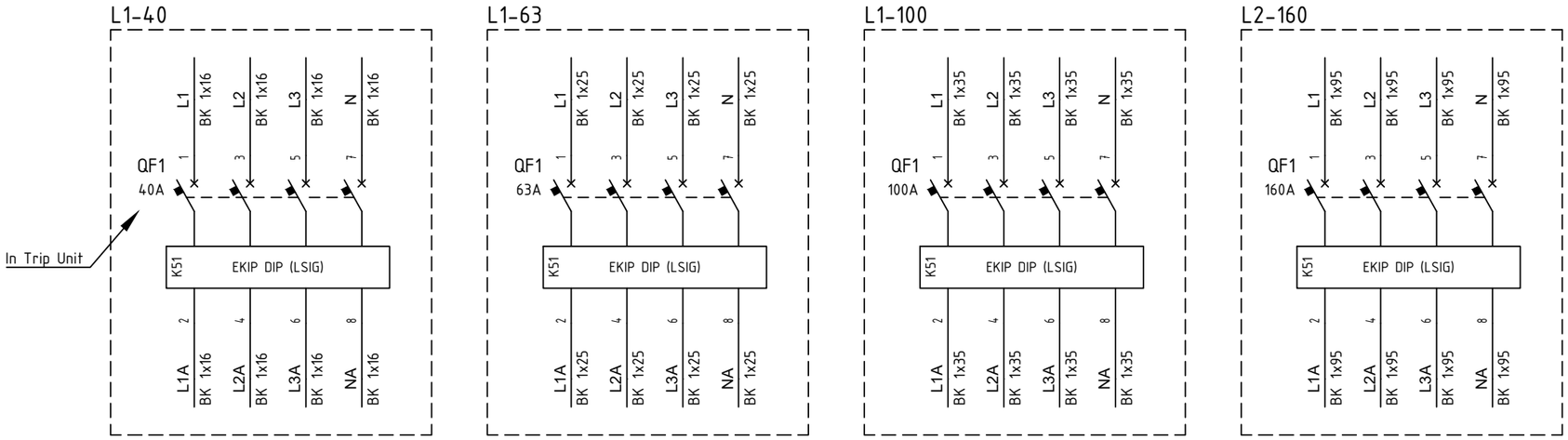
REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

SPECIFIC PARTS

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



= TYPICAL							
+ L-x							
DWG n° : 231298/SD/31							
Item n° : PF1002983/26	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)	
	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. 02

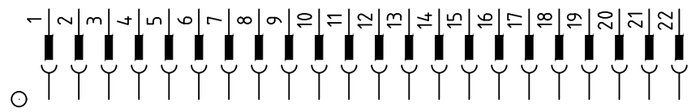
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

TYPICAL - L-x - Y1

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						
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)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

DWG 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 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

= 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)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

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. 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

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

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 033 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

ITEM	Tag	A2/+04-QF1	: DRAWER UPS F&G - BYPASS - A2/+04-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module			
TASK	code	C10002819	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°:	E218122002521070	Relay type:	EKIP DIP LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A2/+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	31.5A	189A		3s	796ms
S	157.5A			0.1s	
I	315A	630A		INSTANT	32ms
G	12.6A			0.1s	

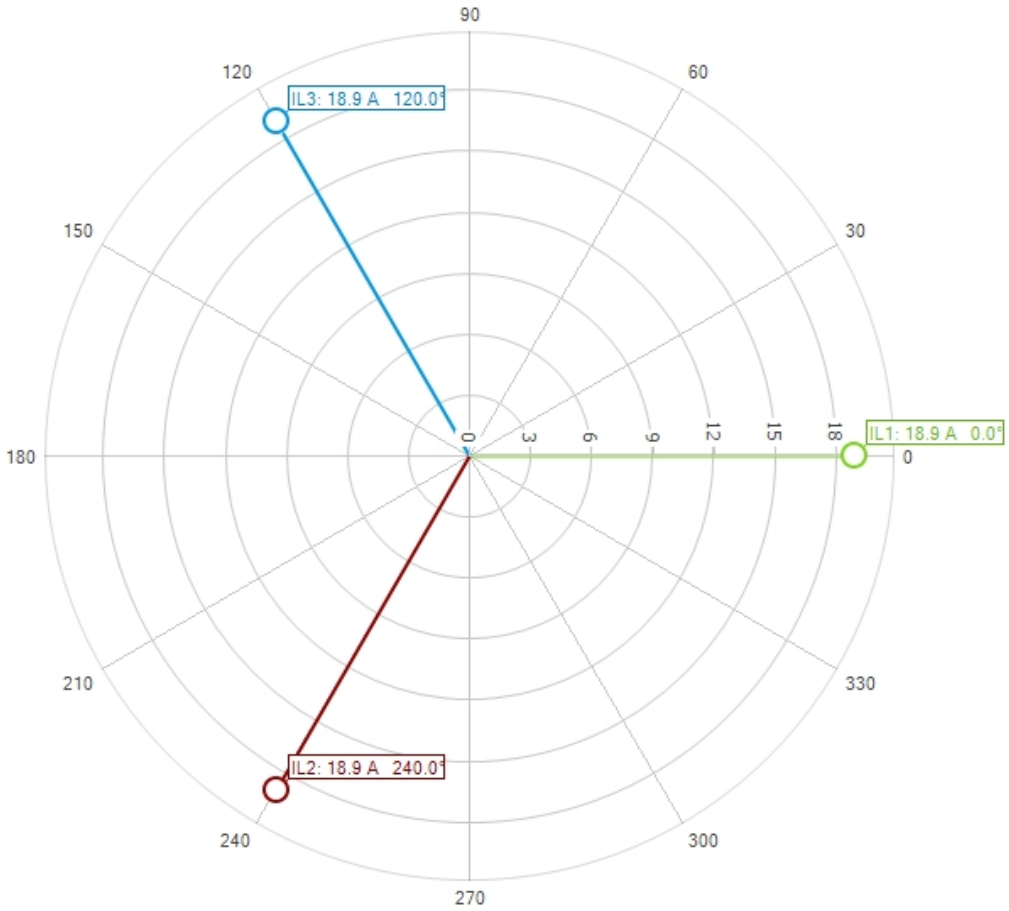
Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

Comments: See 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	2024-09-19	2024-09-19	2024-09-20
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-19T11:02:07.755Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-19T11:50:25.080Z	PROVERLIS Digitaly signed by Witness waived 2024-09-20T06:25:41.469Z

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	0.50	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)	2.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	5.00	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

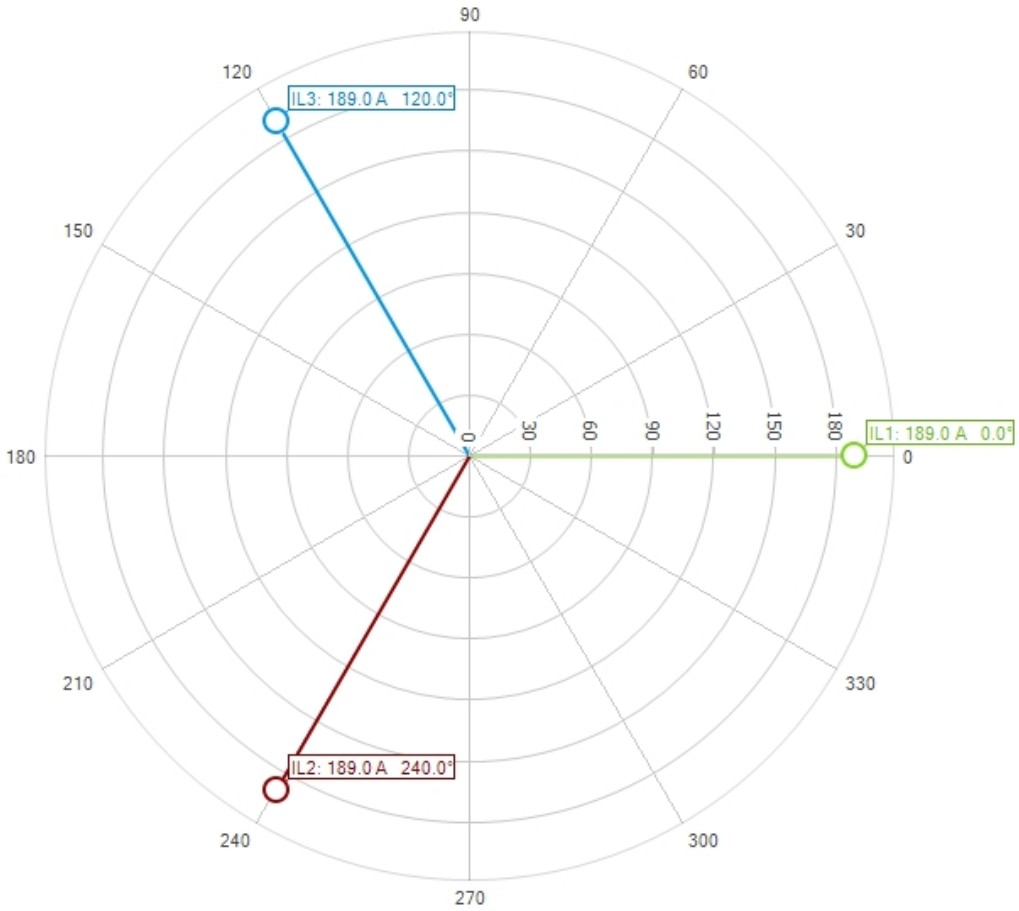
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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

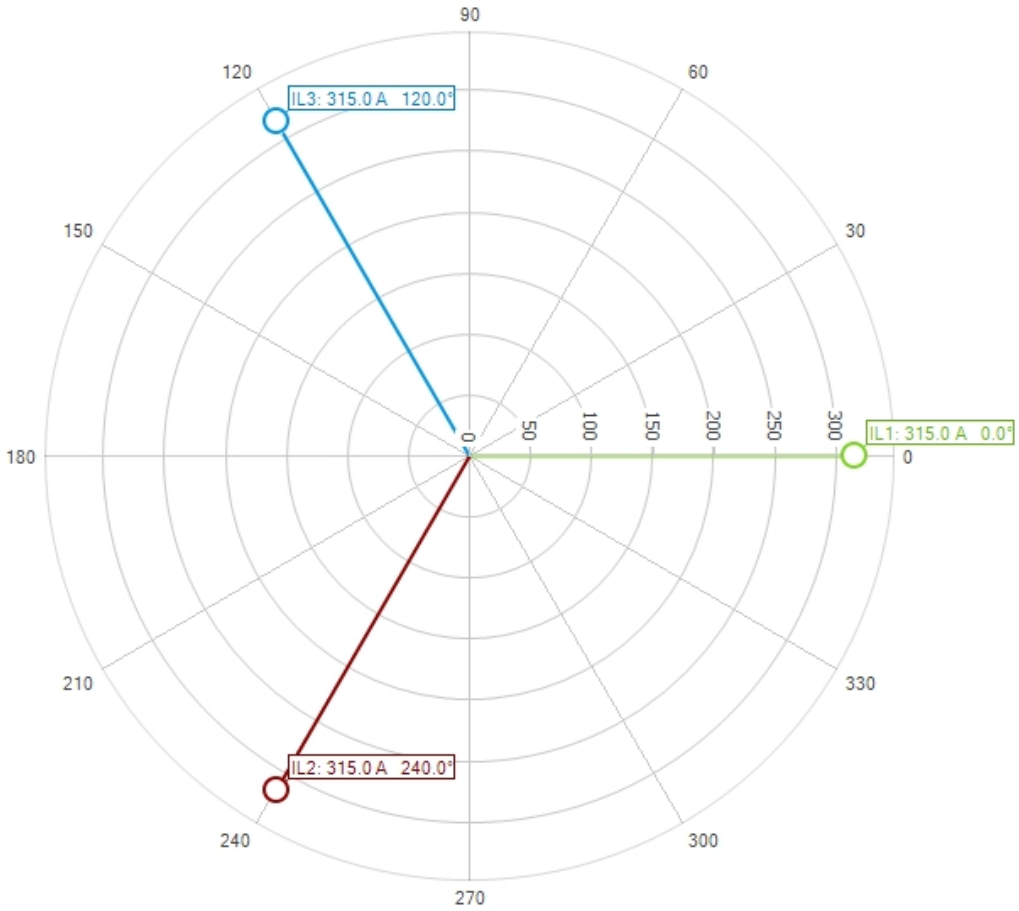
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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 796 ms.
Trip time must be between 0 ms and 1000 ms.



Test

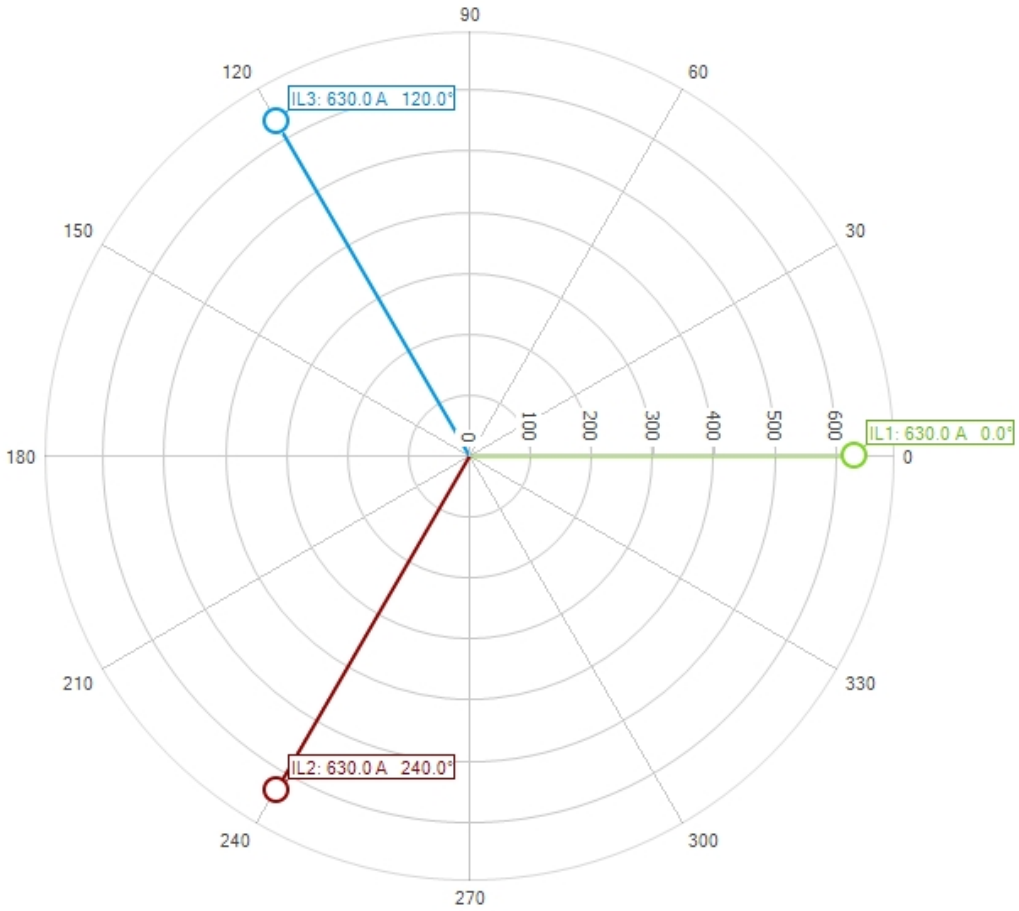
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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 24 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	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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 32 ms.
Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A2/+04-QF1	: DRAWER UPS F&G - BYPASS - A2/+04-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module			
TASK	code	C10002820	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:	UPS F&G-BYPASS	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A2/+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	A2/+04 - QF1/21-24	A2/+04 - X1/14-15	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A2/+04 - QF1/21-22	A2/+04 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A2/+04 - KA1/11-14	A2/+04 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A2/+04 - QF1/15-18	A2/+04 - X1/14-17	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	INTERNAL FAULT	HW	DI	A2/+04 - QA1/11-14	A2/+04 - X1/14-18	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
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: The test of the cubicle was carried out on a test bench.

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	2024-10-03	2024-10-03	2024-10-03
Signature	Digitaly signed by Davide Zucconelli 2024-10-03T08:37:16.706Z	Digitaly signed by Kristian Castellani 2024-10-03T13:49:57.915Z	Digitaly signed by Witness waived 2024-10-03T14:27:00.011Z

ROSETTI MARINO — CROSSWIND

ITEM	Tag	A6/+05-QF1	: DRAWER UPS F&G - LINE A - A6/+05-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002821		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-A6+05-QF1
Breaker rating (A)	28.9A	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)	>1000	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	0.2 A	OK
11	Attach test procedure, if any				OK

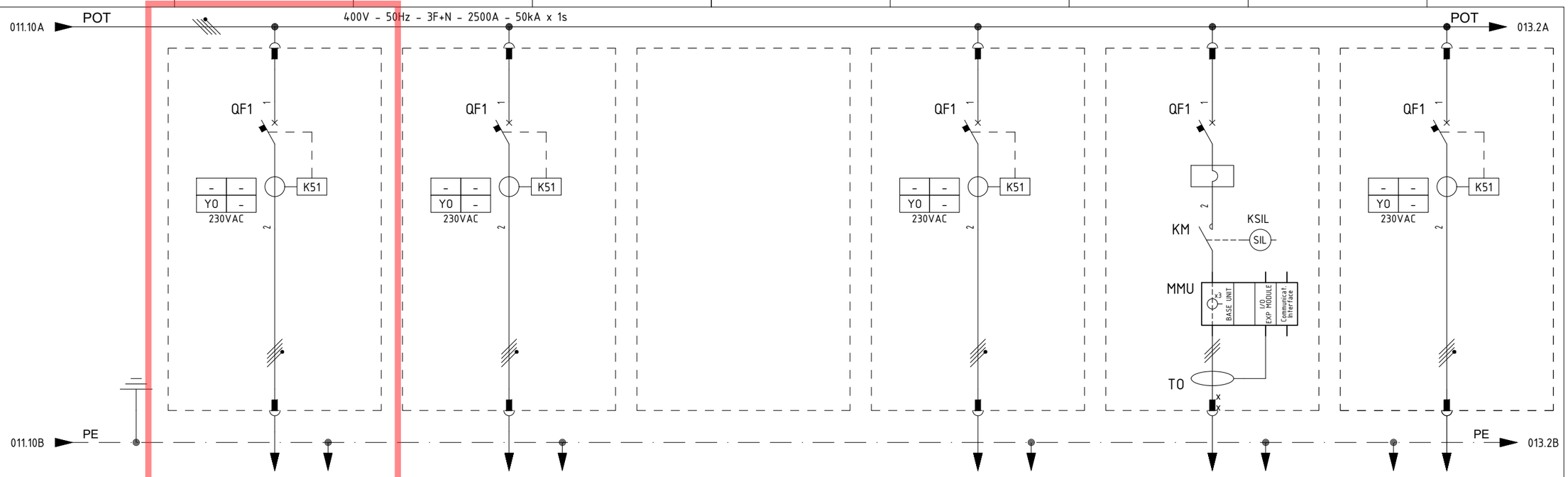
FUNCTION TEST REQUIREMENT	RESULT

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	Witness waived
Date	2024-11-12	2024-11-12	2024-11-12
Signature	Digitaly signed by Davide Zucconelli 2024-11-12T14:31:43.348Z	Digitaly signed by Kristian Castellani 2024-11-12T15:35:33.172Z	Digitaly signed by Witness waived 2024-11-12T16:01:25.276Z



ITEM			1	UP-200F4	UP-200F4	ESW-200N1	PM-50001 A	UP-200F3
UTILITY			2	AC UPS F&G - 8 H UP-200F4 - LINE A	AC UPS F&G - 8h UP-200F4 - LINE B	WELDING SOCKETS (TOP DECK)	SEA WATER PUMP A	AC UPS PAS - 30 min. UP-200F3 - BYPASS
COLUMN/CUBICLE			3	A6 / +05	A6 / +06	A6 / +08	A7 / +01	A7 / +02
RATED POWER | RATED CURRENT			4/5	18 kW | 28.9 A	18 kW | 28.9 A	69.84 kW | 126.15 A	6.1 kW | 11.0 A	36 kW | 57.8 A
TYPICAL FUNCTIONAL			6	L1-63	L1-63	L2-160	M1-6	L1-100
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160	XT4S - 250	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	3P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 160A)	MA (In = 20A)	EKIP DIP LSIG (In = 100A)
	Icu	KA	10	50 kA	50kA	50kA	-	50 kA
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
		Range t	12	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
		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
INST. SHORT-CIRCUIT	I	Range A	15	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(6 - 14) x I	(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
		Range t	18	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec	-	0.1 - 0.8 sec
CONTACTOR (ABB)			19	-	-	-	AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	UMC100.3 UC (0.24 - 63A)	-
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	4G35	4G35	5G50	4G4	4G35

=

+

DWG n° : 231298/SD/11

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

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 012

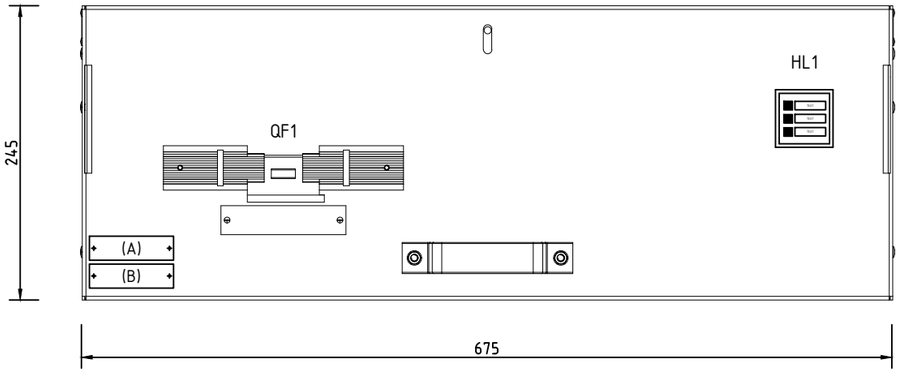
REV. 04

F.to UNI A3: 420mmx297mm

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

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "L1-n"

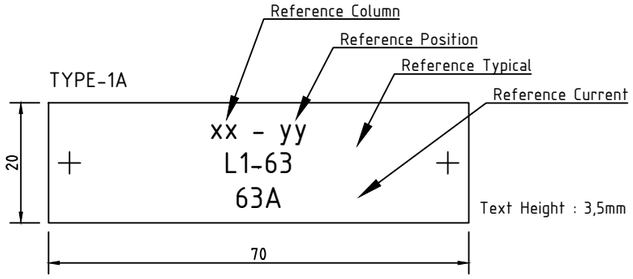


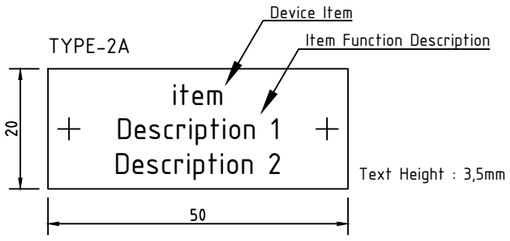
NOTE :

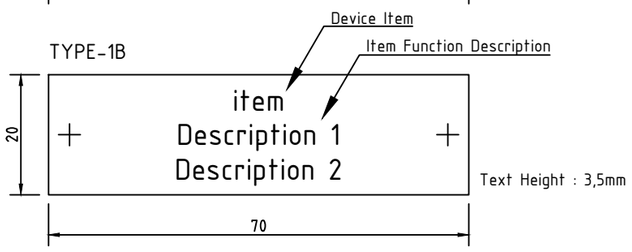
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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
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)

CROSSWIND

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

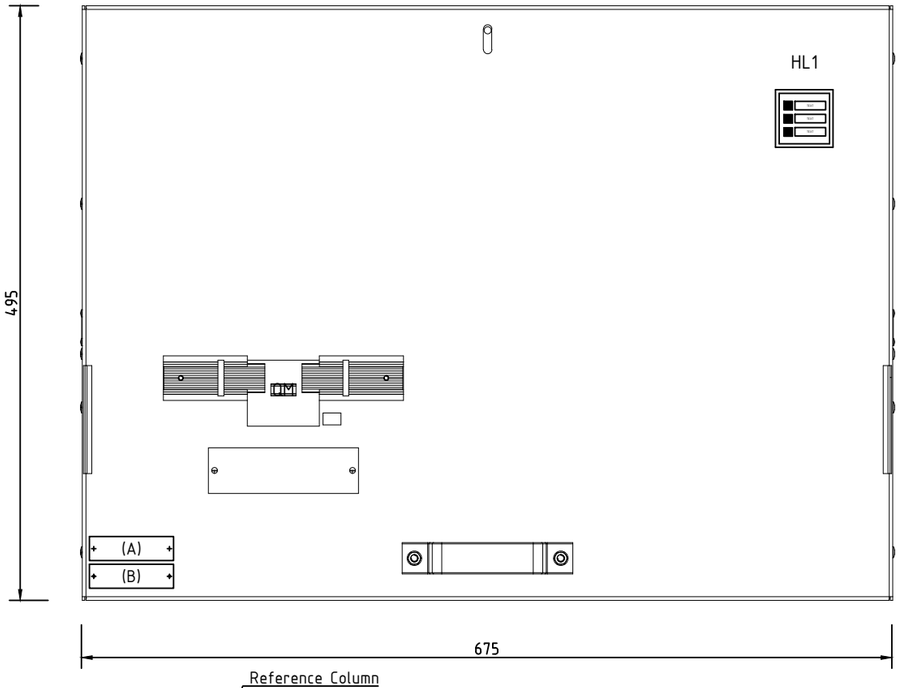
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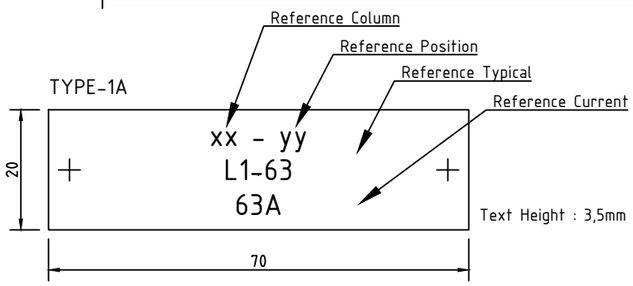
F.to UNI A3: 420mmx297mm

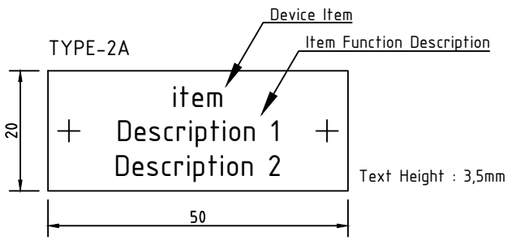
File Name : 1723002197-EL-DG-00031 Rev. 02

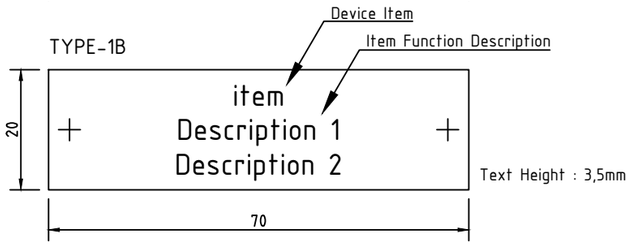
DOOR FRONT LAY-OUT

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
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)

CROSSWIND

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. 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

= 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)

CROSSWIND

ROSETTI MARINO

IMESA ELECTRICAL ENGINEERING

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	

=	TYPICAL					
+	L-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
		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)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

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

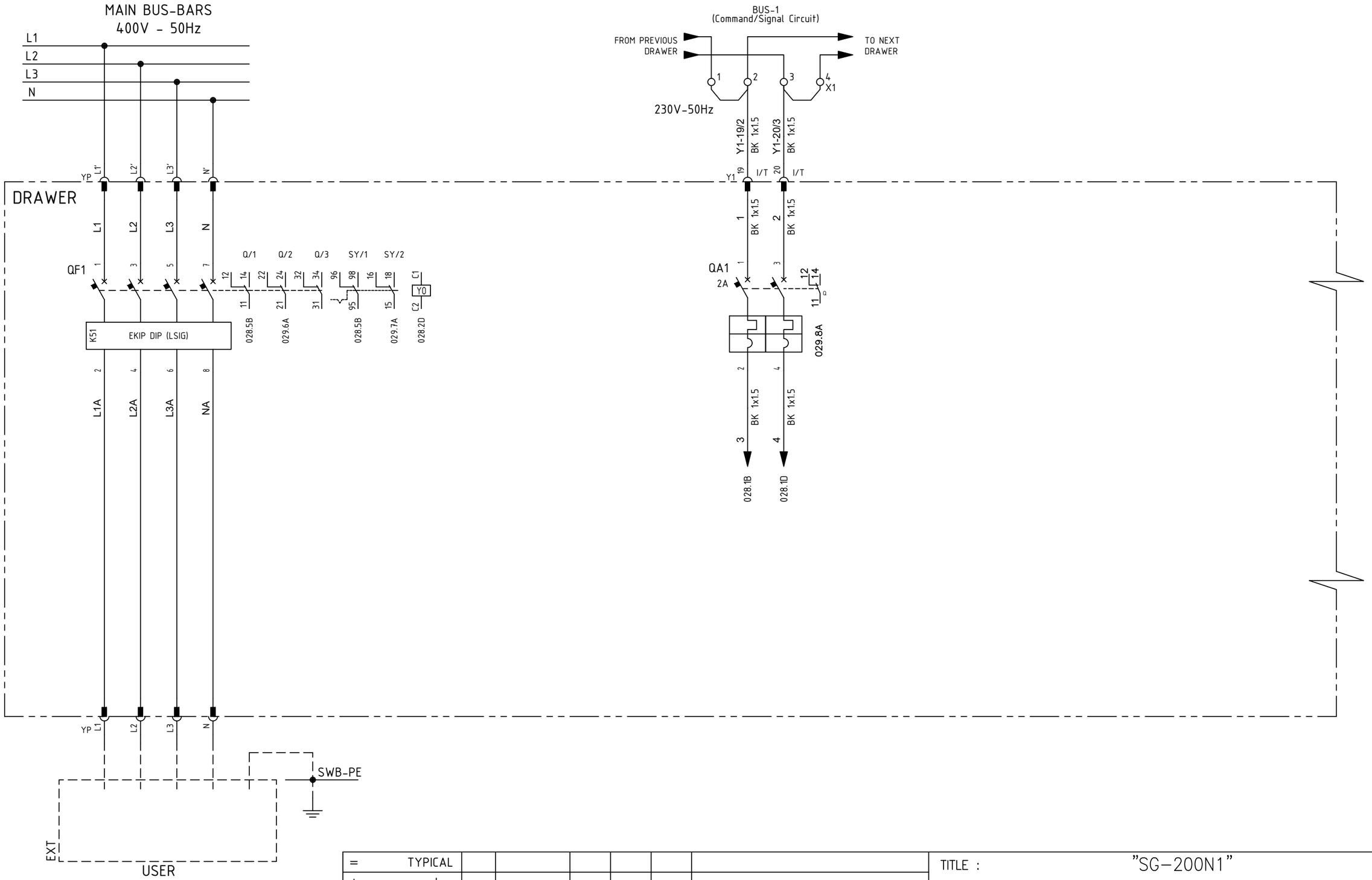
DRAWING NO. 1723002197-EL-DG-00031

SHEET 026

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



=	TYPICAL					
+	L-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
		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)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

CROSSWIND

IMESA ELECTRICAL ENGINEERING

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

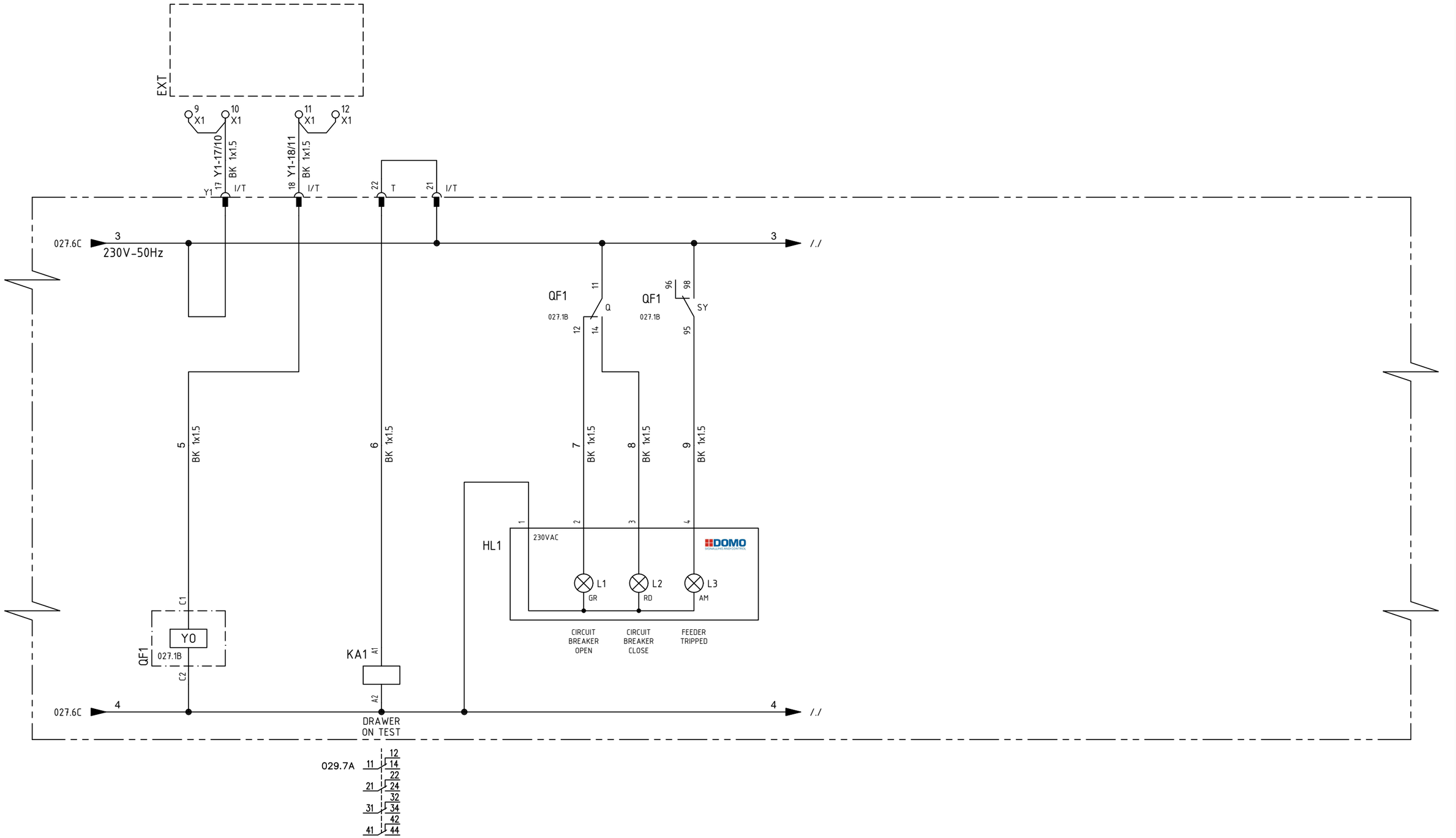
DRAWING NO. 1723002197-EL-DG-00031

SHEET 027

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



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

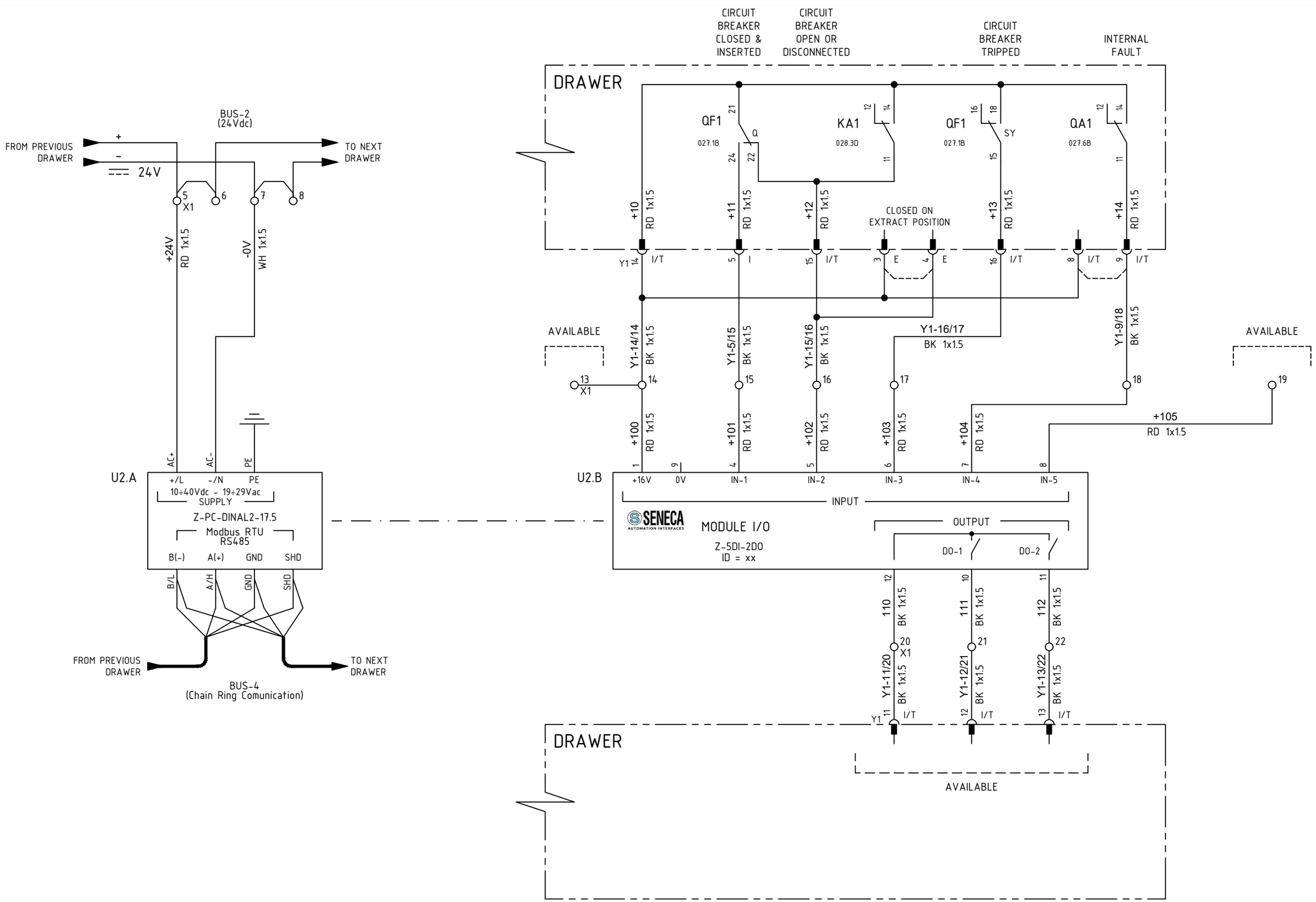
DRAWING NO. 1723002197-EL-DG-00031

SHEET 028

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



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

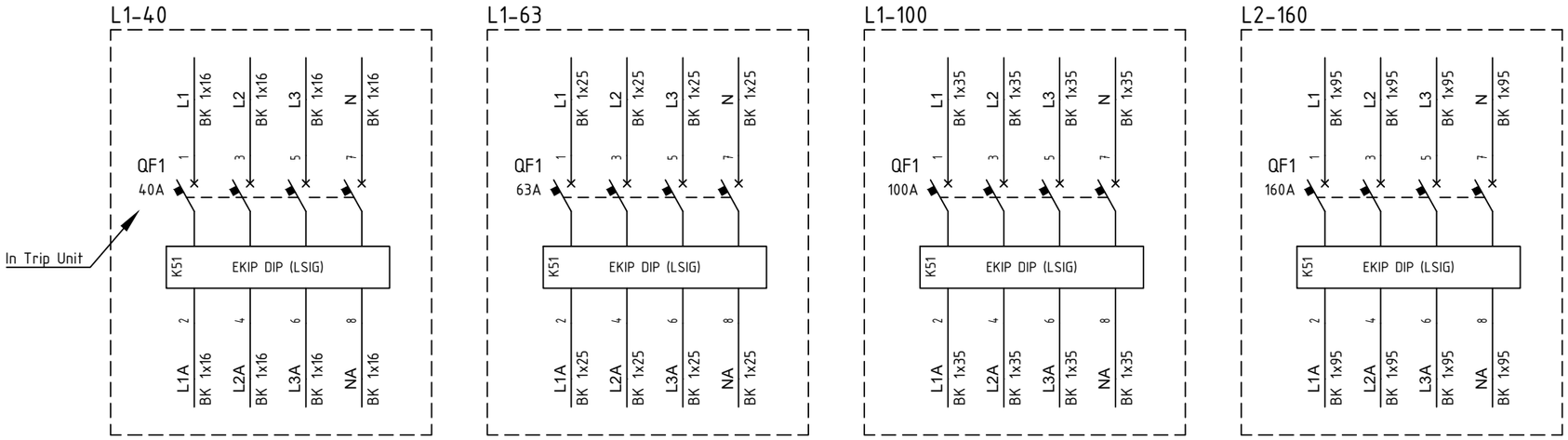
REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

SPECIFIC PARTS

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



= TYPICAL							
+ L-x							
DWG n° : 231298/SD/31							
Item n° : PF1002983/26	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)	
	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. 02

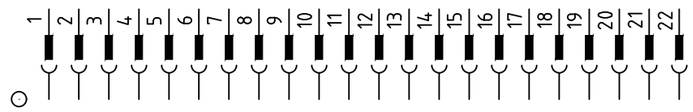
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

TYPICAL - L-x - Y1

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						
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)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

DWG 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 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

= 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)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

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. 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

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

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 033 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

ITEM	Tag	A6/+05-QF1	:	DRAWER UPS F&G - LINE A - A6/+05-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	84-20	:	AC 15 kVA UPS System (UP-200F4)	Module		
TASK	code	C10002822	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°:	E198130002521070	Relay type:	EKIP DIP LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A6/+05
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	31.5A	189A		3s	795ms
S	157.5A			0.1s	
I	315A	630A		INSTANT	26ms
G	12.6A			0.1s	

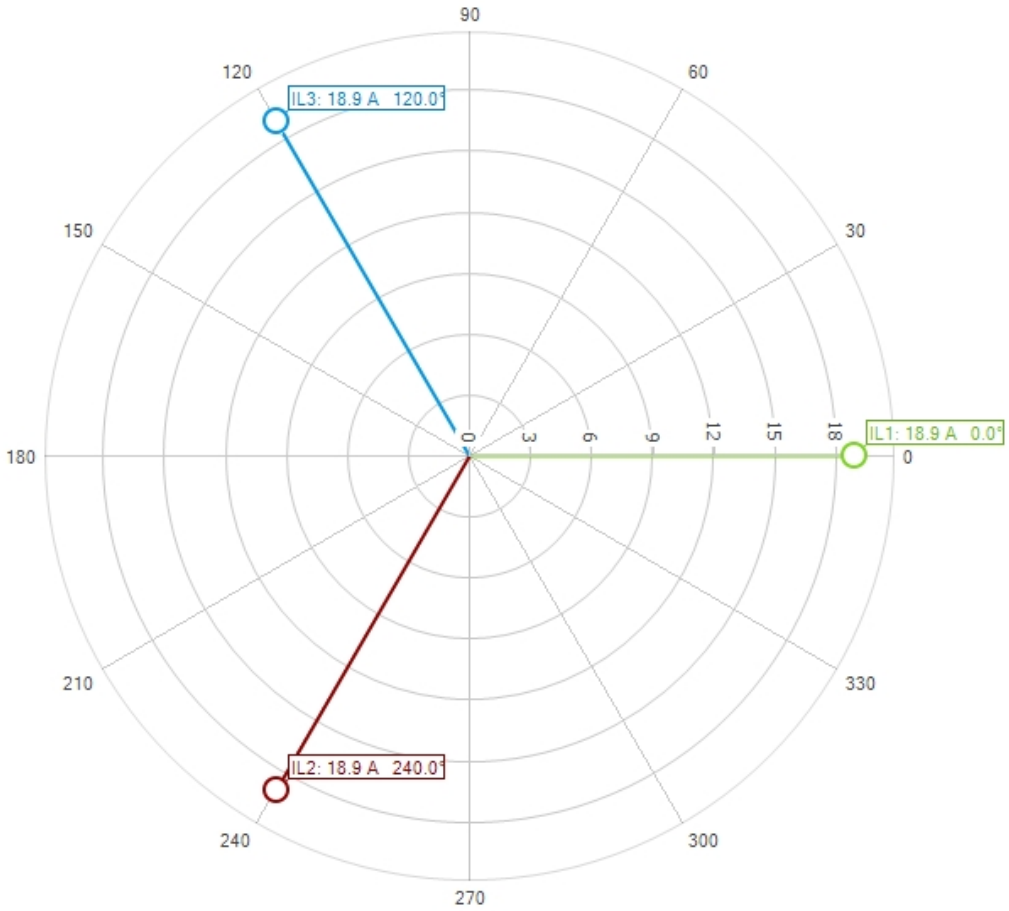
Testing & measurement instruments used

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	Digitaly signed by Mattia Girotti 2024-09-18T08:51:37.373Z	Digitaly signed by Kristian Castellani 2024-09-18T12:53:23.104Z	Digitaly signed by Witness waived 2024-09-20T06:26:05.162Z

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	0.50	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)	2.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	5.00	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

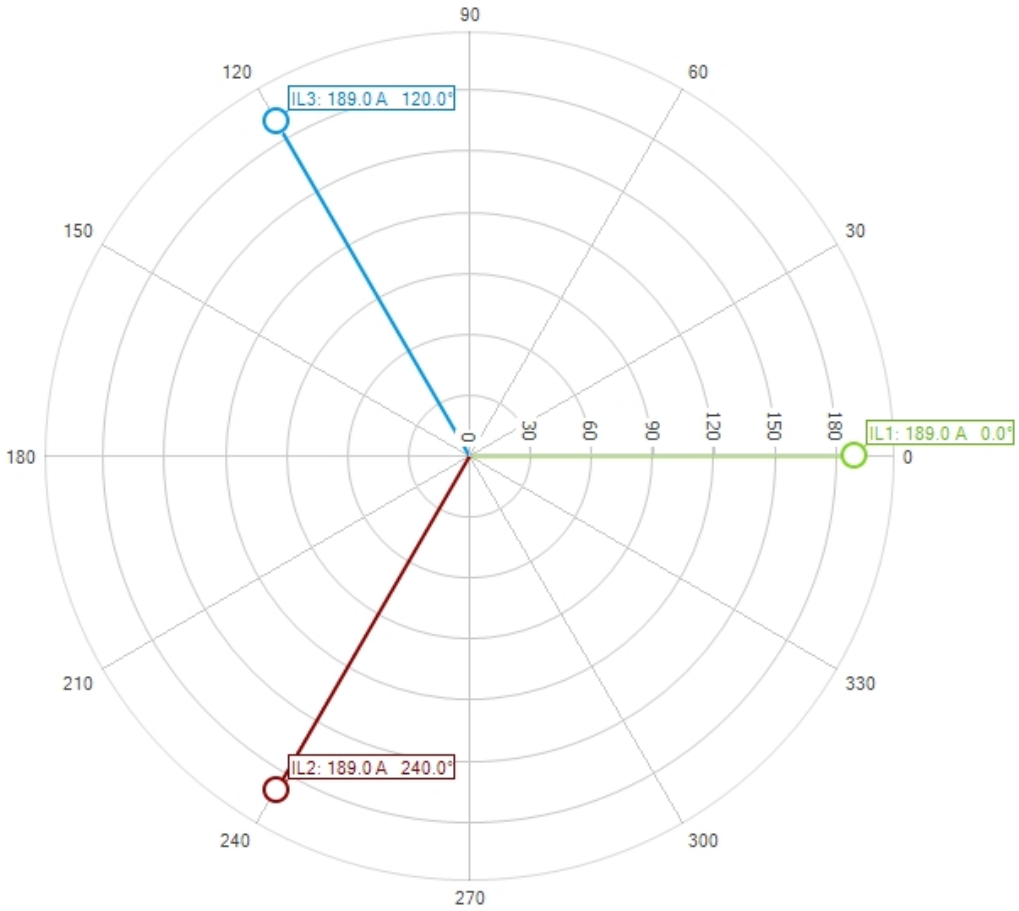
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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

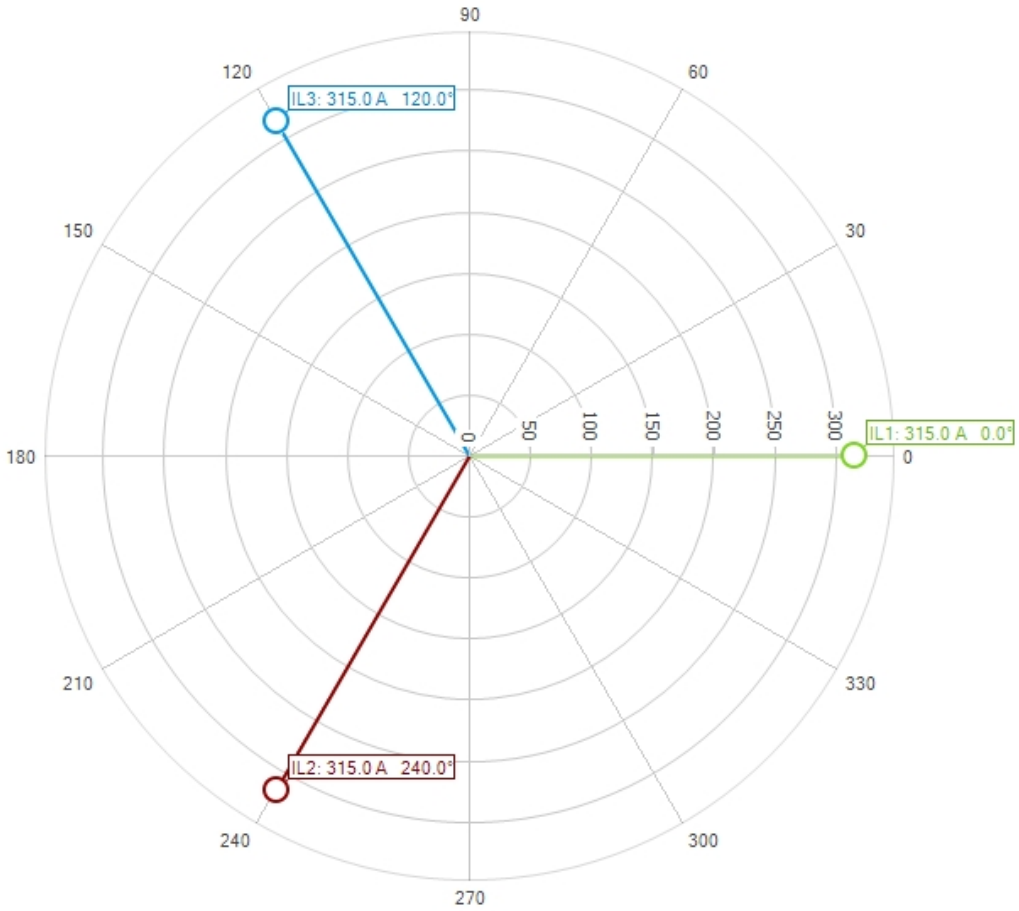
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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 795 ms.
Trip time must be between 0 ms and 1000 ms.



Test

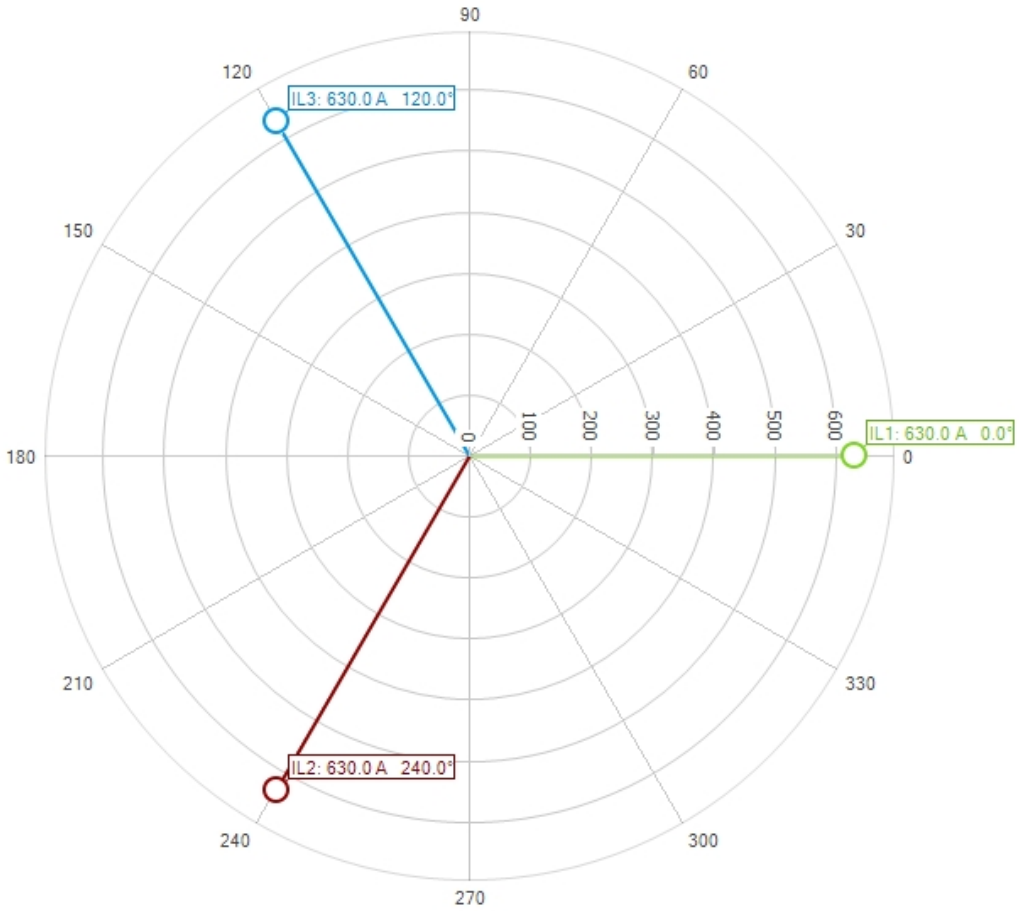
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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.

ITEM	Tag	A6/+05-QF1	: DRAWER UPS F&G - LINE A - A6/+05-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module			
TASK	code	C10002823	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:	UPS F&G-LINE A	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A6/+05	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	A6/+05 - QF1/21-24	A6/+05 - X1/14-15	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A6/+05 - QF1/21-22	A6/+05 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A6/+05 - KA1/11-14	A6/+05 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A6/+05 - QF1/15-18	A6/+05 - X1/14-17	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	INTERNAL FAULT	HW	DI	A6/+05 - QA1/11-14	A6/+05 - X1/14-18	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
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:

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	Digitaly signed by Davide Zucconelli 2024-10-02T08:19:05.750Z	Digitaly signed by Kristian Castellani 2024-10-02T08:48:56.120Z	Digitaly signed by Witness waived 2024-10-02T09:19:42.105Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A6/+06-QF1	: DRAWER UPS F&G - LINE B - A6/+06-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002824		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:	46/+06-QF1
Breaker rating (A)	28.9A	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)	>1000	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	401	V	0.3 A	OK
11	Attach test procedure, if any				NA

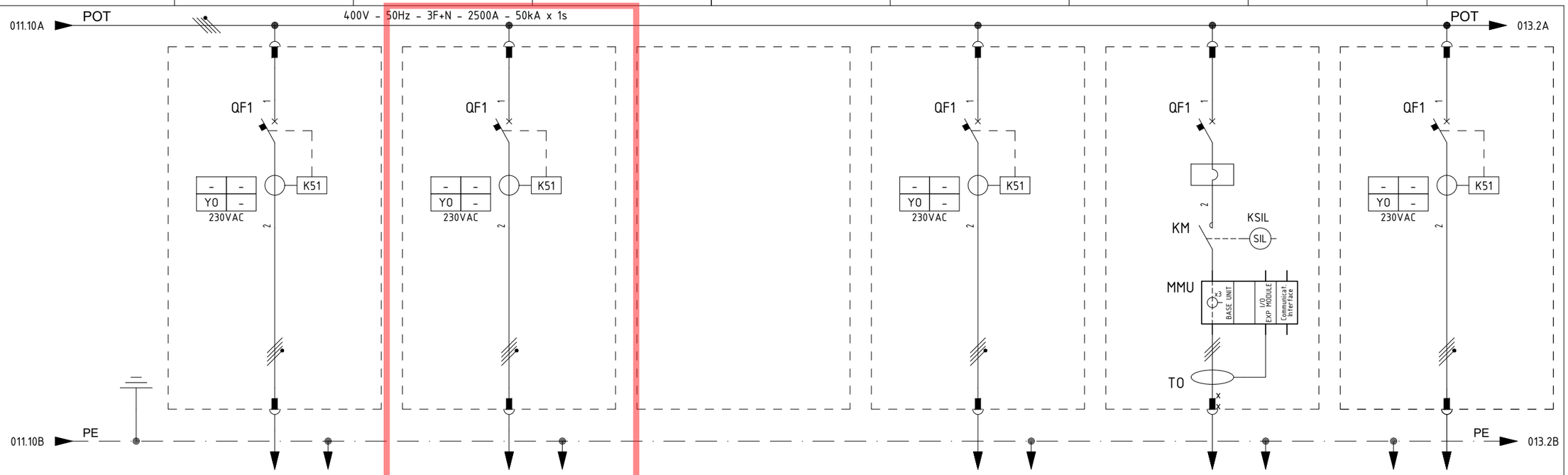
FUNCTION TEST REQUIREMENT	RESULT

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:

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	2024-11-12	2024-11-12	2024-11-12
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-12T14:44:55.108Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-12T15:37:21.852Z	PROVERLIS Digitaly signed by Witness waived 2024-11-12T16:01:51.291Z



ITEM			1	UP-200F4	UP-200F4	ESW-200N1	PM-50001 A	UP-200F3
UTILITY			2	AC UPS F&G - 8 H UP-200F4 - LINE A	AC UPS F&G - 8h UP-200F4 - LINE B	WELDING SOCKETS (TOP DECK)	SEA WATER PUMP A	AC UPS PAS - 30 min. UP-200F3 - BYPASS
COLUMN/CUBICLE			3	A6 / +05	A6 / +06	A6 / +08	A7 / +01	A7 / +02
RATED POWER | RATED CURRENT			4/5	18 kW | 28.9 A	18 kW | 28.9 A	69.84 kW | 126.15 A	6.1 kW | 11.0 A	36 kW | 57.8 A
TYPICAL FUNCTIONAL			6	L1-63	L1-63	L2-160	M1-6	L1-100
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160	XT4S - 250	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	3P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 160A)	MA (In = 20A)	EKIP DIP LSIG (In = 100A)
	Icu	KA	10	50 kA	50kA	50kA	-	50 kA
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
		Range t	12	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
		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
INST. SHORT-CIRCUIT	I	Range A	15	(1 - 10) x In	(1 - 10) x In	(1 - 10) x In	(6 - 14) x I	(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
		Range t	18	0.1 - 0.8 sec	0.1 - 0.8 sec	0.1 - 0.8 sec	-	0.1 - 0.8 sec
CONTACTOR (ABB)			19	-	-	-	AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	UMC100.3 UC (0.24 - 63A)	-
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	4G35	4G35	5G50	4G4	4G35

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)

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

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 012

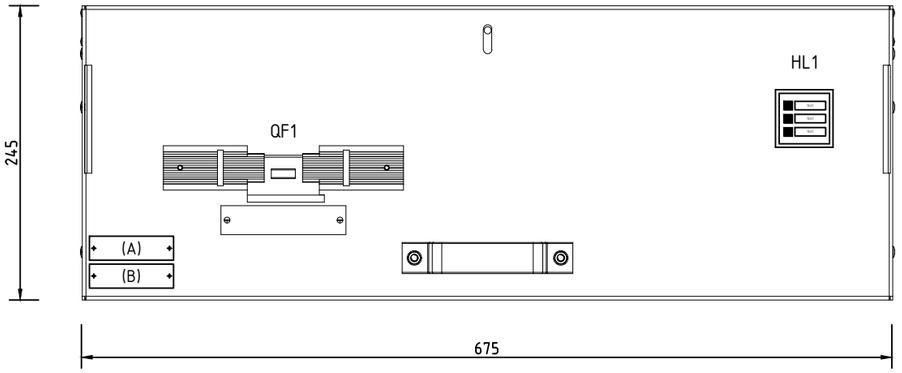
REV. 04

F.to UNI A3: 420mmx297mm

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

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "L1-n"

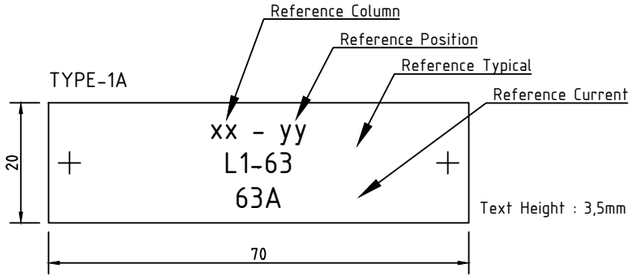


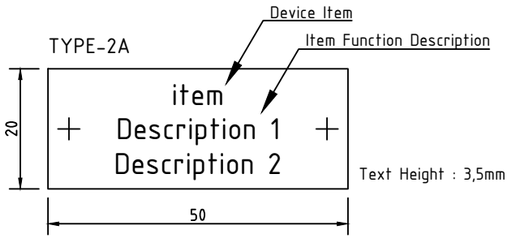
NOTE :

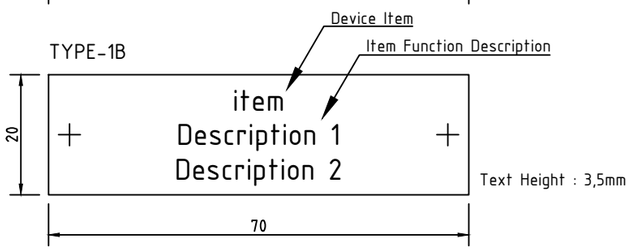
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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
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)

CROSSWIND

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

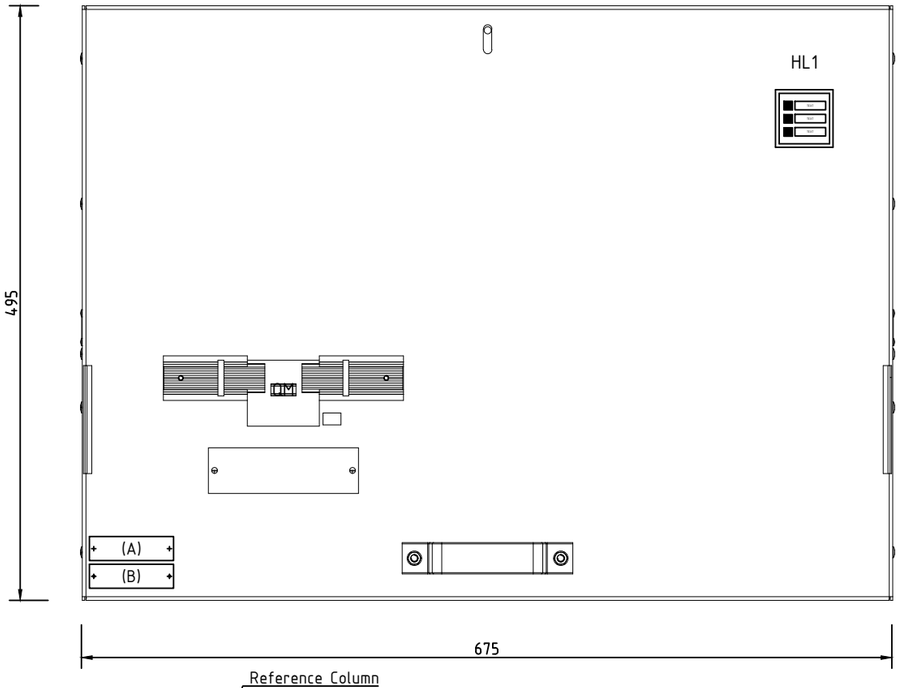
A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 023 | REV. 02

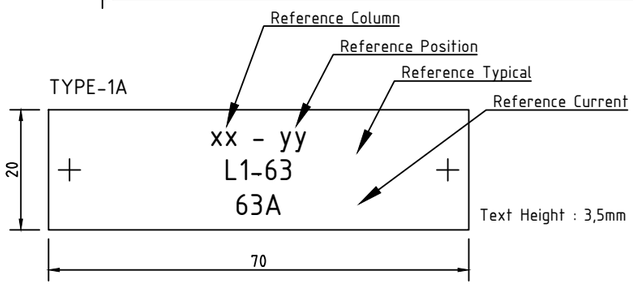
F.to UNI A3: 420mmx297mm

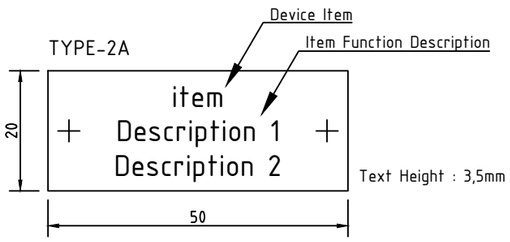
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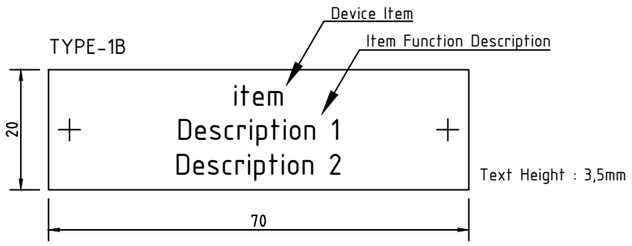
DOOR FRONT LAY-OUT

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

=	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)

CROSSWIND

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. 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

= 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)

CROSSWIND

ROSETTI MARINO

IMESA ELECTRICAL ENGINEERING

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	

=	TYPICAL					
+	L-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
		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)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

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

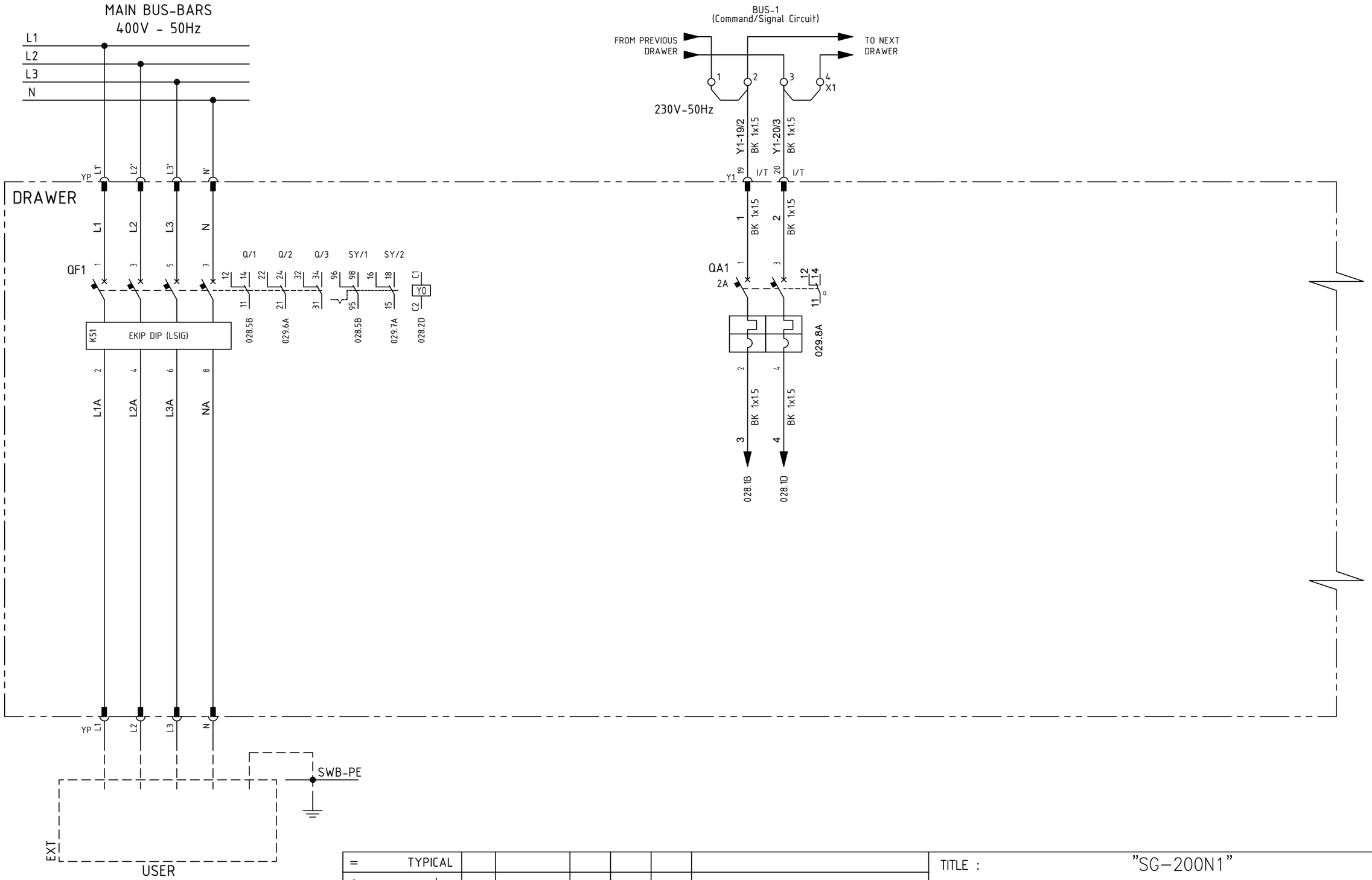
DRAWING NO. 1723002197-EL-DG-00031

SHEET 026

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



=	TYPICAL					
+	L-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
		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)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

CROSSWIND

IMESA ELECTRICAL ENGINEERING

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

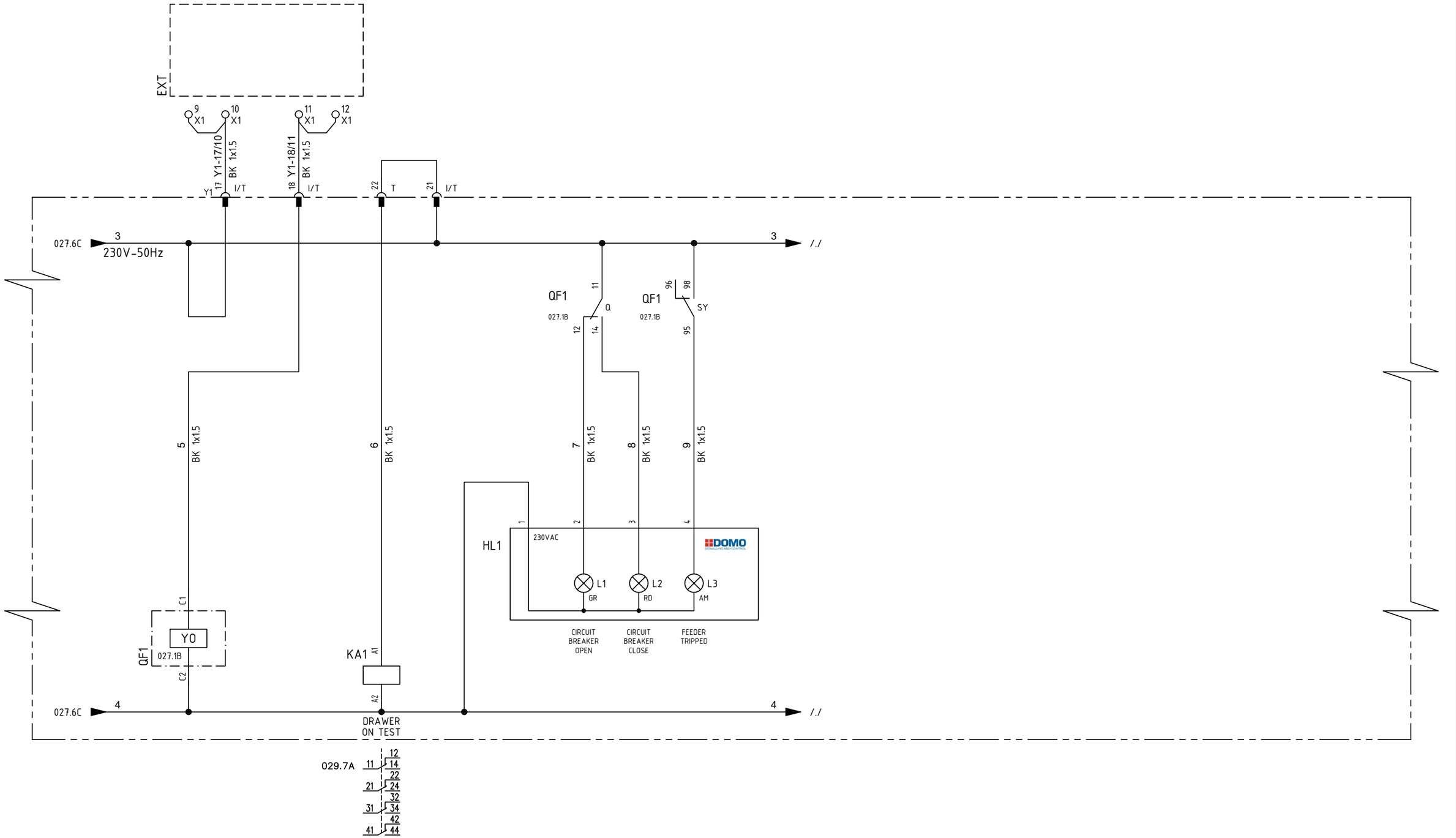
DRAWING NO. 1723002197-EL-DG-00031

SHEET 027

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



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

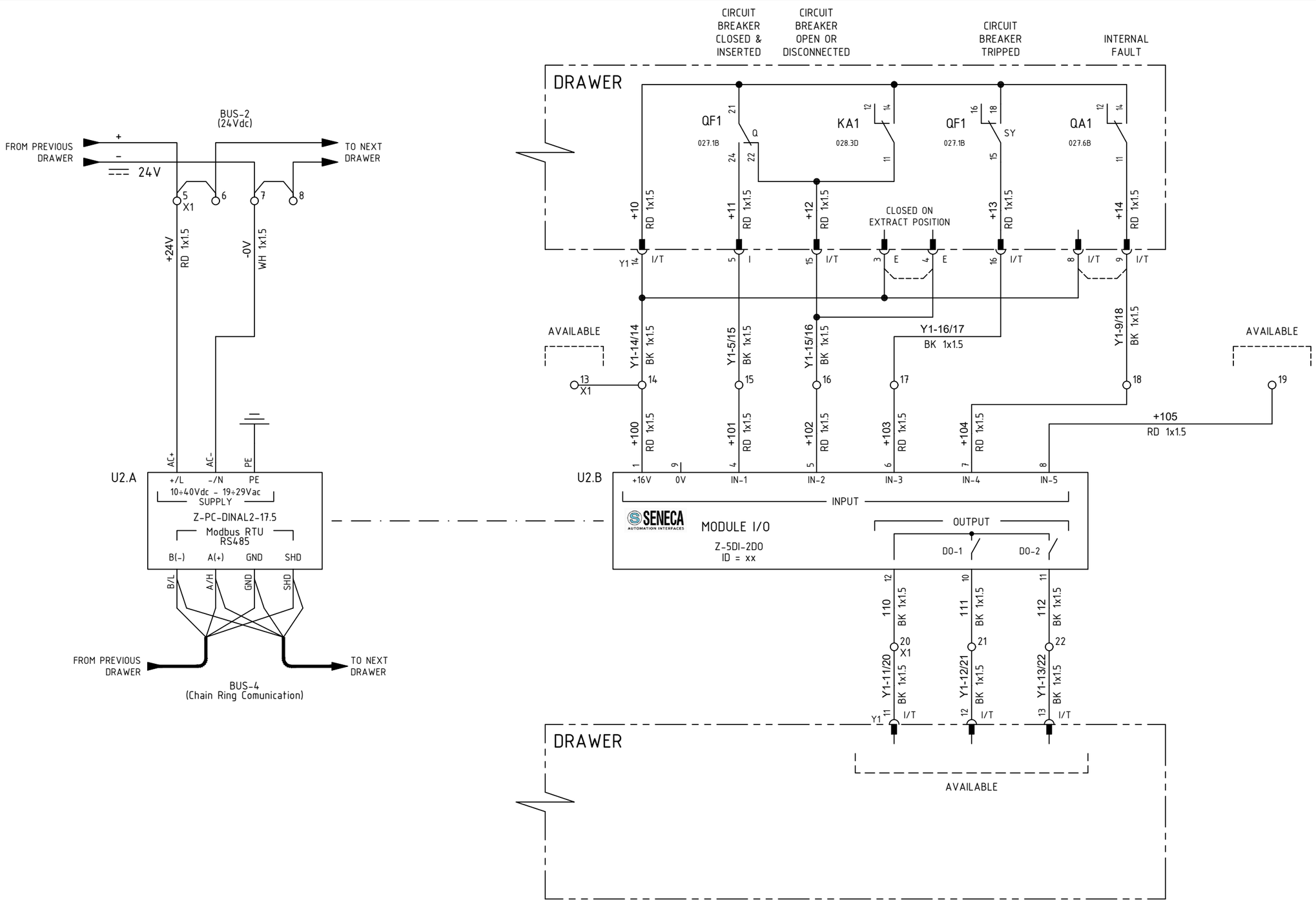
DRAWING NO. 1723002197-EL-DG-00031

SHEET 028

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



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

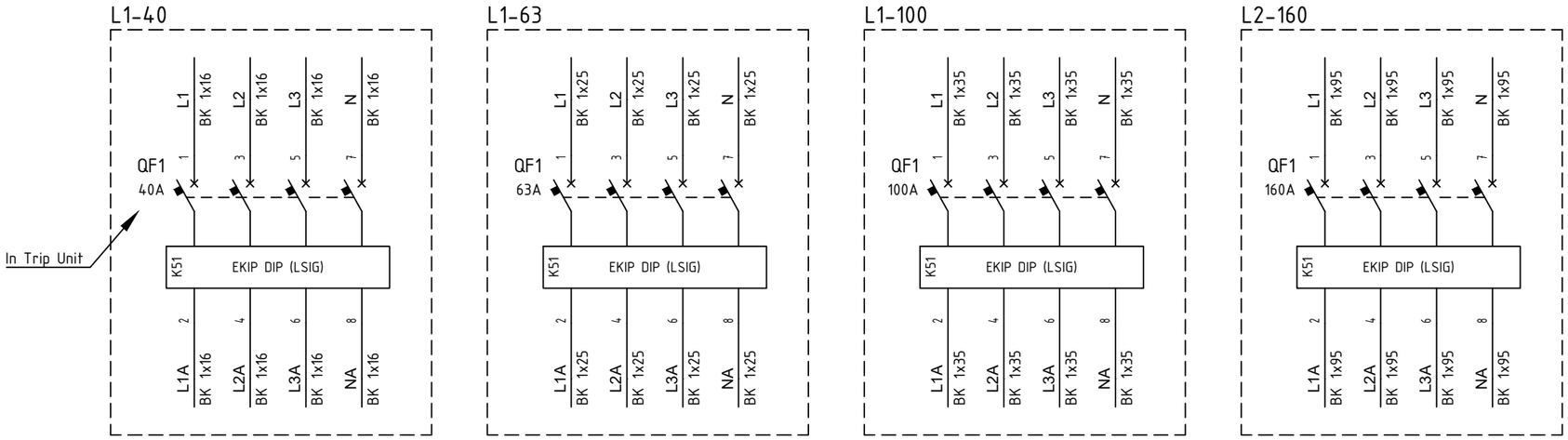
REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

SPECIFIC PARTS

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



= TYPICAL							
+ L-x							
DWG n° : 231298/SD/31							
Item n° : PF1002983/26	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)	
	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. 02

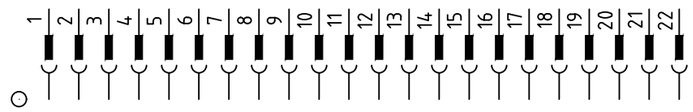
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

TYPICAL - L-x - Y1

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						
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)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

DWG 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 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

= 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)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

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. 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

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

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 033 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

ITEM	Tag	A6/+06-QF1	: DRAWER UPS F&G - LINE B - A6/+06-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module			
TASK	code	C10002825	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°:	E198128002521070	Relay type:	EKIP DIP LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A6/+06
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	31.5A	189A		3s	788ms
S	157.5A			0.1s	
I	315A	630A		INSTANT	26ms
G	12.6A			0.1s	

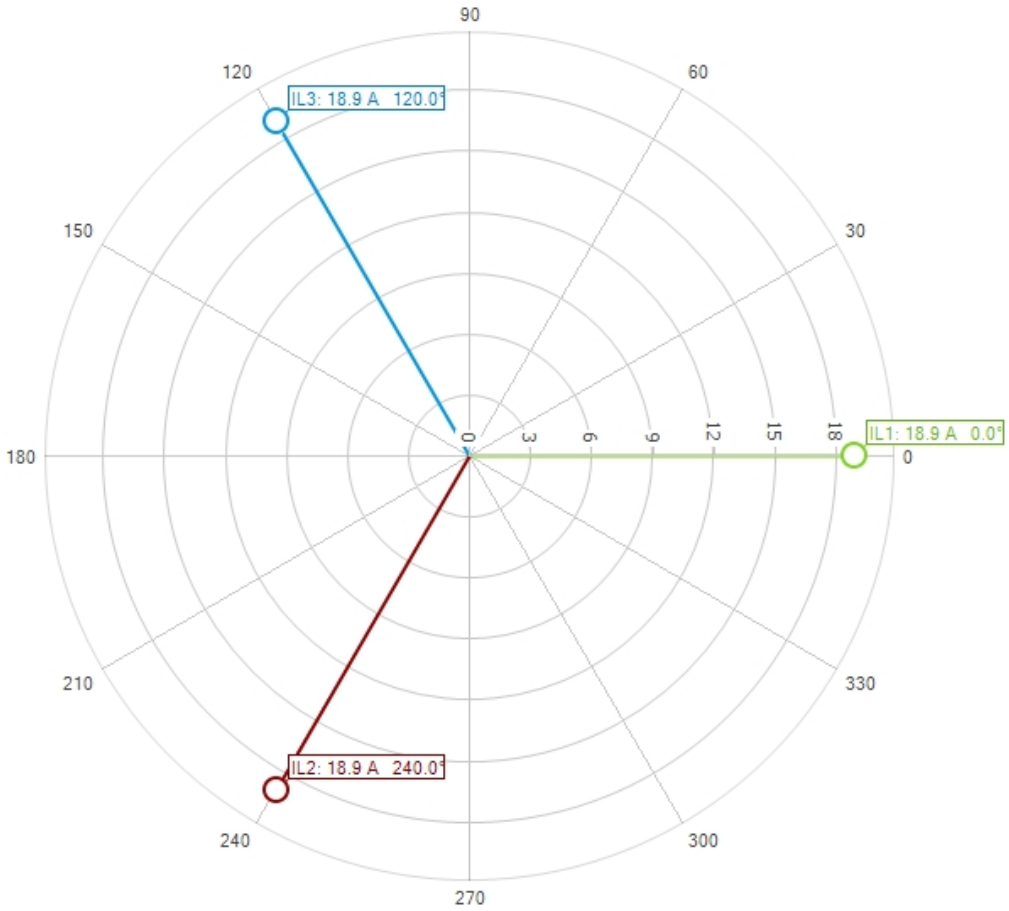
Testing & measurement instruments used

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 2024-09-18T08:56:40.590Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-18T12:52:51.747Z	PROVERLIS Digitaly signed by Witness waived 2024-09-20T06:26:28.854Z

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	0.50	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)	2.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	5.00	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

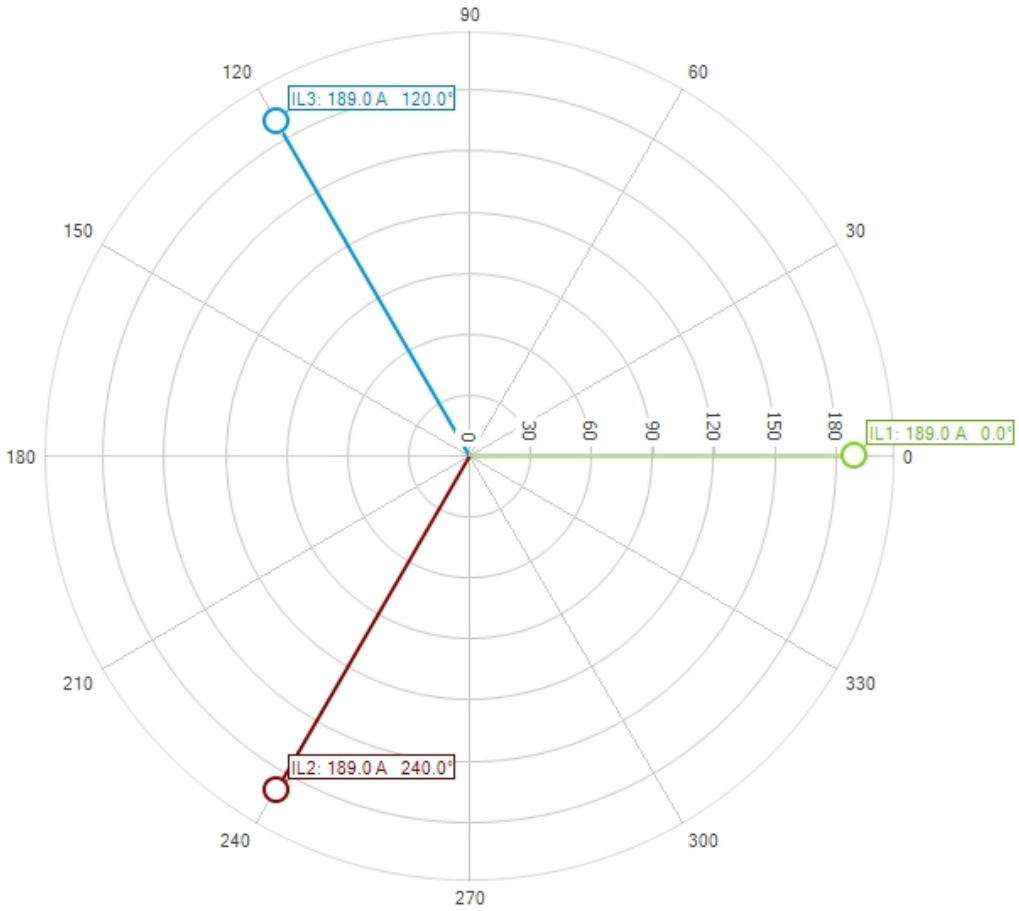
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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

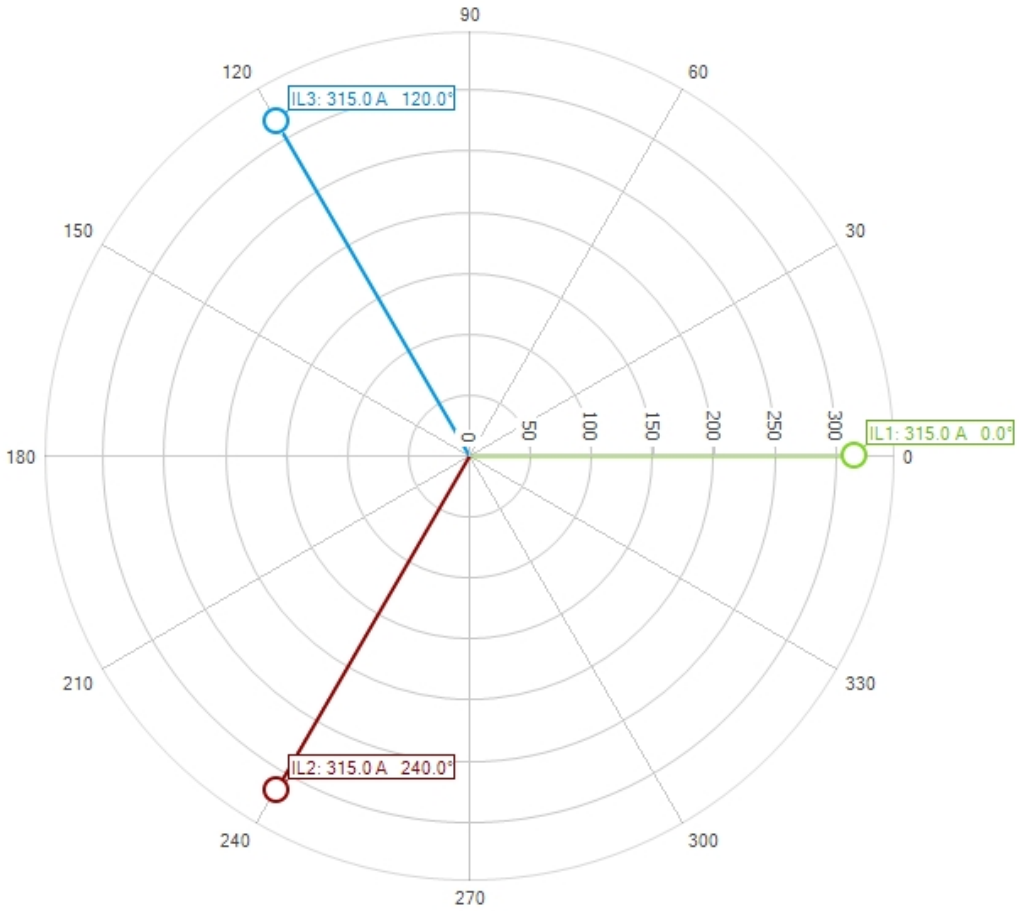
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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 788 ms.
Trip time must be between 0 ms and 1000 ms.



Test

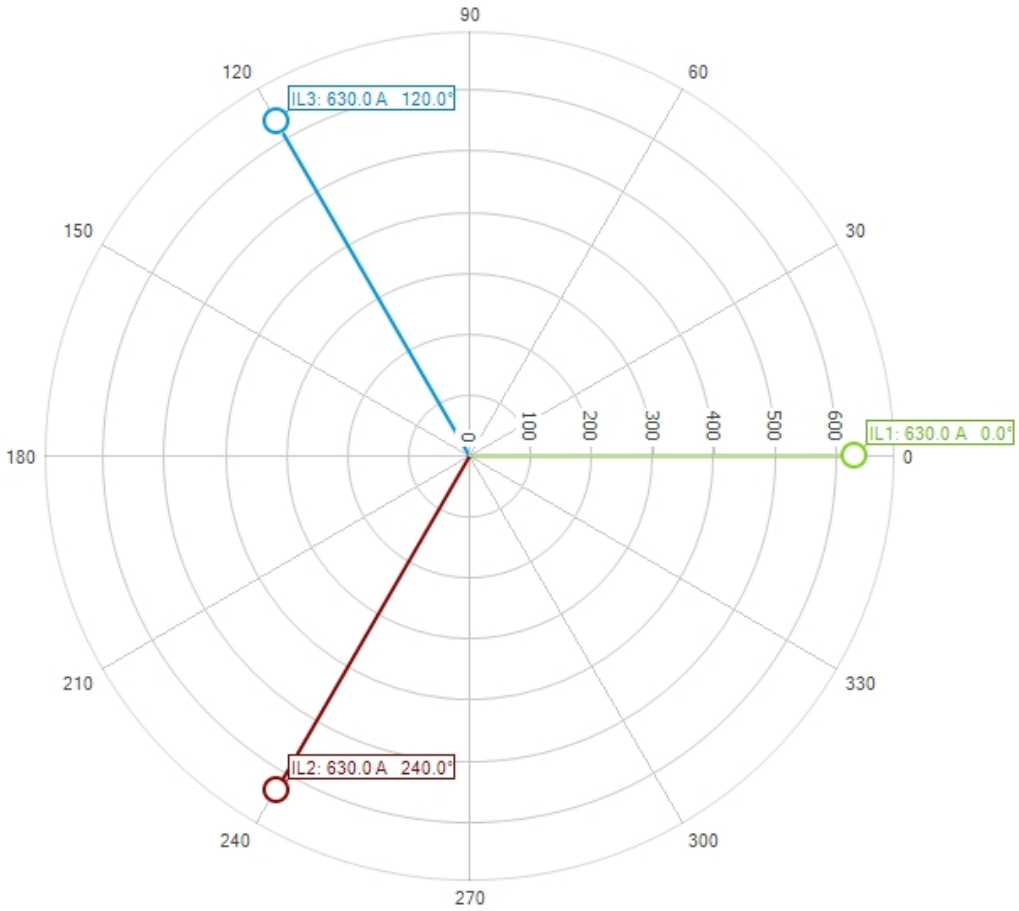
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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 38 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	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 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.

ITEM	Tag	A6/+06-QF1	: DRAWER UPS F&G - LINE B - A6/+06-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module			
TASK	code	C10002826	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:	UPS F&G-LINE B	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A6/+06	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	A6/+06 - QF1/21-24	A6/+06 - X1/14-15	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A6/+06 - QF1/21-22	A6/+06 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A6/+06 - KA1/11-14	A6/+06 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A6/+06 - QF1/15-18	A6/+06 - X1/14-17	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	INTERNAL FAULT	HW	DI	A6/+06 - QA1/11-14	A6/+06 - X1/14-18	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
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:

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 2024-10-02T08:28:17.969Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-02T08:49:50.228Z	PROVERLIS Digitaly signed by Witness waived 2024-10-02T09:19:56.064Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	UP-200F4	: AC UPS 15 kVA Redundant System with By-Pass	Dwg	123A90-DDL-EL-DS-20032		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module	LD_B-300		
TASK	code	C10002827	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FP16A	AC UPS

DATA

Manufacturer	AEG Power Solution	Rating kVA	20	Input V	400
Serial N°	1010864/001	Frequency Hz	50	Output V	400

FUNCTION TEST REQUIREMENT

1	Check MC activities have been carried out	OK
2	Check equipment for cleaness	OK
3	Energise control of UPS 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 UPS system as per manufacturer's test procedure and record on attached manufacturer test sheets.	OK
	These tests include as minimum:	
8	Output voltages adjustment	OK
9	Permanent insulation monitor test (if any)	NA
10	Alarms checking	OK
11	Remote input/output signals	OK
12	Parallel operation	OK
13	Automatic and manual transfer sequences	OK
14	Test UPS interface trips and signals (remote alarms & status). Check the ITR presence in the system	OK
15	Perform battery charge / discharge tests according to Manufacturer's instructions. Check the ITR presence in the systen	OK
16	Perform battery autonomy test at rated power. Check the ITR presence in the system	OK

Comments: NOTE POINT 5: See the ITR FTR-5 S.S. 84-20 (C10003009, C10003010, C10003011).
NOTE POINT 6: See the ITR FTR-2 S.S. 84-20 (C10002819, C10002822, C10002825).

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 2025-03-11T14:00:36.279Z	Digitaly signed by Kristian Castellani 2025-03-11T15:03:54.197Z	Digitaly signed by Witness waived 2025-03-12T07:12:10.661Z

CAE EPLAN Electric P8

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AUXILIARY
From Lighting & Small Power DB BOP DP-200N1 (Cubicle 03-Q42)
100-240V/N/PE~50/60Hz

back-up fuse
gG10A
3G2.5mm2

LINE A
From LV Switchgear SG-200N1 (Cubicle A6/05)
Mains
400V;3/PE~50Hz

gG80A
4G35mm2

From LV Switchgear SG-200N1 (Cubicle A2/04)
Bypass mains
400V;3/PE~50Hz

gG63A
4G35mm2

LINE B
From LV Switchgear SG-200N1 (Cubicle A6/06)
Mains
400V;3/PE~50Hz

gG80A
4G35mm2

Not included in the AEG shipment

Code	Description
Q1	Rectifier input mains breaker
T40	Rectifier input isolation transformer
A1	Rectifier
A2	Inverter
T1	Inverter output isolation transformer
A3-A4	Static by-pass switch
A18	Display control module
A85	Heater
H1	Light

+MBC1
BY-200F4
Bypass-Trafoschrank mit HU 20 kVA
1000007888.090
10009760

-Q10
L=50/35A
I=0,5kA
Icu=50kA

-T8
400V/400V
20kVA

-Q28.1 NC
-Q28.2 NC

+UPS1
BC-200F4A
Protect 8.33 20-400-204-400
1000007888.080
10009759

+UPS2
BC-200F4B
Protect 8.33 20-400-204-400
1000007888.080
10009759

-Q1
L=100/85A
I=1,0kA
Icu=50kA

-T40

-A1
REC

-A2
INV

-T1

-F1,-F2,-F3

-A3
SBS

-A4

-A18
Display

-A20
Parallel Adapter
INV CAN -X3 1-3 → 203 / 1.6
INV Sync -X5 1-4 → 205 / 1.6

-L11,-L12,-L13
Parallel preventive choke coil

-A12 ,-A13
Remote signaling

-A24.1 BLÜ-PRO -F91
-A24.2 BLÜ-PRO -F92
-A24.3 BLÜ-PRO -F93

-Q71 NC
-Q72 NC

-Q29
INV operation
Manual bypass

-F25

DP-200F4

-QF31 B16A 300mA
-QF35 B16A 300mA
5pc
-QF36 B10A
3pc
-QF38 B10A

Load
400/230V;3/N/PE~50Hz
max. gG10A
max. gG10A

Not included in the AEG shipment

+BFB1
CB-200F4A
Battery fuse box 200 A

-Q2
L=200A
DC 24V
max. 300W

+BFB2
CB-200F4B
Battery fuse box 200 A

-Q2
L=200A
DC 24V
max. 300W

2(1x70 mm2)

+BAT1
BA-200F4A
Batteries installed on rack

3 x 18 x FTG 12-120
Battery voltage 216V
Battery capacity 360Ah

+BAT2
BA-200F4B
Batteries installed on rack

3 x 18 x FTG 12-120
Battery voltage 216V
Battery capacity 360Ah

string 1
String 2
String 3

-R81

*1 Attention! In the event of battery undervoltage < 130 V, the UPS automatically switches off battery isolator Q2.
If this happens, switch X15:3 must be switched into the open position (undervoltage trip blocked).
For restart, please refer to the chapter in the UPS operating instructions (charging the DC link capacitors) attached.
Unlock the tripped switch Q2 by switching to open position.
After charging the DC link capacitors, switch on Q2.
Attention! When the battery voltage reaches > 200 V, switch X15:3 must be switched back to the closed position.

*2 Connection cables are not included.

				Date	14.05.2024		
01	500000002053	13.08.2024	Beckschäfer	Editor	EEC	ROSETTI MARINO	System 20 kVA
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck	Hollandse Kust Noord (HKN) wind farm	Single-line diagram
Stat	Alteration	Date	Name	Norm			

AEG POWER SOLUTIONS

1000007888_080 en

A0 | sheet 1 | sheets 1

1000007888_080

ITEM	Tag	UP-200F4	: AC UPS 15 kVA Redundant System with By-Pass	Dwg	123A90-DDL-EL-DS-20032	
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module	LD_B-300	
TASK	code	C10002828	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-200F4	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 AC UPS UP-200F4 Battery A (CB-20	HW	DO	B-300-UPS ROOM_TB-X3:7-8	B400-SIS-001_TB-XS-000:05-06	NA	NA	NA	NA	Y	NA	NA	NA	NA
2	Disconnected AC UPS UP-200F4 Battery A (CB-20	HW	DO	B-300-UPS ROOM_TB-X3:7-8	B400-SIS-001_TB-XS-000:13-14	NA	NA	NA	NA	Y	NA	NA	NA	NA
3	Battery room fan fault-charge inhibit	HW	DO	B-300-UPS ROOM_TB-120:1-2	B400-SIS-001_TB-XS-000:43-44	NA	NA	NA	NA	Y	NA	NA	NA	NA
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-200F4 15KVA 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 2025-03-11T14:01:38.391Z	Digitaly signed by Kristian Castellani 2025-03-11T15:04:51.498Z	Digitaly signed by Witness waived 2025-03-12T07:12:34.158Z

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-200F4.
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-200F4 - 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 AC UPS UP-200F4 Battery A	DO	84-XS-008A	0 TRIP
BOX BATTERY		Disconnect AC UPS UP-200F4 Battery B	DO	84-XS-008B	0 TRIP
UPSA/B		Battery room fan fault-charge inhibit	DO	84-XS-011	0 INIBIT

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

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5.4.5.2 UPS UP-200F4 - I/O Modbus TCP-IP list

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

Alarms:
Read: Fct.-Code 3 (Read Holding Register) or Fct.-Code 4 (Read Input Register)

Reg.	Bit no.	Type	Name	Description (1=active)
2	0	WORD	NonCriticalFault	W: Collective warning
3	0	WORD	CriticalFault	A: Collective alarm
4	0	WORD	Userdef_DigIn1Active	W: "O"
5	0	WORD	Userdef_DigIn2Active	W: "O"
6	0	WORD	Userdef_DigIn3Active	W: "O"
7	0	WORD	EmergencySwitchOff	A: UPS output off "O"
8	0	WORD	DouCanFault	W: DOU CAN fault
9	0	WORD	MainsFault	W: Rectifier/bypass mains fault
10	0	WORD	RectifierWarning	W: Rectifier warning
11	0	WORD	RectifierFault	A: Rectifier fault
12	0	WORD	BatteryAlarm	A: Battery fault
13	0	WORD	InverterWarning	W: Inverter warning
14	0	WORD	InverterFault	A: Inverter fault
15	0	WORD	SBSWarning	W: Bypass warning
16	0	WORD	SBSFault	A: Bypass fault
17	0	WORD	EqualisingCharge	I: Charger status – equalising charging
18	0	WORD	Charge	I: Charger status – charging
19	0	WORD	TrickleCharge	I: Charger status – trickle charging
20	0	WORD	GenSetOperation	I: Charger status: Em. power supply "O"
21	0	WORD	BattTemp.SensFault	W: Battery temp. sensor "O"
22	0	WORD	BatteryTemp.ToHigh	W: Battery temp. too high "O"
23	0	WORD	CircuitBreaker	W: Circuit-breaker tripped "O"
24	0	WORD	BatteryWarning	W: Battery warning
25	0	WORD	BatteryLow	W: Battery undervoltage
26	0	WORD	Overload	W: Inverter overload
27	0	WORD	FanFault	W: Fan fault
28	0	WORD	Overload	A: Inverter overload
29	0	WORD	ShortCircuit	A: Inverter short-circuit
30	0	WORD	DcUnderVoltage	A: Inverter DC undervoltage
31	0	WORD	DcOverVoltage	A: Inverter DC overvoltage
32	0	WORD	PowerStackOverTemp	A: Inverter stack fault
33	0	WORD	SBSReady	I: Bypass ready
34	0	WORD	SBSMainsFault	W: Bypass mains fault
35	0	WORD	SBSBlocked	W: Bypass blocked
36	0	WORD	RectifierOn	I: Rectifier on
37	0	WORD	InverterOn	I: Inverter on
38	0	WORD	SBSOn	I: Bypass on

Table 5: Modbus TCP-IP PCS

ITEM	Tag	BA-200F4A-C	: UPS F&G - BA-200F4A-C			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002829		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	FTG 12-120
Rated voltage	220V	Battery capacity (Ah):	120Ah	Number of cells	54
Rated autonomy (min)			720		

Test type

Important notice:

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

Manufacturer:		Serial N°:	NA	Type	FTG 12-120
Test type: Charge ● Discharge		Duration	12h	Time	START: 8:30 STOP: 8:00
CdNi	constant current	Current(A)	4.2A / 3.9A	Ambiant T°	NA
Pb ●	constant voltage	Volt/Cell	NA	Initial T° 19.5°	Final T° 21.4°

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

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-14	2024-11-15	2024-11-18
Signature	Digitaly signed by Davide Zucconelli 2024-11-14T08:10:25.865Z	Digitaly signed by Kristian Castellani 2024-11-15T10:19:09.421Z	Digitaly signed by Witness waived 2024-11-18T13:10:40.647Z

13/11/26 NOME: MATTIA GIROTTI FIRMA:

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA

UP-200F4 [ANNEX001]

SUBSYSTEM 84-20: BATTERY FIRST CHARGE RECORD SHEET DURATION 12HOURS

ROSETTI MARINO

	BATTERY 'A' RACK' UPS-BAT-1A																		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~~	~~8,00~~	~~8,30~~	~~9,00~~	~~10,00~~	~~10,30~~	~~11,00~~	~~14,30~~	~~42,00~~
Time (hh:mm)	8:30	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~~					7:30	8:00
Charge Voltage (V)	251,7	256,3	256,3	256,3	256,7	255,9	255,7	255,6	255,7	255,7	255,6	255,5	255,5	255,5	255,6	255,8	255,7	255,8							255,7	255,8
Charge Current (A)	0	4,2	4,8	4,7	4,7	4,5	4,3	4,1	4,2	3,2	4,1	3,7	3,6	3,7	3,7	4,8	3,8	3,9							3,7	3,9
Ambient Temp. (°C)	19,5	21,1	21,1	20,8	21,2	22,1	22,8	22,8	22,8	23,2	23,3	24,0	24,1	23,4	22,8	22,6	22,4	22,6							21,5	21,4
Battery Cell Temp. (°C)	21,0	21,4	21,8	21,7	21,6	22,4	22,9	23,4	23,6	23,7	23,9	23,8	23,7	22,9	22,0	22,0	22,1	22,0							23,0	23,5
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)	(V)
1	13,26	13,77	13,89	13,87	14,01	14,03	14,04	14,04	14,04	14,04	14,04	14,04	14,04	14,06	14,04	14,04	14,04	14,04							14,04	14,03
2	13,35	13,93	14,07	14,15	14,16	14,18	14,17	14,16	14,17	14,16	14,16	14,16	14,16	14,15	14,13	14,12	14,12	14,12							14,16	14,18
3	13,32	14,26	14,23	14,22	14,24	14,24	14,24	14,25	14,25	14,25	14,25	14,24	14,25	14,25	14,26	14,26	14,25	14,24							14,25	14,24
4	13,37	14,31	14,33	14,35	14,32	14,31	14,28	14,29	14,28	14,28	14,28	14,29	14,26	14,29	14,27	14,24	14,22	14,26							14,29	14,31
5	13,36	14,29	14,28	14,27	14,28	14,27	14,28	14,29	14,28	14,28	14,28	14,30	14,28	14,30	14,30	14,30	14,28	14,26							14,29	14,28
6	13,37	14,24	14,52	14,43	14,38	14,43	14,46	14,46	14,47	14,47	14,47	14,52	14,57	14,53	14,48	14,46	14,42	14,30							14,20	14,27
7	13,34	13,96	14,08	14,15	14,20	14,38	14,38	14,19	14,22	14,29	14,27	14,18	14,19	14,20	14,37	14,31	14,39	14,29							14,47	14,43
8	13,39	14,65	14,52	14,45	14,44	14,48	14,44	14,41	14,42	14,41	14,42	14,40	14,41	14,40	14,38	14,33	14,35	14,35							14,41	14,45
9	13,35	14,58	14,54	14,47	14,48	14,45	14,47	14,51	14,50	14,51	14,51	14,53	14,53	14,53	14,54	14,55	14,55	14,55							14,51	14,47
10	13,39	14,68	14,60	14,56	14,53	14,44	14,42	14,40	14,41	14,41	14,40	14,42	14,43	14,42	14,41	14,40	14,41	14,41							14,41	14,44
11	13,38	14,81	14,66	14,57	14,55	14,53	14,51	14,49	14,50	14,50	14,50	14,47	14,50	14,48	14,45	14,43	14,42	14,42							14,50	14,53
12	13,28	14,04	14,08	14,11	14,17	14,14	14,14	14,14	14,14	14,18	14,18	14,14	14,16	14,13	14,12	14,11	14,12	14,12							14,18	14,14
13	13,37	14,45	14,39	14,34	14,36	14,31	14,31	14,31	14,31	14,32	14,32	14,29	14,30	14,29	14,29	14,29	14,28	14,30							14,32	14,31
14	13,33	14,64	14,68	14,49	14,48	14,32	14,31	14,30	14,30	14,31	14,31	14,30	14,31	14,31	14,31	14,31	14,33	14,31							14,30	14,07
15	13,27	13,87	13,84	13,89	14,04	14,07	14,05	14,10	14,10	14,11	14,11	14,13	14,14	14,11	14,08	14,06	14,09	14,11							14,12	14,31
16	13,26	13,88	13,94	14,00	14,08	14,07	14,10	14,12	14,11	14,12	14,12	14,09	14,13	14,10	14,11	14,12	14,12	14,10							14,12	14,07
17	13,28	13,84	13,87	14,04	14,11	14,10	14,11	14,12	14,11	14,12	14,12	14,15	14,16	14,13	14,13	14,12	14,13	14,22							14,16	14,12
18	13,26	13,94	13,98	14,05	14,11	14,12	14,15	14,16	14,16	14,16	14,16	14,19	14,21	14,18	14,18	14,21	14,22	14,13							14,12	14,10
TERMINAL VOLT. n.1~n.18																										
19	13,31	14,40	14,28	14,30	14,31	14,30	14,30	14,32	14,31	14,33	14,32	14,27	14,28	14,33	14,34	14,37	14,38	14,33							14,35	14,36
20	13,34	14,46	14,41	14,38	14,36	14,36	14,34	14,35	14,34	14,35	14,35	14,35	14,35	14,39	14,36	14,33	14,32	14,37							14,33	14,30
21	13,24	14,22	14,23	14,23	14,28	14,21	14,18	14,18	14,18	14,20	14,24	14,17	14,20	14,14	14,12	14,11	14,14	14,15							14,20	14,21
22	13,26	14,22	14,20	14,20	14,25	14,24	14,24	14,24	14,24	14,26	14,26	14,24	14,25	14,20	14,22	14,22	14,24	14,18							14,26	14,24
23	13,32	14,31	14,32	14,31	14,33	14,30	14,30	14,30	14,30	14,31	14,30	14,31	14,30	14,32	14,28	14,25	14,24	14,25							14,25	14,33
24	13,31	14,21	14,24	14,22	14,26	14,23	14,24	14,25	14,25	14,26	14,25	14,26	14,25	14,20	14,22	14,23	14,24	14,23							14,31	14,30
25	13,28	14,29	14,25	14,22	14,25	14,24	14,24	14,25	14,24	14,25	14,25	14,26	14,26	14,28	14,22	14,23	14,24	14,25							14,26	14,23
26	13,29	14,45	14,33	14,29	14,31	14,33	14,36	14,40	14,38	14,38	14,40	14,47	14,46	14,49	14,45	14,43	14,41	14,40							14,38	14,24
27	13,32	14,52	14,34	14,29	14,34	14,26	14,27	14,27	14,27	14,28	14,28	14,27	14,28	14,27	14,22	14,19	14,18	14,22							14,23	14,26
28	13,26	14,18	14,17	14,17	14,24	14,18	14,16	14,16	14,16	14,17	14,18	14,14	14,18	14,18	14,11	14,09	14,13	14,10							14,17	14,18
29	13,34	14,56	14,40	14,38	14,38	14,40	14,41	14,43	14,42	14,43	14,43	14,45	14,45	14,46	14,45	14,45	14,45	14,44							14,40	14,40
30	13,25	14,01	14,08	14,13	14,16	14,16	14,17	14,18	14,18	14,19	14,23	14,21	14,22	14,20	14,17	14,15	14,17	14,10							14,21	14,16
31	13,21	13,85	13,88	14,04	14,09	14,06	14,07	14,06	14,07	14,08	14,11	14,04	14,10	14,04	14,06	14,08	14,08	14,13							14,10	14,06
32	13,27	13,97	14,07	14,20	14,26	14,15	14,19	14,51	14,50	14,50	14,50	14,16	14,20	14,16	14,14	14,14	14,15	14,14							14,48	14,15
33	13,27	13,95	14,07	14,11	14,15	14,13	14,17	14,20	14,18	14,20	14,18	14,15	14,16	14,12	14,08	14,08	14,07	14,08							14,50	14,13
34	13,26	14,03	14,10	14,22	14,28	14,20	14,18	14,18	14,18	14,20	14,21	14,19	14,21	14,19	14,18	14,18	14,18	14,20							14,20	14,39
35	13,34	13,64	14,58	14,53	14,58	14,49	14,50	14,50	14,50	14,50	14,50	14,52	14,51	14,43	14,34	14,31	14,50	14,49							14,20	14,20
36	13,34	14,42	14,60	14,42	14,38	14,36	14,35	14,34	14,33	14,37	14,35	14,28	14,31	14,32	14,31	14,30	14,32	14,33							14,50	14,43
TERMINAL VOLT. n.19~n.36																										
37	13,32	14,46	14,47	14,24	14,27	14,35	14,35	14,35	14,35	14,38	14,38	14,27	14,28	14,34	14,32	14,30	14,31	14,38							14,38	14,43
38	13,30	14,67	14,54	14,22	14,31	14,44	14,49	14,46	14,46	14,47	14,46	14,46	14,47	14,43	14,40	14,39	14,38	14,31							14,40	14,35
39	13,27	14,20	14,21	14,16	14,18	14,22	14,22	14,21	14,21	14,22	14,25	14,21	14,22	14,21	14,18	14,16	14,17	14,20							14,15	14,30
40	13,26	14,36	14,27	14,31	14,37	14,30	14,31	14,32	14,32	14,34	14,34	14,32	14,31	14,32	14,32	14,31	14,30	14,27							14,44	14,22
41	13,26	14,31	14,23	14,44	14,33	14,27	14,28	14,31	14,30	14,33	14,32	14,31	14,32	14,30	14,28	14,31	14,26	14,26							14,33	14,27
42	13,28	14,10	14,17	14,40	14,38	14,21	14,21	14,21	14,21	14,22	14,21	14,24	14,25	14,22	14,20	14,18	14,18	14,18							14,22	14,21
43	13,32	14,43	14,33	14,46	14,42	14,32	14,33	14,35	14,34	14,36	14,33	14,28	14,28	14,34	14,31	14,26	14,28	14,26							14,34	14,14
44	13,31	13,98	14,07	14,22	14,18	14,14	14,16	14,19	14,18	14,20	14,21	14,21	14,18	14,21	14,23	14,18	14,17	14,17							14,20	14,32
45	13,23	14,15	14,15	14,28	14,34	14,20	14,21	14,22	14,22	14,22	14,21	14,21	14,21	14,21	14,18	14,17	14,16	14,18							14,27	14,24
46	13,24	14,25	14,18	14,26	14,31	14,24	14,26	14,28	14,27	14,27	14,28	14,29	14,28	14,30	14,28	14,26	14,25	14,23							14,28	14,20
47	13,28	14,15	14,22	14,19	14,28	14,24	14,24	14,25	14,25	14,28	14,25	14,26	14,27	14,25	14,25	14,23	14,25	14,26							14,27	14,15
48	13,22	14,07	14,11	14,33	14,39	14,15	14,18	14,19	14,19	14,23	14,22	14,16	14,18	14,19	14,13	14,10	14,13	14,15							14,30	14,26
49	13,27	14,21	14,22	14,12	14,19	14,26	14,27	14,28	14,28	14,30	14,31	14,27	14,26	14,29	14,28	14,25	14,26	14,20							14,23	14,17
50	13,20	14,27	14,30	14,18	14,25	14,22	14,23	14,24	14,24	14,27	14,27	14,25	14,25	14,28	14,30	14,31	14,32	14,31							14,27	14,22
51	13,23	14,15	14,23	14,21	14,27	14,17	14,16	14,16	14,16	14,18	14,17	14,13	14,13	14,13	14,10	14,09	14,09	14,10							14,15	14,16
52	13,25	14,06	14,14	14,23	14,31	14,16	14,16	14,16	14,16	14,20	14,25	14,16	14,18	14,16	14,15	14,12	14,13	14,11							14,23	14,17
53	13,29	14,36	14,33	14,13	14,22	14,30	14,28	14,29	14,28	14,28	14,28	14,28	14,29	14,27	14,25	14,23	14,25	14,22							14,28	14,33
54	13,29	14,55	14,53	14,24	14,28	14,39	14,40	14,42	14,41	14,42	14,41	14,37	14,40	14,41	14,38	14,35	14,36	14,36							14,42	14,30
TERMINAL VOLT. n.37~n.54																										

Note:

14,4 V ~ 15,0 V at 20°C V

INITIAL CHARGING CURRENT < 72A .....A

1	FAAM BATTERY,TYPE FTG 12-120Ah
2	FAAM BATTERY,TYPE FTG 12-120Ah
3	FAAM BATTERY,TYPE FTG 12-120Ah
4	FAAM BATTERY,TYPE FTG 12-120Ah
5	FAAM BATTERY,TYPE FTG 12-120Ah
6	FAAM BATTERY,TYPE FTG 12-120Ah
7	FAAM BATTERY,TYPE FTG 12-120Ah
8	FAAM BATTERY,TYPE FTG 12-120Ah
9	FAAM BATTERY,TYPE FTG 12-120Ah
10	FAAM BATTERY,TYPE FTG 12-120Ah
11	FAAM BATTERY,TYPE FTG 12-120Ah
12	FAAM BATTERY,TYPE FTG 12-120Ah
13	FAAM BATTERY,TYPE FTG 12-120Ah
14	FAAM BATTERY,TYPE FTG 12-120Ah
15	FAAM BATTERY,TYPE FTG 12-120Ah
16	FAAM BATTERY,TYPE FTG 12-120Ah
17	FAAM BATTERY,TYPE FTG 12-120Ah
18	FAAM BATTERY,TYPE FTG 12-120Ah
19	FAAM BATTERY,TYPE FTG 12-120Ah
20	FAAM BATTERY,TYPE FTG 12-120Ah
21	FAAM BATTERY,TYPE FTG 12-120Ah
22	FAAM BATTERY,TYPE FTG 12-120Ah
23	FAAM BATTERY,TYPE FTG 12-120Ah
24	FAAM BATTERY,TYPE FTG 12-120Ah
25	FAAM BATTERY,TYPE FTG 12-120Ah
26	FAAM BATTERY,TYPE FTG 12-120Ah
27	FAAM BATTERY,TYPE FTG 12-120Ah
28	FAAM BATTERY,TYPE FTG 12-120Ah
29	FAAM BATTERY,TYPE FTG 12-120Ah
30	FAAM BATTERY,TYPE FTG 12-120Ah
31	FAAM BATTERY,TYPE FTG 12-120Ah
32	FAAM BATTERY,TYPE FTG 12-120Ah
33	FAAM BATTERY,TYPE FTG 12-120Ah
34	FAAM BATTERY,TYPE FTG 12-120Ah
35	FAAM BATTERY,TYPE FTG 12-120Ah
36	FAAM BATTERY,TYPE FTG 12-120Ah
37	FAAM BATTERY,TYPE FTG 12-120Ah
38	FAAM BATTERY,TYPE FTG 12-120Ah
39	FAAM BATTERY,TYPE FTG 12-120Ah
40	FAAM BATTERY,TYPE FTG 12-120Ah
41	FAAM BATTERY,TYPE FTG 12-120Ah
42	FAAM BATTERY,TYPE FTG 12-120Ah
43	FAAM BATTERY,TYPE FTG 12-120Ah
44	FAAM BATTERY,TYPE FTG 12-120Ah
45	FAAM BATTERY,TYPE FTG 12-120Ah
46	FAAM BATTERY,TYPE FTG 12-120Ah
47	FAAM BATTERY,TYPE FTG 12-120Ah
48	FAAM BATTERY,TYPE FTG 12-120Ah
49	FAAM BATTERY,TYPE FTG 12-120Ah
50	FAAM BATTERY,TYPE FTG 12-120Ah
51	FAAM BATTERY,TYPE FTG 12-120Ah
52	FAAM BATTERY,TYPE FTG 12-120Ah
53	FAAM BATTERY,TYPE FTG 12-120Ah
54	FAAM BATTERY,TYPE FTG 12-120Ah

ITEM	Tag	BA-200F4A-D	: UPS F&G - BA-200F4A-D			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002830	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	FTG 12-120
Rated voltage	400V	Battery capacity (Ah):	120	Number of cells	54
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	FTG 12-120
Test type: Charge	Discharge ●	Duration	10h	Time	8:45 - 18:45
CdNi	constant current	Current(A)	31A - 45.3A	Ambiant T°	NA
Pb ●	constant voltage	Volt/Cell	NA	Initial T° 17.1	Final T° 24.8

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)	NOTE																				
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	NOTE																				
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
LOAD BANK - MAREL XP250.250	517		

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-11-15	2024-11-18	2024-11-18
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-15T09:12:04.468Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-18T13:07:36.267Z	PROVERLIS Digitaly signed by Witness waived 2024-11-18T13:12:42.991Z

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA

ROSETTI MARINO

UP-200F4 [ANNEX 003]

SUBSYSTEM 84-20: BATTERY CHARGE / DISCHARGE RECORD SHEET

EQUIPMENT	BATTERY 'A' RACK UP-200F4	TEST MEASUREMENT:	ANNEX 003: BEFORE DISCHARGE

BATTERY BANK A TERMINAL VOLTAGE

AMBIENT TEMPERATURE 17,5 °C BATTERY TEMPERATURE 17,2 °C

CELL N°	TAG UTILITY / TYPE	MANIFACTURER	MODEL	LOCATION	VOLTAGE (V)	DATE	TIME	REMARKS
1	FAAM,TYPE FTG 12-120 Ah			B 300	14,02	14/11/24	8:30	
2	FAAM,TYPE FTG 12-120 Ah			B 300	14,11	14/11/24	8:30	
3	FAAM,TYPE FTG 12-120 Ah			B300	14,17	14/11/24	8:30	
4	FAAM,TYPE FTG 12-120 Ah			B300	14,29	14/11/24	8:30	
5	FAAM,TYPE FTG 12-120 Ah			B300	14,29	14/11/24	8:30	
6	FAAM,TYPE FTG 12-120 Ah			B300	14,58	14/11/24	8:30	
7	FAAM,TYPE FTG 12-120 Ah			B300	14,15	14/11/24	8:30	
8	FAAM,TYPE FTG 12-120 Ah			B300	14 34	14/11/24	8:30	
9	FAAM,TYPE FTG 12-120 Ah			B300	14,51	14/11/24	8:30	
10	FAAM,TYPE FTG 12-120 Ah			B300	14,33	14/11/24	8:30	
11	FAAM,TYPE FTG 12-120 Ah			B300	14,48	14/11/24	8:30	
12	FAAM,TYPE FTG 12-120 Ah			B300	14,08	14/11/24	8:30	
13	FAAM,TYPE FTG 12-120 Ah			B300	14,22	14/11/24	8:30	
14	FAAM,TYPE FTG 12-120 Ah			B300	14,38	14/11/24	8:30	
15	FAAM,TYPE FTG 12-120 Ah			B300	14,08	14/11/24	8:30	
16	FAAM,TYPE FTG 12-120 Ah			B300	14,12	14/11/24	8:30	
17	FAAM,TYPE FTG 12-120 Ah			B300	14,23	14/11/24	8:30	
18	FAAM,TYPE FTG 12-120 Ah			B300	14,17	14/11/24	8:30	
19	TERMINAL VOLT. n.1~n.18			B300	14,35	14/11/24	8:30	
20	FAAM,TYPE FTG 12-120 Ah			B300	14,41	14/11/24	8:30	
21	FAAM,TYPE FTG 12-120 Ah			B300	14,12	14/11/24	8:30	
22	FAAM,TYPE FTG 12-120 Ah			B300	14,14	14/11/24	8:30	
23	FAAM,TYPE FTG 12-120 Ah			B300	14,31	14/11/24	8:30	
24	FAAM,TYPE FTG 12-120 Ah			B300	14,20	14/11/24	8:30	
25	FAAM,TYPE FTG 12-120 Ah			B300	14,35	14/11/24	8:30	
26	FAAM,TYPE FTG 12-120 Ah			B300	14,72	14/11/24	8:30	
27	FAAM,TYPE FTG 12-120 Ah			B300	14,22	14/11/24	8:30	
28	FAAM,TYPE FTG 12-120 Ah			B300	14,06	14/11/24	8:30	
29	FAAM,TYPE FTG 12-120 Ah			B300	14,46	14/11/24	8:30	
30	FAAM,TYPE FTG 12-120 Ah			B300	14,23	14/11/24	8:30	
31	FAAM,TYPE FTG 12-120 Ah			B300	13,99	14/11/24	8:30	
32	FAAM,TYPE FTG 12-120 Ah			B300	14,13	14/11/24	8:30	
33	FAAM,TYPE FTG 12-120 Ah			B300	14,04	14/11/24	8:30	
34	FAAM,TYPE FTG 12-120 Ah			B300	14,09	14/11/24	8:30	
35	FAAM,TYPE FTG 12-120 Ah			B300	14,48	14/11/24	8:30	
36	FAAM,TYPE FTG 12-120 Ah			B300	14,25	14/11/24	8:30	
37	TERMINAL VOLT. n.19~n.36			B300	14,35	14/11/24	8:30	
38	FAAM,TYPE FTG 12-120 Ah			B300	14,38	14/11/24	8:30	
39	FAAM,TYPE FTG 12-120 Ah			B300	14,07	14/11/24	8:30	
40	FAAM,TYPE FTG 12-120 Ah			B300	14,16	14/11/24	8:30	
41	FAAM,TYPE FTG 12-120 Ah			B300	14,27	14/11/24	8:30	
42	FAAM,TYPE FTG 12-120 Ah			B300	14,32	14/11/24	8:30	
43	FAAM,TYPE FTG 12-120 Ah			B300	14,26	14/11/24	8:30	
44	FAAM,TYPE FTG 12-120 Ah			B300	14,23	14/11/24	8:30	
45	FAAM,TYPE FTG 12-120 Ah			B300	14,12	14/11/24	8:30	
46	FAAM,TYPE FTG 12-120 Ah			B300	14,24	14/11/24	8:30	
47	FAAM,TYPE FTG 12-120 Ah			B300	14,27	14/11/24	8:30	
48	FAAM,TYPE FTG 12-120 Ah			B300	14,15	14/11/24	8:30	
49	FAAM,TYPE FTG 12-120 Ah			B300	14,38	14/11/24	8:30	
50	FAAM,TYPE FTG 12-120 Ah			B300	14,47	14/11/24	8:30	
51	FAAM,TYPE FTG 12-120 Ah			B300	14,10	14/11/24	8:30	
52	FAAM,TYPE FTG 12-120 Ah			B300	14,12	14/11/24	8:30	
53	FAAM,TYPE FTG 12-120 Ah			B300	14,16	14/11/24	8:30	
54	FAAM,TYPE FTG 12-120 Ah			B300	14,51	14/11/24	8:30	
55	FAAM,TYPE FTG 12-120 Ah							
56	FAAM,TYPE FTG 12-120 Ah							
57	TERMINAL VOLT. n.37~n.54							

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA

UPS UP-200F4 [ANNEX 005]

SUBSYSTEM 84-20: BATTERY DISCHARGE RECORD SHEET

ROSETTI MARINO

BATTERY 'A' RACK' UPS-BAT-1A

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
Time (hh:mm)	8:45	9:15	9:45	10:15	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	17:15	17:45	18:15	18:45
Discharge Power (W)	244,1	228,8	221,8	220,9	220,2	219,2	218,2	216,9	215,7	215,1	212,6	213,2	212,1	210,8	209,7	208,4	206,8	205,1	203,8	201,90	200,38
Discharge Current (A)	0	42,8	42,1	41,9	42,0	41,8	42,0	41,5	41,4	45,3	44,0	32,3	32,2	32,1	31,3	31,4	31,0	34,2	39,7	39,2	34,7
Ambient Temp. (°C)	16,7	17,9	19,2	20,1	21,2	21,8	22,3	22,6	22,6	22,8	23,3	23,4	23,6	24,01	23,4	22,3	22,8	21,6	22,10	22,9	22,3
Battery Cell Temp. (°C)	17,1	17,8	18,4	19,4	19,8	19,9	21,1	21,3	21,9	21,4	22,5	22,8	23,4	23,4	22,9	21,1	21,6	22,1	22,6	21,7	24,8

Note:

255W .....W

19,120A. .....A

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	13,54	12,37	12,25	12,20	12,16	12,11	12,06	11,99	11,92	11,88	11,75	11,74	11,67	11,63	11,52	11,42	11,26	11,20	11,20	11,08	11,00
2	13,58	12,45	12,32	12,28	12,24	12,19	12,14	12,08	12,02	11,93	11,86	11,86	11,80	11,75	11,68	11,61	11,53	11,31	11,15	11,09	11,01
3	13,58	12,41	12,29	12,29	12,21	12,16	12,11	12,04	11,98	11,91	11,82	11,83	11,77	11,71	11,65	11,57	11,49	11,31	11,16	11,11	11,00
4	13,61	12,47	12,34	12,29	12,25	12,20	12,14	12,09	12,03	11,98	11,86	11,87	11,81	11,75	11,59	11,61	11,53	11,32	11,13	11,07	10,98
5	13,62	12,45	12,33	12,28	12,23	12,18	12,13	12,06	12,00	11,91	11,83	11,85	11,78	11,73	11,66	11,58	11,50	11,40	11,14	11,12	11,01
6	13,59	12,45	12,33	12,29	12,24	12,19	12,14	12,08	12,02	11,98	11,85	11,86	11,80	11,75	11,68	11,61	11,53	11,41	11,18	11,06	10,95
7	13,58	12,46	12,33	12,29	12,24	12,19	12,13	12,07	12,01	11,95	11,85	11,86	11,79	11,74	11,67	11,60	11,51	11,38	11,20	11,07	10,96
8	13,63	12,40	12,33	12,28	12,24	12,18	12,15	12,06	12,00	11,94	11,83	11,84	11,75	11,72	11,55	11,57	11,48	11,41	11,21	11,06	10,95
9	13,57	12,44	12,32	12,27	12,23	12,18	12,13	12,07	12,00	11,92	11,86	11,86	11,79	11,74	11,67	11,50	11,52	11,30	11,18	11,04	10,94
10	13,61	12,46	12,33	12,29	12,24	12,19	12,13	12,07	12,01	11,95	11,85	11,86	11,79	11,74	11,67	11,60	11,51	11,41	11,19	11,09	10,98
11	13,59	12,45	12,32	12,28	12,24	12,18	12,10	12,06	12,00	11,96	11,85	11,84	11,78	11,73	11,66	11,58	11,50	11,41	11,19	11,08	10,97
12	13,53	12,43	12,30	12,25	12,21	12,15	12,12	12,04	11,98	11,90	11,82	11,82	11,75	11,70	11,63	11,55	11,45	11,38	11,15	11,06	10,95
13	13,64	12,44	12,31	12,27	12,22	12,17	12,13	12,07	11,99	11,91	11,82	11,83	11,76	11,71	11,64	11,56	11,47	11,40	11,12	11,11	10,99
14	13,59	12,44	12,31	12,27	12,23	12,18	12,13	12,07	12,01	11,97	11,85	11,85	11,79	11,74	11,67	11,50	11,51	11,28	11,15	11,03	10,99
15	13,51	12,46	12,33	12,29	12,24	12,19	12,13	12,07	12,01	11,98	11,84	11,85	11,78	11,73	11,66	11,58	11,50	11,29	11,17	11,07	10,96
16	13,51	12,45	12,33	12,28	12,23	12,18	12,16	12,06	12,00	11,96	11,84	11,85	11,78	11,73	11,61	11,59	11,50	11,23	11,13	11,05	10,94
17	13,55	12,45	12,33	12,28	12,23	12,18	12,13	12,06	12,00	11,92	11,83	11,84	11,78	11,72	11,65	11,58	11,49	11,40	11,14	11,07	10,92
18	13,53	12,44	12,32	12,27	12,23	12,18	12,13	12,07	12,01	11,94	11,85	11,86	11,79	11,74	11,67	11,60	11,51	11,42	11,15	11,08	10,96
TERMINAL VOLT. n.1~n.18																					
19	13,60	12,44	12,31	12,27	12,23	12,18	12,14	12,07	12,01	11,98	11,86	11,87	11,81	11,76	11,70	11,76	11,54	11,30	11,16	11,09	10,98
20	13,63	12,45	12,33	12,28	12,24	12,19	12,14	12,08	12,02	11,96	11,86	11,87	11,80	11,75	11,69	11,62	11,53	11,41	11,18	11,11	10,99
21	13,59	12,37	12,25	12,28	12,16	12,10	12,05	11,98	11,91	11,89	11,88	11,74	11,66	11,60	11,51	11,40	11,24	11,20	11,12	11,12	11,01
22	13,56	12,42	12,29	12,25	12,21	12,16	12,10	12,04	11,98	11,91	11,82	11,86	11,77	11,71	11,64	11,57	11,49	11,38	11,12	11,09	10,98
23	13,62	12,45	12,32	12,28	12,24	12,19	12,14	12,07	12,02	11,98	11,85	11,84	11,80	11,75	11,68	11,61	11,53	11,42	11,08	11,08	10,98
24	13,61	12,43	12,31	12,27	12,23	12,17	12,12	12,06	12,01	11,97	11,83	11,82	11,78	11,73	11,66	11,59	11,51	11,43	11,10	11,10	10,98
25	13,58	12,42	12,29	12,25	12,21	12,16	12,11	12,04	11,98	11,90	11,81	11,85	11,76	11,70	11,63	11,55	11,47	11,40	11,09	11,00	10,90
26	13,58	12,44	12,31	12,27	12,23	12,18	12,13	12,06	11,99	11,91	11,84	11,85	11,79	11,73	11,67	11,50	11,52	11,45	11,18	11,10	10,98
27	13,58	12,45	12,32	12,27	12,23	12,16	12,13	12,06	12,00	11,94	11,84	11,81	11,79	11,73	11,67	11,60	11,51	11,43	11,12	11,11	10,93
28	13,53	12,43	12,30	12,25	12,20	12,15	12,10	12,03	11,97	11,96	11,81	11,86	11,78	11,69	11,62	11,54	11,46	11,40	11,08	11,13	11,01
29	13,36	12,44	12,33	12,29	12,25	12,19	12,14	12,08	12,02	11,94	11,85	11,81	11,80	11,75	11,68	11,61	11,53	11,43	11,13	11,08	10,96
30	13,52	12,43	12,32	12,27	12,23	12,16	12,10	12,03	11,97	11,91	11,80	11,75	11,84	11,68	11,61	11,52	11,42	11,40	11,16	11,09	10,97
31	13,53	12,39	12,27	12,22	12,22	12,12	12,06	11,99	11,92	11,89	11,85	11,87	11,68	11,61	11,53	11,43	11,30	11,29	11,10	11,03	10,92
32	13,53	12,46	12,34	12,30	12,18	12,14	12,15	12,08	12,01	11,92	11,86	11,87	11,81	11,72	11,69	11,62	11,54	11,29	11,11	11,04	10,93
33	13,57	12,48	12,35	12,30	12,25	12,20	12,15	12,09	12,03	11,93	11,87	11,85	11,81	11,76	11,70	11,63	11,55	11,43	11,14	11,05	10,94
34	13,54	12,44	12,32	12,28	12,26	12,18	12,13	12,06	11,99	11,91	11,84	11,86	11,79	11,74	11,67	11,60	11,53	11,48	11,15	11,06	10,95
35	13,64	12,45	12,24	12,30	12,23	12,19	12,14	12,07	12,01	11,98	11,85	11,89	11,79	11,74	11,68	11,60	11,52	11,41	11,20	11,08	10,98
36	13,60	12,46	12,36	12,31	12,25	12,22	12,16	12,10	12,03	11,97	11,82	11,89	11,83	11,78	11,71	11,58	11,52	11,40	11,18	11,21	11,01
TERMINAL VOLT. n.19~n.36																					
37	13,62	12,45	12,33	12,29	12,25	12,20	12,15	12,08	12,02	11,96	11,86	11,87	11,81	11,63	11,69	11,62	11,53	11,39	11,19	11,10	11,00
38	13,61	12,44	12,32	12,28	12,26	12,18	12,13	12,06	11,99	11,91	11,83	11,85	11,78	11,74	11,67	11,59	11,50	11,42	11,07	11,05	10,84
39	13,56	12,45	12,32	12,27	12,23	12,17	12,12	12,05	11,99	11,91	11,82	11,83	11,76	11,72	11,74	11,55	11,48	11,40	11,10	11,03	10,83
40	13,56	12,43	12,31	12,26	12,22	12,13	12,11	12,04	11,98	11,98	11,81	11,82	11,75	11,70	11,63	11,57	11,46	11,42	11,36	11,04	10,84
41	13,55	12,44	12,32	12,27	12,23	12,17	12,12	12,05	11,99	11,93	11,82	11,83	11,77	11,72	11,65	11,63	11,49	11,31	11,20	11,09	10,84
42	13,56	12,46	12,34	12,30	12,26	12,20	12,15	12,09	12,02	11,97	11,88	11,88	11,81	11,76	11,70	11,63	11,54	11,47	11,12	11,06	10,96
43	13,61	12,46	12,34	12,27	12,26	12,21	12,16	12,09	12,03	11,96	11,86	11,88	11,82	11,73	11,70	11,52	11,55	11,48	11,14	11,02	10,91
44	13,51	12,38	12,27	12,23	12,18	12,12	12,07	12,01	11,95	11,94	11,78	11,79	11,72	11,67	11,59	11,56	11,42	11,39	11,11	11,03	10,92
45	13,58	12,42	12,30	12,25	12,21	12,16	12,10	12,04	11,98	11,90	11,81	11,82	11,76	11,70	11,64	11,55	11,47	11,40	11,02	11,06	10,86
46	13,53	12,41	12,30	12,25	12,21	12,15	12,10	12,04	11,97	11,87	11,80	11,82	11,75	11,70	11,62	11,62	11,47	11,39	11,18	11,07	10,96
47	13,56	12,47	12,34	12,30	12,25	12,20	12,15	12,09	12,03	11,91	11,87	11,88	11,81	11,76	11,69	11,51	11,54	11,40	11,19	11,09	10,98
48	13,55	12,42	12,30	12,25	12,21	12,13	12,10	12,03	11,96	11,87	11,79	11,80	11,73	11,67	11,59	11,60	11,40	11,33	11,11	11,09	10,98
49	13,56	12,33	12,32	12,28	12,24	12,18	12,13	12,07	12,01	11,93	11,84	11,86	11,79	11,74	11,67	11,49	11,51	11,40	11,18	11,09	10,99
50	13,53	12,41	12,29	12,24	12,19	12,14	12,09	12,02	11,95	11,90	11,78	11,79	11,72	11,66	11,51	11,53	11,38	11,30	11,19	11,03	10,96
51	13,57	12,39	12,28	12,23	12,19	12,14	12,09	12,02	11,96	11,91	11,79	11,80	11,74	11,68	11,61	11,57	11,44	11,41	11,11	11,07	10,99
52	13,57	12,40	12,30	12,26	12,22	12,17	12,12	12,05	11,99	11,92	11,83	11,84	11,77	11,72	11,65	11,60	11,49	11,40	11,15	11,05	10,91
53	13,60	12,44	12,32	12,28	12,24	12,19	12,14	12,07	12,01	11,97	11,85	11,86	11,79	11,74	11,67	11,60	11,51	11,47	11,18	11,09	10,93
54	13,61	12,43	12,31	12,27	12,23	12,18	12,13	12,07	12,01	11,93	11,84	11,86	11,79	11,74	11,67	11,60	11,52	11,43	11,12	11,09	10,95
55TERMINAL VOLT. n.37~n.54																					

14/11/24 NOME: GIROTTI MATTIA FIRMA:

ITEM	Tag	BA-200F4A	: Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	Dwg	123A90-DDL-EL-DS-20032
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module	LD_B-300
TASK	code	C10002831	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	FTG 12-120
Rated voltage	400V	Battery capacity (Ah):	120	Number of cells	54
Rated autonomy (min):	600				

Battery autonomy test			
Floating battery voltage:	2.27 V	Test load (kW):	8.8 kW

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

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	3 x 18 x FTG 12-120	Measured	10.90

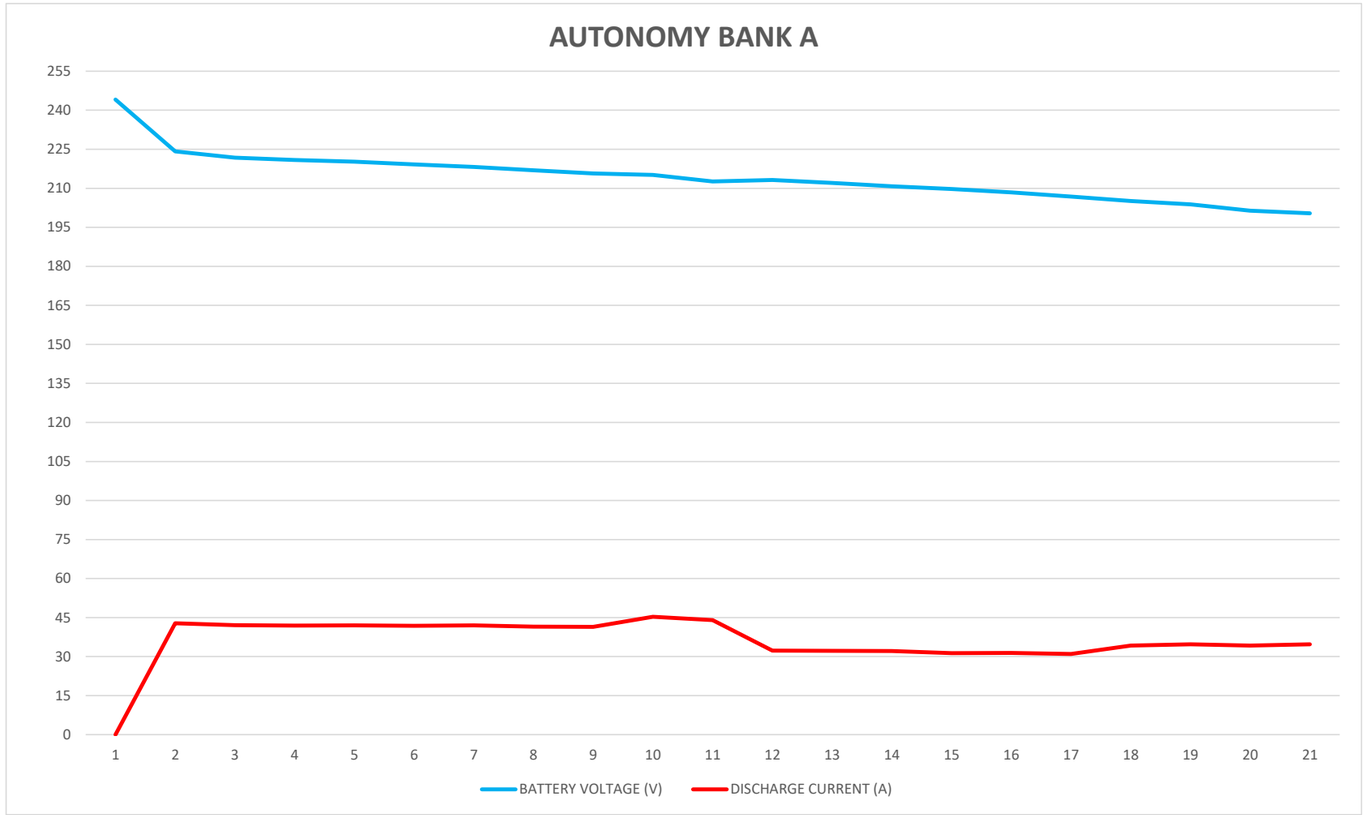
Testing & measurement instruments used

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

Comments: NOTE: See attachment for full measures.

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	2024-11-15	2024-11-18	2024-11-18
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-15T10:34:48.523Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-18T13:08:33.726Z	PROVERLIS Digitaly signed by Witness waived 2024-11-18T13:14:16.091Z

	TIME	BATTERY VOLTAGE (V)	DISCHARGE CURRENT (A)
1	08:45	244,1	0
2	09:15	224,2	42,8
3	09:45	221,8	42,1
4	10:15	220,9	41,9
5	10:45	220,2	42
6	11:15	219,2	41,8
7	11:45	218,2	42
8	12:15	216,9	41,5
9	12:45	215,7	41,4
10	13:15	215,1	45,3
11	13:45	212,6	44
12	14:15	213,2	32,3
13	14:45	212,1	32,2
14	15:15	210,8	32,1
15	15:45	209,7	31,3
16	16:15	208,4	31,4
17	16:45	206,8	31
18	17:15	205,1	34,2
19	17:45	203,8	34,7
20	18:15	201,4	34,2
21	18:45	200,38	34,7



Target discharge rate in Amperes to 1,8 Vpc at 20°C = 40A

The result is OK and for every cell battery the minimum Vpc registered is 1,817V > 1,8V

ITEM	Tag	BA-200F4B-C	: UPS F&G - BA-200F4B-C			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002832		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	FTG 12-120
Rated voltage	400V	Battery capacity (Ah):	120	Number of cells	54
Rated autonomy (min)			720		

Test type

Important notice:

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

Manufacturer:	FAAM	Serial N°:	NA	Type	FTG 12-120
Test type: Charge ● Discharge		Duration	12h	Time	8:30 - 6:45
CdNi	constant current	Current(A)	2	Ambiant T°	NA
Pb ●	constant voltage	Volt/Cell	NA	Initial T° 15.1	Final T° 21.2

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)	NOTE																				
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	NOTE																				
2																					
3																					
4																					
5																					
...																					
N																					

Testing & measurement instruments used

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

Comments: NOTE: See the attchment for full measures

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-11-15	2024-11-18	2024-11-18
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-15T09:23:09.987Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-18T13:09:28.076Z	PROVERLIS Digitaly signed by Witness waived 2024-11-18T13:14:35.092Z

16/11/24 NOTE: DATA GIRATA: FIRMA:

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F3 35kVA

UP-200F4 [ANNEX002]

SUBSYSTEM 84-20: BATTERY FIRST CHARGE RECORD SHEET DURATION 12HOURS

ROSETTI MARINO

BATTERY 'B' RACK' UPS-BAT-1B

12h CAPACITY CHARGE TEST RECORD 6:15 6:45

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)	8:30	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~~			6:15	6:45	
Charge Voltage (V)	242,7	258,7	258,5	258,5	258,5	258,5	258,5	258,5	258,5	258,5	258,5	258,5	258,5	258,5	258,5	258,4	258,4	258,5						258,5	258,4	14,4 V ~ 15,0 V at 20°C V
Charge Current (A)	0	1,4	1,4	1,4	1,5	1,6	1,8	1,9	1,9	1,9	2,0	2,2	2,2	2,2	2,1	1,9	2,1	2,1						2,2	2,1	INITIAL CHARGING CURRENT < 72A .....A
Ambient Temp. (°C)	16,3	17,3	18,8	19,4	19,8	20,1	21,6	22,8	22,8	22,9	23,0	23,0	23,5	23,7	23,01	22,5	21,5	22,0						15,8	16,0	
Battery Cell Temp. (°C)	15,1	15,8	17,9	18,1	18,6	18,9	19,2	19,5	21,4	21,8	22,0	22,1	22,7	22,9	22,2	21,9	20,8	21,1						21	21,2	

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	13,56	14,67	14,65	14,61	14,58	14,54	14,51	14,48	14,46	12,46	14,45	14,44	14,44	14,44	14,42	14,41	14,40	14,42						14,44	14,40	FAAM BATTERY,TYPE FTG 12-120 Ah
2	13,57	14,48	14,47	14,46	14,44	14,43	14,41	14,41	14,41	14,41	14,40	14,40	14,40	14,41	14,36	14,24	14,22	14,20						14,41	14,22	FAAM BATTERY,TYPE FTG 12-120 Ah
3	13,57	14,40	14,38	14,37	14,36	14,36	14,36	14,36	14,35	14,35	14,35	14,35	14,35	14,35	14,37	14,37	14,37	14,38						14,35	14,37	FAAM BATTERY,TYPE FTG 12-120 Ah
4	13,56	14,49	14,47	14,40	14,42	14,47	14,47	14,47	14,47	14,47	14,46	14,46	14,44	14,44	14,44	14,42	14,42	14,40						14,44	14,32	FAAM BATTERY,TYPE FTG 12-120 Ah
5	13,51	14,11	14,13	14,15	14,18	14,18	14,18	14,20	14,20	14,21	14,22	14,22	14,22	14,23	14,23	14,23	14,23	14,21						14,21	14,23	FAAM BATTERY,TYPE FTG 12-120 Ah
6	13,52	14,51	14,52	14,54	14,56	14,57	14,57	14,57	14,57	14,57	14,57	14,57	14,58	14,58	14,39	14,22	14,39	14,38						14,60	14,58	FAAM BATTERY,TYPE FTG 12-120 Ah
7	13,53	14,48	14,34	14,43	14,43	14,41	14,40	14,39	14,39	14,39	14,36	14,34	14,36	14,39	14,38	14,36	14,36	14,36						14,33	14,41	FAAM BATTERY,TYPE FTG 12-120 Ah
8	13,50	14,11	14,12	14,13	14,15	14,16	14,18	14,19	14,19	14,21	14,22	14,23	14,23	14,24	14,24	14,23	14,23	14,25						14,24	14,33	FAAM BATTERY,TYPE FTG 12-120 Ah
9	13,48	14,25	14,24	14,27	14,25	14,25	14,25	14,27	14,28	14,28	14,28	14,29	14,29	14,29	14,28	14,28	14,28	14,26						14,29	14,23	FAAM BATTERY,TYPE FTG 12-120 Ah
10	13,58	14,53	14,53	14,52	14,54	14,56	14,54	14,53	14,51	14,51	14,50	14,48	14,47	14,45	14,43	14,41	14,41	14,41						14,45	14,43	FAAM BATTERY,TYPE FTG 12-120 Ah
11	13,46	14,19	14,20	14,22	14,25	14,25	14,26	14,29	14,30	14,30	14,32	14,33	14,33	14,34	14,32	14,30	14,29	14,29						14,35	14,32	FAAM BATTERY,TYPE FTG 12-120 Ah
12	13,50	14,33	14,33	14,32	14,32	14,33	14,33	14,34	14,34	14,34	14,34	14,37	14,35	14,35	14,32	14,32	14,32	14,30						14,34	14,32	FAAM BATTERY,TYPE FTG 12-120 Ah
13	13,53	14,40	14,37	14,36	14,35	14,35	14,33	14,33	14,33	14,33	14,33	14,34	14,33	14,33	14,33	14,33	14,33	14,35						14,32	14,33	FAAM BATTERY,TYPE FTG 12-120 Ah
14	13,54	14,57	14,55	14,59	14,56	14,54	14,50	14,48	14,45	14,42	14,38	14,34	14,33	14,32	14,32	14,31	14,31	14,33						14,33	14,30	FAAM BATTERY,TYPE FTG 12-120 Ah
15	13,48	14,19	14,21	14,23	14,23	14,25	14,27	14,29	14,30	14,31	14,33	14,33	14,33	14,33	14,31	14,29	14,27	14,25						14,32	14,35	FAAM BATTERY,TYPE FTG 12-120 Ah
16	13,51	14,20	14,21	14,22	14,25	14,26	14,26	14,28	14,29	14,30	14,30	14,32	14,32	14,33	14,31	14,30	14,29	14,28						14,32	14,32	FAAM BATTERY,TYPE FTG 12-120 Ah
17	13,57	14,32	14,34	14,33	14,32	14,32	14,33	14,33	14,32	14,32	14,32	14,32	14,32	14,32	14,31	14,30	14,30	14,30						14,33	14,32	FAAM BATTERY,TYPE FTG 12-120 Ah
18	13,41	14,33	14,34	14,32	14,40	14,45	14,34	14,29	14,29	14,29	14,30	14,30	14,30	14,31	14,30	14,29	14,29	14,29						14,33	14,31	FAAM BATTERY,TYPE FTG 12-120 Ah
TERMINAL VOLT. n.1~n.18																										FAAM BATTERY,TYPE FTG 12-120 Ah
19	13,55	14,51	14,53	14,52	14,50	14,48	14,47	14,47	14,45	14,44	14,41	14,39	14,38	14,37	14,35	14,34	14,32	14,34						14,37	14,34	FAAM BATTERY,TYPE FTG 12-120 Ah
20	13,52	14,50	14,46	14,44	14,40	14,35	14,33	14,33	14,33	14,31	14,30	14,30	14,31	14,31	14,33	14,35	14,34	14,32						14,31	14,35	FAAM BATTERY,TYPE FTG 12-120 Ah
21	13,45	14,17	14,15	14,14	14,12	14,12	14,12	14,14	14,14	14,14	14,14	14,17	14,15	14,16	14,24	14,30	14,24	14,32						14,16	14,30	FAAM BATTERY,TYPE FTG 12-120 Ah
22	13,57	14,58	14,58	14,56	14,51	14,49	14,47	14,46	14,44	14,43	14,40	14,38	14,37	14,36	14,34	14,34	14,32	14,26						14,36	14,34	FAAM BATTERY,TYPE FTG 12-120 Ah
23	13,50	14,26	14,24	14,22	14,20	14,20	14,21	14,22	14,22	14,22	14,22	14,22	14,22	14,22	14,22	14,21	14,21	14,21						14,22	14,21	FAAM BATTERY,TYPE FTG 12-120 Ah
24	13,52	14,44	14,40	14,37	14,35	14,32	14,32	14,31	14,31	14,31	14,31	14,31	14,31	14,31	14,30	14,29	14,29	14,29						14,33	14,29	FAAM BATTERY,TYPE FTG 12-120 Ah
25	13,55	14,66	14,65	14,63	14,61	14,60	14,58	14,58	14,57	14,56	14,54	14,53	14,53	14,53	14,51	14,50	14,49	14,45						14,51	14,50	FAAM BATTERY,TYPE FTG 12-120 Ah
26	13,55	14,36	14,37	14,37	14,36	14,36	14,36	14,36	14,36	14,36	14,36	14,36	14,36	14,36	14,35	14,33	14,32	14,38						14,36	14,40	FAAM BATTERY,TYPE FTG 12-120 Ah
27	13,59	14,90	14,85	14,98	14,98	15,00	15,00	15,02	15,02	15,02	14,00	14,98	14,99	14,99	14,93	14,89	14,89	14,85						14,93	14,95	FAAM BATTERY,TYPE FTG 12-120 Ah
28	13,34	14,10	14,12	14,14	14,15	14,16	14,18	14,19	14,20	14,21	14,22	14,22	14,22	14,22	14,22	14,21	14,21	14,21						14,17	14,17	FAAM BATTERY,TYPE FTG 12-120 Ah
29	13,45	14,02	14,04	14,08	14,09	14,10	14,11	14,12	14,06	14,00	14,08	14,16	14,16	14,17	14,17	14,17	14,17	14,17						14,22	14,22	FAAM BATTERY,TYPE FTG 12-120 Ah
30	13,50	14,66	14,66	14,66	14,64	14,64	14,62	14,64	14,64	14,63	14,63	14,63	14,63	14,62	14,59	14,57	14,55	14,57						14,62	14,62	FAAM BATTERY,TYPE FTG 12-120 Ah
31	13,45	14,01	14,02	14,04	14,06	14,08	14,08	14,10	14,11	14,12	14,12	14,14	14,15	14,15	14,15	14,16	14,16	14,16						14,15	14,15	FAAM BATTERY,TYPE FTG 12-120 Ah
32	13,51	14,40	14,37	14,35	14,33	14,33	14,33	14,34	14,34	14,35	14,35	14,35	14,36	14,36	14,36	14,36	14,35	14,35						14,33	14,36	FAAM BATTERY,TYPE FTG 12-120 Ah
33	13,44	14,19	14,19	14,20	14,21	14,23	14,25	14,27	14,28	14,29	14,30	14,31	14,32	14,33	14,34	14,35	14,35	14,36						14,36	14,35	FAAM BATTERY,TYPE FTG 12-120 Ah
34	13,57	14,30	14,30	14,31	14,31	14,31	14,32	14,32	14,32	14,32	14,32	14,33	14,33	14,33	14,33	14,32	14,32	14,27						14,33	14,32	FAAM BATTERY,TYPE FTG 12-120 Ah
35	13,48	14,17	14,18	14,20	14,21	14,22	14,24	14,24	14,25	14,26	14,26	14,27	14,28	14,28	14,27	14,27	14,27	14,32						14,28	14,27	FAAM BATTERY,TYPE FTG 12-120 Ah
36	13,48	14,32	14,33	14,34	14,34	14,34	14,34	14,36	14,34	14,33	14,35	14,38	14,38	14,39	14,38	14,38	14,36	14,36						14,35	14,36	FAAM BATTERY,TYPE FTG 12-120 Ah
TERMINAL VOLT. n.19~n.36																										FAAM BATTERY,TYPE FTG 12-120 Ah
37	13,47	14,23	14,24	14,25	14,27	14,28	14,28	14,29	14,30	14,30	14,30	14,31	14,31	14,32	14,30	14,30	14,30	14,37						14,38	14,30	FAAM BATTERY,TYPE FTG 12-120 Ah
38	13,47	14,22	14,24	14,26	14,29	14,31	14,33	14,33	14,34	14,35	14,36	14,37	14,38	14,39	14,38	14,37	14,37	14,30						14,30	14,37	FAAM BATTERY,TYPE FTG 12-120 Ah
39	13,46	14,16	14,16	14,16	14,16	14,13	14,15	14,17	14,17	14,18	14,18	14,18	14,18	14,18	14,18	14,18	14,18	14,18						14,18	14,18	FAAM BATTERY,TYPE FTG 12-120 Ah
40	13,49	14,26	14,27	14,28	14,29	14,30	14,30	14,31	14,32	14,32	14,30	14,28	14,30	14,34	14,28	14,22	14,22	14,22						14,28	14,22	FAAM BATTERY,TYPE FTG 12-120 Ah
41	13,51	14,36	14,38	14,41	14,42	14,45	14,46	14,48	14,48	14,49	14,50	14,50	14,51	14,50	14,49	14,48	14,48	14,48						14,50	14,48	FAAM BATTERY,TYPE FTG 12-120 Ah
42	13,42	14,04	14,07	14,09	14,11	14,14	14,16	14,18	14,19	14,20	14,21	14,22	14,22	14,23	14,23	14,23	14,22	14,23						14,22	14,23	FAAM BATTERY,TYPE FTG 12-120 Ah
43	13,44	14,12	14,14	14,16	14,18	14,20	14,20	14,21	14,21	14,22	14,21	14,22	14,22	14,23	14,22	14,21	14,22	14,21						14,23	14,21	FAAM BATTERY,TYPE FTG 12-120 Ah
44	13,48	14,21	14,21	14,22	14,22	14,23	14,25	14,27	14,27	14,28	14,28	14,28	14,28	14,29	14,27	14,27	14,27	14,27						14,27	14,27	FAAM BATTERY,TYPE FTG 12-120 Ah
45	13,45	14,42	14,42	14,43	14,43	14,43	14,43	14,43	14,44	14,44	14,44	14,45	14,46	14,46	14,44	14,44	14,44	14,44						14,44	14,44	FAAM BATTERY,TYPE FTG 12-120 Ah
46	13,43	14,09	14,10	14,12	14,14	14,16	14,14	14,12	14,17	14,20	14,20	14,21	14,21	14,21	14,21	14,21	14,21	14,23						14,23	14,21	FAAM BATTERY,TYPE FTG 12-120 Ah
47	13,48	14,22	14,22	14,22	14,23	14,25	14,40	14,54	14,39	14,28	14,29	14,29	14,29	14,29	14,29	14,29	14,29	14,21						14,21	14,23	FAAM BATTERY,TYPE FTG 12-120 Ah
48	13,42	14,14	14,15	14,16	14,18	14,19	14,20	14,22	14,22	14,23	14,24	14,25	14,26	14,27	14,28	14,28	14,28	14,28						14,27	14,28	FAAM BATTERY,TYPE FTG 12-120 Ah
49	13,58	14,64	14,61	14,57	14,51	14,49	14,46	14,44	14,44	14,43	14,42	14,42	14,41	14,41	14,41	14,41	14,41	14,41						14,49	14,41	FAAM BATTERY,TYPE FTG 12-120 Ah
50	13,58	14,78	14,76	14,72	14,66	14,63	14,60	14,56	14,55	14,54	14,52	14,50	14,50	14,49	14,47	14,45	14,43	14,45						14,41	14,45	FAAM BATTERY,TYPE FTG 12-120 Ah
51	13,58	14,53	14,52	14,49	14,46	14,45	14,43	14,43	14,43	14,42	14,41	14,41	14,40	14,40	14,39	14,37	14,35	14,37						14,40	14,38	FAAM BATTERY,TYPE FTG 12-120 Ah
52	13,58	14,36	14,35	14,33	14,79	14,77	14,75	14,74	14,72	14,72	14,69	14,67	14,65	14,64	14,60	14,58	14,56	14,58						14,64	14,37	FAAM BATTERY,TYPE FTG 12-120 Ah
53	13,53	14,33	14,51	14,48	14,46	14,42	14,42	14,42	14,41	14,40	14,39	14,37	14,36	14,36	14,34	14,32	14,32	14,32						14,36	14,50	FAAM BATTERY,TYPE FTG 12-120 Ah
54	13,52	14,73	14,80	14,66	14,60	14,55	14,55	14,53	14,52	14,51	14,49	14,47	14,46	14,45	14,44	14,43	14,42	14,43						14,45	14,43	FAAM BATTERY,TYPE FTG 12-120 Ah
TERMINAL VOLT. n.37~n.54																										

ITEM	Tag	BA-200F4B-D	: UPS F&G - BA-200F4B-D			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10002833		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:	AEG	Serial N°:	NA	Type	FTG 12-120
Rated voltage	400V	Battery capacity (Ah):	120Ah	Number of cells	54
Rated autonomy (min)			600min		

Test type

Important notice:

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

Manufacturer:		Serial N°:	NA	Type	FTG 12-120
Test type: Charge	Discharge ●	Duration	10h	Time	START: 7:00 STOP: 17:00
CdNi	constant current	Current(A)	30.4/36.2 A	Ambiant T°	NA
Pb ●	constant voltage	Volt/Cell	NA	Initial T° 24.3°	Final T° 24.8°

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:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-18	2024-11-18	2024-11-18
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-11-18T08:31:01.909Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-18T13:10:37.250Z	PROVERLIS Digitaly signed by Witness waived 2024-11-18T13:14:58.969Z

CROSSWIND

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA

UPS UP-200F4 [ANNEX 005]

SUBSYSTEM 84-20: BATTERY DISCHARGE RECORD SHEET

ROSETTI MARINO

	BATTERY 'B' RACK' UPS-BAT-1B														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
Time (hh:mm)	7:00	7:30	8:00	8:30	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
Discharge Power (W)	230.8	228.4	226.6	225.7	224.3	223.5	222.4	221.5	220.7	219.9	219.1	217.9	216.7	215.4	214.5	213.3	211.8	210.4	209.2	207.3	206.3
Discharge Current (A)	0	30.9	30.8	31.0	30.4	30.4	36.2	36.2	36.2	35.9	36.00	35.6	35.7	35.2	35.1	35.0	34.8	34.4	34.4	34.1	34.2
Ambient Temp. (°C)	24.3	23.8	23.5	23.8	24.1	24.5	24.6	24.6	24.5	24.5	24.3	24.4	25.2	25.2	25.0	24.8	24.8	24.8	24.7	24.7	24.8
Battery Cell Temp. (°C)	23.5	23.0	22.5	22.5	23.2	24.3	24.3	24.5	24.1	24.3	24.7	24.8	25.1	25.0	25.0	25.0	24.3	24.8	24.8	24.8	24.8

Note:

255W .....W

19,20A. .....A

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	13,20	12,87	12.60	12.54	12,46	12.43	12.36	12.31	12.27	12.21	12.17	12.11	12.04	11.98	11.91	11.86	11.78	11.70	11.64	11.54	11.43
2	13,21	12,87	12.61	12.55	12,47	12.43	12.37	12.32	12.28	12.22	12.18	12.11	12.05	11.98	11.92	11.87	11.77	11.70	11.64	11.53	11.49
3	13,18	12,82	12.58	12.52	12,44	12.41	12.34	12.28	12.25	12.19	12.14	12.09	12.02	11.96	11.90	11.84	11.76	11.68	11.61	11.51	11.46
4	13,18	12,88	12.58	12.52	12,44	12.41	12.34	12.28	12.25	12.19	12.15	12.08	12.02	11.96	11.89	11.83	11.74	11.65	11.63	11.46	11.39
5	13,12	12,93	12.60	12.55	12,47	12.42	12.36	12.31	12.27	12.21	12.17	12.11	12.04	11.97	11.92	11.86	11.77	11.68	11.58	11.52	11.48
6	13,12	12,87	12.62	12.55	12,48	12.44	12.37	12.33	12.28	12.23	12.19	12.13	12.06	11.99	11.94	11.87	11.80	11.73	11.66	11.56	11.52
7	13,20	12,95	12.60	12.53	12,46	12.42	12.36	12.31	12.26	12.21	12.17	12.11	12.05	11.98	11.93	11.87	11.79	11.71	11.65	11.55	11.50
8	13,18	12,93	12.58	12.52	12,44	12.40	12.34	12.28	12.25	12.20	12.16	12.09	12.03	11.96	11.91	11.84	11.75	11.68	11.61	11.50	11.45
9	13,18	12,84	12.61	12.52	12,45	12.41	12.34	12.30	12.25	12.20	12.16	12.10	12.07	11.96	11.90	11.85	11.76	11.69	11.62	11.52	11.47
10	13,23	12,88	12.58	12.54	12,46	12.43	12.37	12.32	12.28	12.22	12.18	12.12	12.04	11.99	11.94	11.81	11.78	11.71	11.64	11.54	11.49
11	13,18	12,96	12.60	12.52	12,45	12.41	12.34	12.30	12.25	12.20	12.15	12.08	12.03	11.96	11.91	11.85	11.76	11.69	11.62	11.52	11.47
12	13,20	12,92	12.58	12.52	12,45	12.41	12.35	12.30	12.26	12.21	12.16	12.10	12.05	11.97	11.92	11.86	11.77	11.70	11.63	11.53	11.48
13	13,13	12,98	12.57	12.51	12,44	12.41	12.35	12.30	12.26	12.21	12.17	12.11	12.06	11.98	11.93	11.86	11.78	11.70	11.64	11.54	11.49
14	13,16	12,89	12.53	12.48	12,47	12.42	12.35	12.27	12.27	12.17	12.13	12.06	12.02	11.92	11.83	11.87	11.70	11.61	11.53	11.38	11.28
15	13,20	12,93	12.62	12.56	12,49	12.45	12.38	12.30	12.29	12.24	12.20	12.13	12.07	11.95	11.89	11.81	11.77	11.72	11.67	11.56	11.52
16	13,21	12,84	12.63	12.57	12,50	12.46	12.40	12.35	12.31	12.25	12.21	12.15	12.08	12.02	11.98	11.91	11.83	11.75	11.69	11.59	11.54
17	13,21	12,91	12.60	12.54	12,48	12.46	12.40	12.34	12.30	12.25	12.21	12.15	12.07	12.03	11.99	11.92	11.83	11.77	11.71	11.62	11.58
18	13,08	12,86	12.48	12.43	12,41	12.34	12.27	12.21	12.17	12.10	12.06	12.00	11.92	11.85	11.80	11.72	11.61	11.52	11.43	11.25	11.15
19	13,13	12,87	12.53	12.47	12,41	12.37	12.30	12.25	12.20	12.21	12.17	12.03	11.96	11.90	11.86	11.77	11.68	11.58	11.50	11.36	11.29
20	13,21	12,88	12.53	12.53	12,45	12.41	12.35	12.30	12.26	12.21	12.17	12.09	12.02	11.96	11.90	11.84	11.75	11.67	11.60	11.48	11.43
21	13,18	12,88	12.56	12.51	12,43	12.33	12.33	12.28	12.23	12.22	12.18	12.07	11.98	11.94	11.90	11.82	11.73	11.65	11.58	11.46	11.41
22	13,18	12,88	12.56	12.50	12,43	12.33	12.33	12.28	12.23	12.21	12.16	12.07	12.00	11.93	11.88	11.81	11.72	11.64	11.56	11.44	11.37
23	13,17	12,87	12.55	12.49	12,42	12.38	12.32	12.27	12.23	12.22	12.18	12.06	11.98	11.93	11.89	11.81	11.70	11.64	11.57	11.45	11.40
24	13,18	12,88	12.58	12.53	12,45	12.42	12.35	12.31	12.27	12.22	12.17	12.11	12.04	11.98	11.92	11.87	11.78	11.71	11.64	11.54	11.43
25	13,21	12,88	12.58	12.52	12,45	12.42	12.35	12.30	12.26	12.22	12.18	12.10	12.03	11.97	11.91	11.86	11.77	11.70	11.62	11.52	11.46
26	13,22	12,88	12.53	12.51	12,45	12.42	12.35	12.30	12.26	12.23	12.19	12.10	12.03	11.97	11.92	11.85	11.77	11.68	11.62	11.51	11.46
27	13,22	12,89	12.59	12.52	12,46	12.43	12.36	12.32	12.23	12.18	12.14	12.12	12.03	11.93	11.95	11.86	11.73	11.72	11.65	11.55	11.50
28	13,18	12,90	12.58	12.50	12,43	12.33	12.33	12.32	12.23	12.20	12.15	12.11	12.05	11.94	11.89	11.87	11.74	11.65	11.59	11.48	11.42
29	13,20	12,90	12.59	12.54	12,47	12.43	12.36	12.31	12.27	12.17	12.12	12.10	12.04	11.97	11.91	11.85	11.76	11.68	11.62	11.51	11.45
30	13,17	12,88	12.57	12.52	12,46	12.42	12.36	12.31	12.27	12.18	12.15	12.11	12.04	11.98	11.92	11.86	11.78	11.70	11.64	11.53	11.49
31	13,21	12,90	12.59	12.54	12,47	12.43	12.37	12.32	12.27	12.18	12.15	12.12	12.04	11.99	11.93	11.87	11.78	11.70	11.64	11.53	11.48
32	13,18	12,88	12.58	12.53	12,46	12.43	12.36	12.31	12.27	12.21	12.16	12.11	12.04	11.98	11.92	11.86	11.78	11.70	11.64	11.53	11.48
33	13,18	12,88	12.59	12.53	12,47	12.43	12.37	12.32	12.26	12.20	12.16	12.12	12.05	11.99	11.94	11.88	11.79	11.72	11.65	11.55	11.50
34	13,20	12,87	12.59	12.53	12,47	12.42	12.37	12.32	12.28	12.21	12.17	12.12	12.06	11.99	11.94	11.87	11.79	11.71	11.65	11.54	11.49
35	13,18	12,87	12.58	12.52	12,46	12.43	12.36	12.32	12.28	12.22	12.18	12.12	12.05	11.98	11.93	11.88	11.80	11.72	11.66	11.55	11.51
36	13,21	12,88	12.58	12.55	12,48	12.45	12.37	12.33	12.30	12.23	12.19	12.13	12.07	12.02	11.98	11.91	11.81	11.74	11.67	11.58	11.53
37	13,20	12,88	12.59	12.52	12,47	12.43	12.37	12.32	12.28	12.22	12.18	12.12	12.04	11.99	11.95	11.87	11.79	11.71	11.64	11.54	11.49
38	13,21	12,87	12.49	12.54	12,48	12.44	12.36	12.33	12.05	12.23	12.18	12.13	12.06	11.99	11.94	11.89	11.80	11.73	11.66	11.56	11.51
39	13,14	12,90	12.51	12.45	12,39	12.35	12.28	12.23	12.18	12.12	12.08	12.01	11.93	11.84	11.80	11.73	11.62	11.52	11.43	11.25	11.15
40	13,22	12,90	12.60	12.55	12,48	12.44	12.38	12.33	12.26	12.23	12.18	12.12	12.05	11.99	11.95	11.86	11.80	11.72	11.66	11.55	11.50
41	13,21	12,91	12.60	12.56	12,47	12.45	12.38	12.33	12.28	12.23	12.18	12.12	12.06	12.01	11.96	11.89	11.81	11.74	11.67	11.57	11.53
42	13,18	12,89	12.58	12.53	12,46	12.42	12.35	12.30	12.26	12.20	12.15	12.10	12.03	11.97	11.92	11.85	11.76	11.68	11.62	11.51	11.46
43	13,19	12,88	12.57	12.52	12,45	12.41	12.34	12.30	12.25	12.20	12.16	12.09	12.02	11.96	11.90	11.85	11.76	11.68	11.61	11.50	11.45
44	13,20	12,88	12.57	12.51	12,45	12.41	12.35	12.30	12.25	12.20	12.16	12.08	12.02	11.96	11.91	11.85	11.77	11.68	11.56	11.51	11.46
45	13,15	12,87	12.54	12.48	12,42	12.38	12.32	12.27	12.23	12.17	12.13	12.07	12.01	11.94	11.89	11.82	11.74	11.66	11.59	11.48	11.43
46	13,19	12,88	12.57	12.52	12,45	12.41	12.34	12.29	12.25	12.19	12.15	12.09	12.04	11.96	11.90	11.84	11.75	11.67	11.60	11.49	11.44
47	13,20	12,88	12.53	12.54	12,47	12.43	12.37	12.33	12.28	12.22	12.17	12.12	12.06	11.99	11.95	11.87	11.79	11.70	11.64	11.54	11.49
48	13,15	12,87	12.53	12.48	12,42	12.38	12.31	12.26	12.22	12.16	12.11	12.06	11.98	11.93	11.88	11.81	11.72	11.64	11.57	11.46	11.40
49	13,21	12,87	12.55	12.53	12,47	12.41	12.37	12.32	12.28	12.22	12.18	12.12	12.02	11.98	11.93	11.87	11.78	11.71	11.65	11.54	11.48
50	13,21	12,89	12.58	12.52	12,45	12.42	12.35	12.31	12.28	12.21	12.17	12.11	12.03	11.98	11.92	11.86	11.78	11.70	11.64	11.52	11.49
51	13,23	12,88	12.53	12.52	12,45	12.41	12.35	12.30	12.27	12.20	12.15	12.10	12.02	11.96	11.91	11.85	11.76	11.68	11.61	11.50	11.45
52	13,20	12,88	12.57	12.51	12,44	12.40	12.34	12.30	12.27	12.20	12.16	12.08	12.02	11.96	11.90	11.84	11.75	11.67	11.60	11.48	11.44
53	13,20	12,86	12.56	12.50	12,43	12.43	12.33	12.29	12.26	12.19	12.14	12.08	12.04	11.95	11.91	11.83	11.75	11.67	11.60	11.48	11.44
54	13,21	12,87	12.58	12.53	12,46	12.42	12.36	12.31	12.29	12.22	12.18	12.11	12.04	11.98	11.92	11.87	11.79	11.72	11.65	11.55	11.50

15/11/2024

NOME: DAVIDE ZUCCONELLI FIRMA:

ITEM	Tag	BA-200F4B	: Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	Dwg	123A90-DDL-EL-DS-20032		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module	LD_B-300		
TASK	code	C10002834	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	FTG 12-120
Rated voltage	400V	Battery capacity (Ah):	120	Number of cells	54
Rated autonomy (min):	600				

Battery autonomy test			
Floating battery voltage:	2.27 V	Test load (kW):	7 kW

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

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	3 x 18 x FTR 12-120	Measured	11.15

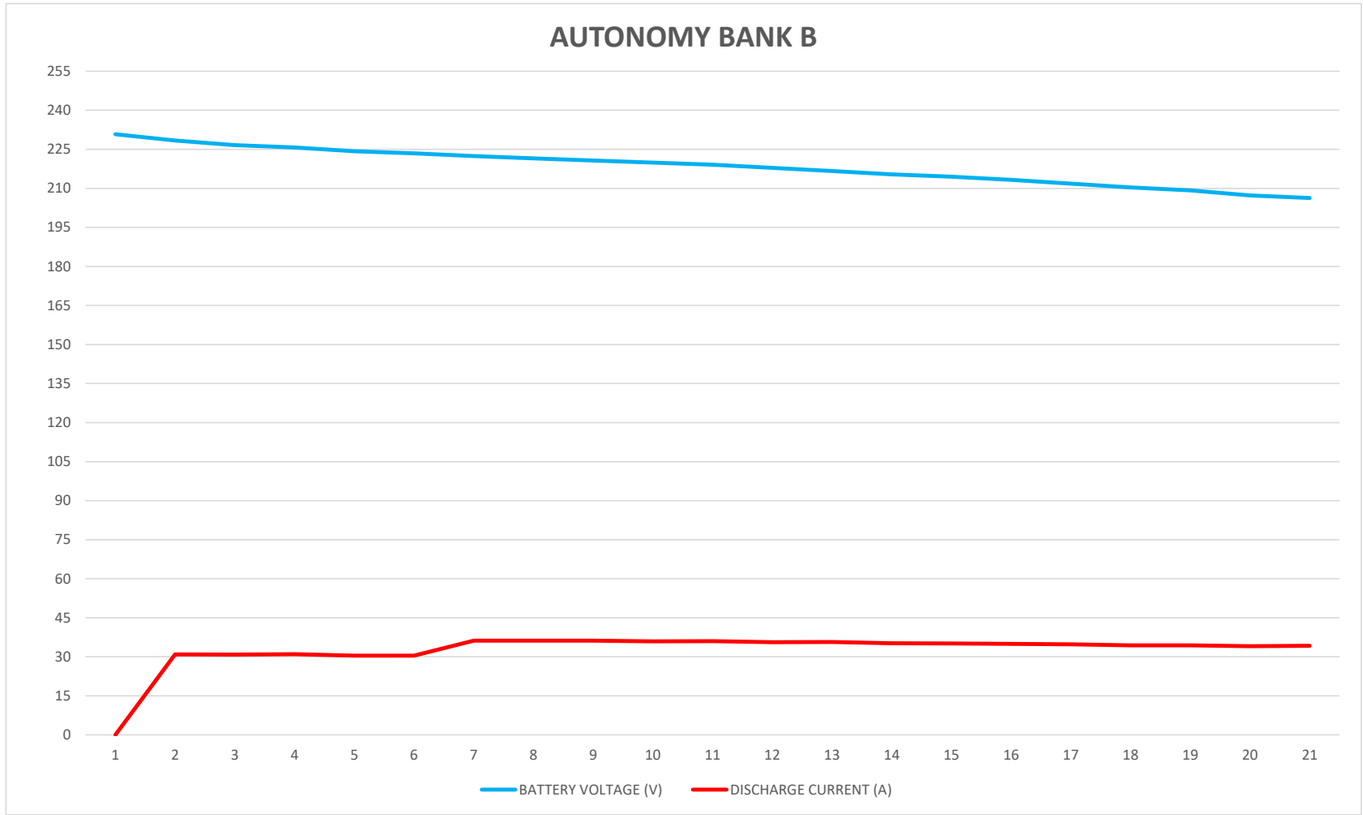
Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 175	17140769	7715/24	10-07-2025
LOAD BANK MAREL XP250.250	517		

Comments: NOTE: See attchment for full easures

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	2024-11-18	2024-11-19	2024-11-19
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-18T13:26:39.635Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-19T07:29:09.221Z	PROVERLIS Digitaly signed by Witness waived 2024-11-19T08:01:43.966Z

	TIME	BATTERY VOLTAGE (V)	DISCHARGE CURRENT (A)
1	07:00	230,8	0
2	07:30	228,4	30,9
3	08:00	226,6	30,8
4	08:30	225,7	31
5	09:00	224,3	30,4
6	09:30	223,5	30,4
7	10:00	222,4	36,2
8	10:30	221,5	36,2
9	11:00	220,7	36,2
10	11:30	219,9	35,9
11	12:00	219,1	36
12	12:30	217,9	35,6
13	13:00	216,7	35,7
14	13:30	215,4	35,2
15	14:00	214,5	35,1
16	14:30	213,3	35
17	15:00	211,8	34,8
18	15:30	210,4	34,4
19	16:00	209,2	34,4
20	16:30	207,3	34,1
21	17:00	206,3	34,2



Target discharge rate in Amperes to 1,8 Vpc at 20°C = 36A

The result is OK and for every cell battery the minimum Vpc registered is 1,86V > 1,8V

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A2/+04-QF1	: DRAWER UPS F&G - BYPASS - A2/+04-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10003009		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°:	A2/+05

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 2025-04-22T09:03:03.093Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-22T14:37:08.483Z	PROVERLIS Digitaly signed by Jamie McAllister 2025-04-22T15:11:43.286Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A6/+05-QF1	: DRAWER UPS F&G - LINE A - A6/+05-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module			
TASK	code	C10003010	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°:	A6/+05

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 2025-04-22T09:04:28.983Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-22T14:37:52.181Z	PROVERLIS Digitaly signed by Jamie McAllister 2025-04-22T15:12:14.769Z

ITEM	Tag	A6/+06-QF1	: DRAWER UPS F&G - LINE B - A6/+06-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10003011		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°:	A6/+06

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 2025-04-22T09:05:05.782Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-22T14:38:37.478Z	PROVERLIS Digitaly signed by Jamie McAllister 2025-04-22T15:13:05.370Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	UP-200F4-QF33	: SPARE			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10004589		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:	TYPE A
Auxiliary supply:	NA	Location:	B300	Cubicle:	QF33
Switchboard:	UP-200F4				

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
64	300mA	300mA	210mA	FIXED	36.2ms

Testing & measurement instruments used

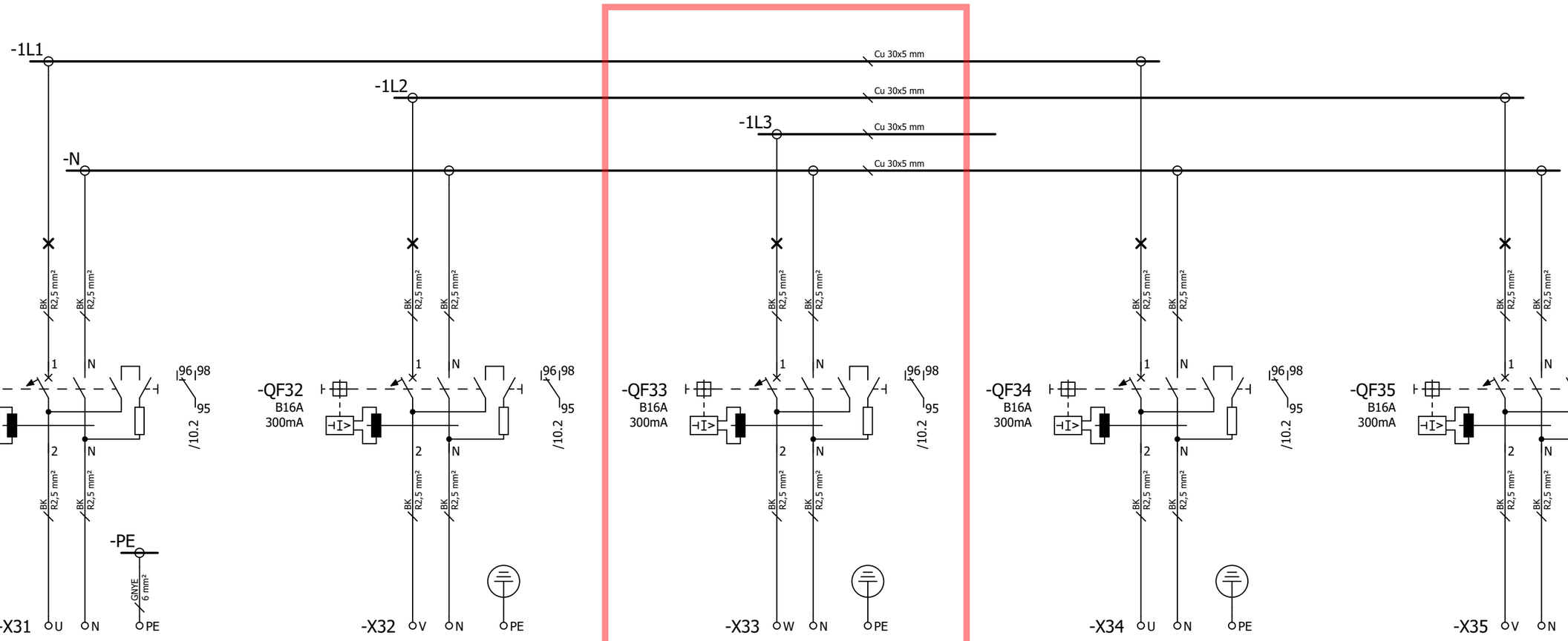
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

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	2024-11-13	2024-11-14	2024-11-14
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-13T09:37:30.503Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-14T08:18:32.874Z	PROVERLIS Digitaly signed by Witness waived 2024-11-14T08:41:15.334Z

CAE EPLAN Electric P8

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Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE A
2KW

Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE B
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

1000007888_080

				Date	28.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

1000007888.090
10009760

1000007888_080 en

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+ MBC1
& EFS

A3

sheet 7
sheets 11

ITEM	Tag	UP-200F4-QF34	: SPARE			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10004590		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:	B300	Cubicle:	NA
Switchboard:	UP-200F4				

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
64	300mA	300mA	270mA	FIXED	36.4ms

Testing & measurement instruments used

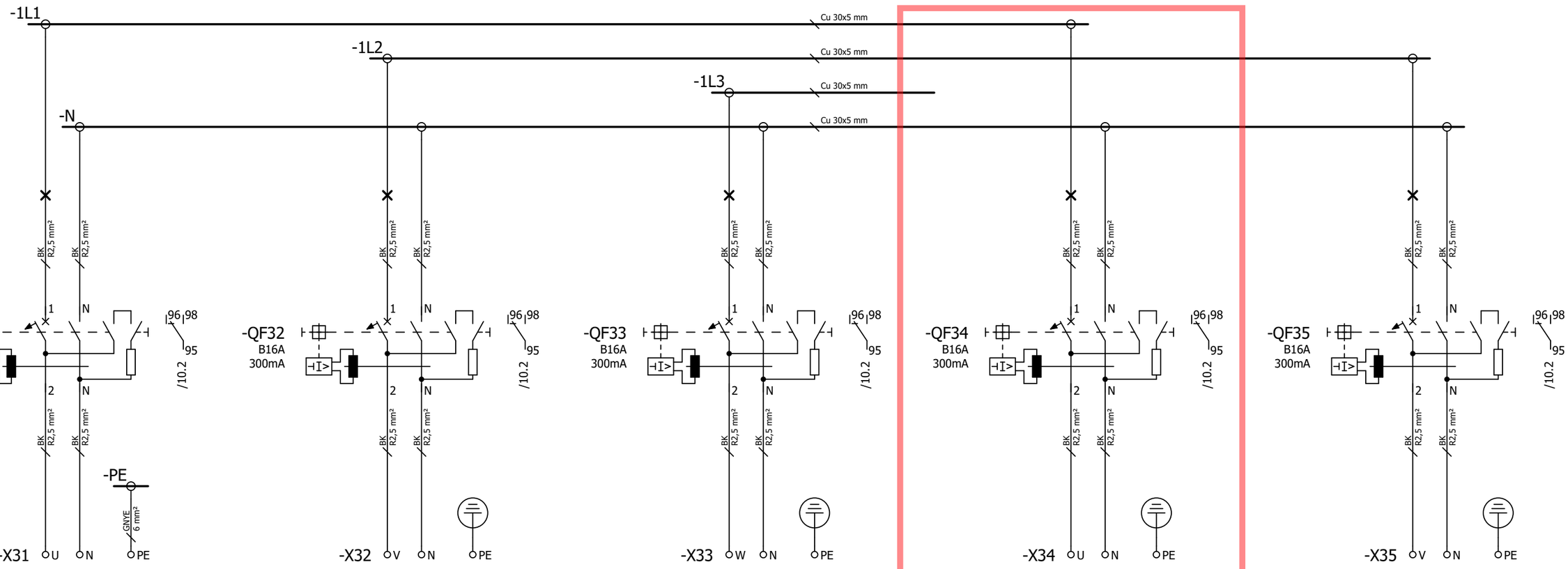
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-13	2024-11-14	2024-11-14
Signature	Digitaly signed by Davide Zucconelli 2024-11-13T10:21:38.665Z	Digitaly signed by Kristian Castellani 2024-11-14T08:19:28.599Z	Digitaly signed by Witness waived 2024-11-14T08:41:33.997Z

CAE EPLAN Electric P8

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Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE A
2KW

Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE B
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

1000007888_080

				Date	28.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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10009760

1000007888_080 en

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+ MBC1
& EFS

A3

sheet 7
sheets 11

ITEM	Tag	UP-200F4-QF35	: SPARE			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10004591		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:	B300	Cubicle:	NA
Switchboard:	UP-200F4				

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
64	300mA	300mA	210mA	FIXED	57.8ms

Testing & measurement instruments used

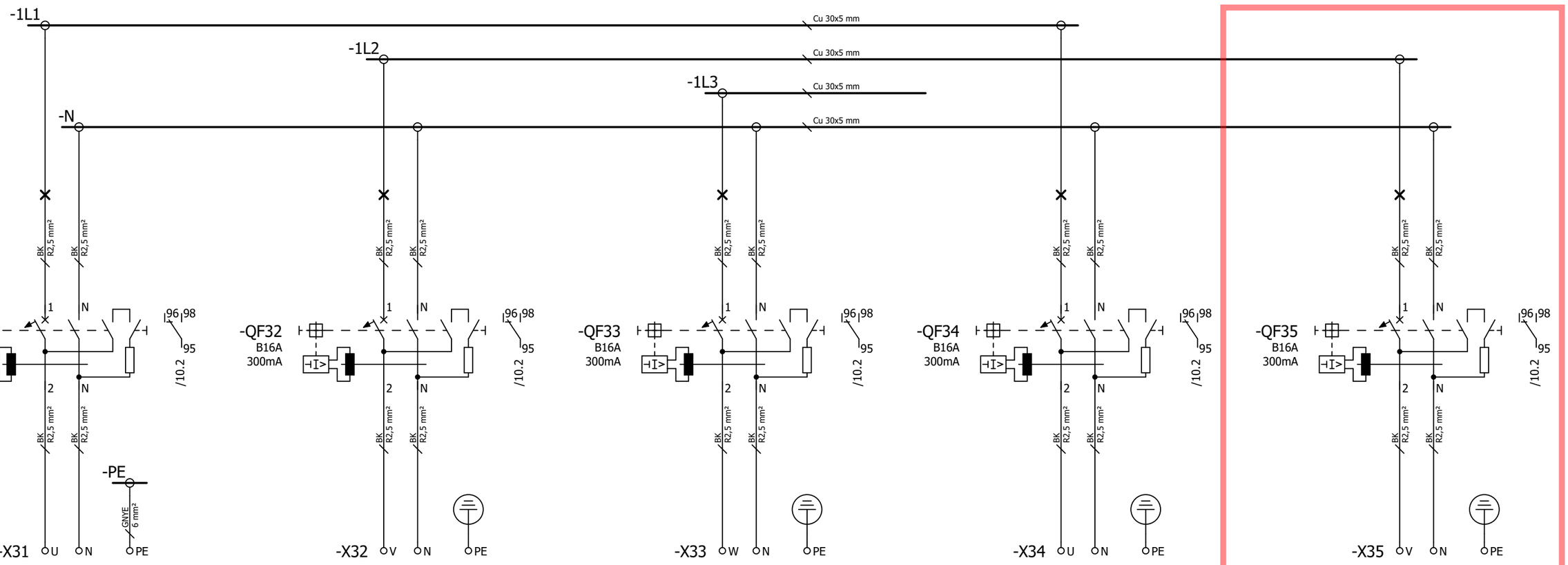
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-13	2024-11-14	2024-11-14
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-11-13T10:24:22.336Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-14T08:20:24.374Z	PROVERLIS Digitaly signed by Witness waived 2024-11-14T08:41:55.637Z

CAE EPLAN Electric P8

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Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE A
2KW

Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE B
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

1000007888_080

				Date	28.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

1000007888.090
10009760

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=
+ MBC1
& EFS

A3

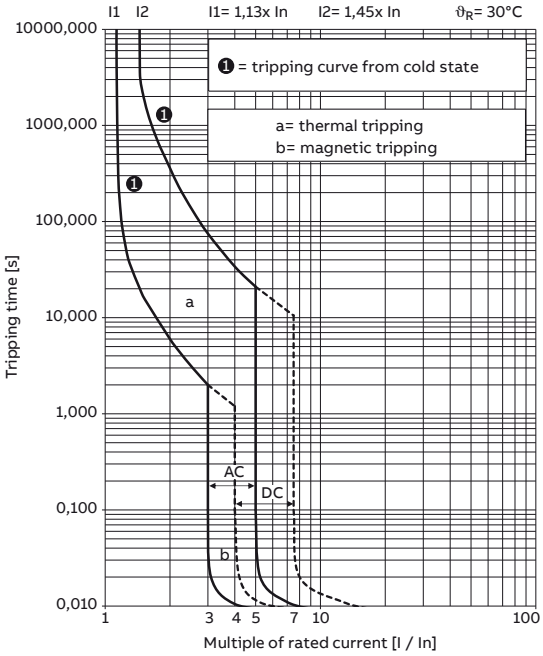
sheet 7
sheets 11

Miniature Circuit breakers S300P

Tripping characteristics

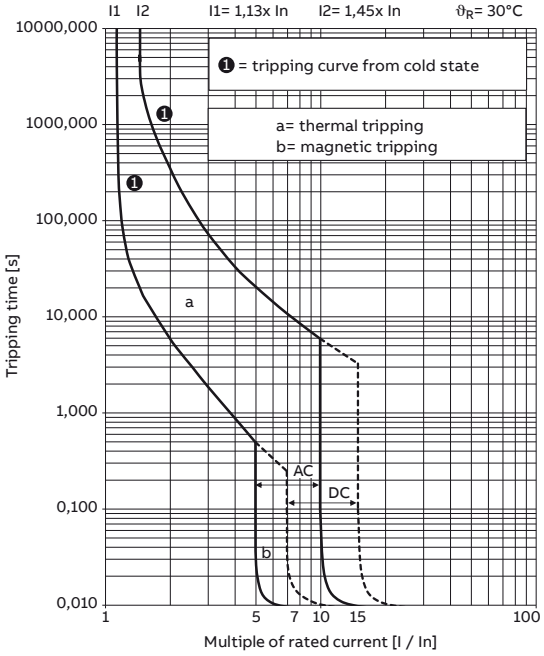
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



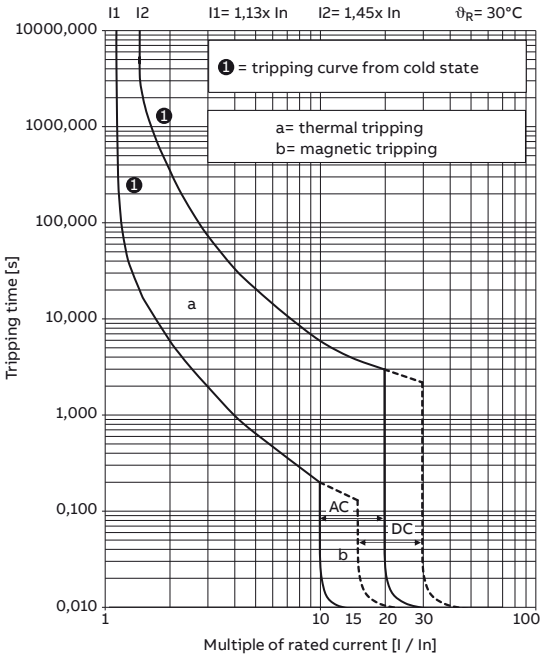
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



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

Tripping Characteristic IEC/EN 60898-1



ITEM	Tag	UP-200F4-QF38	: SPARE			Dwg	1724000372-EL-DG-00009
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10004594		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:	B300	Cubicle:	NA
Switchboard:	UP-200F4				

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	10A	NA	NA	FIXED	NA

Testing & measurement instruments used

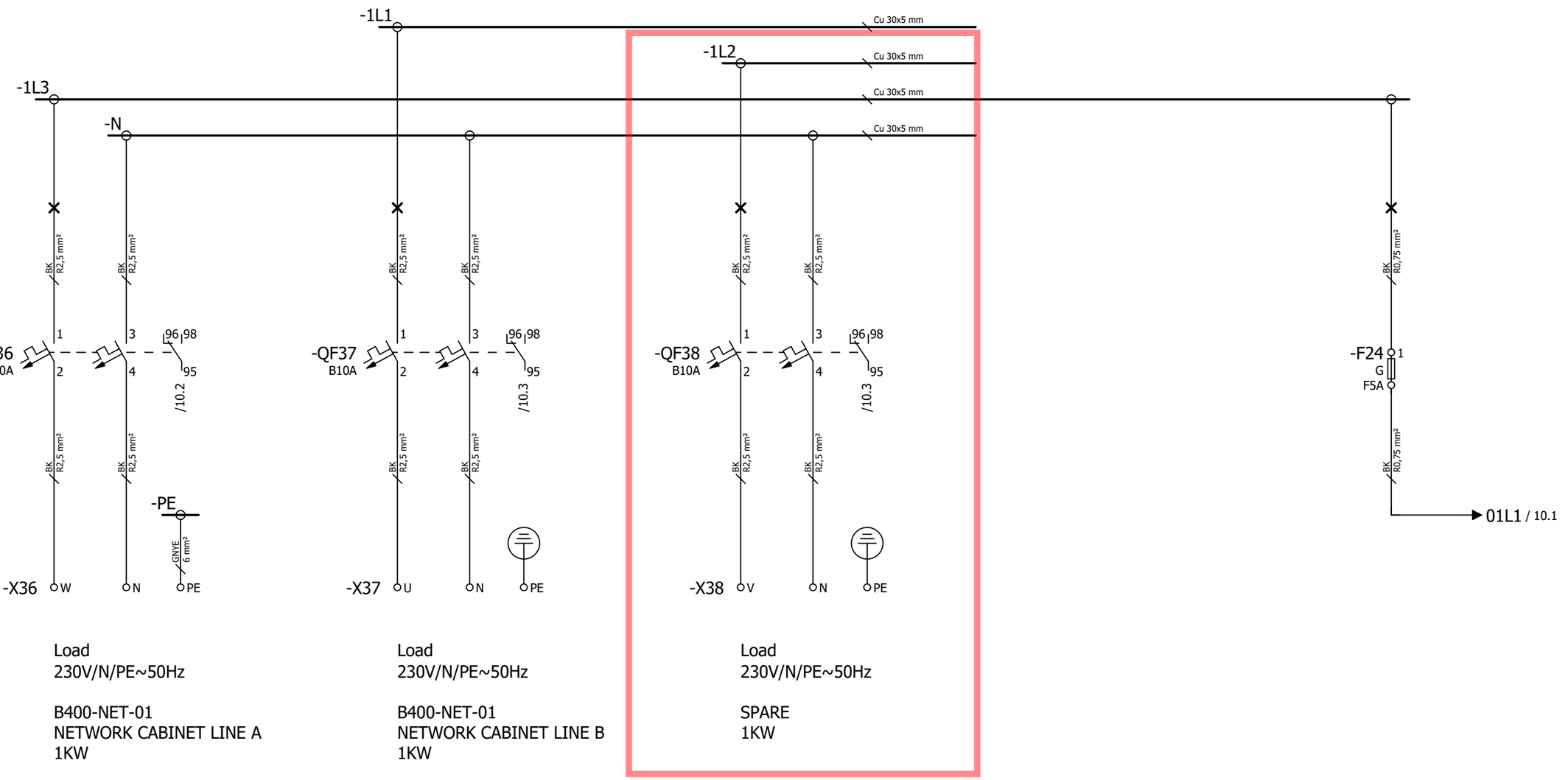
Type	Serial n°	Calibration certificate	Validity
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-13	2024-11-14	2024-11-14
Signature	Digitaly signed by Davide Zucconelli 2024-11-13T10:26:34.736Z	Digitaly signed by Kristian Castellani 2024-11-14T08:23:27.989Z	Digitaly signed by Witness waived 2024-11-14T08:43:04.944Z

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Load
230V/N/PE~50Hz

B400-NET-01
NETWORK CABINET LINE A
1KW

Load
230V/N/PE~50Hz

B400-NET-01
NETWORK CABINET LINE B
1KW

Load
230V/N/PE~50Hz

SPARE
1KW

1000007888_080

				Date	28.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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10009760

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+ MBC1
& EFS

A3

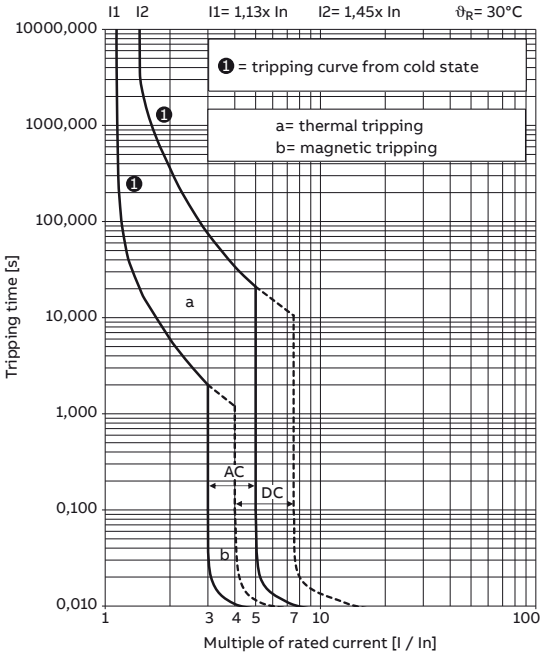
sheet 8
sheets 11

Miniature Circuit breakers S300P

Tripping characteristics

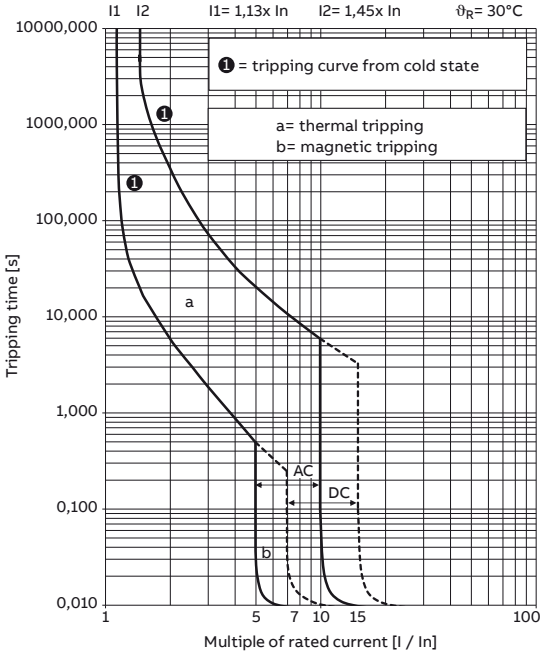
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



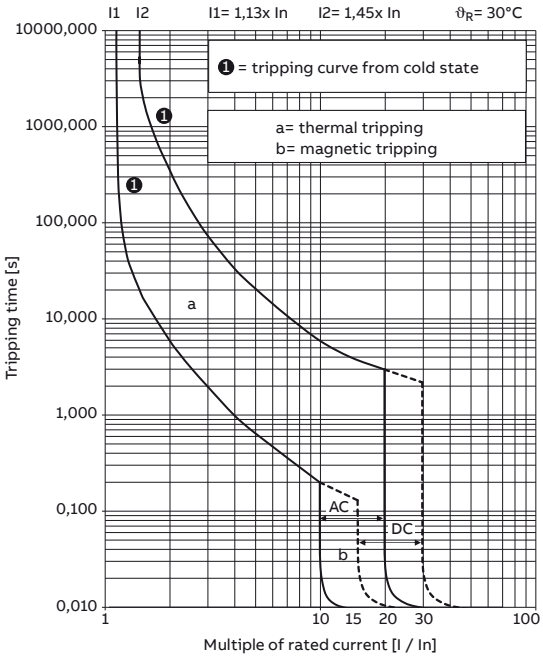
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



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

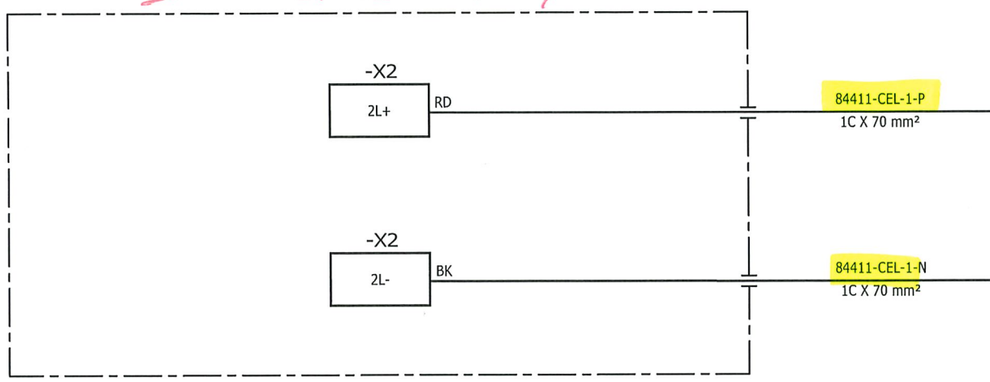
Tripping Characteristic IEC/EN 60898-1



Section 4.2 Electrical
“As-Commissioned” interconnection diagrams

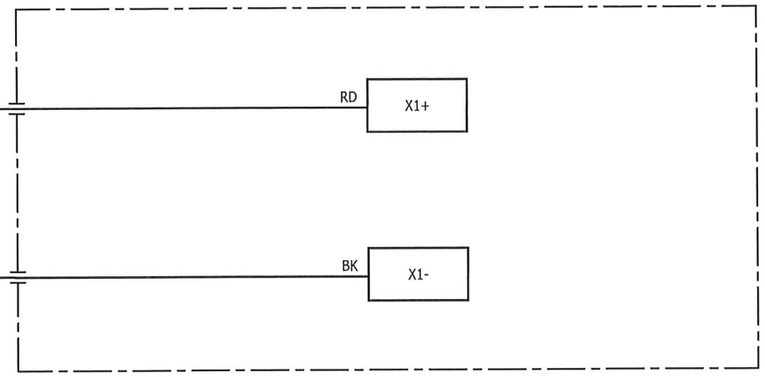
FROM	TO

DESCRIPTION: AC UPS F&G - CHARGER-A
TAG NUMBER: ~~BC-200F4A~~ UP-200 FA BY PASS

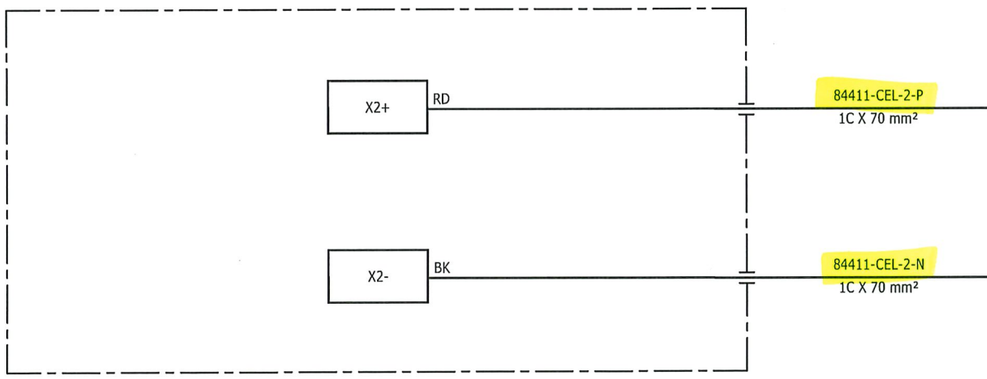


MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS F&G - BATTERY ISOLATOR-A
TAG NUMBER: CB-200F4A

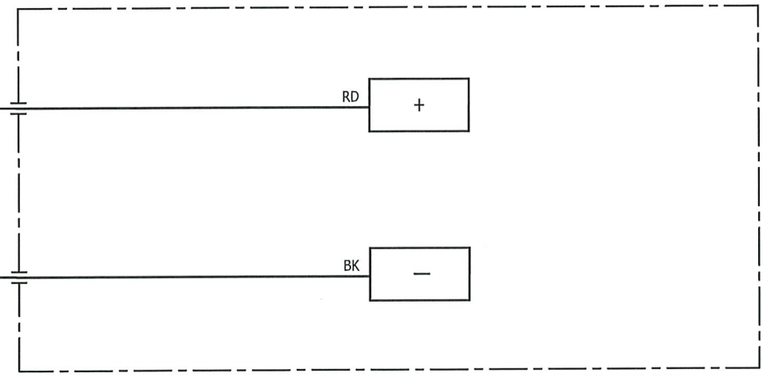


DESCRIPTION: AC UPS F&G - BATTERY ISOLATOR-A
TAG NUMBER: CB-200F4A



NO MARK UP
MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS F&G - BATTERY-A
TAG NUMBER: BA-200F4A



AS COMMISSIONED: MATIA GIOTO

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
AC UPS F&G – CHARGER-A & BATTERY ISOLATOR-A

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

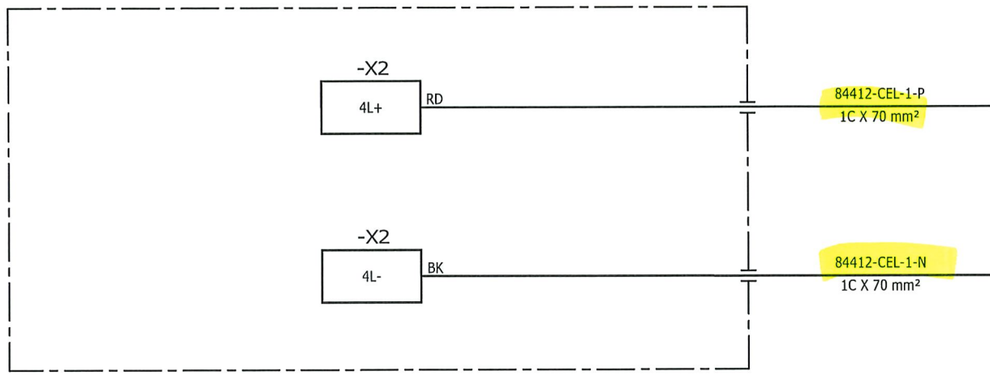
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F.to UNI A3: 420mmx297mm

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

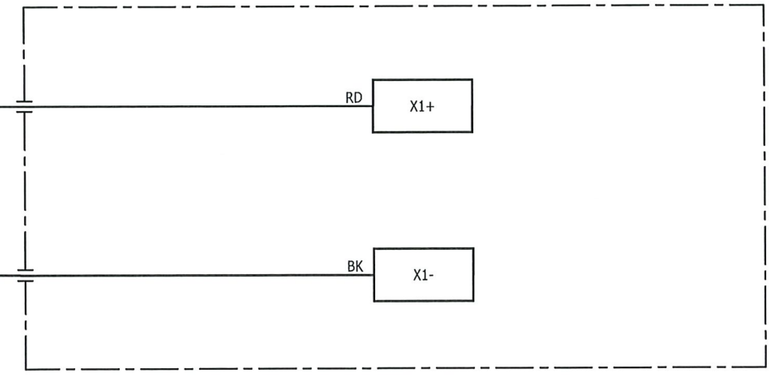
FROM	TO

DESCRIPTION: AC UPS F&G - CHARGER-B
TAG NUMBER: ~~BC-200F4B~~ UP-200 F4 BY PASS

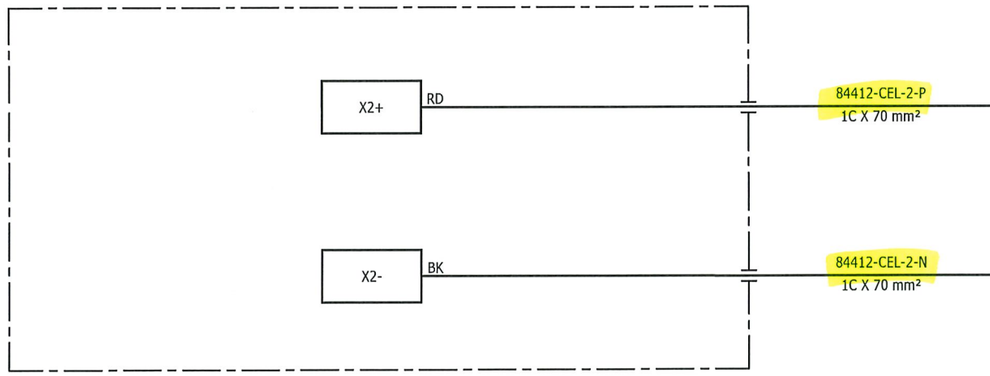


MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS F&G - BATTERY ISOLATOR-B
TAG NUMBER: CB-200F4B

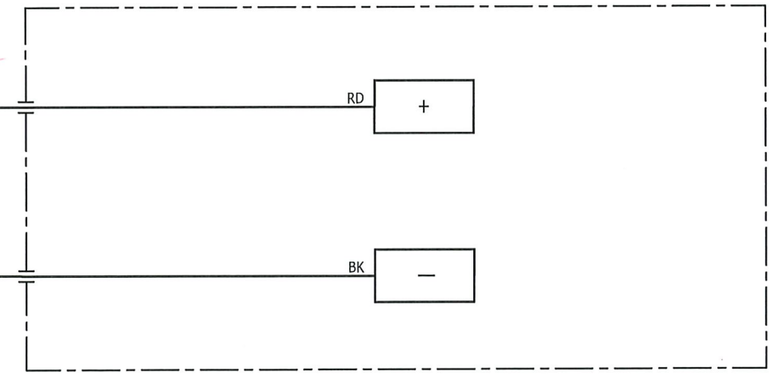


DESCRIPTION: AC UPS F&G - BATTERY ISOLATOR-B
TAG NUMBER: CB-200F4B



NO MARK UP
20/3/25

DESCRIPTION: AC UPS F&G - BATTERY-B
TAG NUMBER: BA-200F4B



AS COMMISSIONED: MATTIA GIRTZ

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
AC UPS F&G – CHARGER-B & BATTERY ISOLATOR-B

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

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	123A90-DDL-EL-DG-20149	064	02

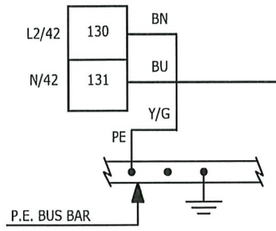
F.to UNI A3: 420mmx297mm

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

FROM	TO

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

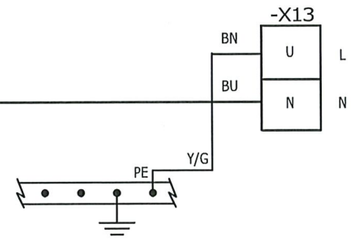
CUBICLE/CB: +03/Q42



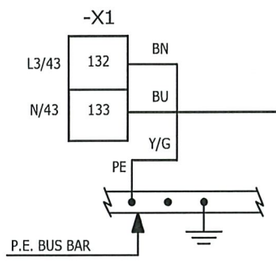
83123-CEL
3G2.5 mm²

MARCO MORETTO
20/3/25

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



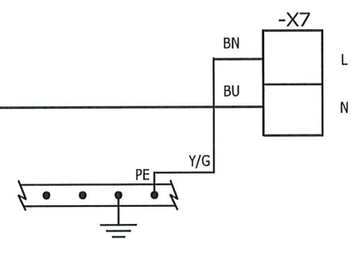
CUBICLE/CB: +03/Q43



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

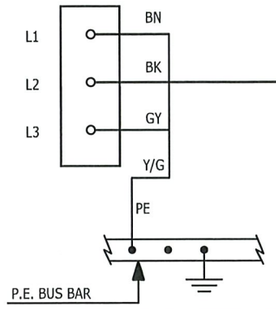
F.to UNI A3: 420mmx297mm

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

FROM	TO

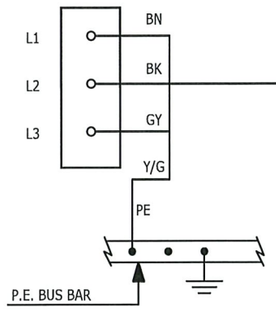
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TAG NUMBER: SG-200N1

COLUMN/CUBIC.: A2/+04



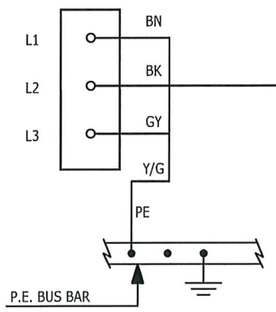
83033-CEL
4G35 mm²

COLUMN/CUBIC.: A7/+03



83034-CEL
4G16 mm²

COLUMN/CUBIC.: A7/+04



83035-CEL
4G16 mm²

AS COMMISSIONED: MATTIA GIROTTI

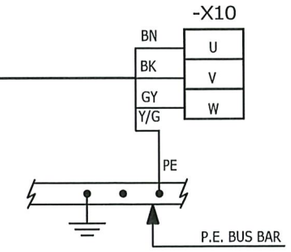
MARCO MORETTO 20/3/25

MARCO MORETTO 19/3/25

MARCO MORETTO 19/3/25

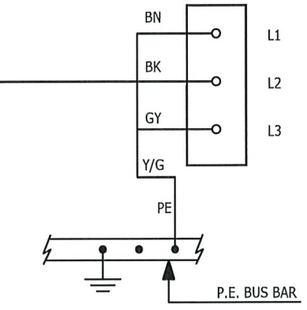
DESCRIPTION: AC UPS F&G - 8H - BYPASS
TAG NUMBER: UP-200F4 BY PASS

PANEL:.BYPASS



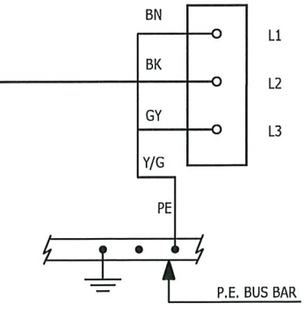
DESCRIPTION: DC BATTERY SYSTEM - SWITCHGEAR CONTROL - FEEDER A
TAG NUMBER: UP-200F1 A

PANEL:.CHARGER-1



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

PANEL:.CHARGER-2



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

A3	DRAWING NO.	SHEET	REV.
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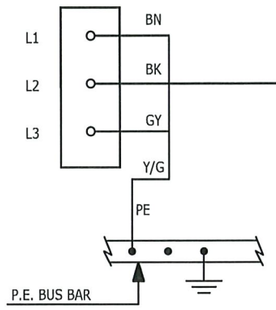
F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: LV SWITCHGEAR
TAG NUMBER: SG-200N1

COLUMN/CUBIC.: A7/+02

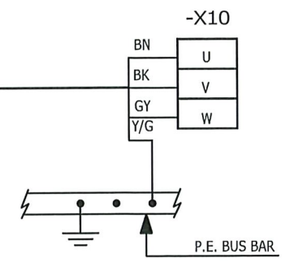


83030-CEL
4G35 mm²

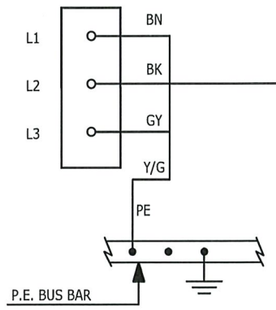
MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS PAS - 30MIN - BYPASS
TAG NUMBER: UP-200F3 BY PASS

PANEL:.BYPASS



COLUMN/CUBIC.: A6/+05

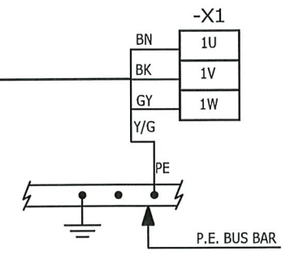


83031-CEL
4G35 mm²

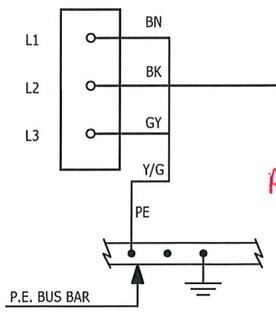
MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS F&G - 8H - LINE A
TAG NUMBER: UP-200F4 BY PASS

PANEL:.UPS1



COLUMN/CUBIC.: A6/+06



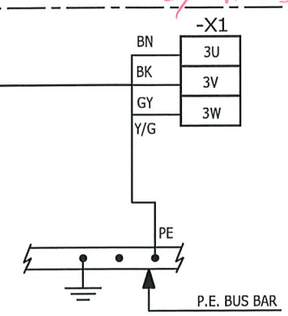
83032-CEL
4G35 mm²

AS COMMISSIONED: NATWA GIRL

MARCO MORETTO
20/3/25

DESCRIPTION: AC UPS F&G - 8H - LINE B
TAG NUMBER: UP-200F4 BY PASS

PANEL:.UPS2



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

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DG-20149	028	02

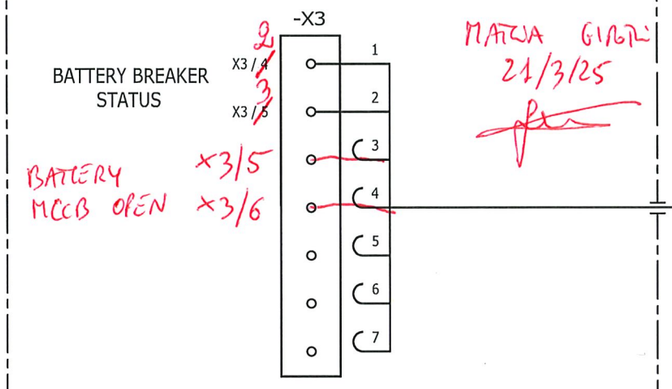
F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: AC UPS F&G - BATTERY ISOLATOR-B
TAG NUMBER: CB-200F4B

COLUMN: -



MATTIA GIBTI
21/3/25

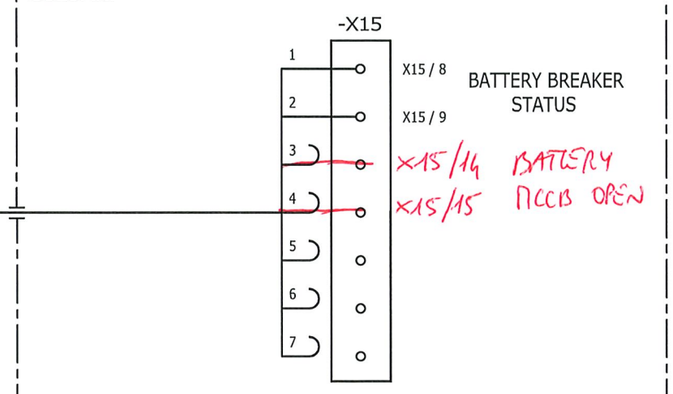
BK

84411-CEC
7C X 1.5 mm²

BK

DESCRIPTION: AC UPS F&G - CHARGER-B
TAG NUMBER: ~~BC-200F4B~~ UP-200FG BY PASS

COLUMN: -



AS COMMISSIONED: MATTIA GIBTI
01/4/25

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

REV.:	DATE:	SIGNATURE:
2_L	13/03/25	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 091

REV. 02

F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: AC UPS PAS - BATTERY ISOLATOR-B
TAG NUMBER: CB-200F3B

COLUMN: -

-X3

BATTERY BREAKER STATUS

X3 / 4
X3 / 5

1
2
3
4
5
6
7

MARCO MORETTO
20/3/25

BATTERY MCCB OPEN
X3/3
X3/5
X3/6

BK

84331-CEC
7C X 1.5 mm²

BK

DESCRIPTION: AC UPS PAS - CHARGER-B
TAG NUMBER: ~~BC-200F3B~~ UP-200F3 BY PASS

COLUMN: -

-X15

1
2
3
4
5
6
7

X15 / 8
X15 / 9

BATTERY BREAKER STATUS

X15/14 BATTERY
X15/15 MCCB OPEN

DESCRIPTION: AC UPS F&G - BATTERY ISOLATOR-A
TAG NUMBER: CB-200F4A

COLUMN: -

-X3

BATTERY BREAKER STATUS

X3 / 1
X3 / 3

1
2
3
4
5
6
7

MARCO MORETTO
20/3/25

BATTERY MCCB OPEN
X3/5
X3/6

BK

84410-CEC
7C X 1.5 mm²

BK

AS COMMISSIONED: NATALIA GIROTTI

DESCRIPTION: AC UPS F&G - CHARGER-A
TAG NUMBER: ~~BC-200F4A~~ UP-200 F4 BY PASS

COLUMN: -

-X15

1
2
3
4
5
6
7

X15 / 4
X15 / 5

BATTERY BREAKER STATUS

X15/10 BATTERY
X15/11 MCCB OPEN

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 090 | REV. 02

F.to UNI A3: 420mmx297mm

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: 84-20 & discipline : I

Instrumental	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
84-XS-008A	DISCONNECT AC UPS UP-200F4 BATTERIES A	ONSHORE	C10003815	FJ01D	100	2025-01-28	RFO 2
84-XS-008B	DISCONNECT AC UPS UP-200F4 BATTERIES B	ONSHORE	C10003814	FJ01D	100	2025-01-28	RFO 2
84-XS-011	INHIBIT. BATTERY CHARGING AC UPS UP-200F4 BATTERIES	ONSHORE	C10003811	FJ01D	100	2025-01-28	RFO 2

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	84-XS-011	: INHIBIT. BATTERY CHARGING AC UPS UP-200F4 BATTERIES			Dwg	123A90-DDL-IN-LIS-40089
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10003811		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-011					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	08A/08B	Slot	05	Rack	03	Chanel	08

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	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 2025-01-27T17:32:00.854Z

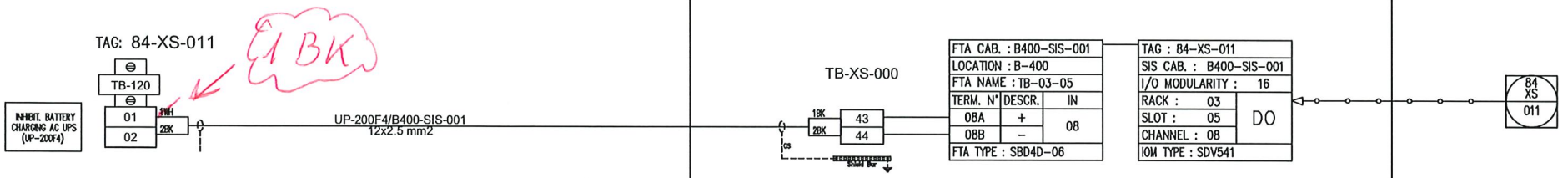
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-28T06:34:24.851Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-01-28T08:55:10.486Z

Signature			

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

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



21/01/25

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

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

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
84-XS-011
INHIBIT. BATTERY CHARGING AC UPS UP-200F4 BATTERIES

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 165	REV. 01

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

ITEM	Tag	84-XS-008B	: DISCONNECT AC UPS UP-200F4 BATTERIES B	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)	Module			
TASK	code	C10003814	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-008B			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 03A/03B		Slot 05	Rack 02	Chanel 03	

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	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:

	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 2025-01-27T17:31:39.855Z

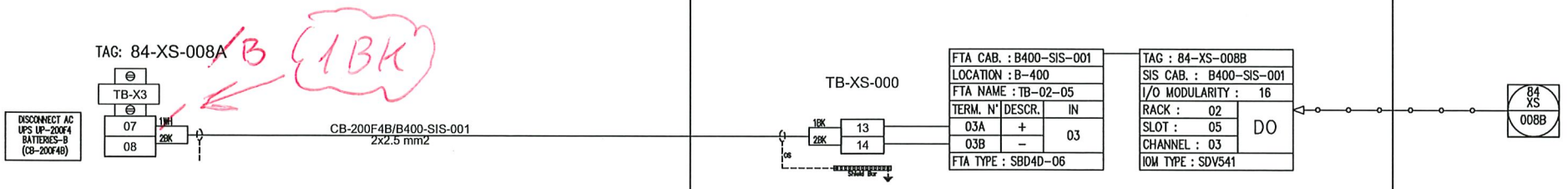
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PROVERLIS Digitaly signed by Jamie McAllister 2025-01-28T08:57:38.741Z

Signature			

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

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



21/01/25

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

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

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
84-XS-008B
DISCONNECT AC UPS UP-200F4 BATTERIES B

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

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-IN-DG-40014	170	01

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

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	84-XS-008A	: DISCONNECT AC UPS UP-200F4 BATTERIES A			Dwg	123A90-DDL-IN-LIS-40089
	S/Sys	84-20	: AC 15 kVA UPS System (UP-200F4)			Module	
TASK	code	C10003815		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-008A				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	03A/03B		Slot	05	Rack	01	Chanel 03

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	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:

	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 2025-01-27T17:31:31.294Z

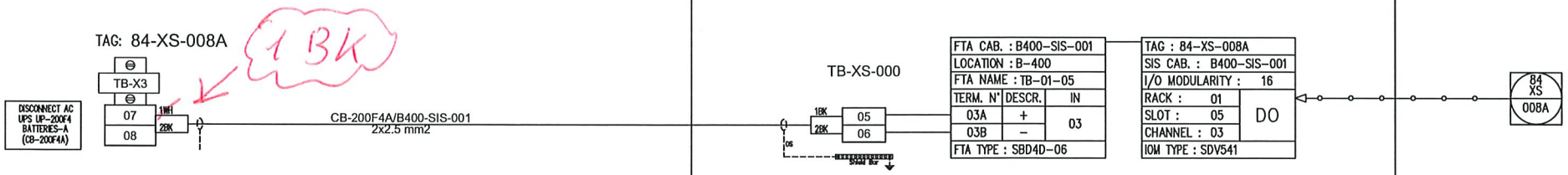
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-01-28T06:35:51.944Z

PROVERLIS Digitaly signed by Jamie McAllister 2025-01-28T09:32:34.310Z

Signature			

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

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



21/01/25

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

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

CROSSWIND

ROSETTI MARINO

TITLE :
INSTRUMENT LOOP DIAGRAM
84-XS-008A
DISCONNECT AC UPS UP-200F4 BATTERIES A

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 169	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

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20

Miscellaneous	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03060	OTP -UPS System UP-200F4 15kVA	ONSHORE	C10004629	5300	100	2025-04-23	-
		OFFSHORE	C10004950	5300	0	-	-

ITEM	Tag	123A90-PML-COM-PRO-03060 : OTP -UPS System UP-200F4 15kVA				Dwg	123A90-PML-COM-PRO-03060
	S/Sys	84-20 : AC 15 kVA UPS System (UP-200F4)				Module	
TASK	code	C10004629		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-03060

Associated subsystems: 84-20

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	Gerry McCann
Date	2025-04-15	2025-04-15	2025-04-23
Signature	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-15T12:30:07.302Z	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-15T12:54:59.302Z	PROVERLIS Digitaly signed by Gerry McCann 2025-04-23T12:55:24.541Z

Base Load Power Hub (BLPH)

OTP: UPS System UP-200F4 15kVA

Document Number: 123A90-PML-COM-PRO-03060

Document Class: 2

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

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Revision / Change Log

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

HOLDS LIST

No.	Description
1	
2	
3	
4	

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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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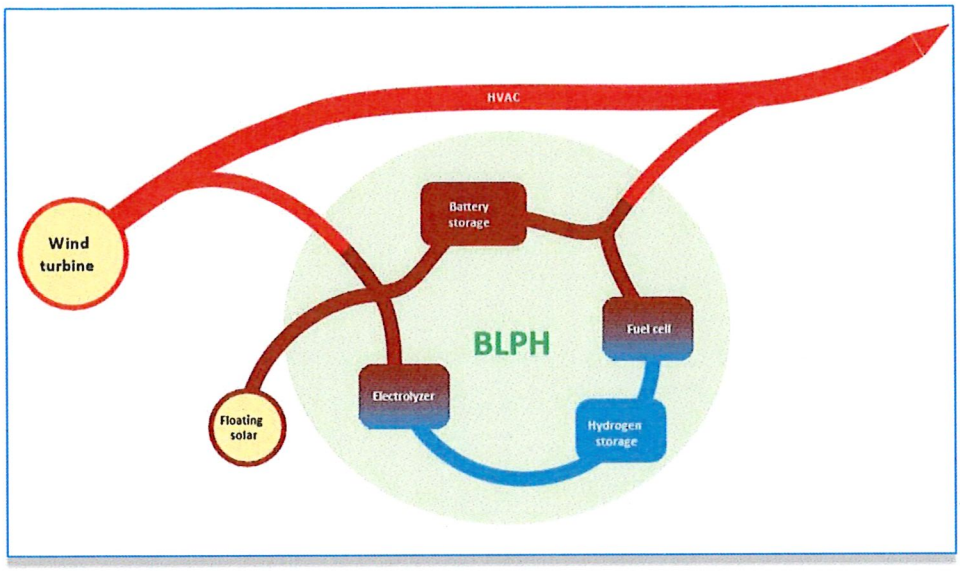


Figure 3 - BLPH Concept

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

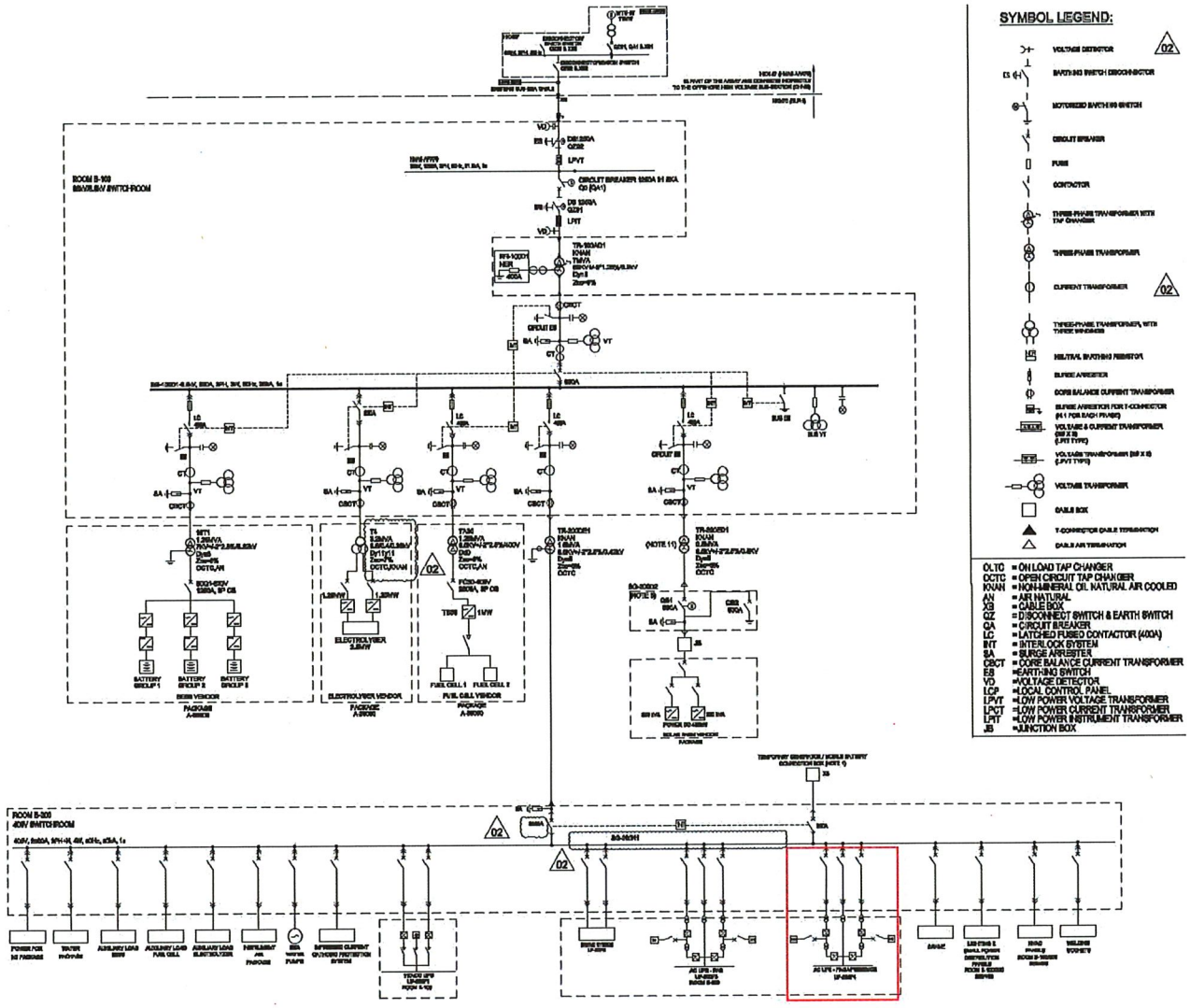


Figure 4 – OTP System Boundary Limits

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
- 84-20: 230V AC UPS - 15KVA (UP-200F4)
- 84-20: 230V UPS DISTRIBUTION BOARD (UP-200F4)
- 84-20: UPS BATTERY RACK BANK (BA-200F4A & BA-200F4B)

- 84-20: UPS CUT OFF BREAKER (CB-200F4A/CB-200F4B)
- 79-00: EMERGENCY SHUTDOWN SYSTEMS (SIS)
- 87-10: PROCESS CONTROL SYSTEM (PCS)

All equipment is installed inside Technical Room B-300.

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
- Finish Colour: RAL 7035

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

POWER SUPPLY:
- Rated Service Voltage: 400V
- Rated Frequency: 50 Hz
- Cabinet Rated Current: A

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

BATTERY:
- Configuration 2x50%
- Autonomy :240 MIN/BANK
- Temp. Design: -8,4 - 40 °C
- Humidity :95%
- Lead ACID VLRA GEL
- Capacity 120 Ah
- Recharge: 10h
- Float Charge: 2,28 V
- Boost Charge: 2,28 V

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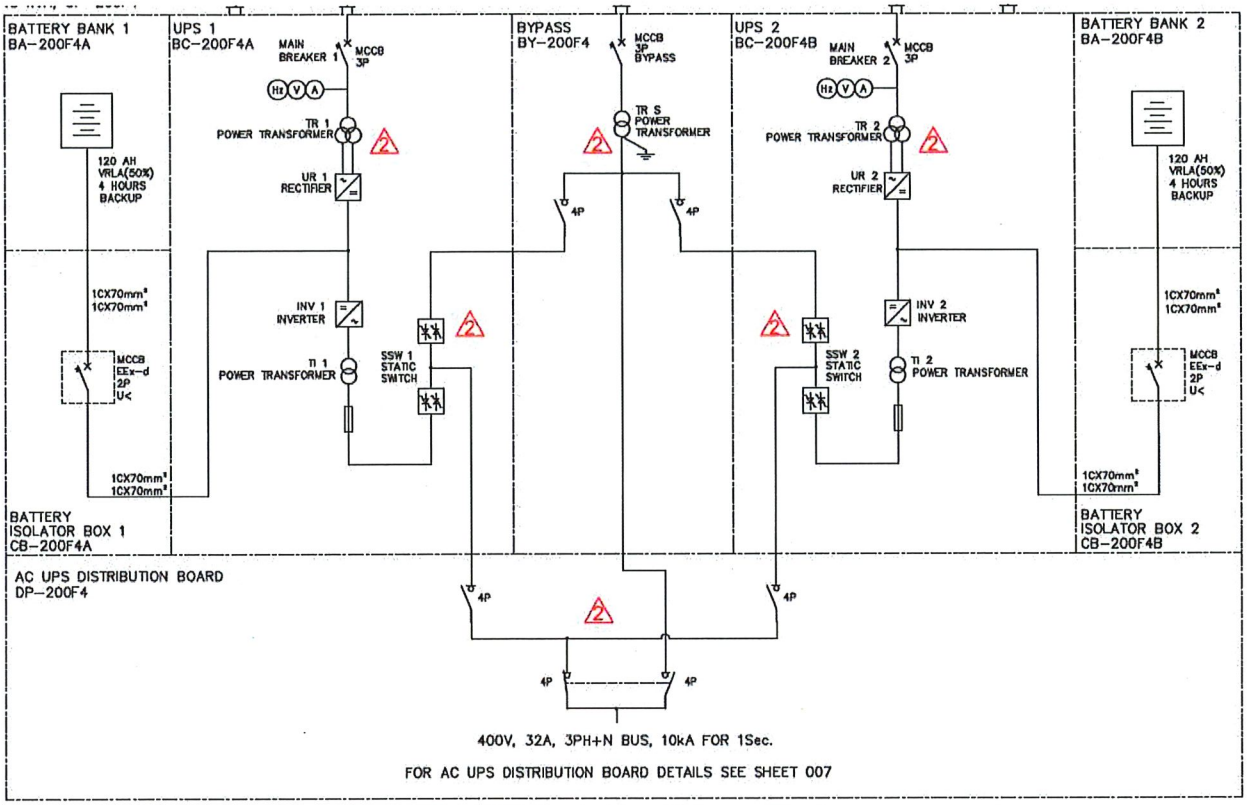


Figure 5 - UPS Single Line Diagram Block

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:

- SS84-20 UPS-200F4

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) and Bypass 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
- Inverter output voltage within tolerance

- Unit changes to Battery operation
- Unit changes to By-pass operation
- Functionality of Manual By-pass Switch
- 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
[9] 123A90-PML-COM-PRO-03038	Leak Test Procedure

Document ID	Document Title
[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 - 6.6 kV Switchgear & 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
[38]123A90-PML-QHSE-PRO-00120	Proverlis Management Procedure

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Document ID	Document Title
[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-00025	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
C&E	Cause & Effects

Acronyms / Abbreviations	Description
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
ORR	Operations Readiness Review

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Acronyms / Abbreviations	Description
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

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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:

- 5 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-200F3 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
- 84-20:230V UPS AC UP-200F4

5.2.3 Status of Required Associated Subsystems

PHASE 1 UPS START UP with battery banks first charging and discharging tests
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
- 84-20: UPS AC UP-200F4

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
- 84-20: UPS AC UP-200F4

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
- 84-20: UPS AC UP-200F4
- 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 15kVA)
- 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 15kVA.

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		15/11/2024
2	No Mechanical Completion or Pre-commissioning punch list 'A' items are outstanding against the system to be commissioned.	ok		
3	Factory Acceptance Test Procedure has been carried out successfully (refer to Doc. 1723002197-QC-PRO-00045)	ok		
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		
5	A final walkdown of the system has been completed, to ensure that the system and the area are ready for commissioning.	ok		
6	Check that areas are free for work and escape routes are clear of any obstructions.	ok		
7	All safety barriers and warning signs have been installed. All specific safety requirements will be detailed within HSE risk assessment mandatory for every Permit to Work (PTW).	ok		
8	Ensure that proper communications have been established between parties involved in the implementation of the procedure.	ok		
9	Verify availability of test equipment and consumables as per section 3.2.4.	ok		
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		

Step	Description	Result	Verified by	Date
11	All yard personnel have been duly notified by dedicated LUN (Livening Up Notification) that the system(s) is ready for commissioning.	ok		15/11/2024

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		15/11/2024
13	Verify that all relevant associated systems / subsystems are completed.	ok		
14	Check that grounding and bonding are in accordance with applicable documents.	ok		
15	Review and confirmation of protection settings on up-stream LV Switchboards feeder power supply circuit breakers.	ok		
16	Verify finalization of UPS '1', '2' and 'By-Pass' Units internal power and auxiliary circuit connections in accordance with manufacturers documentation.	ok		
17	Verify finalization of the auxiliary contact connection between UP-200F4 UPS Unit '1' (Inverter) and UPS MAIN DISTRIBUTION SWITCHBOARD SG-200N1 related to acquisition of the simultaneous CLOSED status of three circuit breakers INCOMER UPS '1', IN-COMER UPS '2'	ok		

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		15/11/2024
19	Verify that all relevant associated systems / subsystems are ready.	ok		
20	Check Inhibit and Override register has been prepared and validated.	ok		

Step	Description	Result	Verified by	Date
21	Verify that relevant equipment/ components are available and in operation for start of commissioning activities.	OK		15/11/2024

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 '1' and '2' and bypass
- First charge of battery racks 'A' and 'B' (12 hours each)
- Discharge of battery racks 'A' and 'B' (10 hours each)
- Second recharge racks 'A' and 'B' (battery banks 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		15/11/2024
2	*Before start-up, check that the equipment is earthed in accordance with regulations*	OK		15/11/2024
3	*Make sure that the ventilation grids are never covered during operation*	OK		15/11/2024

Step	Description	Result	Verified by	Date
4	Check the battery cut off breaker is open.	OK		15/11/2024
5	Set the load interrupter switch Q1 to the "OFF" position.	OK		15/11/2024
6	Set the manual bypass switch Q29 to position "3 - Manual bypass".	OK		15/11/2024
7	Remove the protective cover from the connection panel	OK		15/11/2024
8	Check connection of the mains voltage for the rectifier.	OK		15/11/2024
9	Measure the mains voltage at connection terminal X1 (outer conductor/outer conductor): the mains voltage is U~ = 400 V	OK		15/11/2024
10	Measure the mains voltage at connection terminal X4 (outer conductor/neutral conductor): the mains voltage is U~ = 230 V	OK		15/11/2024
11	Check the Phase rotation at connection terminal X1: L1, L2 and L3 clockwise rotation	OK		15/11/2024
12	Disconnect the mains voltage for the rectifier	OK		15/11/2024
13	Resolve any problems identified	OK		15/11/2024
14	Replace the protective cover on the connection panel.	OK		15/11/2024
15	Confirm absence of anomalies preventing UPS start-up.	OK		15/11/2024
Starting UP the UPS				
16	Set the load interrupter switch Q1 to the "OFF" position	OK		15/11/2024
17	- Set the manual bypass switch Q29 to position "2 - Service operation".	OK		15/11/2024
18	Connect the mains voltage for the rectifier.	OK		15/11/2024
19	Connect the mains voltage for the bypass circuit	OK		15/11/2024
20	Check status: The bypass is starting up, *the green and yellow LEDs are flashing. LCD: "Main menu" is displayed*	OK		15/11/2024

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Step	Description	Result	Verified by	Date
21	Wait for status: The bypass is ready, *the green LED is flashing. LCD: "Bypass symbol OK" is displayed*	OK		15/11/2024
22	Set the manual bypass switch Q29 to position "1 - Inverter operation". *The green and yellow LEDs flash.*	OK		15/11/2024
23	Set the load interrupter switch Q1 to the "ON" position.	OK		15/11/2024
24	Wait for status: The REC is ready, *the green LED is flashing. LCD: "INV symbol OK" is displayed*	OK		15/11/2024
25	Check the battery cut off breaker voltage and polarity	OK		15/11/2024
26	Close the battery cut off breaker	OK		15/11/2024
27	Press the "~I" key on the HMI. *LCD: "INV symbol" flashes*	OK		15/11/2024
28	Wait for status: Bypass switches to normal operation, *green LED lights up. LCD: "Energy flow display via INV" is displayed*	OK		15/11/2024
29	The first UPS unit is now in operation, repeat the above STEPS to start the second UPS unit.	OK		15/11/2024

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5.4.1.2 Charge And Discharge Battery

Here follows the installed battery type datasheet:

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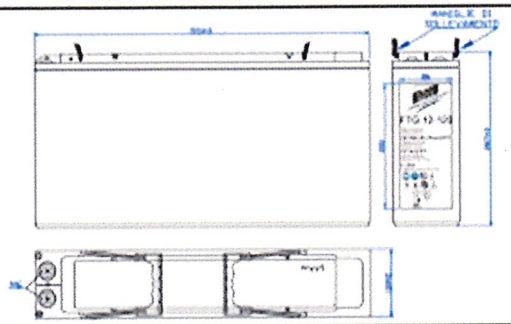
FAAM

FTG 12-120

CARATTERISTICHE DIMENSIONALI

Tensione nominale Capacità nominale (10 ore)		12V 120Ah (1,80Vpc) a 20°C
Dimensioni	Lunghezza Larghezza Altezza totale	551 ±3mm 110 ±2mm 287 ±3mm
Disegno tecnico n°4 00412-0		Peso 42,5 Kg ± 5%
Terminali a vite: M6 femmina Materiale: ottone		

Batteria stazionaria ermetica regolata con valvola
Materiale box: ABS di colore nero
Materiale coperchio: ABS termosaldato di colore nero
Piastre positive tubolari e negative piane a griglia fusa impastata Pb/Ca/Sn
Separatori microporosi ad alta capacità di assorbimento
Tecnologia GEL VRLA attacchi frontali
Vita di progetto: 15 anni (a 20°C)
Norma di riferimento: CEI EN 60896 Parti 21 e 22



Tensione di mantenimento a 20°C 2,27±0,02V/el
Tensione di carica rapida 2,40±0,02V/el
Temperatura di esercizio: 20°C±3°C (raccomandata)
Max temperatura di lavoro: -40°C / 50°C
Coppia di serraggio: 8÷10 Nm
Massima corrente di carica permessa: 24A
Massima corrente di scarica: 960A

CARATTERISTICHE ELETTRICHE

Caratteristiche

Capacità	10ore(1,80Vpc fin a 20°C) 8ore(1,75Vpc fin a 20°C) 3ore(1,70Vpc fin a 20°C) 1ora(1,60Vpc fin a 20°C)	120,0 Ah 116,8 Ah 94,2 Ah 73,3 Ah
Influenza della temperatura sulla capacità (10h)	40°C 20°C 0° C	102% 100% 85%
Resistenza interna Ri: 8,8 mΩ ±10%		SCC Isc: 1300 A ±10%
Tensione di carica – Uso ciclico		Corrente iniziale minore di 24A Tensione 14,4÷15,0 V a 20°C Coefficiente di temperatura -30 mV/°C
Tensione di carica – Uso standby		Nessun limite sulla corrente di carica iniz. Tensione 13,5÷13,8 V a 20°C Coefficiente di temperatura -18mV/°C

Curve di scarica @ 20°C (77 °F)

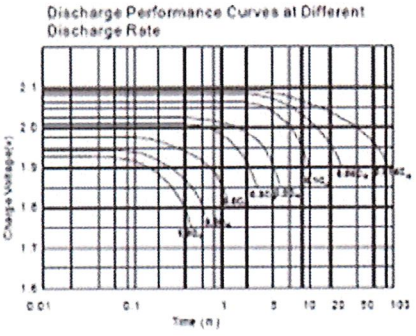


Tabella di scarica a Corrente costante (Amp) e Potenza costante (Watt/elem.) a 20°C

Tempo		30min	60min	120min	180min	300min	600min	1200min
9,6V	A	107,0	73,3	44,5	33,2	22,6	12,8	6,78
	W	197,0	139,0	85,1	64,0	43,9	25,3	13,5
10,2V	A	98,6	68,9	41,6	31,4	21,6	12,4	6,63
	W	185,0	132,0	80,4	61,0	42,3	24,6	13,2
10,8V	A	85,7	61,2	38,3	28,9	20,3	12,0	6,42
	W	164,0	119,0	74,5	56,4	39,9	23,9	12,8

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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:				
30	Perform first full commissioning charge of Battery Bank A 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 seting equal to: 242 .....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		15/11/2024
31	Perform first full commissioning charge of Battery Bank B with duration 12 hours. N.B. The UPS unit must be recalibrated by vendor field engineer for the purpose of the test. Commissioning charge voltage seting equal to: 242 .....V With reference to Annex 002 '12h Capacity charge test record' start recording measurements at beginning of charging cycle every 30 minutes. ANNEX 002 12H CAPACITY CHARGE TEST RECORD	Ok		15/11/2024
After successful completion of above steps record Battery Bank A and B terminal voltages.				

Step	Description	Result	Verified by	Date
32	Record Battery Bank A Terminal voltage. Record results in: "ANNEX 003 - BEFORE DISCHARGE BANK A"	OK		15/11/2024
33	Record Battery Bank B Terminal voltage. Record results in: "ANNEX 004 - BEFORE DISCHARGE BANK B"	OK		15/11/2024
After successful completion of above steps prepare for Battery Banks Discharge tests.				
Verification for system status for DISCHARGING:				
34	Verify that Batteries are disconnected from UPS, cut off breakers Q0 and Q2 are open.	OK		15/11/2024
35	With vendor field service engineer connect temporary load bank to AC output of UPS.	OK		15/11/2024
36	The Discharge tests will be performed with a constant discharge current of 12,0 A for the duration of the 10h test.	OK		15/11/2024
37	Verify that all connections between UPS and temporary Load Bank are correct	OK		15/11/2024
38	Verify and confirm that auxiliary power supply for Load Bank is OK.	OK		15/11/2024
After completion of above verification steps continue with following steps and record results in relevant attached ANNEX documents. Perform each Battery Bank discharge test separately, First Battery Bank A and then Battery Bank B. Records measurements in intervals of 30 minutes. During each measurement record ambient temperature.				
39	Perform discharge of Battery Bank A for 10h. Record results in: "ANNEX 05 - DISCHARGE BANK A"	OK		15/11/2024
40	Perform discharge of Battery Bank B for 10h. Record results in:	OK		15/11/2024

Step	Description	Result	Verified by	Date
	"ANNEX 06 - DISCHARGE BANK B"			
	Battery Re-Charge			
	Verification for system status for CHARGING:			
41	N.B. The UPS unit must now be recalibrated by vendor field engineer to the normal volatge value for the UPS normal operation. UPS'1' Normal Voltage battery charging calibration equal to: .....258,2.....V UPS'2' Normal Voltage battery charging calibration equal to: .....258,2.....V	OK		15/11/2024
42	Proceed with recharging of battery bank A under normal operation UPS '1' charging conditions and monitor periodically battery voltages for a period of 10 h. Confirm normal operation of UPS '1' with no alarms and battery bank A voltages after 10 hours period.	Ok		15/11/2024
43	Proceed with recharging of battery bank B under normal operation UPS '2' charging conditions and monitor periodically battery voltages for a period of 10 h. Confirm normal operation of UPS '2' with no alarms and battery bank B voltages after 10 hours period.	Ok		15/11/2024

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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 CASTELLAN	ROSETTI M.	ELE LEAD COMM.	
OBSERVED BY G. MCCANN	CROSSWIND	COMM ENGINEER	
ANTHONY IVERSON	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 84-20: 230V UPS UP-200F4

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 1&2 (Rectifier) and Bypass are according to specification.
- Unit Synchronization
- Powering of one unit at the time will show UPS'1' in normal operation and UPS'2' in stand-by and vice versa.
- Installation and functionality of Battery breakers
- Charging of batteries and battery current
- Inverter output voltage within tolerance
- Functionality of Manual By-pass Switch
- Black start operation
- Output / Distribution as per specification

5.4.3.1 Verify UPS Unit'1'

These steps are required for initial verification of the UPS Unit '1'.

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 84-20 UPS SYSTEM INITIAL VERIFICATION				
1	Verify all metallic parts are correctly earthed as per engineering documentation	OK		28/11/2024
2	Verify that all UPS internal circuit breakers and fuses are in the close / on position and UPS healthy with no alarms	OK		28/11/2024

Step	Description	Result	Verified by	Date
3	Verify that the battery cut-off breaker related to Battery Bank 'A' Q2 is in the close / on position	Ok		28/11/24
4	Verify and confirm availability of temporary power supply on main input terminals	Ok		28/11/24

5.4.3.2 Verify UPS UNIT 'BYPASS'

These steps are required for initial verification of the UPS Unit 'By-Pass'.

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 84-20 UPS SYSTEM INITIAL VERIFICATION				
5	Verify all metallic parts are correctly earthed as per engineering documentation	Ok		28/11/24
6	Verify that all UPS internal circuit breakers and fuses are in the close / on position	Ok		28/11/24
7	Verify all metallic parts are correctly earthed as per engineering documentation	Ok		28/11/24

5.4.3.3 Verify UPS UNIT'2'

These steps are required for initial verification of the UPS Unit '2'.

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 84-20 UPS SYSTEM INITIAL VERIFICATION				
8	Verify all metallic parts are correctly earthed as per engineering documentation	Ok		28/11/24
9	Verify that all UPS internal circuit breakers and fuses are in the close / on position	Ok		28/11/24
10	Verify and confirm availability of temporary power supply on main input terminals	Ok		28/11/24

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5.4.3.4 UPS Functional Tests

Step	Description	Result	Verified by	Date
UPS '1' & '2' and Bypass Functional test				
1.	Confirm that main breaker QF1 on both Incoming 1 & 2 are CLOSED (A6/+05 SG200N1) & (A6/+06 SG200N1)	ok		28/11/2024
2.	Confirm that main breaker QF1 on Bypass is CLOSED (A2/+04 SG200N1)	ok		28/11/2024
3.	Confirm that Battery banks are powered ON, and Battery MCCB box 1&2 are overridden from ESD (selector switch S2 in position Override) and both breakers Q2 are CLOSED	ok		28/11/2024
4.	Confirm there is no alarms present on HMI UPS UP-200F4.	ok		28/11/2024
5.	Breaker status: Q29 – Manual Bypass CLOSED UPS '1' Q1 – CLOSED UPS '2' Q1 – CLOSED UPS '1' Q2 – CLOSED (Battery) UPS '2' Q2 – CLOSED (Battery)	ok		28/11/2024
RECTIFIER A1 OF UPS '1' MAINS FAILURE.				
This check is performed for one unit at a time, starting with unit 1. Afterwards unit 1 is in standby and unit 2 is in normal operation, with load connected of 35kVA.				
6.	Open the MCCB in ~~A6/+05~~ Q1 of SG-200N1 SWBD			
7.	Check the incoming AC voltage on terminals X1: 1U,1V,1W. (Expected Value 0 V) Vin =.....0.....V Check the incoming AC current through UPS '1' control panel HMI -A18 (Expected value 0 A): Ain = ...0.....A Check the AC voltage in output on terminals X3: U,V,W (Expected Value 400V) Vout= ...231, 230, 230..... V Check the output AC current through UPS '1' control panel HMI -A18 (Expect Value Equal to 50 % of Nominal Current): Aout= R=9A S=8,6 T=8,9.....A	ok		28/11/2024

Step	Description	Result	Verified by	Date
	Verify the Normal operation of INVERTER A2 of UPS'1' via Battery Bank BAT1.			
RECTIFIER A1 OF UPS '1' MAINS RETURN				
8.	Close the MCCB in A6/405 of SG-200N1 SWBD	✓		
9.	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 '1' control panel HMI -A18 (Expected value Equal to 50% of Nominal Current): Ain = R=21, S=21,67 T=21,3 A Check the AC voltage in output on terminals X3: U,V,W (Expected Value 400V) Vout= 230 230 230 V Check the output AC current through UPS '1' control panel HMI -A18 (Expect Value Equal to 50% of Nominal Current): Aout= R=0 S=8,5 T=8,2 A Verify the Normal operation of INVERTER A2 of UPS'1' via Battery Bank BAT1.	OK	[signature]	28/11/2024
INVERTER A2 OF UPS '1' FAILURE – Transfer from Inverter UPS'2' PARALLEL OPERATION				
10.	Switch off Inverter A2 via HMI -A18			
11.	Record AC Load Voltage and AC Load current at terminals X3 and UPS'2' terminals X4. Check the AC voltage on terminals X3: U, V, W (Expected Value 400 V) Vout= 0 V Check the output AC current through Inverter A2 in UPS '1' control panel HMI -A18 (Expected Value 0 A): Aout= 0 A Check the AC voltage on terminals X4: U, V, W (Expected Value 400 V) Vout= 231 - 231 - 231 V Check the UPS'2' AC current on control panel HMI -A18 (Expected Value 100% of Nominal Current) Aout= R=18A S=17A T=17A A	OK	[signature]	28/11/24

Step	Description	Result	Verified by	Date
INVERTER A2 OF UPS 1 RESTORATION - Transfer of load from UPS'2' to Inverter				
12.	Switch ON the Inverter A2 via HMI -A18			
13.	Recording of AC Load Voltage and AC Load current at terminals X3 and UPS'2' terminals X4. Check the AC voltage on terminals X3: U,V,W (Expected Value 400 V) Vout= ..... 0 V ..... V Check the output AC current through Inverter A2 in UPS '1' control panel HMI -A18 (Expected Value 50% of Nominal Current): Aout=..... 0 A .....A Check the AC voltage on terminals X4: U, V, W (Expected Value 400 V) Vout=R=231 S=231 T=231 V Check the bypass AC current on control panel HMI -A18 (Expected Value 0 A). Aout=...R=18A S=18A T=18..A	Ok		28/11/2024

PARALLEL OPERATION UPS1 and UPS2 Switching OFF UPS2 via MCCB of SG200N1				
14.	Open MCB of A6/+05 of the UPS '2' in SG-200N1	OK		28/11/2024
15.	Switch off Inverter A2 of UPS '2' with MCB Q2	ok		28/11/2024
16.	Verify UPS1 takes over 100% Load via HMI -A18: AC Load voltage and AC load current and SBS current by screen shot.	ok		28/11/2024
RECTIFIER A1 OF UPS '2' MAINS FAILURE				
17.	This check is performed for one unit at a time, starting with unit 1. Afterwards unit 2 is in standby and unit 1 is in normal operation, with load connected of 15kVA.	Ok		28/11/2024
18.	Open the MCCB in A6/+06 of SG-200N1 SWBD			

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19.	Check the incoming AC voltage on terminals X1: 2U,2V,2W.(Expected Value 0 V) Vin =....0.....V Check the incoming AC current through UPS '2' control panel HMI -A18 (Expected value 0 A) : Ain = ...0.....A Check the AC voltage in output on terminals X3: U,V,W (Expected Value 400V) Vout= ....230,230,230..... V Check the output AC current through UPS '2' control panel HMI -A18 (Expect Value Equal to 50% of Nominal Current): Aout= R=8,9A T=8,1.....A Verify the Normal operation of INVERTER A2 of UPS'1' via Battery Bank BAT2.	ok		28/11/2024
RECTIFIER A1 OF UPS '2' MAINS RETURN				
20.	Close the MCB in ~~A6/+06 of SG-200N~~1 SWBD PJ			
21.	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 '2' control panel HMI -A18 (Expected value 50% of nominal current A) : Ain = R=9A.....A Check the AC voltage in output on terminals X3: U,V,W (Expected Value 400V) Vout= ....231,231,231..... V Check the output AC current through UPS '1' control panel HMI -A18 (Expect Value Equal to 50% of Nominal Current): Aout= R=9,8=9A T=8,1.....A Verify the Normal operation of INVERTER A2 of UPS'2' via Battery Bank BAT2.	ok		28/11/2024
INVERTER A2 OF UPS '2' FAILURE – Transfer from Inverter to UPS'1' PARALLEL OPERATION				
22.	Switch off Inverter A2 via HMI			

23.	Record AC Load Voltage and AC Load current at terminals X3 and UPS'1' terminals X4. Check the AC voltage on terminals X3: U, V,W (Expected Value 400 V) Vout= 231,231,231 ..... V Check the output AC current through Inverter A2 in UPS '2' control panel HMI -A18 (Expected Value 0 A): Aout= R=0, S=0, T=0 .....A Check the AC voltage on terminals X4: U, V,W (Expected Value 400 V) Vout= 400, ... V Check the UPS'1' AC current on control panel HMI -A18 (Expected Value 100% of Nominal Current) Aout= R=16, S=17 T=17 .....A	ok	[illegible]	28/11/2024

INVERTER A2 OF UPS "2" RESTORATION - Transfer of load from UPS"1" to Inverter				
24.	Switch ON the Inverter A2 via HMI			
25.	Recording of AC Load Voltage and AC Load current at terminals X3 and UPS'1' terminals X4. Check the AC voltage on terminals X3: U,V,W (Expected Value 400 V) Vout= 231, 231, 231 ..... V Check the output AC current through Inverter A2 in UPS '2' control panel HMI -A18 (Expected Value 50% of Nominal Current): Aout= 19,4 .....A Check the AC voltage on terminals X4: U, V,W (Expected Value 400 V) Vout= 231, 231, 231 ..... V Check the bypass AC current on control panel HMI -A18 (Expected Value 0 A). Aout= 0 .....A	ok	M Patella	28/11/2024
PARALLEL OPERATION UPS1 AND UPS2 Switchin OFF UPS1 AND UPS2 via MCCB of SG200N1				
26.	Open MCCB ~~of A6/+05~~ Q1 of the UPS '1' in SG-200N1	ok	M Patella	28/11/2024
27.	Switch off Inverter A2 of UPS '1' with MCB Q2			
28.	Verify UPS '2' takes over 100% Load via HMI-A18: AC Load voltage and AC load current and SBS current by screen shot	ok	M Patella	28/11/2024
29.	Open MCCB of ~~A6/+06~~ Q1 of the UPS '2' in SG-200N1	ok	M Patella	28/11/2024
30.	Switch off Inverter A2 of UPS '2' with MCB Q2	ok	M Patella	28/11/2024
31.	Verify Bypass takes over 100% Load via HMI_A18. R=16A S=16A T=16A	ok	M Patella	28/11/24
UPS1 RESTORATION				
32.	Close MCCB of A6/+05 of the UPS'1' in SG200N1	ok	M Patella	28/11/2024

33.	Switch ON Inverter A2 of UPS'1' with MCB Q2	ok		28/11/2024
UPS2 RESTORATION				
34.	Close the MCCB in A6/+06 of SG-200N1 SWBD	ok		28/11/2024
35.	Switch ON Inverter A2 of UPS'2' with MCB Q2	ok		28/11/2024

5.4.3.5 Black Start Operation

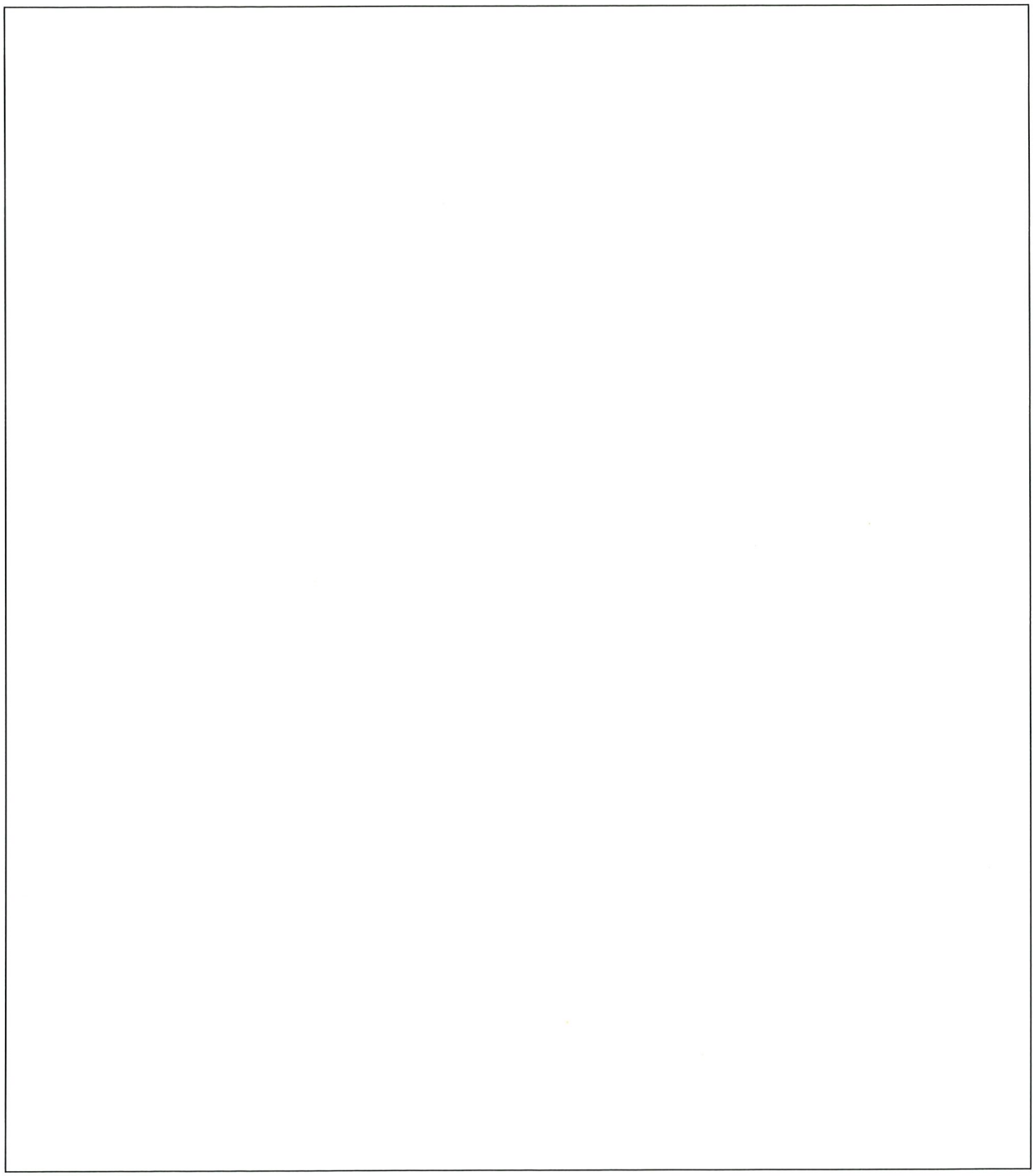
Step	Description	Result	Verified by	Date
Black Start				
With Black Start it is possible to start the system with only the batteries when the rectifier mains and bypass mains are unavailable. UPS is switched OFF at start of this test.				
Verification for system status				
1.	Verify that Rectifier mains breaker(s) Q1 (UPS 1 and UPS 2) for Incoming 1 and Incoming 2 are in: **Open position** The rectifier main supplies are not available.	ok		28/11/2024
2.	Measure and record battery banks A & B terminal voltages, confirm suitability to perform Black Start procedure, minimum voltage >178,2V: Bank A: 216,7 V Bank B: 217,2 V	ok		28/11/2024
3.	Verify that Bypass mains input breaker Q10 is in: **Open position**	ok		28/11/2024

Step	Description	Result	Verified by	Date
	The bypass main supply is not available			
4.	Verify that Output breaker(s) Q31, Q32, Q33,Q34,Q35,Q36,Q37,Q38,Q39,Q40, Q41,Q42,Q43,Q44,Q45,Q46, Q47are in: **Open position** Consumers must be volt free	ok		28/11/2024
Black Start procedure				
IMPORTANT: The DC capacitors must be charged before connecting the load to the batteries.				
5.	**BLACK START UPS'1'** With reference to battery cut off breaker enclosures **(CB-200F4A/CB-200F4B)** locate the following: - Selector switch S1 ON-OFF - Selector switch S2 NORMAL-OVERRIDE	ok		28/11/2024 DM
6.	Rotate selector switch S2 from position NORMAL to position OVERRIDE (ESD healthy signal not available).	ok		28/11/2024 DM
7.	Rotate the selector switch S1 from position OFF to position ON (shunt resistor internally connected to enable precharging of UPS capacitors)	ok		28/11/2024 DM
8.	Confirm power up of UPS'1' controller HMI -A18 within 10 seconds of rotated selector switch S1 to ON position	ok		28/11/2024 DM
9.	When, and only when the controller HMI -A18 will be powered up proceed to close battery cut off breaker Q2.	Ok		28/11/2024 DM
10.	The inverter A2 will now be operational and AC output voltage available for essential loads. Proceed to close the followings MCBs: Q31,Q32,Q33,Q34,Q35,Q36,Q37,Q38, Q39,Q40,Q41,Q42,Q43,Q44,Q45,Q46, Q47	ok		28/11/2024 DM
11.	Once essential loads will be operational and platform operational status normal it will be possible to reset the black start scenario.	ok		28/11 DM

Step	Description	Result	Verified by	Date
12.	With reference the battery cut off breaker enclosure CB-200F4A rotate the selector switches as follows: - Selector switch S1 OFF - Selector switch S2 NORMAL	ok		28/11
13.	The battery cut off breaker should remain closed and connected as per normal UPS operation.	ok		28/11
14.	**BLACK START UPS'2'** With reference to battery cut off breaker enclosures (CB-200F4A/CB-200F4B) locate the following: - Selector switch S1 ON-OFF Selector The inverter A2 will now be operational and AC output voltage available for essential loads switch S2 NORMAL-OVERRIDE	OK		09/03/2025
15.	Rotate selector switch S2 from position NORMAL to position OVERRIDE (ESD healthy signal not available).			
16.	Rotate the selector switch S1 from position OFF to position ON (shunt resistor internally connected to enable precharging of UPS capacitors)			
17.	Confirm power up of UPS'2' controller HMI -A18 within 10 seconds of rotated selector switch S1 to ON position			
18.	When, and only when the controller HMI -A18 will be powered up proceed to close battery cut off breaker Q2.			
19.	The inverter A2 will now be operational and AC output voltage available for essential loads.			
20.	Proceed to close the followings MCBs: Q31,Q32,Q33,Q34,Q35,Q36,Q37,Q38, Q39,Q40,Q41,Q42,Q43,Q44,Q45,Q46, Q47			
21.	Once essential loads will be operational and platform operational status normal it			

Step	Description	Result	Verified by	Date
	will be possible to reset the black start scenario.	ok		
22.	With reference the battery cut off breaker enclosure CB-200F4B rotate the selector switches as follows: - Selector switch S1 OFF - Selector switch S2 NORMAL			
23.	The battery cut off breaker should remain closed and connected as per normal UPS operation.			

5.4.3.6 OTP Worksite Phase 2 Tests Notes and Remarks



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

Name and Surname	Certifying Authority	Position	Signature

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

Name and Surname	Company Representative	Position	Signature
[illegible] CASTELLANI	ROSETTI M.	LEAD FLE COMMISSIONING	
DAVE MUSGROVE	C.W	OPERATIONS ENGINEER	
ANTHONY IVESON	ROSETTI MARINO	COMM. MGR.	

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-200F4.
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-200F4 - 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 AC UPS UP-200F4 Battery A	DO	XS008A	0 TRIP
BOX BATTERY		Disconnect AC UPS UP-200F4 Battery B	DO	XS008B	0 TRIP
UPSA/B		Battery room fan fault-charge inhibit	DO	~~X4/1-2~~ XS011	0 INIBIT

Step	Description	Result	Verified by	Date
1	Confirm correct and positive result of pre-commissioning Check Sheet for above signals I/O list, Correct and positive results.....	ok		03/03

5.4.5.2 UPS UP-200F4 - I/O Modbus TCP-IP list

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

Alarms:
Read: Fct.-Code 3 (Read Holding Register) or Fct.-Code 4 (Read Input Register)

Reg.	Bit no.	Type	Name	Description (1=active)	
2	0	WORD	NonCriticalFault	W: Collective warning	DM
3	0	WORD	CriticalFault	A: Collective alarm	
4	0	WORD	Userdef_DigIn1Active	W: "O"	
5	0	WORD	Userdef_DigIn2Active	W: "O"	
6	0	WORD	Userdef_DigIn3Active	W: "O"	
7	0	WORD	EmergencySwitchOff	A: UPS output off "O"	
8	0	WORD	DouCanFault	W: DOU CAN fault	
9	0	WORD	MainsFault	W: Rectifier/bypass mains fault	DM
10	0	WORD	RectifierWarning	W: Rectifier warning	
11	0	WORD	RectifierFault	A: Rectifier fault	
12	0	WORD	BatteryAlarm	A: Battery fault	
13	0	WORD	InverterWarning	W: Inverter warning	
14	0	WORD	InverterFault	A: Inverter fault	
15	0	WORD	SBSWarning	W: Bypass warning	
16	0	WORD	SBSFault	A: Bypass fault	DM
17	0	WORD	EqualisingCharge	I: Charger status – equalising charging	
18	0	WORD	Charge	I: Charger status – charging	
19	0	WORD	TrickleCharge	I: Charger status – trickle charging	DM
20	0	WORD	GenSetOperation	I: Charger status: Em. power supply "O"	
21	0	WORD	BattTemp.SensFault	W: Battery temp. sensor "O"	
22	0	WORD	BatteryTemp.ToHigh	W: Battery temp. too high "O"	
23	0	WORD	CircuitBreaker	W: Circuit-breaker tripped "O"	DM
24	0	WORD	BatteryWarning	W: Battery warning	
25	0	WORD	BatteryLow	W: Battery undervoltage	
26	0	WORD	Overload	W: Inverter overload	
27	0	WORD	FanFault	W: Fan fault	DM
28	0	WORD	Overload	A: Inverter overload	
29	0	WORD	ShortCircuit	A: Inverter short-circuit	
30	0	WORD	DcUnderVoltage	A: Inverter DC undervoltage	
31	0	WORD	DcOverVoltage	A: Inverter DC overvoltage	
32	0	WORD	PowerStackOverTemp	A: Inverter stack fault	
33	0	WORD	SBSReady	I: Bypass ready	DM
34	0	WORD	SBSMainsFault	W: Bypass mains fault	DM
35	0	WORD	SBSBlocked	W: Bypass blocked	DM
36	0	WORD	RectifierOn	I: Rectifier on	DM
37	0	WORD	InverterOn	I: Inverter on	DM
38	0	WORD	SBSOn	I: Bypass on	

Table 5: Modbus TCP-IP PCS

Step	Description	Result	Verified by	Date
2	Confirm correct and positive result of pre-commissioning Check Sheet for above signals I/O list, Correct and positive results. ..... ☑	ok	M Colella	07/03

5.4.5.3 OTP WORKSITE Phase 3 - Tests Notes and Remarks

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
JONATHAN CASTELLAN	ROSETTI M.	LEAD E/E COMM.	
DAVE MUSGROVE	CW	OPERATIONS ENG	
ANTHONY IVESON	ROSETTI MARINO	COMM MGR.	

SEE ATTACHED MARKED UP I/O LIST

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.

All preservation routines identified and required will be included in relevant Preservation ITR within the Proverlis Completion System.

6 OTP AT OFFSHORE SITE

6.1 Planning and Manpower

6.1.1 Offshore Site overview

It is expected that all pre-commissioning 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
- 84-20: UPS System UP-200F4
- 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 - MODBUS 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 UPS spare parts.

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts
			Project Datasheet no.
	7	8	9
1	36	FUSE 6,3 X 32 F5A 500VAC	1724000372-EL-DS-00005
2	16	G-FUSE 6,3 X 32 F4A 440V KTA/UL	1724000372-EL-DS-00005
3	4	FUSE 6,3 X 32 T8A 500VAC KTA	1724000372-EL-DS-00005
4	4	G-FUSE 6,3 X 32 M2A 500V	1724000372-EL-DS-00005
5	4	619 ADD. REMOTE SIGNAL. OPTION-2 F UPS	1724000372-EL-DS-00005
6	4	261 SBS INTERFACE P8 3-PHASE	1724000372-EL-DS-00005
7	4	261 INVERTER INTERFACE P8 3-PHASE	1724000372-EL-DS-00005
8	4	261 RECTIFIER INTERFACE P8	1724000372-EL-DS-00005
9	32	FUSE CER. 5 X 20 T3,15A 250VAC	1724000372-EL-DS-00005
10	8	CYL. FUSE 5 X 20 2,5A SP 380V S	1724000372-EL-DS-00005
11	2	PCB EQUIP. GCAU V3 VERNISH	1724000372-EL-DS-00005
12	2	PCB RELAY PROTECT RCS VARNISH	1724000372-EL-DS-00005

Table 6: SPARE PART LIST

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.

N.B.: Kindly note that this procedure this note detail any activities related to BLACK START, consequently reference is made to dedicated document n. 123A90-PML-COM-PRO-03036

6.3.1 OTP Test Preparation

Step	Description	Result	Verified by	Date
1	System Ready for Operation Certificate (RFO) from WORKSITE Phase 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-200F4 230V AC 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.			

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 84-20:230V 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-200F4.

Step	Description	Result	Verified by	Date
UPS "1" & "2" and Bypass Functional test				
1	Confirm that diesel generator power supply is energized to upstream switchboard SG-200N1.			
2	Set the load interrupter switch Q1 to the "OFF" position			
3	- Set the manual bypass switch Q29 to position "2 - Service operation".			
4	Connect the mains voltage for the rectifier.			
5	Connect the mains voltage for the bypass circuit			
6	Check status: The bypass is starting up, *the green and yellow LEDs are flashing. LCD: "Main menu" is displayed*			
7	Wait for status: The bypass is ready, *the green LED is flashing. LCD: "Bypass symbol OK" is displayed*			
8	Set the manual bypass switch Q29 to position "1 - Inverter operation". *The green and yellow LEDs flash.*			
9	Set the load interrupter switch Q1 to the "ON" position.			
10	Wait for status: The REC is ready, *the green LED is flashing. LCD: "INV symbol OK" is displayed*			
11	Check the battery cut off breakersvoltage and polarity			
12	Locate selector switche S2			
13	Rotate selector switch S2 from position NORMAL to position OVERRIDE (ESD healthy signal not available at this time).			
14	Close the battery cut off breaker Q2			
15	Press the "~I" key on the HMI. *LCD: "INV symbol" flashes*			
16	Wait for status: Bypass switches to normal operation, *green LED lights up. LCD: "Energy flow display via INV" is displayed*			

Step	Description	Result	Verified by	Date
17	The first UPS unit is now in operation, repeat the above STEPS to start the second UPS unit.			
18	Proceed to close on board MCBs to energize BLPH essential loads.			
19	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

Base Load Power Hub (BLPH)

AC UPS F&G - TAG: UP-200F4

SITE ACCEPTANCE TEST / PRE-COMMISSIONING / COMMISSIONING PROCEDURE

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AEG

POWER
SOLUTIONS

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

Project name: Hollandse Kust Noord (HKN) wind farm	Order-No.: 4400007525

Configuration and Serial No.: **Installed:**

BC-200F4-A - UPS Protect 8.33 / 20-400-216-400-RP-IP43 - Serial No.: 1010864/001 ☒

BC-200F4-B - UPS Protect 8.33 / 20-400-216-400-RP-IP43 - Serial No.: 1010864/002 ☒

BY-200F4 - By-Pass Transformer Cabinet 20 kVA 400/400V - Serial No.: ☒

CB-200F4-A - Battery Fuse Box 200A - Serial No.: 24/86529 ☒

CB-200F4-B - Battery Fuse Box 200A - Serial No.: 24/86529 ☒

BA-200F4-A - Battery 216V-360Ah 3 x 18 x FLG12-150 ☒

BA-200F4-B - Battery 216V-360Ah 3 x 18 x FLG12-150 ☒

Participants:	Company:	Date / Signature:
1. ANTHONY IVESON	ROSETTI M. COMM. MGR	
2. KRISTIAN CSHELIAN	ROSETTI M.	
3. MATTIA GIRLI	ROSETTI M.	
4. DAVIDE RICCHELLI	ROSETTI M.	
5.		

Remark:

Site Acceptance Test must be performed by a skilled AEG technician.

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

Content:

1. Informations and Basic Datas: 3
2. Visual Inspection....6
3. Starting 7
4. Functional tests UPS / Load Transfer Tests: 12
5. MODBUS Adapter 22
6. Alarm Test: 28
7. Battery test: 29
8. Black start procedure validation test: 33

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

1. Informations and Basic Datas:

SCOPE This procedure describes the methods for checking the AC UPS system, once installed on site, to ensure that it works correctly and it meets the operational requirements
REFERENCE DOCUMENTS 1724000372-EL-DA-00004 AC UPS - GENERAL ARRANGEMENT 1724000372-EL-DG-00007 AC UPS - SINGLE LINE DIAGRAM 1724000372-EL-DG-00009 AC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE 1724000372-EL-DG-00011 AC UPS - BATTERY LAYOUT AND INTERCONNECTION
TESTING EQUIPMENT & ACCESSORIES Digital Multimeter, Clamp-meter and Dummy Load

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

UPS A

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) +/-10% Charge voltage (V) 220V

Output current (A) 43A Battery current limit (A) /

INVERTER

DC Input range (V) 220 AC Output voltage (V) 400

Output frequency (Hz) 50 Number of phases 3

Rated power (kVA) 20KVA Power factor 0,8

ALTERNATIVE LINE

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

BATTERY

Type FTG 12-120 Capacity (Ah) 120 Number of strings / cells 54

Autonomy 240 MIN @ Load 20KVA

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

UPS B

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) +/-10% Charge voltage (V) 220V

Output current (A) 63A Battery current limit (A) /

INVERTER

DC Input range (V) 220 AC Output voltage (V) 400

Output frequency (Hz) 50 Number of phases 3

Rated power (kVA) 20KVA Power factor 0,8

ALTERNATIVE LINE

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

BATTERY

Type PTG 12-120 Capacity (Ah) 120 Number of strings / cells 54

Autonomy 240 min @ Load 20KVA

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

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.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

3. Starting

Rectifier start	Result
Input phase sequence	OK CW
Float voltage correct setting	OK +/-10%
High-rate voltage correct setting	OK

Inverter start	Result
DC input voltage	220 Vdc
AC output voltage	400 V
Frequency	50

Alternate mains start	Result
AC output voltage	400V
Frequency	50

For the starting and shut-down procedure please refer to the following pages.

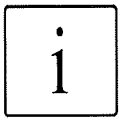
INITIAL START-UP

Prior to starting the unit, check whether the preset unit data complies with the system data by referring to the technical data sheet.

Parallel units are adjusted by the factory with regard to their current distribution. Since the local cabling affects the current distribution of the parallel units (cable cross-sections, cable lengths, cable routing and inductivities of the load distribution board), a new adjustment can be required following installation. The equalizing current of idle parallel units should be less than 5% of the inverter's nominal current. The current distribution must be controlled during start-up. Any adjustment necessary must only be carried out by appropriately trained expert personnel.



ATTENTION:
Improperly adjusted systems can in certain circumstances (individual batteries charged, i.e. 100% capacity and idle inverter) damage the battery.



NOTE:
The start-up instructions of the battery manufacturer must be complied with. Any necessary parameter modifications must be made by our service personnel or via the DOU. If changing the parameters via the DOU, ensure that these changes are applied to all units.

A phase-rotation indicator and a voltmeter are required for the following steps.



CAUTION:
When the mains is connected, potentially fatal voltages are applied to the terminals.
Always observe the safety regulations!

5.1 Preparing Initial Start-Up of a Parallel System

Step	ID No.	Action
1	1 to 2	Input breaker Q1, SBS circuit and battery isolator MCCB (external) to the "**OFF**" position.
2	1 to 2	Open Q71, Q72 inverter output isolators.
3	1 to 2	Distribution breakers to the "OFF" position, Q29 (manual by-pass) to the "OFF" position.
4	1 to 2	Remove connection cover.
5	1 to 2	Check the cable cross sections and fuse protection (refer to the operating instructions of the individual unit). Check the proper earthing of the units (all cubicles must be screwed to one another and earthed).
6	1 to 2	Connect the mains voltage for the rectifier circuit and SBS circuit.
7	1 to 2	Measure the mains voltage at terminals X1 and X4 (X1 phase-to-phase and X4 phase/zero). Refer to the technical data sheet for the nominal voltage.
8	1 to 2	Check the rotating fields at terminals X1 and X4. L1, L2 and L3 clockwise rotation.
9	1 to 2	Switch on input breaker Q1 and wait until the DC nominal voltage is reached.
10	1 to 2	Switch on the inverters.
11	1 to 2	Check the voltage between the parallel units at the inverter output isolators Q71, Q72. The voltage difference of the inverters should not be more than 2 V. (If you measure more than 2 V then adjustment is required which can only be performed by trained expert personnel.)
12	1 to 2	Switch off the inverters.
13	1 to 2	Switch off the mains voltage for the rectifier circuit and SBS circuit.
14	1 to 2	Rectify any errors if necessary and repeat the steps.
15	1 to 2	Replace the connection cover.

5.2 Initial Start-Up of a Parallel System

Step	ID No. 1 to n	Action	DOU	
			LED	Display
1	1 to 2	Input breaker Q1, SBS circuit and battery isolator MCCB (external) to the **"OFF"** position. INV output isolators Q71 and Q72 set to **"ON"**.	None	OFF
2	1 to 2	Load breakers to the "OFF" position, Q29 (manual by-pass) to the "OFF" position.		
3	1 to 2	Connect the mains voltage for the rectifier circuit and SBS circuit.		
4	1 to 2	Move Q1 to the **"ON"** position. The rectifier starts automatically. In systems with a central battery it only starts when the necessary number of rectifiers for the required capacity are switched on. The DC voltage increases.	Red/yellow/ green changing	Self-test
5	1 to 2	The DC voltage reaches its final value and the inverter is supplied with power. (In systems with a central battery the voltage of 2V/Pb cell or 1.2V/NiCd can be present at the output terminals of the individual RECs (safety operation), as the battery isolators are not yet closed).	Yellow flashing	Current flow symbol via REC to INV ON (black)
6	1 to 2	When the polarity on the battery isolator (REC voltage – battery voltage) has been checked, the battery isolator MCCB (external) in the **"ON"** position. The batteries are charged.		
7	1 to 2	Connect the SBS circuit. The SBS only fire when the necessary number for the required capacity are supplied with power.	Green, flashing	Current flow symbol via SBS to loads ON (black)
8	1 to 2	Switch on inverter.		INV symbol flashes
9	1 to 2	The respective AC voltage reaches its final value. As soon as the necessary number of INVs for the required capacity are switched on, the INV output contactors close.	Green ON	Current flow symbol via INV to loads ON (black), via SBS OFF
		There is no fault indication.		
11	1 to 2	Compare equalizing currents of the INVs. The equalizing currents of the INVs when idle should be less than 5% of the INV nominal current.		
12	1 to 2	Switch off INV.		
13	1 to 2	Load breakers to the "ON" position, Q29 (manual by-pass) to the "OFF" position.		
14	1 to 2	Switch on the INV and supply the loads.		

NOTE:
For all additional functions and operating modes please refer to the operating instructions of the individual units.

7.2 Proverlis Summary System Reports

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CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20

Electrical	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
83031-CEL	LV Switchgear / AC UPS F&G - 8h - Line A	ONSHORE	C10000556	CPX09	100	2024-11-04	RFC 1
83032-CEL	LV Switchgear / AC UPS F&G - 8h - Line B	ONSHORE	C10000557	CPX09	100	2024-11-04	RFC 1
83033-CEL	LV Switchgear / AC UPS F&G - 8h - Bypass	ONSHORE	C10000558	CPX09	100	2024-10-24	RFC 1
83123-CEL	Lighting & Small Power DB BoP / AC UPS F&G AUXILIARY	ONSHORE	C10002109	CPX09	100	2024-10-24	RFC 1
84410-CEC	Isolator Battery Box for AC UPS 15 kVA / AC UPS 15 kVA Redundant System with By-Pass	ONSHORE	C10002345	CPX10	100	2024-10-29	RFC 1
84411-CEC	Isolator Battery Box for AC UPS 15 kVA / AC UPS 15 kVA Redundant System with By-Pass	ONSHORE	C10002346	CPX10	100	2024-11-04	RFC 1
84411-CEL-1-N	AC UPS F&G - Charger-A / AC UPS F&G - Battery Isolator-A	ONSHORE	C10000651	CPX09	100	2024-11-05	RFC 1
84411-CEL-1-P	AC UPS F&G - Charger-A / AC UPS F&G - Battery Isolator-A	ONSHORE	C10000650	CPX09	100	2024-11-05	RFC 1
84411-CEL-2-N	AC UPS F&G - Battery Isolator-A / AC UPS F&G - Battery-A	ONSHORE	C10000653	CPX09	100	2024-11-20	RFC 2
84411-CEL-2-P	AC UPS F&G - Battery Isolator-A / AC UPS F&G - Battery-A	ONSHORE	C10000652	CPX09	100	2024-11-20	RFC 2
84412-CEL-1-N	AC UPS F&G - Charger-B / AC UPS F&G - Battery Isolator-B	ONSHORE	C10000655	CPX09	100	2024-11-05	RFC 1
84412-CEL-1-P	AC UPS F&G - Charger-B / AC UPS F&G - Battery Isolator-B	ONSHORE	C10000654	CPX09	100	2024-11-05	RFC 1
84412-CEL-2-N	AC UPS F&G - Battery Isolator-B / AC UPS F&G - Battery-B	ONSHORE	C10000657	CPX09	100	2024-11-21	RFC 2
84412-CEL-2-P	AC UPS F&G - Battery Isolator-B / AC UPS F&G - Battery-B	ONSHORE	C10000656	CPX09	100	2024-11-21	RFC 2
A2/+04-QF1	DRAWER UPS F&G - BYPASS - A2/+04-QF1	ONSHORE	C10002818	FP00	100	2024-11-12	-
		ONSHORE	C10002819	FTR-2	100	2024-09-20	-
		ONSHORE	C10002820	FTR-6	100	2024-10-03	-
		ONSHORE	C10003009	FTR-5	0	-	-
A6/+05-QF1	DRAWER UPS F&G - LINE A - A6/+05-QF1	ONSHORE	C10002821	FP00	100	2024-11-12	-
		ONSHORE	C10002822	FTR-2	100	2024-09-20	-
		ONSHORE	C10002823	FTR-6	100	2024-10-02	-
		ONSHORE	C10003010	FTR-5	0	-	-
A6/+06-QF1	DRAWER UPS F&G - LINE B - A6/+06-QF1	ONSHORE	C10002824	FP00	100	2024-11-12	-
		ONSHORE	C10002825	FTR-2	100	2024-09-20	-
		ONSHORE	C10002826	FTR-6	100	2024-10-02	-
		ONSHORE	C10003011	FTR-5	0	-	-
BA-200F4A	Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	ONSHORE	C10000850	CPX17	100	2024-11-04	RFC 1
		ONSHORE	C10002831	FTR-3	100	2024-11-18	-
BA-200F4A-C	UPS F&G - BA-200F4A-C	ONSHORE	C10002829	FTR-4	100	2024-11-18	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20

Electrical	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
BA-200F4A-D	UPS F&G - BA-200F4A-D	ONSHORE	C10002830	FTR-4	100	2024-11-18	-
BA-200F4B	Battery Rack GEL VRLA-20Y for AC UPS 15 kVA	ONSHORE	C10000851	CPX17	100	2024-11-04	RFC 1
		ONSHORE	C10002834	FTR-3	100	2024-11-19	-
BA-200F4B-C	UPS F&G - BA-200F4B-C	ONSHORE	C10002832	FTR-4	100	2024-11-18	-
BA-200F4B-D	UPS F&G - BA-200F4B-D	ONSHORE	C10002833	FTR-4	100	2024-11-18	-
CB-200F4A	Isolator Battery Box for AC UPS 15 kVA	ONSHORE	C10000857	CPX00	100	2024-11-04	RFC 1
CB-200F4A-Q2	BATTERY CUTOFF UPS F&G - CB-200F4A-Q2	ONSHORE	C10002815	FTR-2	100	2024-11-14	-
CB-200F4B	Isolator Battery Box for AC UPS 15 kVA	ONSHORE	C10000858	CPX00	100	2024-11-04	RFC 1
CB-200F4B-Q2	BATTERY CUTOFF UPS F&G - CB-200F4B-Q2	ONSHORE	C10002816	FTR-2	100	2024-11-14	-
DP-200N1-Q42	BREAKER AUX UPS F&G - DP-200N1-Q42	ONSHORE	C10002817	FTR-2	100	2024-10-28	-
UP-200F4	AC UPS 15 kVA Redundant System with By-Pass	ONSHORE	C10000872	CPX16	100	2024-11-04	RFC 1
		ONSHORE	C10002827	FP16A	100	2025-03-12	-
		ONSHORE	C10002828	FTR-6	100	2025-03-12	-
UP-200F4-QF33	SPARE	ONSHORE	C10004589	FTR-2	100	2024-11-14	-
UP-200F4-QF34	SPARE	ONSHORE	C10004590	FTR-2	100	2024-11-14	-
UP-200F4-QF35	SPARE	ONSHORE	C10004591	FTR-2	100	2024-11-14	-
UP-200F4-QF38	SPARE	ONSHORE	C10004594	FTR-2	100	2024-11-14	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20

Instrumental	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
84-XS-008A	DISCONNECT AC UPS UP-200F4 BATTERIES A	ONSHORE	C10003815	FJ01D	100	2025-01-28	-
84-XS-008B	DISCONNECT AC UPS UP-200F4 BATTERIES B	ONSHORE	C10003814	FJ01D	100	2025-01-28	-
84-XS-011	INHIBIT. BATTERY CHARGING AC UPS UP-200F4 BATTERIES	ONSHORE	C10003811	FJ01D	100	2025-01-28	-
C-CB-200F4A/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	ONSHORE	C10000199	CJX10	100	2024-11-25	RFC 2
C-CB-200F4B/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	ONSHORE	C10000200	CJX10	100	2024-11-25	RFC 2
C-UP-200F4/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	ONSHORE	C10000201	CJX10	100	2024-11-30	RFC 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20

Telecom	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
UP-200F4/B400-NET-001.01	COMMUNICATION / EMCS SYSTEM	ONSHORE	C10004372	CIX09	100	2024-11-22	RFC 2
UP-200F4/B400-NET-001.02	COMMUNICATION / EMCS SYSTEM	ONSHORE	C10004373	CIX09	100	2024-11-22	RFC 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 84-20

Miscellaneous	84-20 AC 15 kVA UPS System (UP-200F4)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03060	OTP -UPS System UP-200F4 15kVA	ONSHORE	C10004629	5300	99	-	-
		OFFSHORE	C10004950	5300	0	-	-

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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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-200F4 15kVA

UP-200F4 [ANNEX001]

SUBSYSTEM 84-20: BATTERY FIRST CHARGE RECORD SHEET DURATION 12HOURS

BATTERY 'A' RACK' UPS-BAT-1A | 12h CAPACITY CHARGE TEST RECORD

N° Hours	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 V
Charge Current (A)																									INITIAL CHARGING CURRENT < 72A .....A
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)	
11																									FAAM BATTERY, TYPE FTG 12-360 Ah
12																									FAAM BATTERY, TYPE FTG 12-360 Ah
13																									FAAM BATTERY, TYPE FTG 12-360 Ah
14																									FAAM BATTERY, TYPE FTG 12-360 Ah
15																									FAAM BATTERY, TYPE FTG 12-360 Ah
16																									FAAM BATTERY, TYPE FTG 12-360 Ah
17																									FAAM BATTERY, TYPE FTG 12-360 Ah
18																									FAAM BATTERY, TYPE FTG 12-360 Ah
TERMINAL VOLT. n.1°n.18																									

Table 7: DATA RECORD SHEET CHARGE BATTERY BANK A

7.6.2 ANNEX 002 12h CAPACITY CHARGE TEST RECORD

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F3 35kVA

UP-200F4 [ANNEX002]

SUBSYSTEM 84-20: BATTERY FIRST CHARGE RECORD SHEET DURATION 12HOURS

BATTERY 'B' RACK' UPS BAT-1B | 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 < 72A
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)	
11																										FAAM BATTERY, TYPE FTG 12-360
12																										FAAM BATTERY, TYPE FTG 12-360
13																										FAAM BATTERY, TYPE FTG 12-360
14																										FAAM BATTERY, TYPE FTG 12-360
15																										FAAM BATTERY, TYPE FTG 12-360
16																										FAAM BATTERY, TYPE FTG 12-360
17																										FAAM BATTERY, TYPE FTG 12-360
18																										FAAM BATTERY, TYPE FTG 12-360
TERMINAL VOLT. n.1°n.18																										

Table 8: DATA RECORD SHEET CHARGE BATTERY BANK B

7.6.3 ANNEX 003 BEFORE DISCHARGE

	CROSSWIND	CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA UP-200F4 [ANNEX 003] SUBSYSTEM 84-20: BATTERY CHARGE / DISCHARGE RECORD SHEET						ROSETTI MARINO
		EQUIPMENT	BATTERY 'A' RACK UP-200F4		TEST MEASUREMENT:	ANNEX 003: BEFORE DISCHARGE		
		BATTERY BANK A TERMINAL VOLTAGE AMBIENT TEMPERATURE .....°C BATTERY TEMPERATURE .....°C						
CELL N°	TAG UTILITY / TYPE	MANIFACTURER	MODEL	LOCATION	VOLTAGE (V)	DATE	TIME	REMARKS
1	FAAM,TYPE FTG 12-120 Ah							
2	FAAM,TYPE FTG 12-120 Ah							
3	FAAM,TYPE FTG 12-120 Ah							
4	FAAM,TYPE FTG 12-120 Ah							
5	FAAM,TYPE FTG 12-120 Ah							
6	FAAM,TYPE FTG 12-120 Ah							
7	FAAM,TYPE FTG 12-120 Ah							
8	FAAM,TYPE FTG 12-120 Ah							
9	FAAM,TYPE FTG 12-120 Ah							
10	FAAM,TYPE FTG 12-120 Ah							
11	FAAM,TYPE FTG 12-120 Ah							
12	FAAM,TYPE FTG 12-120 Ah							
13	FAAM,TYPE FTG 12-120 Ah							
14	FAAM,TYPE FTG 12-120 Ah							
	BB-000-5-2B							

Table 9: DATA RECORD SHEET BEFORE DISCHARGE BATTERY BANK A

7.6.4 ANNEX 004 BEFORE DISCHARGE

	CROSSWIND	CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA UP-200F4 [ANNEX 004] SUBSYSTEM 84-20: BATTERY CHARGE / DISCHARGE RECORD SHEET			ROSETTI MARINO			
		EQUIPMENT	BATTERY 'B' RACK UP-200F4	TEST MEASUREMENT:	ANNEX 004: BEFORE DISCHARGE			
	BATTERY BANK B TERMINAL VOLTAGE AMBIENT TEMPERATURE .....°C BATTERY TEMPERATURE .....°C							
CELL N°	TAG UTILITY / TYPE	MANIFACTURER	MODEL	LOCATION	VOLTAGE (V)	DATE	TIME	REMARKS
44	FAAM,TYPE FTG 12-120 Ah							
45	FAAM,TYPE FTG 12-120 Ah							
46	FAAM,TYPE FTG 12-120 Ah							
47	FAAM,TYPE FTG 12-120 Ah							
48	FAAM,TYPE FTG 12-120 Ah							
49	FAAM,TYPE FTG 12-120 Ah							
50	FAAM,TYPE FTG 12-120 Ah							
51	FAAM,TYPE FTG 12-120 Ah							
52	FAAM,TYPE FTG 12-120 Ah							
53	FAAM,TYPE FTG 12-120 Ah							
54	FAAM,TYPE FTG 12-120 Ah							
55	FAAM,TYPE FTG 12-120 Ah							
56	FAAM,TYPE FTG 12-120 Ah							
57	TERMINAL VOLT. n.37~n.54							

Table 10: *DATA RECORD SHEET BEFORE DISCHARGE BATTERY BANK B*

7.6.5 ANNEX 005 BATTERY DISCHARGE TEST RECORD WITH APPLIED LOAD RESISTIVE BANK

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA

UPS UP-200F4 [ANNEX 005]
SUBSYSTEM 84-20: BATTERY DISCHARGE RECORD SHEET

	BATTERY 'A' RACK' UPS-BAT-1A													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)																						255W .....W
Discharge Current (A)																						13,120A .....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																						

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Table 11: DATA RECORD SHEET DISCHARGE BATTERY BANK A

7.6.6 ANNEX 006 BATTERY DISCHARGE TEST RECORD WITH APPLIED LOAD RESISTIVE BANK

CROSSWIND BLPH PROJECT - COMMISSIONING PROCEDURE OF UPS SYSTEM UP-200F4 15kVA

UPS UP-200F4 [ANNEX 005]
SUBSYSTEM 84-20: BATTERY DISCHARGE RECORD SHEET

	BATTERY 'B' RACK' UPS-BAT-1B													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)																						256W .....W
Discharge Current (A)																						13,20A .....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																						

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Table 12: *DATA RECORD SHEET DISCHARGE BATTERY BANK B*

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)

AC UPS F&G - TAG: UP-200F4

SITE ACCEPTANCE TEST / PRE-COMMISSIONING / COMMISSIONING PROCEDURE

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AEG

POWER
SOLUTIONS

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

Project name: Hollandse Kust Noord (HKN) wind farm	Order-No.: 4400007525

Configuration and Serial No.: **Installed:**

BC-200F4-A - UPS Protect 8.33 / 20-400-216-400-RP-IP43 - Serial No.: 1010864/001 ☒

BC-200F4-B - UPS Protect 8.33 / 20-400-216-400-RP-IP43 - Serial No.: 1010864/002 ☒

BY-200F4 - By-Pass Transformer Cabinet 20 kVA 400/400V - Serial No.: ☒

CB-200F4-A - Battery Fuse Box 200A - Serial No.: 24/86529 ☒

CB-200F4-B - Battery Fuse Box 200A - Serial No.: 24/86529 ☒

BA-200F4-A - Battery 216V-360Ah 3 x 18 x FLG12-150 ☒

BA-200F4-B - Battery 216V-360Ah 3 x 18 x FLG12-150 ☒

Participants:	Company:	Date / Signature:
1. ANTHONY IVESON	ROSETTI M. COMM. MGR	
2. KRISTIAN CSHELIAN	ROSETTI M.	
3. MATTIA GIRLI	ROSETTI M.	
4. DAVIDE RICCHELLI	ROSETTI M.	
5.		

Remark:

Site Acceptance Test must be performed by a skilled AEG technician.

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

Content:

1. Informations and Basic Datas: 3
2. Visual Inspection....6
3. Starting 7
4. Functional tests UPS / Load Transfer Tests: 12
5. MODBUS Adapter 22
6. Alarm Test: 28
7. Battery test: 29
8. Black start procedure validation test: 33

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

1. Informations and Basic Datas:

SCOPE This procedure describes the methods for checking the AC UPS system, once installed on site, to ensure that it works correctly and it meets the operational requirements
REFERENCE DOCUMENTS 1724000372-EL-DA-00004 AC UPS - GENERAL ARRANGEMENT 1724000372-EL-DG-00007 AC UPS - SINGLE LINE DIAGRAM 1724000372-EL-DG-00009 AC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE 1724000372-EL-DG-00011 AC UPS - BATTERY LAYOUT AND INTERCONNECTION
TESTING EQUIPMENT & ACCESSORIES Digital Multimeter, Clamp-meter and Dummy Load

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

UPS A

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) +/-10% Charge voltage (V) 220V

Output current (A) 43A Battery current limit (A) /

INVERTER

DC Input range (V) 220 AC Output voltage (V) 400

Output frequency (Hz) 50 Number of phases 3

Rated power (kVA) 20KVA Power factor 0,8

ALTERNATIVE LINE

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

BATTERY

Type FTG 12-120 Capacity (Ah) 120 Number of strings / cells 54

Autonomy 240 MIN @ Load 20KVA

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

UPS B

RECTIFIER

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

Float voltage (V) +/-10% Charge voltage (V) 220V

Output current (A) 63A Battery current limit (A) /

INVERTER

DC Input range (V) 220 AC Output voltage (V) 400

Output frequency (Hz) 50 Number of phases 3

Rated power (kVA) 20KVA Power factor 0,8

ALTERNATIVE LINE

Input voltage (V) 400 Frequency (Hz) 50 Number of phases 3

BATTERY

Type PTG 12-120 Capacity (Ah) 120 Number of strings / cells 54

Autonomy 240 min @ Load 20KVA

CONFIGURATION

Single unit ☐ Redundant system ☐ Redundant parallel system ☒

Site Acceptance Test Report		Document-No.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

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.: 14188_SAT_2_00
Type:	AC UPS System F&G	Tag No.: UP-200F4

3. Starting

Rectifier start	Result
Input phase sequence	OK CW
Float voltage correct setting	OK +/-10%
High-rate voltage correct setting	OK

Inverter start	Result
DC input voltage	220 Vdc
AC output voltage	400 V
Frequency	50

Alternate mains start	Result
AC output voltage	400V
Frequency	50

For the starting and shut-down procedure please refer to the following pages.

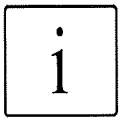
INITIAL START-UP

Prior to starting the unit, check whether the preset unit data complies with the system data by referring to the technical data sheet.

Parallel units are adjusted by the factory with regard to their current distribution. Since the local cabling affects the current distribution of the parallel units (cable cross-sections, cable lengths, cable routing and inductivities of the load distribution board), a new adjustment can be required following installation. The equalizing current of idle parallel units should be less than 5% of the inverter's nominal current. The current distribution must be controlled during start-up. Any adjustment necessary must only be carried out by appropriately trained expert personnel.



ATTENTION:
Improperly adjusted systems can in certain circumstances (individual batteries charged, i.e. 100% capacity and idle inverter) damage the battery.



NOTE:
The start-up instructions of the battery manufacturer must be complied with. Any necessary parameter modifications must be made by our service personnel or via the DOU. If changing the parameters via the DOU, ensure that these changes are applied to all units.

A phase-rotation indicator and a voltmeter are required for the following steps.



CAUTION:
When the mains is connected, potentially fatal voltages are applied to the terminals.
Always observe the safety regulations!

5.1 Preparing Initial Start-Up of a Parallel System

Step	ID No.	Action
1	1 to 2	Input breaker Q1, SBS circuit and battery isolator MCCB (external) to the "**OFF**" position.
2	1 to 2	Open Q71, Q72 inverter output isolators.
3	1 to 2	Distribution breakers to the "OFF" position, Q29 (manual by-pass) to the "OFF" position.
4	1 to 2	Remove connection cover.
5	1 to 2	Check the cable cross sections and fuse protection (refer to the operating instructions of the individual unit). Check the proper earthing of the units (all cubicles must be screwed to one another and earthed).
6	1 to 2	Connect the mains voltage for the rectifier circuit and SBS circuit.
7	1 to 2	Measure the mains voltage at terminals X1 and X4 (X1 phase-to-phase and X4 phase/zero). Refer to the technical data sheet for the nominal voltage.
8	1 to 2	Check the rotating fields at terminals X1 and X4. L1, L2 and L3 clockwise rotation.
9	1 to 2	Switch on input breaker Q1 and wait until the DC nominal voltage is reached.
10	1 to 2	Switch on the inverters.
11	1 to 2	Check the voltage between the parallel units at the inverter output isolators Q71, Q72. The voltage difference of the inverters should not be more than 2 V. (If you measure more than 2 V then adjustment is required which can only be performed by trained expert personnel.)
12	1 to 2	Switch off the inverters.
13	1 to 2	Switch off the mains voltage for the rectifier circuit and SBS circuit.
14	1 to 2	Rectify any errors if necessary and repeat the steps.
15	1 to 2	Replace the connection cover.

5.2 Initial Start-Up of a Parallel System

Step	ID No. 1 to n	Action	DOU	
			LED	Display
1	1 to 2	Input breaker Q1, SBS circuit and battery isolator MCCB (external) to the **"OFF"** position. INV output isolators Q71 and Q72 set to **"ON"**.	None	OFF
2	1 to 2	Load breakers to the "OFF" position, Q29 (manual by-pass) to the "OFF" position.		
3	1 to 2	Connect the mains voltage for the rectifier circuit and SBS circuit.		
4	1 to 2	Move Q1 to the **"ON"** position. The rectifier starts automatically. In systems with a central battery it only starts when the necessary number of rectifiers for the required capacity are switched on. The DC voltage increases.	Red/yellow/ green changing	Self-test
5	1 to 2	The DC voltage reaches its final value and the inverter is supplied with power. (In systems with a central battery the voltage of 2V/Pb cell or 1.2V/NiCd can be present at the output terminals of the individual RECs (safety operation), as the battery isolators are not yet closed).	Yellow flashing	Current flow symbol via REC to INV ON (black)
6	1 to 2	When the polarity on the battery isolator (REC voltage – battery voltage) has been checked, the battery isolator MCCB (external) in the **"ON"** position. The batteries are charged.		
7	1 to 2	Connect the SBS circuit. The SBS only fire when the necessary number for the required capacity are supplied with power.	Green, flashing	Current flow symbol via SBS to loads ON (black)
8	1 to 2	Switch on inverter.		INV symbol flashes
9	1 to 2	The respective AC voltage reaches its final value. As soon as the necessary number of INVs for the required capacity are switched on, the INV output contactors close.	Green ON	Current flow symbol via INV to loads ON (black), via SBS OFF
		There is no fault indication.		
11	1 to 2	Compare equalizing currents of the INVs. The equalizing currents of the INVs when idle should be less than 5% of the INV nominal current.		
12	1 to 2	Switch off INV.		
13	1 to 2	Load breakers to the "ON" position, Q29 (manual by-pass) to the "OFF" position.		
14	1 to 2	Switch on the INV and supply the loads.		

NOTE:
For all additional functions and operating modes please refer to the operating instructions of the individual units.

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

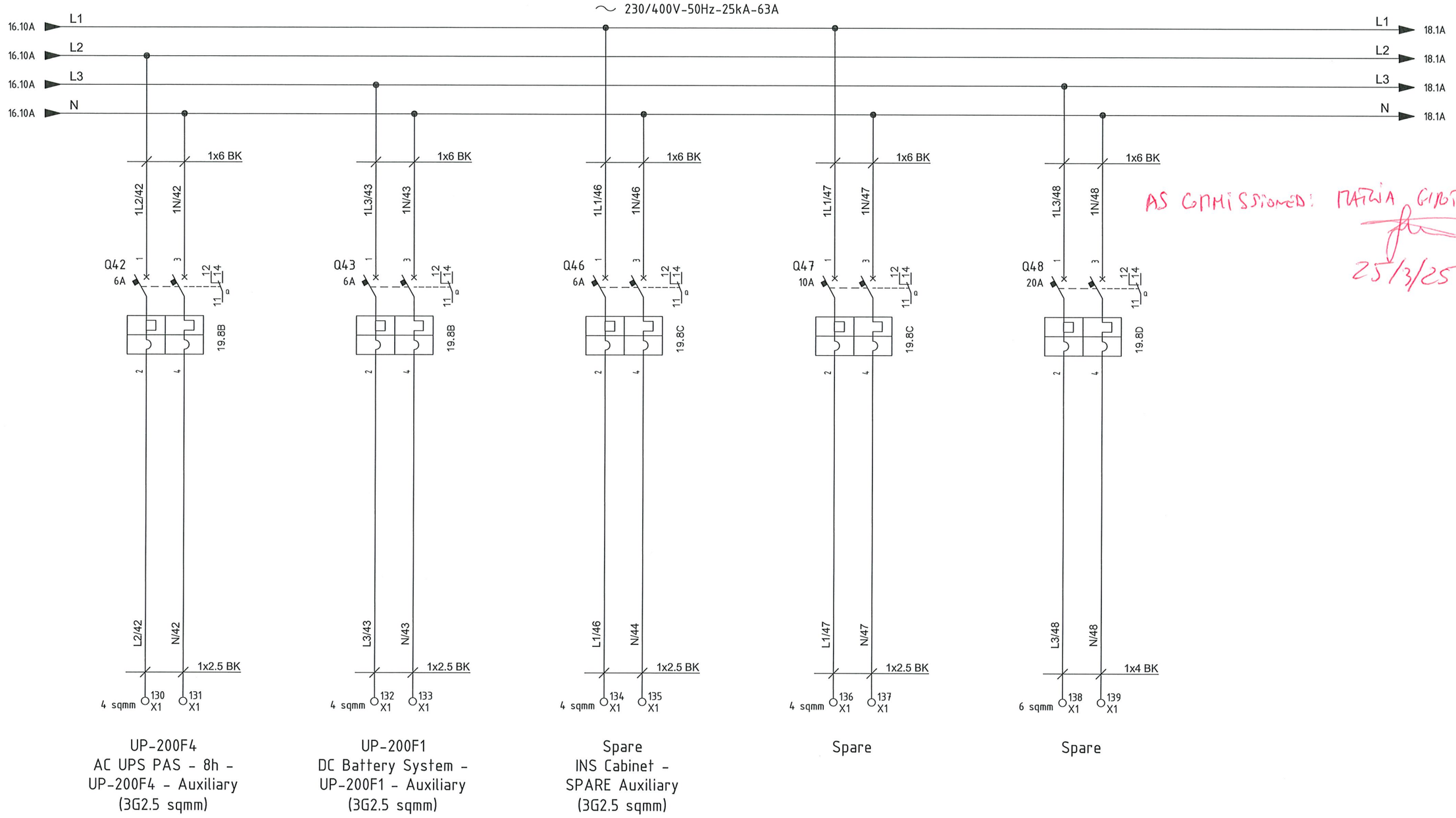
The equipment consists of the following units/components

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



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

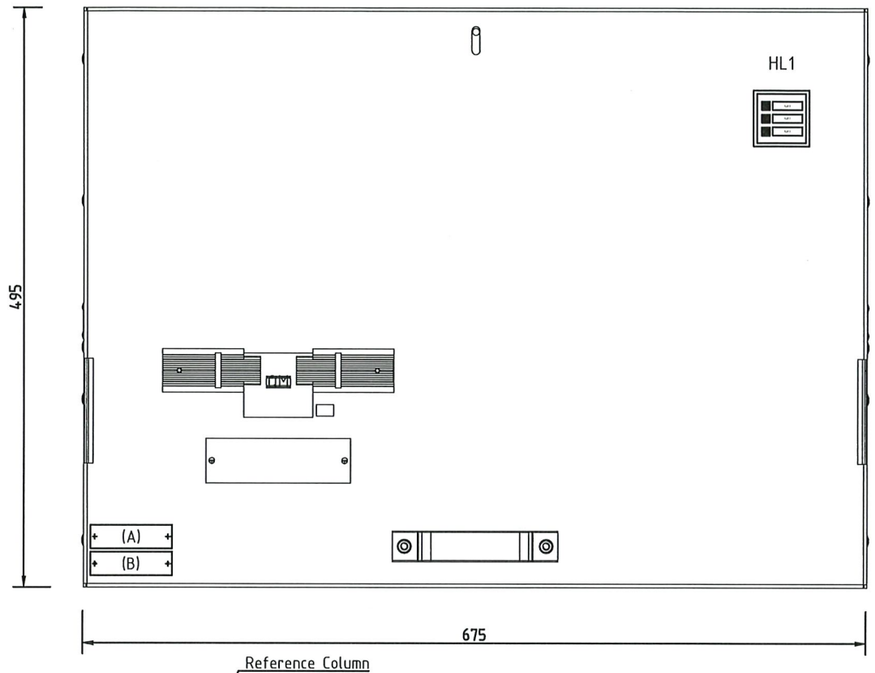
A3 | DRAWING NO. 1723002197-EL-DG-00033 | SHEET 1.7 | REV. 03

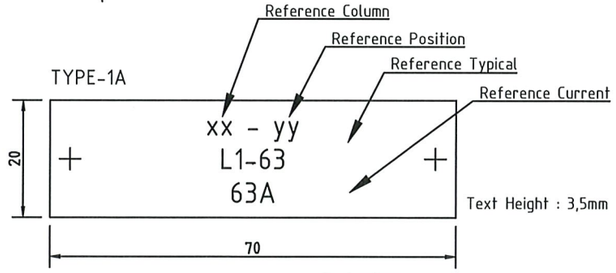
F.to UNI A3: 420mmx297mm

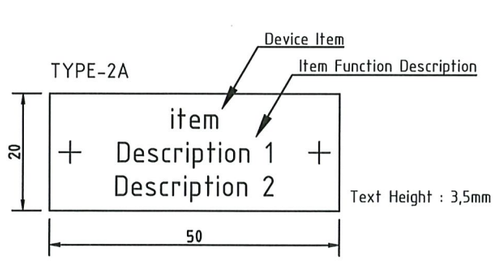
File Name : 1723002197-EL-DG-00033 Rev. 03

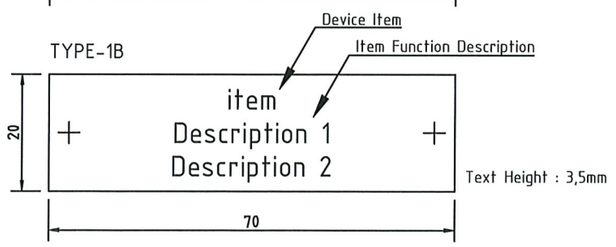
DOOR FRONT LAY-OUT

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)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

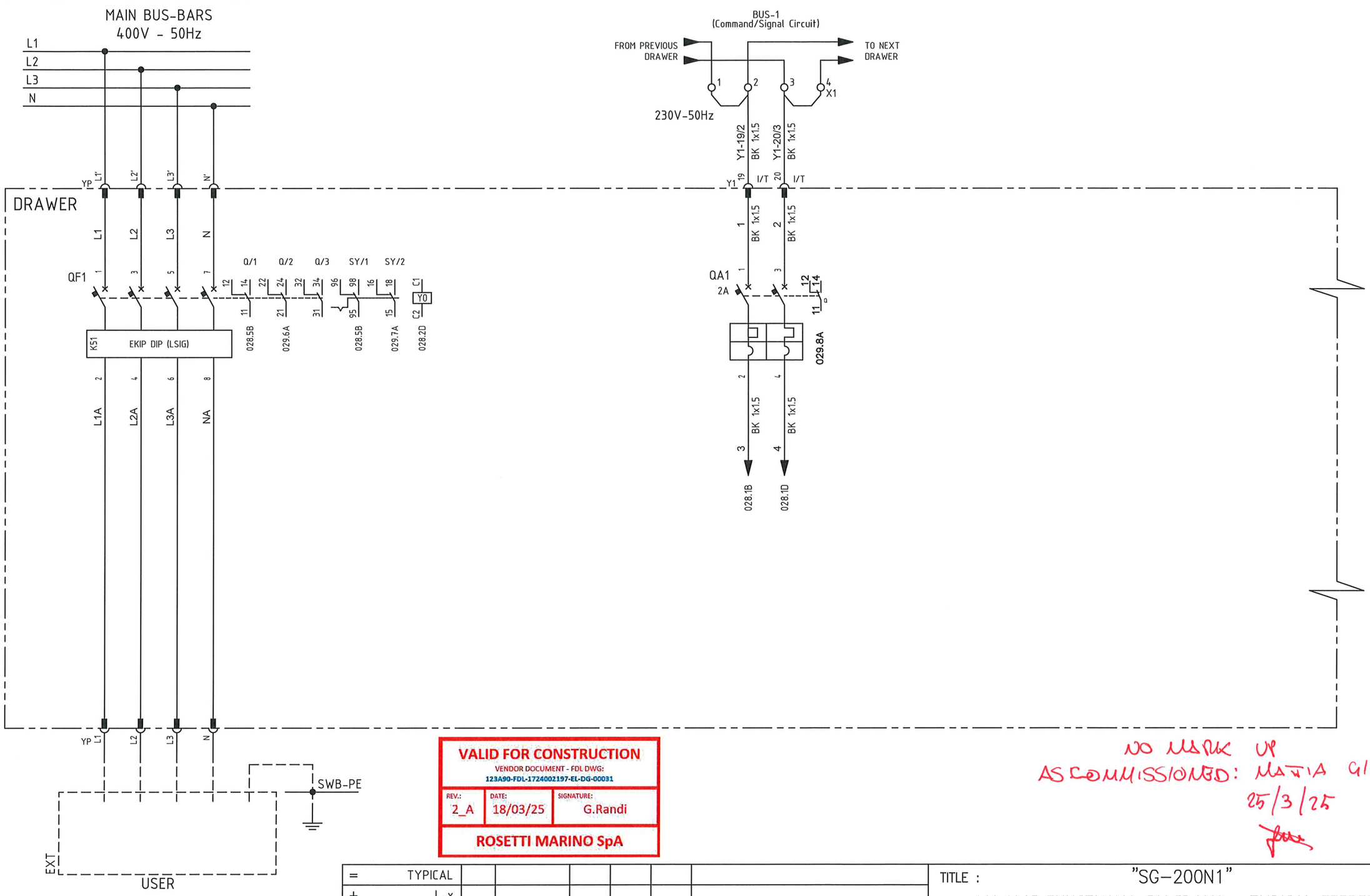
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "L1-n" & "L2-n"

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)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

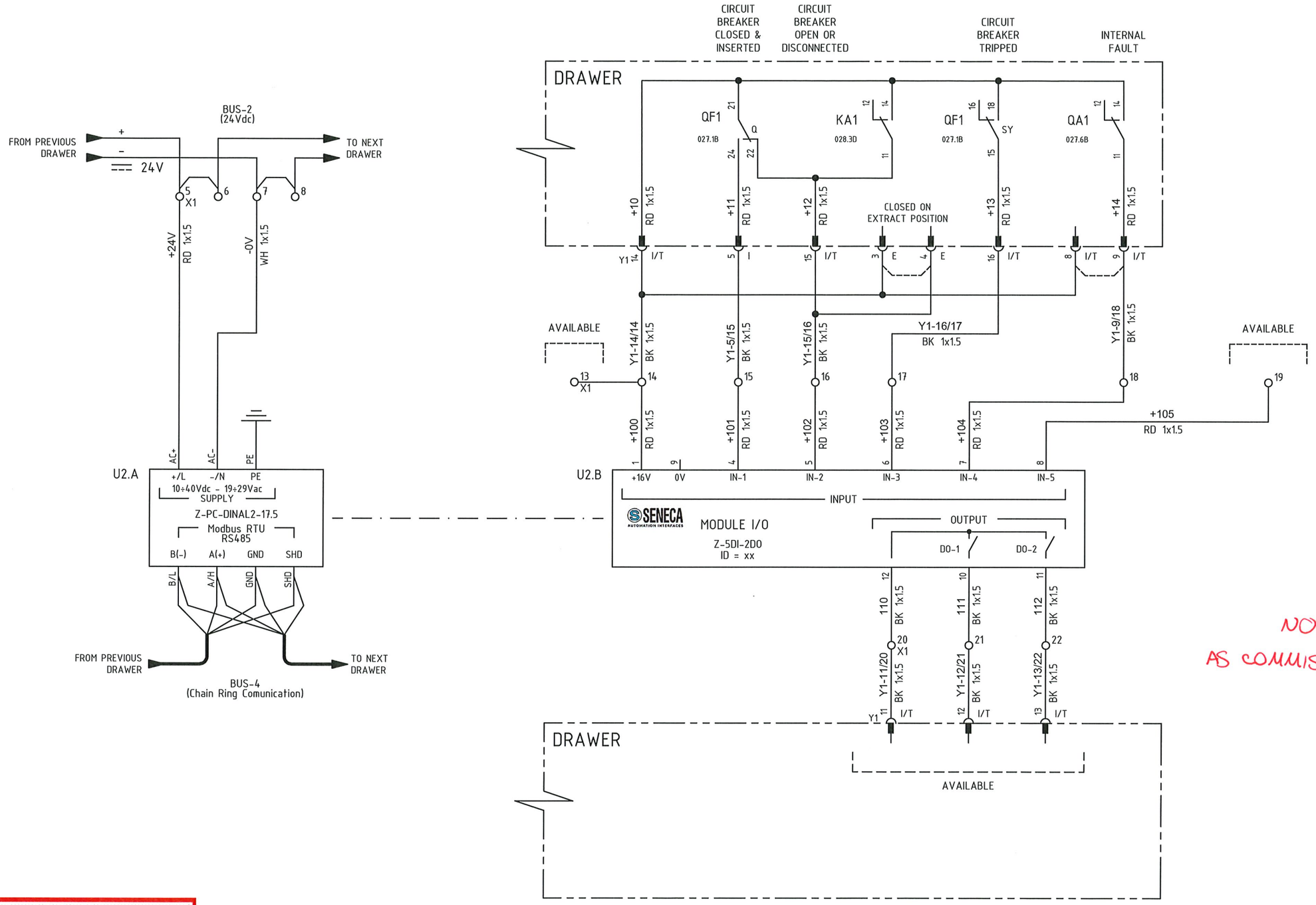
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "L1-n" & "L2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 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)
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

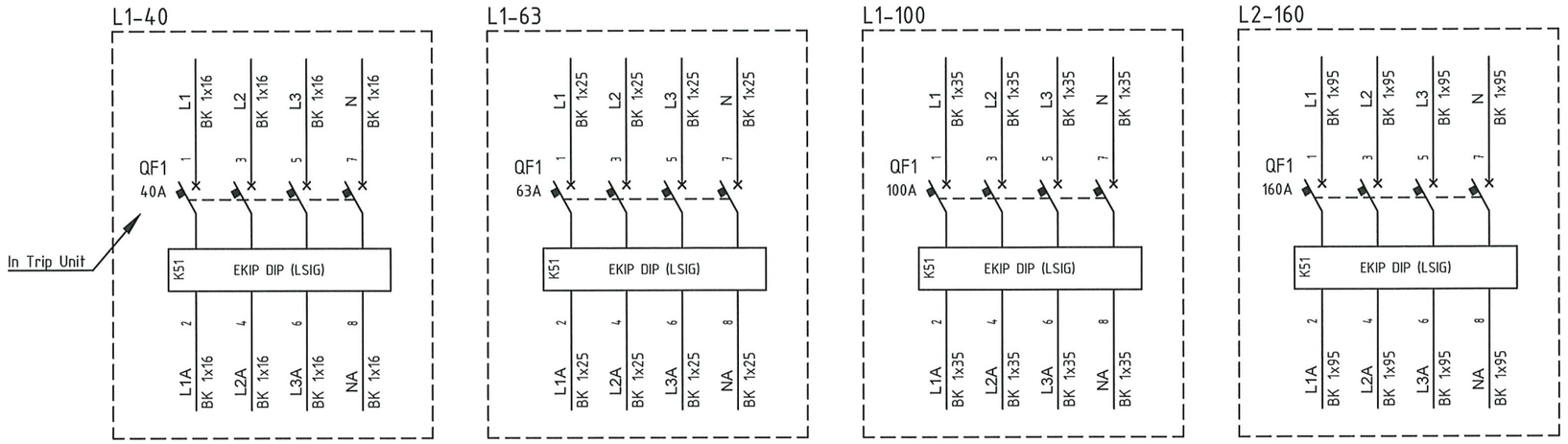
A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 029 | REV. 02

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)
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 030 | REV. 02

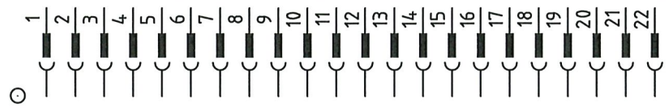
F.to UNI A3: 420mmx297mm

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)
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 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

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25/3/25

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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

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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

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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 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:	AC UPS - WIRING DIAGRAM & TERMINAL SCHEDULE INCLUDING EQUIPMENTS LIST & BILL OF MATERIAL	Sheet 164 of 303 Date: 03/10/2024 Rev: 03

TO MARK UP
AS COMMISSIONED: MATIA GIROTTI
25/3/25

Base Load Power Hub (BLPH)

AC UPS F&G - TAG: UP-200F4

WIRING DIAGRAM & TERMINAL SCHEDULE

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00009

REV.:	DATE:	SIGNATURE:
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SOLUTIONS

Manufacturer (company) Manufacturer (address)	AEG Power Solutions GmbH Emil-Siepmann-Straße 32 59581 Warstein
Phone	+49(0)2902/763-0 www.aegps.com

Project name	1000007888_080
Customer	ROSETTI MARINO
Key word	Hollandse Kust Noord (HKN) wind farm

System	AC UPS F&G - TAG: UP-200F4
Systems Type	System 20 kVA
Responsible for project	Ch.Peck

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VENDOR DOCUMENT - FDL DWG:
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Created on	03.06.2024	from	Beckschäfer
Last Revision	27.08.2024	from	Beckschäfer

Number of pages 133

				Date	03.06.2024	ROSETTI MARINO Hollandse Kust Noord (HKN) wind farm	AEG POWER SOLUTIONS	System 20 kVA Title page/Cover page	=
				Editor	Beckschäfer				+
				Checked	Ch.Peck				& EAA
Stat	Alteration	Date	Name	Norm				1000007888_080 en	A3
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		2	Table of contents	System 20 kVA	Beckschäfer	01	13.08.2024	Beckschäfer
		3	Table of contents	System 20 kVA	Beckschäfer	01	13.08.2024	Beckschäfer
		4	Table of contents	System 20 kVA	Beckschäfer	01	13.08.2024	Beckschäfer
		5	Table of contents	System 20 kVA	Beckschäfer	01	13.08.2024	Beckschäfer
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		1	Single-line diagram	System 20 kVA	EEC	02	27.08.2024	Beckschäfer
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	MBC1	2	Circuit diagram	GR-Ausgang UPS1	Beckschäfer			
	MBC1	3	Circuit diagram	GR-Ausgang UPS2	Beckschäfer			
	MBC1	4	Circuit diagram	Bypass Transformator	Beckschäfer			
	MBC1	5	Circuit diagram	SBS mains	Beckschäfer			
	MBC1	6	Circuit diagram	Manual bypass	Beckschäfer			
	MBC1	7	Circuit diagram	Load	Beckschäfer	02	27.08.2024	Beckschäfer
	MBC1	8	Circuit diagram	Load	Beckschäfer	02	27.08.2024	Beckschäfer
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	MBC1	10	Circuit diagram	Common fault	Beckschäfer	01	13.08.2024	Beckschäfer
	MBC1	11	Circuit diagram	external connection	Beckschäfer			
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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

System 20 kVA

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	MBC1	12	Terminal diagram	Terminal diagram =+MBC1-X32	Beckschäfer	01	13.08.2024	Beckschäfer
	MBC1	13	Terminal diagram	Terminal diagram =+MBC1-X33	Beckschäfer	01	13.08.2024	Beckschäfer
	MBC1	14	Terminal diagram	Terminal diagram =+MBC1-X34	Beckschäfer	01	13.08.2024	Beckschäfer
	MBC1	15	Terminal diagram	Terminal diagram =+MBC1-X35	Beckschäfer	01	13.08.2024	Beckschäfer
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	MBC1	17	Terminal diagram	Terminal diagram =+MBC1-X37	Beckschäfer	01	13.08.2024	Beckschäfer
	MBC1	18	Terminal diagram	Terminal diagram =+MBC1-X38	Beckschäfer	01	13.08.2024	Beckschäfer
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	MBC1	21	Terminal diagram	Terminal diagram =+MBC1-X93	Beckschäfer	01	13.08.2024	Beckschäfer
	MBC1	22	Terminal diagram	Terminal diagram =+MBC1-X130	Beckschäfer	01	13.08.2024	Beckschäfer
	UPS1	1	Circuit diagram	Rectifier input	EEC			
	UPS1	2	Circuit diagram	Power section rectifier	EEC			
	UPS1	3	Circuit diagram	Power section rectifier	EEC			
	UPS1	4	Circuit diagram	Battery connection	EEC			
	UPS1	5	Circuit diagram	Power section inverter	EEC			
	UPS1	6	Circuit diagram	Inverter output	EEC			
	UPS1	7	Circuit diagram	Inverter output	EEC			
	UPS1	8	Circuit diagram	Load output / SBS circuit	EEC			
	UPS1	9	Circuit diagram	Inverter output contactor	EEC			
	UPS1	10	Circuit diagram	Power section SBS	EEC			
	UPS1	11	Circuit diagram	Fuse boards	EEC			
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	UPS1	14	Circuit diagram	Control SBS	EEC			
	UPS1	15	Circuit diagram	DOU	EEC			

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

System 20 kVA

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	UPS1	12	Terminal diagram	Terminal diagram =+UPS1-E1-X1	Beckschäfer			
	UPS1	13	Terminal diagram	Terminal diagram =+UPS1-E2-X2	Beckschäfer			
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	UPS1	16	Terminal diagram	Terminal diagram =+UPS1-F120	Beckschäfer			
	UPS1	17	Terminal diagram	Terminal diagram =+UPS1-F121	Beckschäfer			
	UPS1	18	Terminal diagram	Terminal diagram =+UPS1-PE	Beckschäfer			
	UPS1	19	Terminal diagram	Terminal diagram =+UPS1-X12	Beckschäfer			
	UPS1	20	Terminal diagram	Terminal diagram =+UPS1-X13	Beckschäfer			

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

System 20 kVA

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	UPS2	6	Circuit diagram	Inverter output	Beckschäfer			
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	UPS2	8	Circuit diagram	Load output / SBS circuit	Beckschäfer			
	UPS2	9	Circuit diagram	Inverter output contactor	Beckschäfer			
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	UPS2	11	Circuit diagram	Fuse boards	Beckschäfer			
	UPS2	12	Circuit diagram	Rectifier control	Beckschäfer			
	UPS2	13	Circuit diagram	Inverter control	Beckschäfer			
	UPS2	14	Circuit diagram	Control SBS	Beckschäfer			
	UPS2	15	Circuit diagram	DOU	Beckschäfer			
	UPS2	16	Circuit diagram	Control CAN	Beckschäfer			
	UPS2	17	Circuit diagram	Fan control/monitoring	Beckschäfer			
	UPS2	18	Circuit diagram	battery charging circuit monitoring	Beckschäfer			
	UPS2	19	Circuit diagram	battery charging circuit monitoring	Beckschäfer			
	UPS2	20	Circuit diagram	MultiCom	Beckschäfer			
	UPS2	21	Circuit diagram	Remote signaling	Beckschäfer			
	UPS2	22	Circuit diagram	Remote signaling	Beckschäfer			
	UPS2	23	Circuit diagram	external connection	Beckschäfer			
	UPS2	1	Terminal diagram	Terminal diagram =+UPS2-A9-A12-X3	Beckschäfer			
	UPS2	2	Terminal diagram	Terminal diagram =+UPS2-A9-A12-X4	Beckschäfer			

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VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00009
REV.: 3_A | DATE: 15/11/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

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				Date	13.08.2024	ROSETTI MARINO Hollandse Kust Noord (HKN) wind farm	AEG POWER SOLUTIONS	System 20 kVA Table of contents
				Editor	Beckschäfer			
01	500000002053	13.08.2024	Beckschäfer	Checked	Ch.Peck			
Stat	Alteration	Date	Name	Norm				

1000007888_080 en | = | + | & EAB | A3 | sheet 4 | sheets 5

CAE EPLAN Electric P8

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System	Installation location	Page	Type of circuit diagram	Page description	Editor	Stat	Date	Editor
	UPS2	3	Terminal diagram	Terminal diagram =+UPS2-A9-A12-X5	Beckschäfer			
	UPS2	4	Terminal diagram	Terminal diagram =+UPS2-A9-A12-X6	Beckschäfer			
	UPS2	5	Terminal diagram	Terminal diagram =+UPS2-A9-A29.1-X2	Beckschäfer			
	UPS2	6	Terminal diagram	Terminal diagram =+UPS2-A9-A29.1-X4	Beckschäfer			
	UPS2	7	Terminal diagram	Terminal diagram =+UPS2-A9-A29.1-X5	Beckschäfer			
	UPS2	8	Terminal diagram	Terminal diagram =+UPS2-A20-X3	Beckschäfer			
	UPS2	9	Terminal diagram	Terminal diagram =+UPS2-A20-X4	Beckschäfer			
	UPS2	10	Terminal diagram	Terminal diagram =+UPS2-A20-X5	Beckschäfer			
	UPS2	11	Terminal diagram	Terminal diagram =+UPS2-A20-X6	Beckschäfer			
	UPS2	12	Terminal diagram	Terminal diagram =+UPS2-E1-X1	Beckschäfer			
	UPS2	13	Terminal diagram	Terminal diagram =+UPS2-E2-X2	Beckschäfer			
	UPS2	14	Terminal diagram	Terminal diagram =+UPS2-E3-X3	Beckschäfer			
	UPS2	15	Terminal diagram	Terminal diagram =+UPS2-E4-X4	Beckschäfer			
	UPS2	16	Terminal diagram	Terminal diagram =+UPS2-F120	Beckschäfer			
	UPS2	17	Terminal diagram	Terminal diagram =+UPS2-F121	Beckschäfer			
	UPS2	18	Terminal diagram	Terminal diagram =+UPS2-PE	Beckschäfer			
	UPS2	19	Terminal diagram	Terminal diagram =+UPS2-X12	Beckschäfer			
	UPS2	20	Terminal diagram	Terminal diagram =+UPS2-X13	Beckschäfer			
	UPS2	21	Terminal diagram	Terminal diagram =+UPS2-X14	Beckschäfer			
	UPS2	22	Terminal diagram	Terminal diagram =+UPS2-X15	Beckschäfer			
	UPS2	23	Terminal diagram	Terminal diagram =+UPS2-X120	Beckschäfer			

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			Date	13.08.2024	ROSETTI MARINO Hollandse Kust Noord (HKN) wind farm
			Editor	Beckschäfer	
01	500000002053	13.08.2024	Checked	Ch.Peck	
Stat	Alteration	Date	Norm		

AEG POWER SOLUTIONS

System 20 kVA

Table of contents

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sheet 5 / sheets 5

1000007888_080

CAE EPLAN Electric P8

Structure identifier overview

Full designation	Labeling	Structure description
+BAT1	Installation location	Battery cabinet
+BAT2	Installation location	Battery cabinet
+MBC1	Installation location	Bypass transformer cabinet with manual bypass 20 kVA
+UPS1	Installation location	Protect 8.33 20-400-204-400
+UPS2	Installation location	Protect 8.33 20-400-204-400
&EAA	Document type	Title page/Cover page
&EAB	Document type	Table of contents
&EDB	Document type	Structure identifier overview
&EFA	Document type	Single-line diagram
&EFS	Document type	Circuit diagram
&EMA	Document type	Terminal diagram

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				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

System 20 kVA

Structure identifier overview

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sheet 1
sheets 1

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AUXILIARY
From Lighting & Small Power DB BOP DP 200N1 (Cubicle 33-Q42)
100-240V/N/PE~50/60Hz

back-up fuse gG10A 3G2.5mm2

LINE A
From LV Switchgear SG 200N1 (Cubicle A5/35)
Mains
400V;3/PE~50Hz

gG63A 4G35mm2

From LV Switchgear SG 200N1 (Cubicle A2/34)
Bypass mains
400V;3/PE~50Hz

gG63A 4G35mm2

LINE B
From LV Switchgear SG 200N1 (Cubicle A5/36)
Mains
400V;3/PE~50Hz

gG63A 4G35mm2

Not included in the AEG shipment

Code	Description
Q1	Rectifier input mains breaker
T40	Rectifier input isolation transformer
A1	Rectifier
A2	Inverter
T1	Inverter output isolation transformer
A3-A4	Static by-pass switch
A18	Display control module
A85	Heater
H1	Light

+MBC1
BY-200F4
Bypass-Trafoschrank mit HIU 20 kVA
1000007888.080
10009759

-X1 1U,1V,1W,PE
-X10 U,V,W,PE
-X13 U,N,PE
-X14 U,N
-X1 3U,3V,3W,PE
-Q10 L=50/35A I=0,5kA Icu=50kA
-T8 400V/400V 20kVA
-A85
-H1
-Q28.1 NC
-Q28.2 NC
-X1 2U,2V,2W,PE
-X4 1U,1V,1W,1N,PE
-X4 2U,2V,2W,2N,PE
-X1 4U,4V,4W,PE

+UPS1
BC-200F4A
Protect 8.33 23 400 234 400
1000007888.080
10009759

+UPS2
BC-200F4B
Protect 8.33 23 400 234 400
1000007888.080
10009759

-X13 U,N,PE
-X14 U,N
-E1-X1 U,V,W,PE
-E4-X4 U,V,W,N,PE
-A85
-H1
-Q1 L=100/85A I=1,0kA Icu=50kA
-T40
-A1 REC
-A2 INV
-T1
-F1,-F2,-F3
-A3 SBS
-A4
-A18
Display
-A20
Parallel Adapter
INV CAN -X3 1-3 → 203/1.6
INV Sync -X5 1-4 → 205/1.6
203/1.6 INV CAN -X3 1-3
205/1.6 INV Sync -X5 1-4
-L11,-L12,-L13
Parallel preventive choke coil
-A12,-A13
Remote signaling
-A24.1 BLU PRO -F91
-A24.2 BLU PRO -F92
-A24.3 BLU PRO -F93
-E2-X2 L-,L+,PE
-X15 2,3
-X130 1,2
-E3-X3 U,V,W,N,PE
-X2 1L+,1L-,PE
-X91 1M
-X92 1M
-X93 1M
-X5 1U,1V,1W,1N,PE
-X5 2U,2V,2W,2N,PE
-X2 3L+,3L-,PE
-X15 5,7
-X91 3M
-X92 3M
-X93 3M
-Q71 NC
-Q72 NC
1/5/A
INV operation Manual bypass
-Q29
-F25
DP-200F4
-QF31 B16A 300mA
5pc
-QF35 B16A 300mA
-QF36 B10A
3pc
-QF38 B10A
-X31 U,N,PE
-X35 V,N,PE
-X36 W,N,PE
-X38 V,N,PE
-X2 2L+,2L-,PE
-X15 4,5
-X91 2M
-X92 2M
-X93 2M
-X130 1,2,1PE
-X2 4L+,4L-,PE
-X15 8,9
-X91 4M
-X92 4M
-X93 4M
-X130 3,4,2PE

Not included in the AEG shipment

max. gG10A
max. gG10A
Load
400/230V;3/N/PE~50Hz

+BFB1
CB-200F4A
Battery fuse box 200 A
-Q2 L=200A
DC 24V max. 300W
2(1x70 mm2)

+BFB2
CB-200F4B
Battery fuse box 200 A
-Q2 L=200A
DC 24V max. 300W
2(1x70 mm2)

+BAT1
BA-200F4A
Batteries installed on rack
3 x 18 x FTG 12-120
Battery voltage 216V
Battery capacity 360Ah
String 1
String 2
String 3
-R81

+BAT2
BA-200F4B
Batteries installed on rack
3 x 18 x FTG 12-120
Battery voltage 216V
Battery capacity 360Ah
String 1
String 2
String 3
-R81

*1 Attention! In the event of battery undervoltage < 130 V, the UPS automatically switches off battery isolator Q2.
If this happens, switch X15:3 must be switched into the open position (undervoltage trip blocked).
For restart, please refer to the chapter in the UPS operating instructions (charging the DC link capacitors) attached.
Unlock the tripped switch Q2 by switching to open position.
After charging the DC link capacitors, switch on Q2.
Attention! When the battery voltage reaches > 200 V, switch X15:3 must be switched back to the closed position.

*2 Connection cables are not included.

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ROSETTI MARINO SpA

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21	1000002293	13.09.2024	Rizzolatti	EMEA	Date	18.05.2024	ROSETTI MARINO	AEG	System 23 kVA
20	1000002099	07.08.2024	Rizzolatti	Chirico	EEC	Ch'Picc	Raffaello Rossi [HDN] w/ Isolation		Single line diagram
DIN	Alterations	Date	Name	Name	Date				

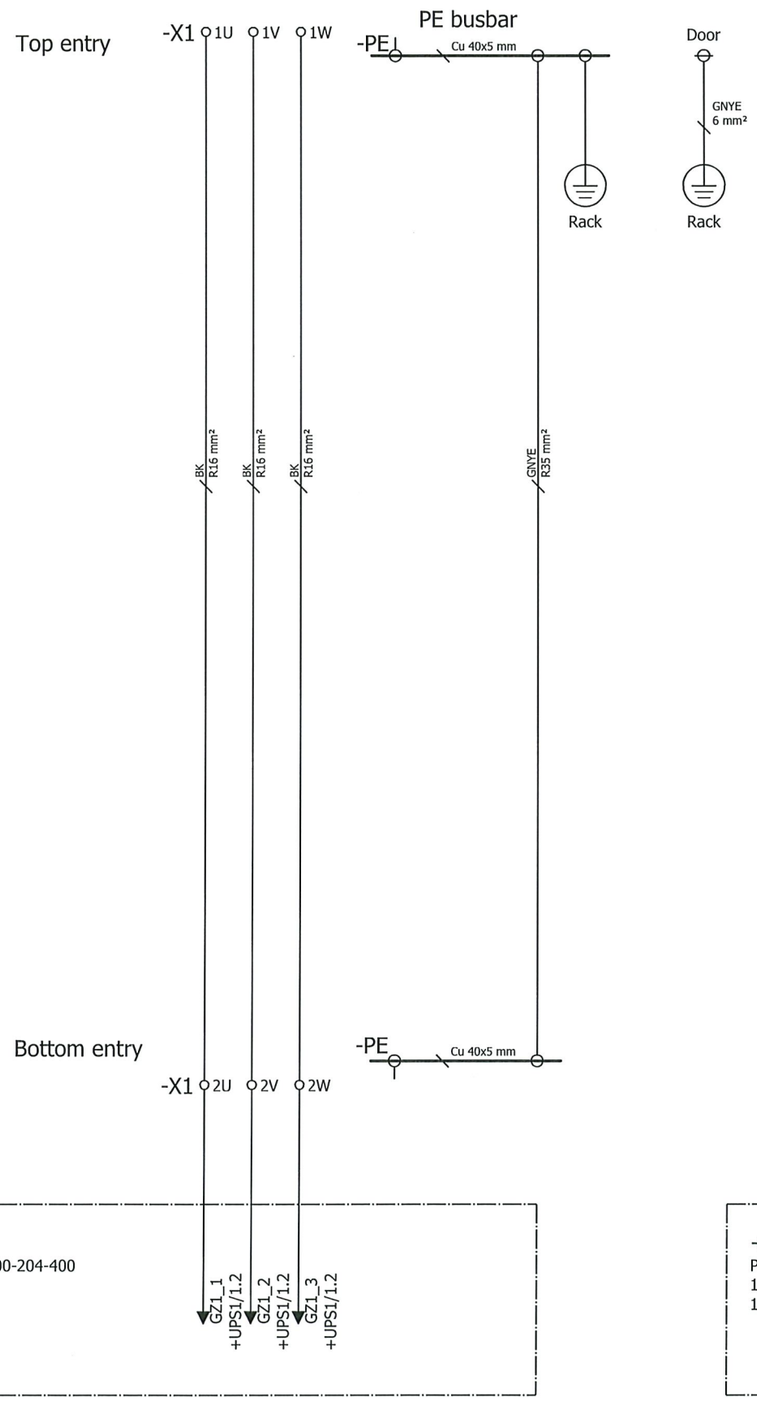
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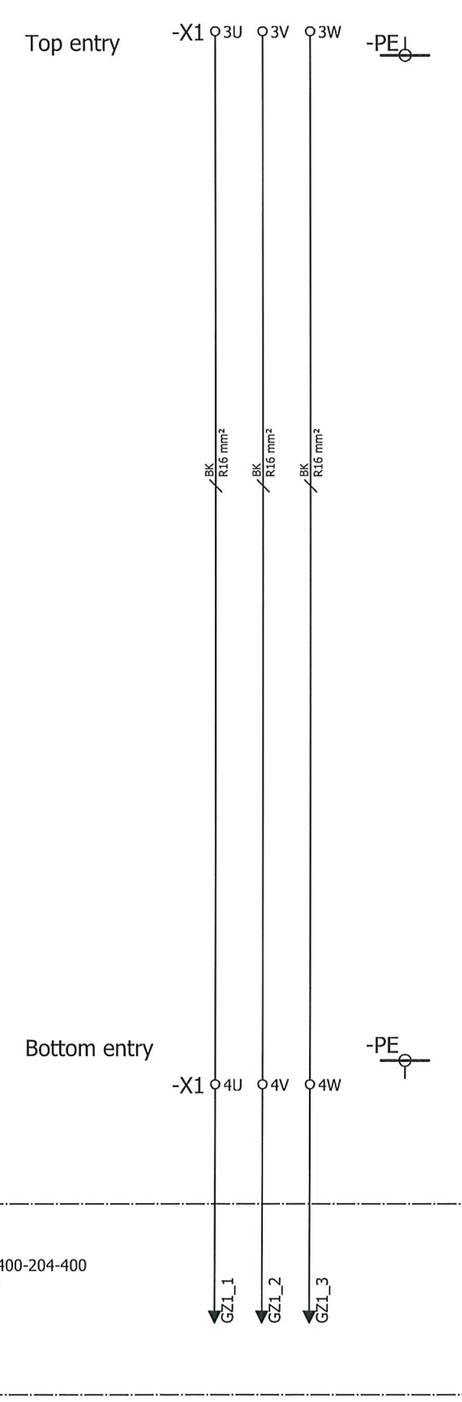
REC mains

UPS1



REC mains

UPS2



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				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

REC mains
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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+ MBC1
& EFS

A3

sheet 1
sheets 11

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1000007888_080

+UPS1
Protect 8.33 20-400-204-400
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GZ2_1 +UPS1/4.3
GZ2_2 +UPS1/4.2
GZ2_3 +UPS1/4.3
GZ15_2 +UPS1/12.8
GZ15_3 +UPS1/12.8
GZ91_1 +UPS1/18.3
GZ92_1 +UPS1/18.7
GZ93_1 +UPS1/19.3
GZ130_1 +UPS1/12.2
GZ130_2 +UPS1/12.2

TO SHEET 227 (A13)

-W208
LiYCY 3x0,5 mm²
WH
BN

Bottom entry
-X2 1L+
1L-
-PE
-X15 2
3
-X15 12
13
-X91 1M
-X92 1M
-X93 1M

BK R70 mm²
BK R70 mm²
BK R2,5 mm²
BK R2,5 mm²
BK R2,5 mm²
BK R2,5 mm²
BK R2,5 mm²

Top entry
-X2 2L+
2L-
-PE
-X15 4
5
-X15 10
11
-X91 2M
-X92 2M
-X93 2M

* **

SEE DOC. EL-DG-00011 SHEET 17

Battery fuse
Battery MCBB
Shunt opening release
Battery central tapping

Top entry
-X130 1
2
1PE
OG 1,5 mm²

+BAT1
Battery cabinet
-R81
-X1 1
2

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				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

GR-Ausgang UPS1
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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& EFS

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sheets 11

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+UPS2
Protect 8.33 20-400-204-400
1000007888.080
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TO SHEET 273
(A13)

GZ2_1 GZ2_2 GZ2_3 GZ15_2 +UPS2/12.8 GZ15_3 +UPS2/12.8 GZ91_1 +UPS2/18.3 GZ92_1 +UPS2/18.7 GZ93_1 +UPS2/19.3 GZ130_1 +UPS2/12.2 GZ130_2 +UPS2/12.2

-W209
LiYCY 3x0,5 mm²
WH BN

Bottom entry -X2 3L+ 3L- -PE -X15 6 7 -X15 16 17 -X91 3M -X92 3M -X93 3M

BK R70 mm² BK R70 mm² BK R2,5 mm² BK R2,5 mm² BK R2,5 mm² BK R2,5 mm² BK R2,5 mm²

Top entry -X2 4L+ 4L- -PE -X15 8 9 -X15 14 15 -X91 4M -X92 4M -X93 4M

* **

SEE DOC. EL-DG-00011 SHEET 17

Battery fuse

Battery MCCB
Shunt opening release

Battery central tapping

Top entry -X130 3 4 2PE

OG 1,5 mm²

+BAT2
Battery cabinet

-R81 -X1 1 2

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

GR-Ausgang UPS2
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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& EFS

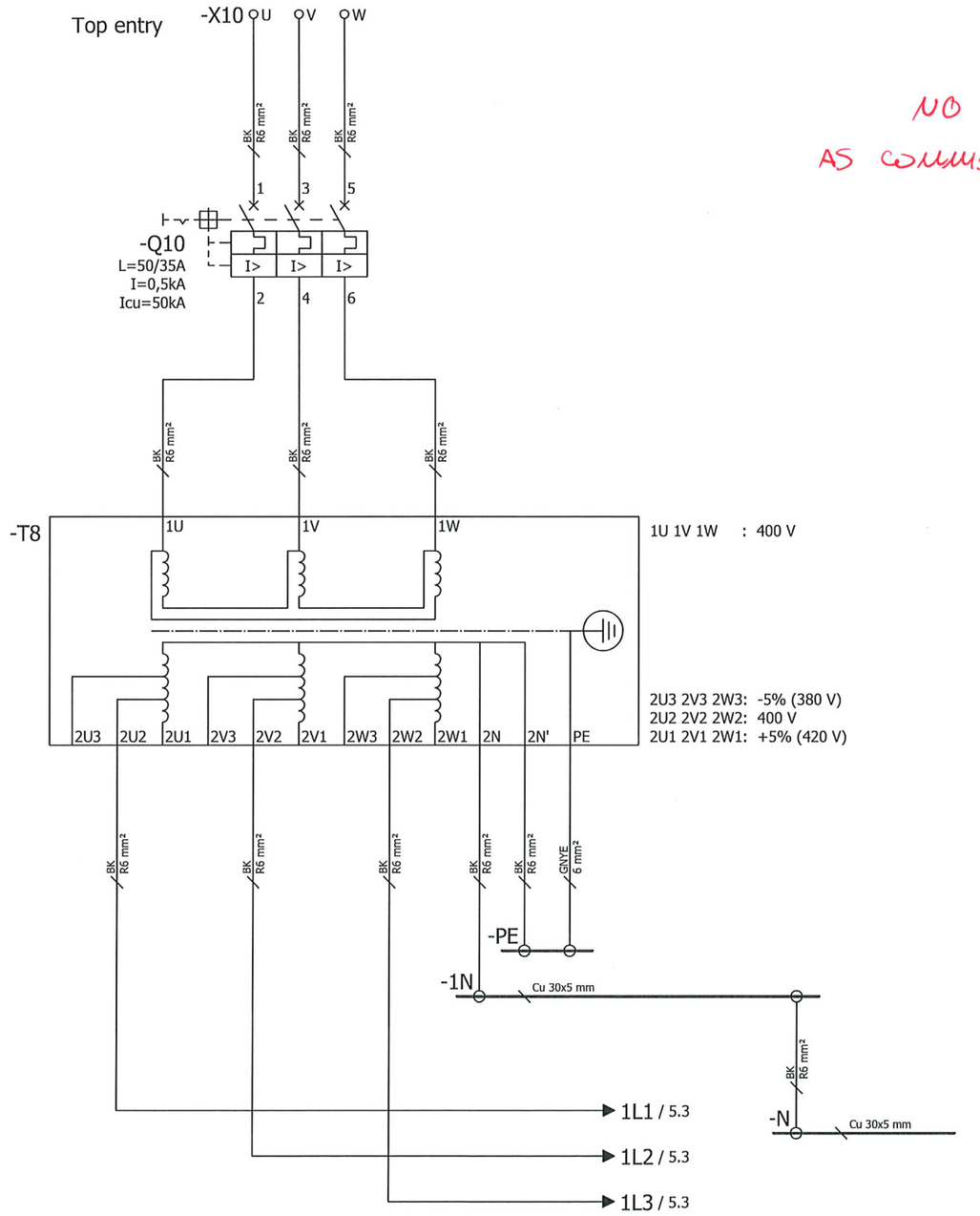
A3

sheet 3
sheets 11

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Mains
400V;3/PE~50Hz



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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Bypass Transformator
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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+ MBC1
& EFS

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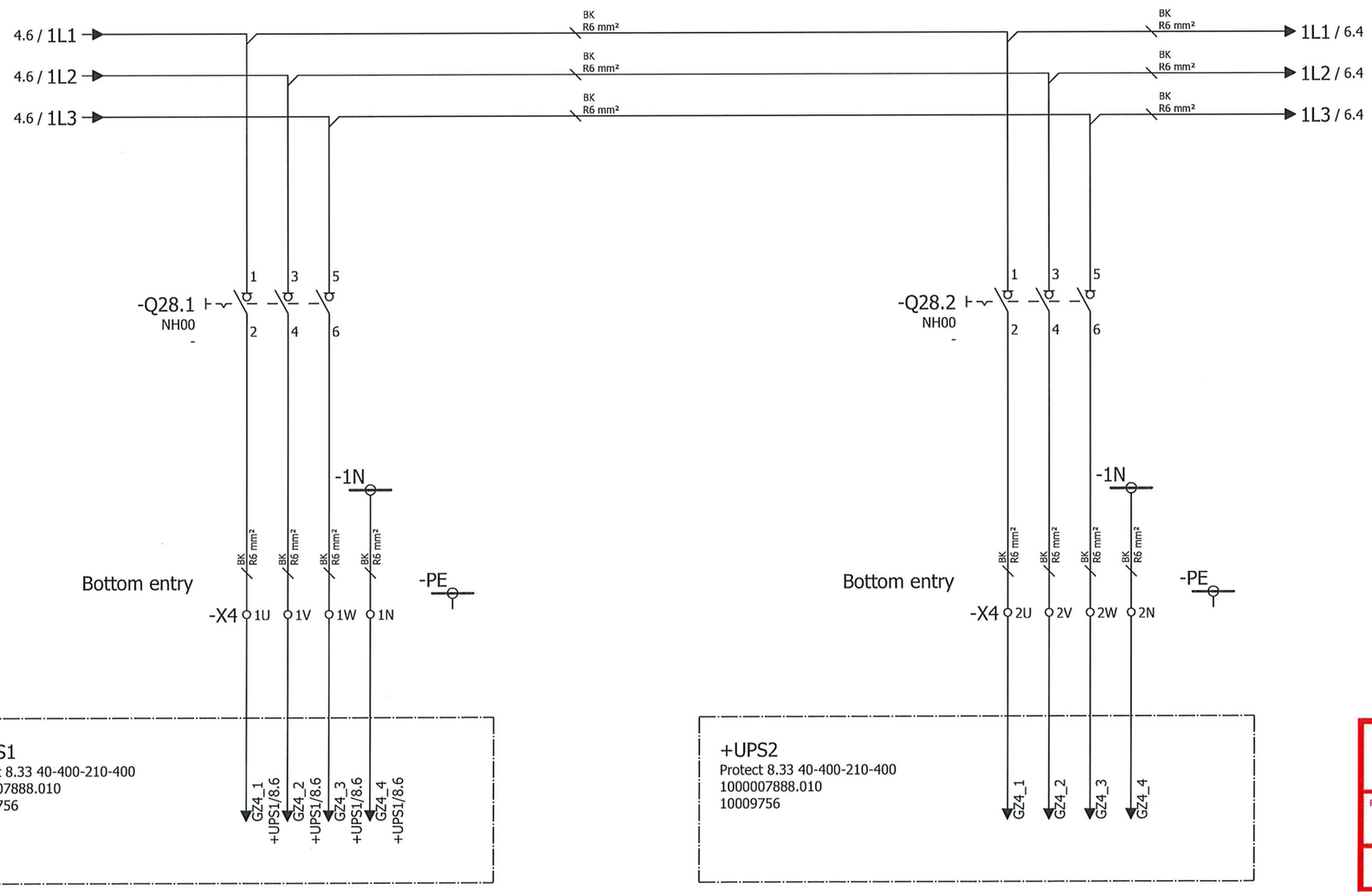
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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

SBS mains
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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sheet 5
sheets 11

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+UPS1
Protect 8.33 40-400-210-400
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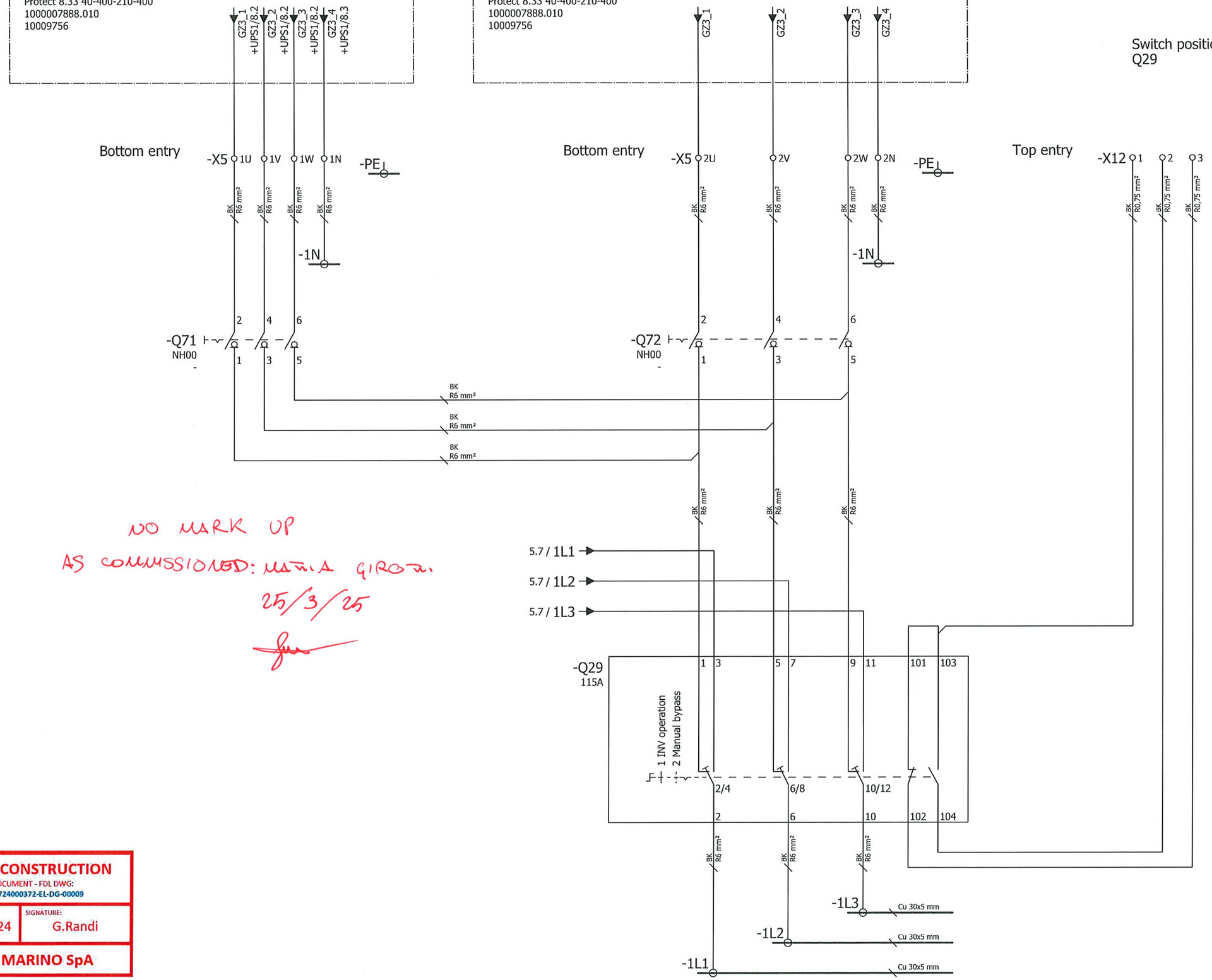
+UPS2
Protect 8.33 40-400-210-400
1000007888.010
10009756

Switch position
Q29

Bottom entry

Bottom entry

Top entry



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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Manual bypass
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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+ MBC1
& EFS

A3

sheet 6
sheets 11

CAE EPLAN Electric P8

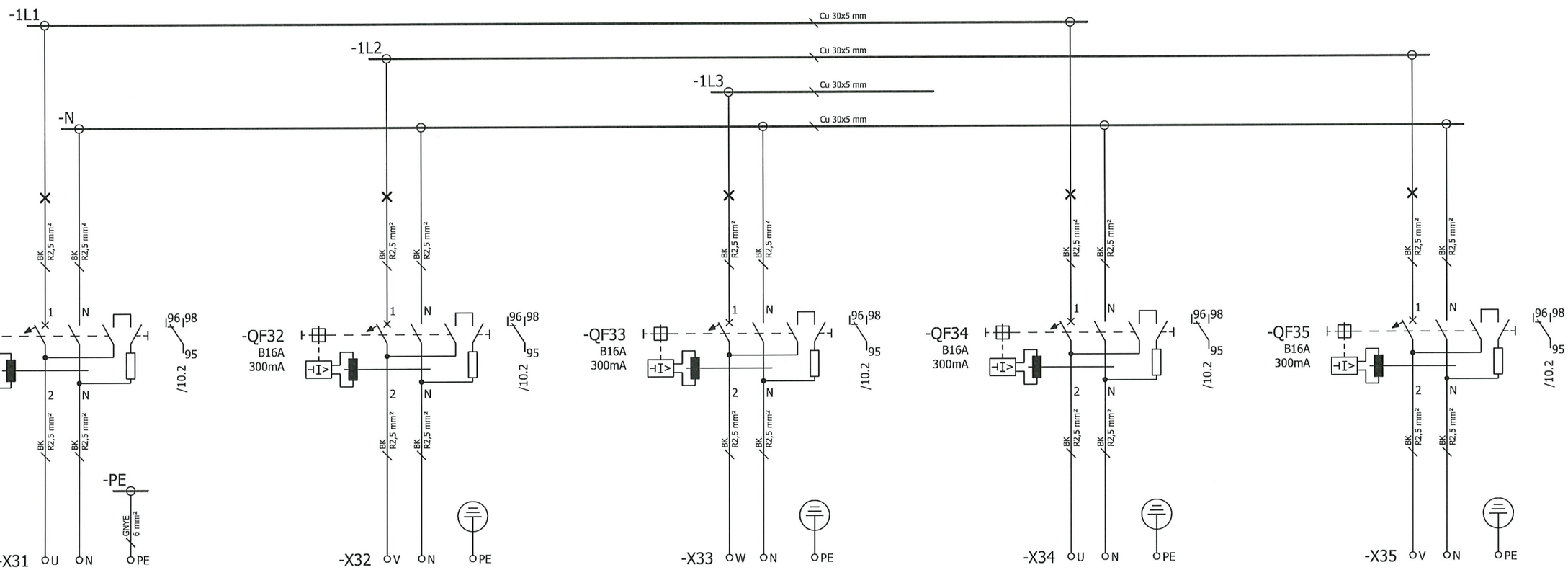
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Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE A
2KW

Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE B
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

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				Date	28.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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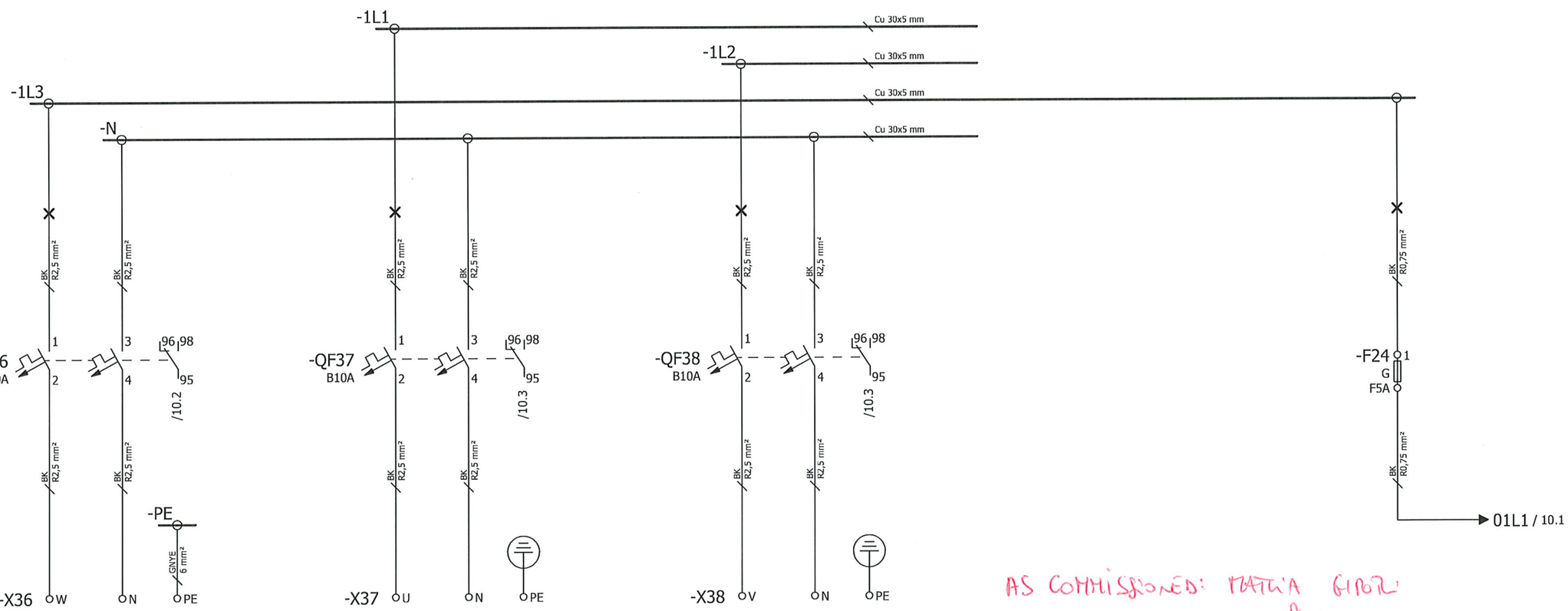
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+ MBC1
& EFS

A3

sheet 7
sheets 11

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Load
230V/N/PE~50Hz

B400-NET-01
NETWORK CABINET LINE A
1KW

Load
230V/N/PE~50Hz

B400-NET-01
NETWORK CABINET LINE B
1KW

Load
230V/N/PE~50Hz

SPARE
1KW

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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sheet 8
sheets 11

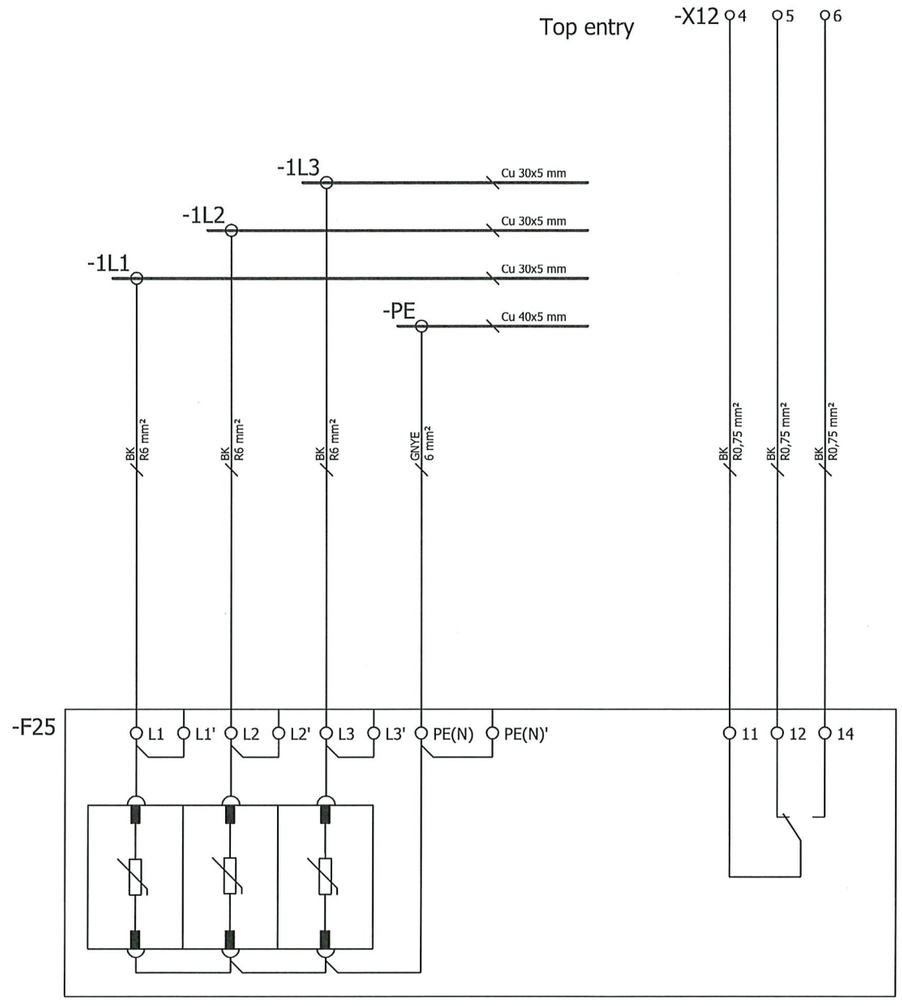
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status
Surge arrester

Top entry



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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Surge arrester
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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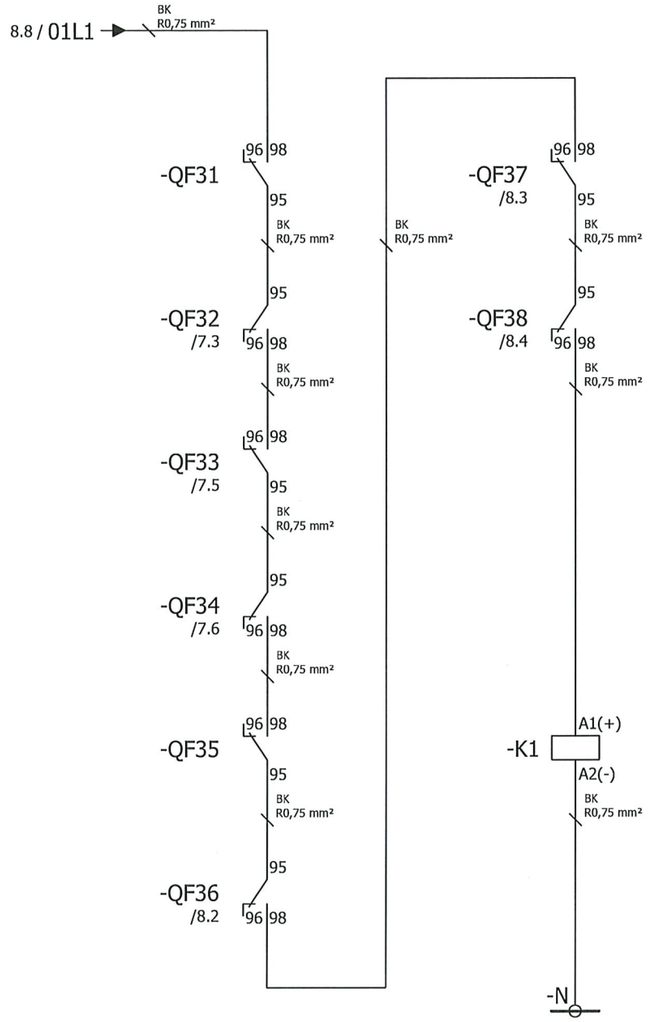
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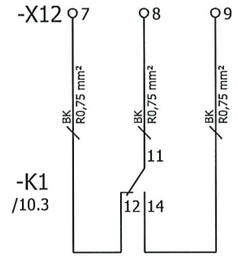


PXC.2966207_PLC-RSC-230UC/21
14
12
11 /10.7

Common fault

QF31 - QF38

Top entry



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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Common fault
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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+ MBC1
& EFS

A3

sheet 10
sheets 11

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+UPS1
Protect 8.33 20-400-204-400
1000007888.080
10009759

GZ13_1
+UPS1/23.7

GZ13_2
+UPS1/23.7

+UPS2
Protect 8.33 20-400-204-400
1000007888.080
10009759

GZ13_1
+UPS2/23.2

GZ13_2
+UPS2/23.3

BK
R1,5 mm²

BK
R1,5 mm²

Top entry

-X13 U U N N PE PE

BK
R0,75 mm²

BK
R0,75 mm²

-F100 1
G
T6,3A 2

BK
R0,75 mm²

L
-F85
I 3 2

BK
R0,75 mm²

-A85 -X1 3 2
-R1

Top entry

-X14 U U N N

BK
R0,75 mm²

-F110 1
G
T6,3A 2

BK
R0,75 mm²

BK
R0,75 mm²

-X114 U N

-W100
H05VV
2x1 mm²
3 m

L N
-H1
Enclosure light

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

external connection
Bypass transformer cabinet
with manual bypass 20 kVA
Circuit diagram

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+ MBC1
& EFS

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sheet 11
sheets 11

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Terminal diagram

terminal

=+MBC1-PE

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				PE						+MBC1&EFS/1.3
				PE						+MBC1&EFS/1.3
				PE						+MBC1&EFS/1.6
				PE						+MBC1&EFS/1.6
		+UPS1-PE	PE	PE						+MBC1&EFS/2.3
				PE						+MBC1&EFS/2.3
				PE						+MBC1&EFS/3.3
				PE						+MBC1&EFS/3.3
				PE						+MBC1&EFS/5.4
				PE						+MBC1&EFS/5.7
				PE						+MBC1&EFS/6.3
				PE						+MBC1&EFS/6.6

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-PE
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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= + MBC1 & EMA

A3

sheet 1
sheets 22

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Terminal diagram

terminal

=+MBC1-X1

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1U	'	-X1	2U			+MBC1&EFS/1.3
				1V	'	-X1	2V			+MBC1&EFS/1.3
				1W	'	-X1	2W			+MBC1&EFS/1.3
		+UPS1-E1-X1	U	2U	'	-X1	1U			+MBC1&EFS/1.3
		+UPS1-E1-X1	V	2V	'	-X1	1V			+MBC1&EFS/1.3
		+UPS1-E1-X1	W	2W	'	-X1	1W			+MBC1&EFS/1.3
				3U	'	-X1	4U			+MBC1&EFS/1.6
				3V	'	-X1	4V			+MBC1&EFS/1.6
				3W	'	-X1	4W			+MBC1&EFS/1.6
				4U	'	-X1	3U			+MBC1&EFS/1.6
				4V	'	-X1	3V			+MBC1&EFS/1.6
				4W	'	-X1	3W			+MBC1&EFS/1.6

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Terminal diagram =+MBC1-X1
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

A3 | sheet 2 | sheets 22

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Terminal diagram

terminal

=+MBC1-X2

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-E2-X2	L+	1L+	'	-X2	2L+			+MBC1&EFS/2.2
		+UPS1-E2-X2	L-	1L-	'	-X2	2L-			+MBC1&EFS/2.3
				2L+	'	-X2	1L+			+MBC1&EFS/2.2
				2L-	'	-X2	1L-			+MBC1&EFS/2.3
				3L+	'	-X2	4L+			+MBC1&EFS/3.2
				3L-	'	-X2	4L-			+MBC1&EFS/3.3
				4L+	'	-X2	3L+			+MBC1&EFS/3.2
				4L-	'	-X2	3L-			+MBC1&EFS/3.3

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X2
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

A3

sheet 3
sheets 22

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CAE EPLAN Electric P8

Terminal diagram

terminal

=+MBC1-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-E4-X4	U	1U	'	-Q28.1	2			+MBC1&EFS/5.3
		+UPS1-E4-X4	V	1V	'	-Q28.1	4			+MBC1&EFS/5.3
		+UPS1-E4-X4	W	1W	'	-Q28.1	6			+MBC1&EFS/5.3
		+UPS1-E4-X4	N	1N	'	-1N				+MBC1&EFS/5.4
				2U	'	-Q28.2	2			+MBC1&EFS/5.6
				2V	'	-Q28.2	4			+MBC1&EFS/5.6
				2W	'	-Q28.2	6			+MBC1&EFS/5.6
				2N	'	-1N				+MBC1&EFS/5.6

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X4
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

A3

sheet 4
sheets 22

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Terminal diagram

terminal

=+MBC1-X5

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-E3-X3	U	1U	'	-Q71	2			+MBC1&EFS/6.3
		+UPS1-E3-X3	V	1V	'	-Q71	4			+MBC1&EFS/6.3
		+UPS1-E3-X3	W	1W	'	-Q71	6			+MBC1&EFS/6.3
		+UPS1-E3-X3	N	1N	'	-1N				+MBC1&EFS/6.3
				2U	'	-Q72	2			+MBC1&EFS/6.5
				2V	'	-Q72	4			+MBC1&EFS/6.5
				2W	'	-Q72	6			+MBC1&EFS/6.6
				2N	'	-1N				+MBC1&EFS/6.6

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X5
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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& EMA

A3 | sheet 5 | sheets 22

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Terminal diagram

terminal

=+MBC1-X10

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U	'	-Q10	1			+MBC1&EFS/4.4
				V	'	-Q10	3			+MBC1&EFS/4.5
				W	'	-Q10	5			+MBC1&EFS/4.5

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X10
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

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sheet 6
sheets 22

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Terminal diagram

terminal

=+MBC1-X12

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1	'	-Q29	103			+MBC1&EFS/6.7
				2	'	-Q29	104			+MBC1&EFS/6.7
				3	'	-Q29	102			+MBC1&EFS/6.7
				4	'	-F25	11			+MBC1&EFS/9.6
				5	'	-F25	12			+MBC1&EFS/9.6
				6	'	-F25	14			+MBC1&EFS/9.6
				7	'	-K1	12			+MBC1&EFS/10.7
				8	'	-K1	11			+MBC1&EFS/10.7
				9	'	-K1	14			+MBC1&EFS/10.7

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X12
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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sheet 7
sheets 22

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Terminal diagram

terminal

=+MBC1-X13

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-X14	U	U		-F100	1:1			+MBC1&EFS/11.2
		-X14	U	U						+MBC1&EFS/11.2
		+UPS1-X14	N	N		-A85	-X1:2			+MBC1&EFS/11.3
		-X14	N	N						+MBC1&EFS/11.3
				PE						+MBC1&EFS/11.3
				PE						+MBC1&EFS/11.3

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X13
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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sheets 22

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Terminal diagram

terminal

=+MBC1-X14

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		-X13	U	U		-F110	1:2			+MBC1&EFS/11.6
		+UPS2-X13	U	U						+MBC1&EFS/11.6
		-X13	N	N		-X114	N			+MBC1&EFS/11.7
		+UPS2-X13	N	N						+MBC1&EFS/11.7

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X14
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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sheet 9
sheets 22

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Terminal diagram

terminal

=+MBC1-X15

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-X15	2	2	'	-X15	4			+MBC1&EFS/2.4
		+UPS1-X15	3	3	'	-X15	5			+MBC1&EFS/2.4
				4	'	-X15	2			+MBC1&EFS/2.4
				5	'	-X15	3			+MBC1&EFS/2.4
		+UPS2-X15	2	6	'	-X15	8			+MBC1&EFS/3.4
		+UPS2-X15	3	7	'	-X15	9			+MBC1&EFS/3.4
				8	'	-X15	6			+MBC1&EFS/3.4
				9	'	-X15	7			+MBC1&EFS/3.4

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X15
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

1000007888_080 en

=
+ MBC1
& EMA

A3

sheet 10
sheets 22

1000007888_080

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Terminal diagram

terminal

=+MBC1-X31

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U	'	-QF31	2			+MBC1&EFS/7.2
				N	'	-QF31	N			+MBC1&EFS/7.2
				PE	'	-PE				+MBC1&EFS/7.2

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X31
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

A3

sheet 11
sheets 22

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Terminal diagram

terminal

=+MBC1-X32

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				V	'	-QF32	2			+MBC1&EFS/7.3
				N	'	-QF32	N			+MBC1&EFS/7.3
				PE	'					+MBC1&EFS/7.3

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X32
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

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sheet 12
sheets 22

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Terminal diagram

terminal

=+MBC1-X33

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				W	'	-QF33	2			+MBC1&EFS/7.5
				N	'	-QF33	N			+MBC1&EFS/7.5
				PE	'					+MBC1&EFS/7.5

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X33
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

A3 | sheet 13 | sheets 22

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Terminal diagram

terminal

=+MBC1-X34

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U	'	-QF34	2			+MBC1&EFS/7.6
				N	'	-QF34	N			+MBC1&EFS/7.6
				PE	'					+MBC1&EFS/7.7

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X34
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

A3

sheet 14
sheets 22

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Terminal diagram

terminal
=+MBC1-X35

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				V	'	-QF35	2			+MBC1&EFS/7.8
				N	'	-QF35	N			+MBC1&EFS/7.8
				PE	'					+MBC1&EFS/7.8

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Terminal diagram =+MBC1-X35
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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= | + MBC1 | & EMA | A3 | sheet 15 | sheets 22

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Terminal diagram

terminal

=+MBC1-X36

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				W	'	-QF36	2			+MBC1&EFS/8.2
				N	'	-QF36	4			+MBC1&EFS/8.2
				PE	'	-PE				+MBC1&EFS/8.2

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X36
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

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sheet 16
sheets 22

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Terminal diagram

terminal

=+MBC1-X37

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U	'	-QF37	2			+MBC1&EFS/8.3
				N	'	-QF37	4			+MBC1&EFS/8.3
				PE	'					+MBC1&EFS/8.4

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X37
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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= +MBC1 & EMA

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Terminal diagram

terminal

=+MBC1-X38

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type			Position / Page
				V	'	-QF38	2					+MBC1&EFS/8.4
				N	'	-QF38	4					+MBC1&EFS/8.5
				PE	'							+MBC1&EFS/8.5

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X38
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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& EMA

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Terminal diagram

terminal

=+MBC1-X91

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-F91	1	1M	'	-X91	2M			+MBC1&EFS/2.5
				2M	'	-X91	1M			+MBC1&EFS/2.5
		+UPS2-F91	1	3M	'	-X91	4M			+MBC1&EFS/3.5
				4M	'	-X91	3M			+MBC1&EFS/3.5

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X91
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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& EMA

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sheet 19
sheets 22

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Terminal diagram

terminal

=+MBC1-X92

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-F92	1	1M	'	-X92	2M			+MBC1&EFS/2.5
				2M	'	-X92	1M			+MBC1&EFS/2.5
		+UPS2-F92	1	3M	'	-X92	4M			+MBC1&EFS/3.5
				4M	'	-X92	3M			+MBC1&EFS/3.5

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X92
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

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sheet 20
sheets 22

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Terminal diagram

terminal
=+MBC1-X93

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-F93	1	1M	'	-X93	2M			+MBC1&EFS/2.6
				2M	'	-X93	1M			+MBC1&EFS/2.6
		+UPS2-F93	1	3M	'	-X93	4M			+MBC1&EFS/3.6
				4M	'	-X93	3M			+MBC1&EFS/3.6

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X93
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
& EMA

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sheet 21
sheets 22

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Terminal diagram

terminal

=+MBC1-X130

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable type	Cable name	-W208	-W209	-W100
										LiYCY 3x0,5 mm²	LiYCY 3x0,5 mm²	H05VV 2x1 mm²
												Position / Page
		+BAT1-R81-X1	1	1	'	+UPS1-X130	1			WH		+MBC1&EFS/2.7
		+BAT2-R81-X1	1	3	'	+UPS2-X130	1				WH	+MBC1&EFS/3.7
		+BAT1-R81-X1	2	2	'	+UPS1-X130	2			BN		+MBC1&EFS/2.7
		+BAT2-R81-X1	2	4	'	+UPS2-X130	2				BN	+MBC1&EFS/3.7
				1PE	'							+MBC1&EFS/2.7
				2PE	'							+MBC1&EFS/3.7

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+MBC1-X130
Bypass transformer cabinet
with manual bypass 20 kVA
Terminal diagram

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+ MBC1
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sheet 22
sheets 22

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Three-phase input
Attention! Observe sequence of wires, L1, L2, L3 -->
See technical data sheet for required mains fuses

Power section rectifier

mains transformer

Note: Reinforced insulated wire
0,75 mm² unmarked wires

-L61 N=2

Measurement REC Interface -A9-A50-X2
01L1 / 12.6
01L2 / 12.6
01L3 / 12.6
Supply REC Interface -A9-A50-X3
02L1 / 11.1
02L2 / 11.1
02L3 / 11.1

-L22 -T40 -L85.1

R25 mm² U2 U1 R25 mm² 1U 2U R16 mm² 1L1 / 2.1
R25 mm² V2 V1 R25 mm² 1V 2V R16 mm² 1L2 / 2.1
R25 mm² W2 W1 R25 mm² 1W 2W R16 mm² 1L3 / 2.1
3U R16 mm² 2L1 / 3.1
3V R16 mm² 2L2 / 3.1
3W R16 mm² 2L3 / 3.1

-L85.2

-C101.1 -C101.2 -C101.3

-Q3 R6 mm² 2 4 6 96 98 95 /12.3
1 3 5 R6 mm²
-L23 -L24 -L25 R6 mm²
-C23 -R23 -C24 -R24 -C25 -R25
3xR6 mm²

-Q1
L=100/85A
I=1,0kA
Icu=50kA
1 3 5 I> I> I>
2 4 6
C1 C2 /12.4

R25 mm² R25 mm² R25 mm²

-A80
Suppression 81 82 83
-R86 -R87 -R88
-R81 -R82 -R83
-V81.1-V81.6 3~
-R84.1 -R84.2
90 89
-C84

-A81
Suppression 81 82 83
-R86 -R87 -R88
-R81 -R82 -R83
-V81.1-V81.6 3~
-R84.1 -R84.2
90 89
-C85

-E1
-X1 U V W
-A2
-X4 EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3

-L92

-A1
-X4 EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3

2xR35 mm² 2xR35 mm² 2xR35 mm²

-X1 U V W

Mains
400V;3/PE~50Hz

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ1_1 +MBC1/1.3
GZ1_2 +MBC1/1.3
GZ1_3 +MBC1/1.3

Rack -PE PE busbar Cu 40x5 mm
Rack GNYE 6 mm² Tür links
Rack GNYE 6 mm² Pivot plate

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Rectifier input
Protect 8.33 20-400-204-400

Circuit diagram

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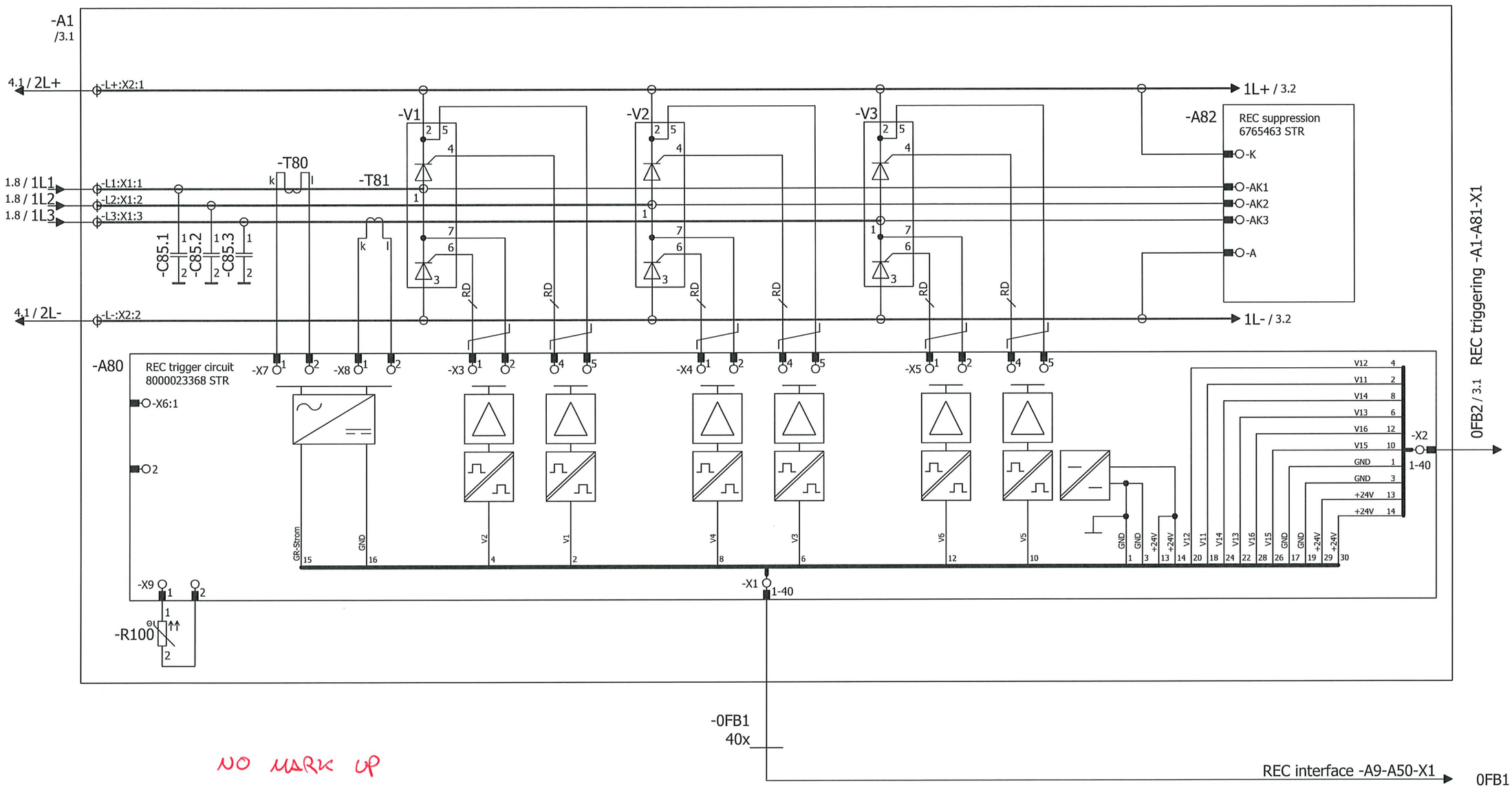
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+ UPS1
& EFS

A3 sheet 1 sheets 23

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Power section rectifier



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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Power section rectifier
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS1
& EFS

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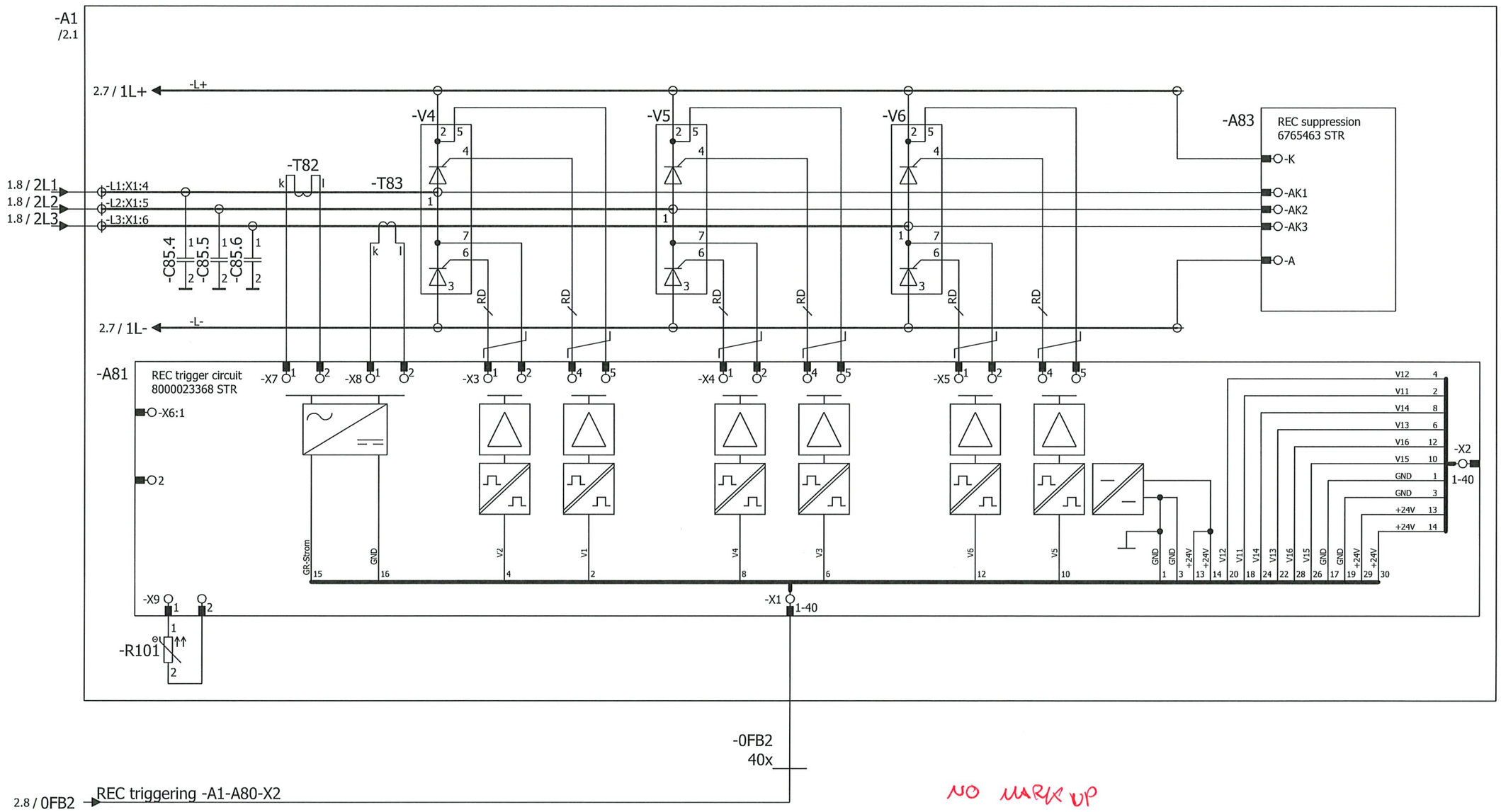
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Power section rectifier



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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Power section rectifier
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS1
& EFS

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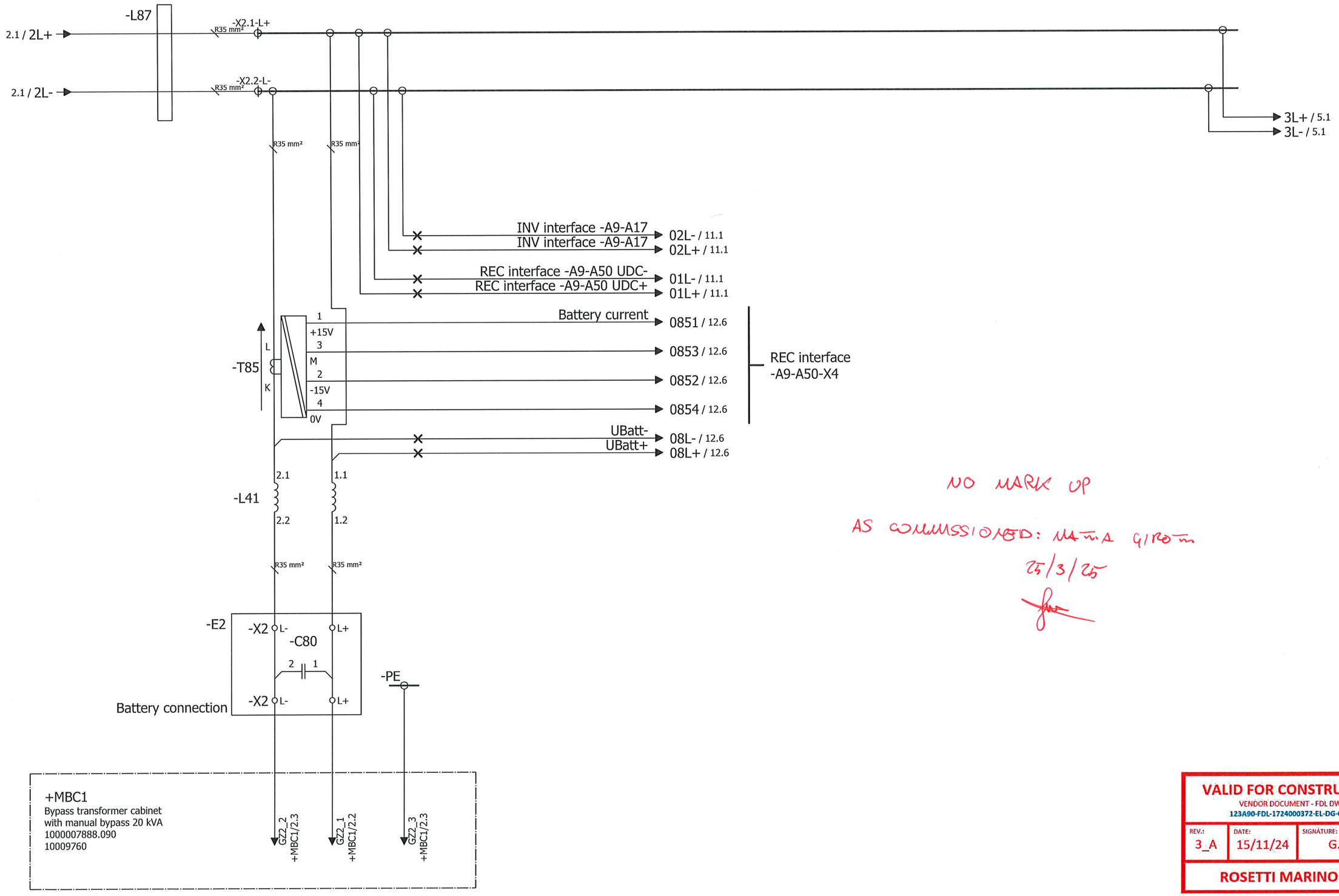
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Power section rectifier
Battery connection



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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Battery connection
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS1
& EFS

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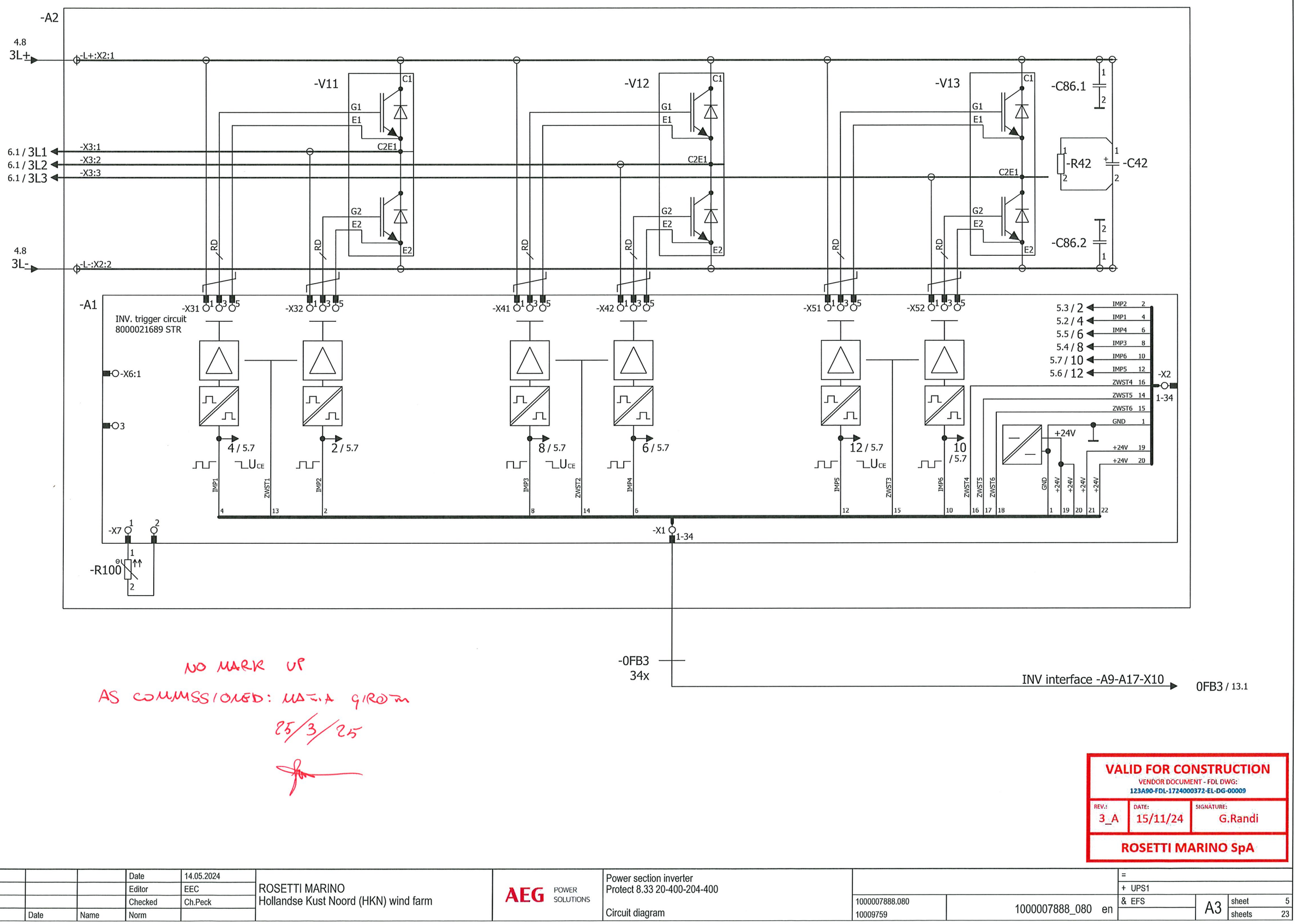
sheet 4
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Power section inverter



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Hollandse Kust Noord (HKN) wind farm

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Power section inverter
Protect 8.33 20-400-204-400

Circuit diagram

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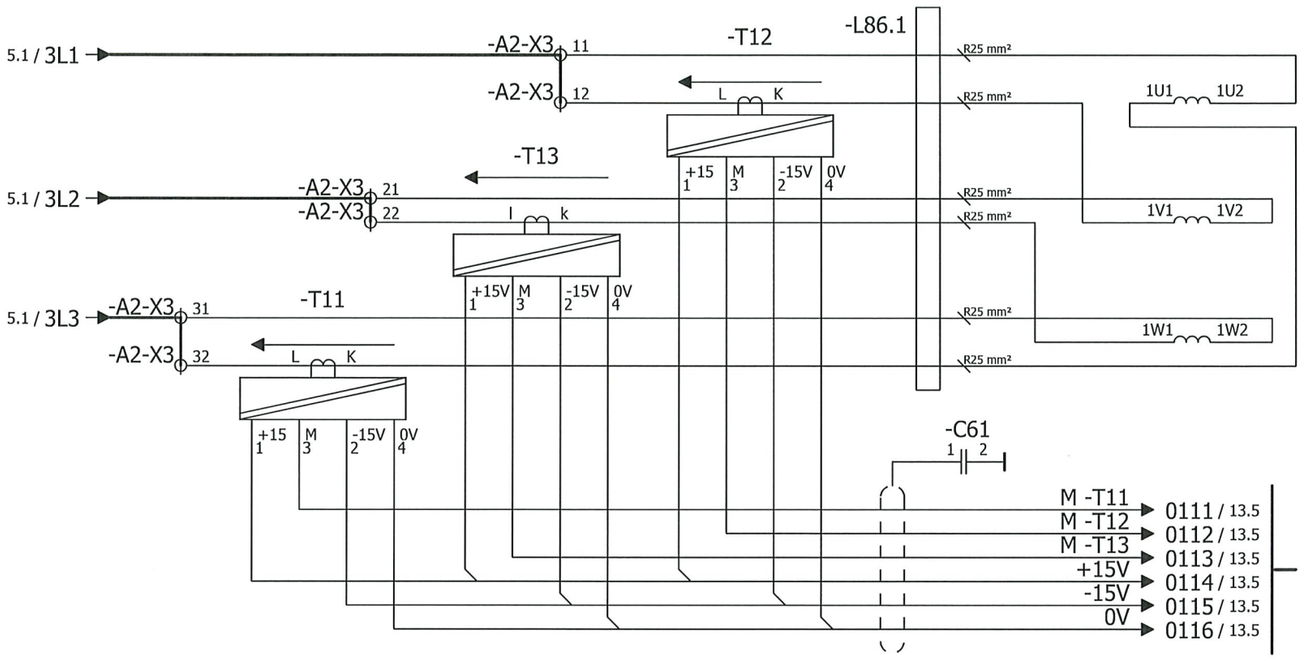
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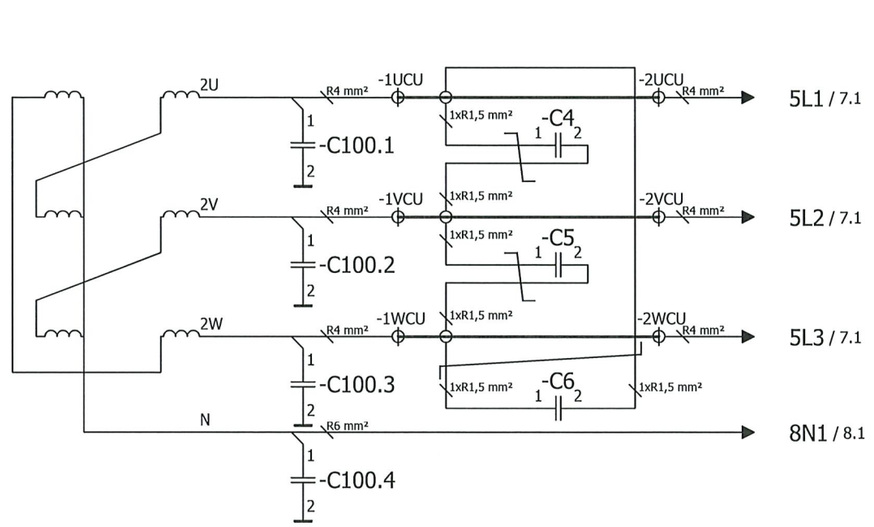
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Power section inverter

Measuring INV current dynamic





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Hollandse Kust Noord (HKN) wind farm

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Inverter output
Protect 8.33 20-400-204-400

Circuit diagram

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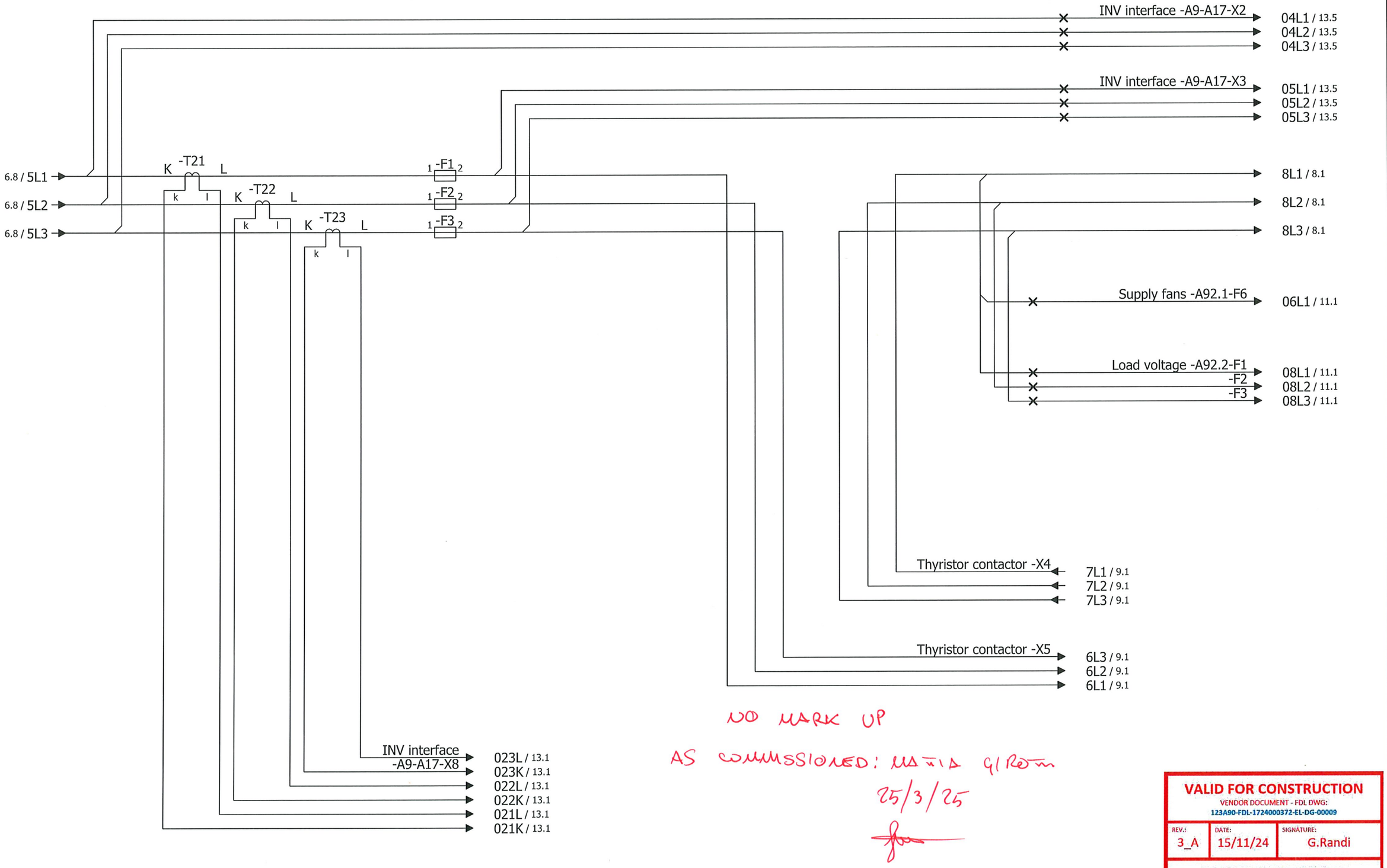
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Power section inverter

Measurement INV current static

Output fuse



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Inverter output
Protect 8.33 20-400-204-400

Circuit diagram

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Power section inverter

Parallel preventive choke coil

7.8 / 8L1
7.8 / 8L2
7.8 / 8L3
6.8 / 8N1

-L11 -L12 -L13

R4 mm²
R25 mm²

SBS Output
10L1 / 10.1
10L2 / 10.1
10L3 / 10.1

-A105
-C56 -C57 -C58
-X1 -X2 -X3 -X4

SBS Input
9L1 / 10.1
9L2 / 10.1
9L3 / 10.1

fan neutral conductor
0451N1 / 17.1

neutral conductor -A9
04N1 / 13.5

-E3
-E4
-A4
-A3
-X3 -X4 U V W N
EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3

-L93 -L94

2xR35 mm²

-PE

Load
400V;3/N/PE~50Hz

Mains
400V;3/N/PE~50Hz

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ3_1 +MBC1/6.3
GZ3_2 +MBC1/6.3
GZ3_3 +MBC1/6.3
GZ3_4 +MBC1/6.3

GZ4_1 +MBC1/5.3
GZ4_2 +MBC1/5.3
GZ4_3 +MBC1/5.3
GZ4_4 +MBC1/5.4

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Load output / SBS circuit
Protect 8.33 20-400-204-400

Circuit diagram

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Power section inverter
Inverter output contactor

-A4

-A37 SBS suppression 8000028996 STR

-A3 -K3 -AK3 -A2 -K2 -AK2 -A1 -K1 -AK1

-V31

-X4:1A
-X4:1
-X4:1K

A K AK G2 K2 K1 G1

-V33

-X4:2A
-X4:2
-X4:2K

A K AK G2 K2 K1 G1

-V35

-X4:3A
-X4:3
-X4:3K

A K AK G2 K2 K1 G1

RD

7.7 / 7L1
7.7 / 7L2
7.7 / 7L3

-X2 1 2 5 4
-X3 1 2 5 4
-X4 1 2 5 4

-A36 SBS trigger circuit 8000028563 STR

-X5:1
2

GND 1 | EUE_EIN 2 | GND 3 | GND 4 | +24V 5 | +24V 6 | 7 | 8 | 9 | 10

-X6 1 2
-X1 1-10

-R100 1 θ 2

-0FB10
10x

-X6 5
-X6 6
-X6 3
-X6 4
-X6 1
-X6 2

7.7 / 6L3
7.7 / 6L2
7.7 / 6L1

-X5:3
-X5:2
-X5:1

INV interface -A9-A17-X1 → 0FB10 / 13.1

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Inverter output contactor
Protect 8.33 20-400-204-400

Circuit diagram

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sheets 23

Power section SBS

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-A3

SBS mains voltage -A92.2-F6 → 010L1 / 11.1
-A92.2-F7 → 010L2 / 11.1
-A92.2-F8 → 010L3 / 11.1

8.8 / 9L1 → SBS mains
8.8 / 9L2 → SBS mains
8.8 / 9L3 → SBS mains

-A37 SBS suppression 8000028996 STR
-A3 -K3 -AK3 -A2 -K2 -AK2 -A1 -K1 -AK1

-V31 -X4:1A -X4:1 -X4:1K — A K AK — G2 K2 K1 G1
-V33 -X4:2A -X4:2 -X4:2K — A K AK — G2 K2 K1 G1
-V35 -X4:3A -X4:3 -X4:3K — A K AK — G2 K2 K1 G1

RD

-A36 SBS trigger circuit 8000028563 STR
-X2 -X3 -X4 1 2 5 4
-X5:1
2
GND EUE_EIN GND GND +24V +24V 1 2 3 4 5 6 7 8 9 10
-X6 1 2
-R100 1 2
-X1 1-10

SBS interface -A9-A16-X1 → 0FB9 / 14.3

-X6 5
-X6 6
-X6 3
-X6 4
-X6 1
-X6 2

8.8 / 10L3 ← UPS Output
8.8 / 10L2 ←
8.8 / 10L1 ←
-X5:3
-X5:2
-X5:1

SBS interface -A9-A16-X4 → 03151L / 14.3
-A9-A16-X4 → 03151K / 14.3
-A9-A16-X4 → 03352L / 14.3
-A9-A16-X4 → 03352K / 14.3
-A9-A16-X4 → 03553L / 14.3
-A9-A16-X4 → 03553K / 14.3

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Hollandse Kust Noord (HKN) wind farm

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Power section SBS
Protect 8.33 20-400-204-400

Circuit diagram

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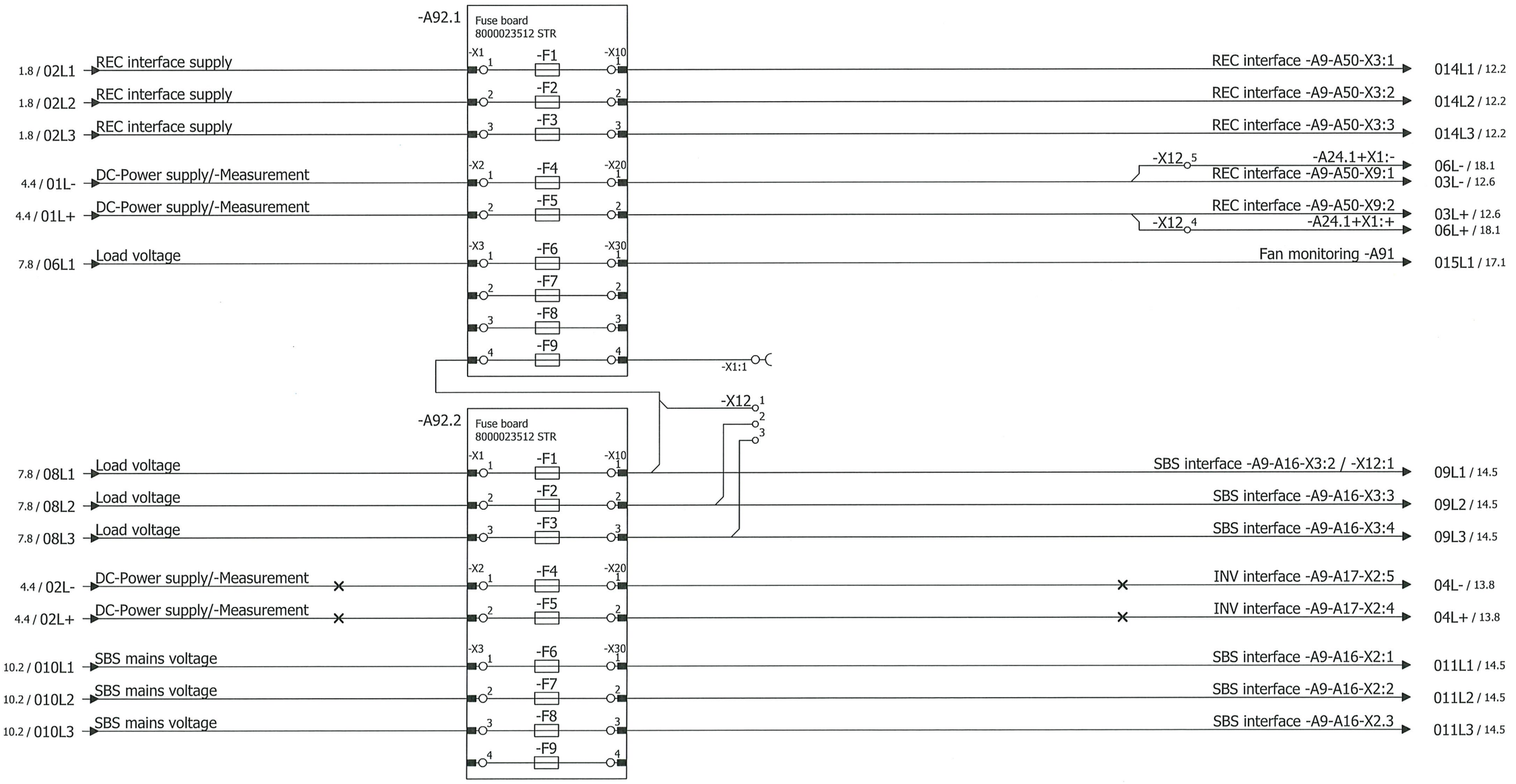
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Hollandse Kust Noord (HKN) wind farm

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Fuse boards
Protect 8.33 20-400-204-400

Circuit diagram

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Rectifier control

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-A9
/16.1

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4.4 / 0854
4.4 / 0851
4.4 / 0853
4.4 / 0852
Battery current transformer -T85

4.4 / 08L+
4.4 / 08L-
UBatt+
UBatt-

11.8 / 03L+
11.8 / 03L-
UIC+ A92.1-F5
UIC- A92.1-F4

1.8 / 01L3
1.8 / 01L2
1.8 / 01L1
-Q1 REC input voltage

11.8 / 014L3
11.8 / 014L2
11.8 / 014L1
-T40 sec. supply REC

2.8 / 0FB1
REC trigger circuit -A1-A80-X1

-A50
/16.2
REC interface
8000022025 STR

-A1
REC control
8000014119 STR

-R204
-R206
REC current stack A1
REC current stack A2

-X130
-X12
-Q3
/1.4
-Q1
+24V DC

-C711 220000µF
-C712 220000µF
0V
-15V
+15V

*1 Attention! In the event of battery undervoltage < 130 V, the UPS automatically switches off battery isolator Q2.
If this happens, switch X15:3 must be switched into the open position (undervoltage trip blocked).
For restart, please refer to the chapter in the UPS operating instructions (charging the DC link capacitors).
Unlock the tripped switch Q2 by switching to open position.
After charging the DC link capacitors, switch on Q2.
Attention! When the battery voltage reaches > 200 V, switch X15:3 must be switched back to the closed position.

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
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Rectifier control
Protect 8.33 20-400-204-400

Circuit diagram

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Inverter control

INV current static

INV current dynamic

INV output voltage reference
7.8 / 05L1
7.8 / 05L2
7.8 / 05L3
neutral conductor
8.8 / 04N1 → N → 05N1 / 14.5
INV output voltage
7.8 / 04L1
7.8 / 04L2
7.8 / 04L3

Transformer -T11...-T13
6.5 / 0116
6.5 / 0115
6.5 / 0113
6.5 / 0112
6.5 / 0111
6.5 / 0114

Transformer -T23
7.3 / 023L
7.3 / 023K

Transformer -T22
7.3 / 022L
7.3 / 022K

Transformer -T21
7.3 / 021L
7.3 / 021K

INV. trigger circuit
-A2-A1-X1
5.8 / 0FB3

Trigger circuit
-A4-A36-X1
9.7 / 0FB10

11.8 / 04L+ UIC+
11.8 / 04L- UIC-

-A9
/16.1

-A17
/16.3
INV interface
8000022441 STR

-X1 1-10
GND SBS_ON GND GND +24V +24V
+24V

-X10 1-34
IMP1 IMP2 IMP5 IMP6 ZWST1 ZWST3 +24V +24V GND
+24V

-X4 1 2 3 4 5 6 -X8 6
-X13 2 3 1 4
-15V +15V

-R203 -R205 -R207
-R204 -R206 -R208
INV current static

-X20 4 1 2 3 5 6
+15V -15V

-X19 4 1 2 3 5 6
+15V -15V

-S201
-S202
-S203
INV current dynamic

-X2 1W 2V -X3 1N 2U 3V 4W

-X2 5 4

-X11 1-50
-A17X11___50x
-X12 1-50
-A17X12___50x

-A1
INV control
8000042636 STR
-X11 1-50
-X12 1-50

-X15 1 4
-X5 1 2 (+)
-X5 5 6 (+)
-X8 8 7
-X5 3 4 (+)
-X8 1 2

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Hollandse Kust Noord (HKN) wind farm

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Inverter control
Protect 8.33 20-400-204-400

Circuit diagram

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Control SBS

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-A9
/16.1

10.4 / 03553L Transformer -T35
10.4 / 03553K
10.4 / 03352L Transformer -T33
10.4 / 03352K
10.4 / 03151L Transformer -T31
10.4 / 03151K

11.8 / 09L1 Load voltage
11.8 / 09L2
11.8 / 09L3

13.8 / 05N1 neutral conductor
-X1:3
-X12 6

11.8 / 011L1 SBS mains voltage
11.8 / 011L2
11.8 / 011L3

SBS trigger circuit
10.2 / 0FB9 -A3-A36-X1

-L62

-A16
/16.4
SBS interface
8000022378 STR

-X1 1-10
GND SBS_ON GND GND +24V +24V
+24V

-X4 1 2 3 4 5 6
SBS current

-X2 1U 2V 3W
-X3 1N 2U 3V 4W

-X12
12
-X8
7

-R201 -R203 -R205
-R202 -R204 -R206

7
8
5
4
9
6
-X18
1
-R120
1
2
2

15 16 26 17
21 29 30 27 45 46 35 36 33 41 42 39

-X11 1-50
-A16X11 50x
-X12 1-50
-A16X12 50x

-A1
SBS control
8000008845 STR
-X11 1-50
-X12 1-50

-X15 1 2 3 +24V 4 5

Fan control -A92.1-X6
091.11 / 17.7
091.12 / 17.7
091.13 / 17.7
091.14 / 17.7
091.15 / 17.7

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Control SBS
Protect 8.33 20-400-204-400

Circuit diagram

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Control

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-A18
Graphic DOU

-A1-X1:1-10

Display

-A1-X2:1-10

DOU-CAN ▶ A / 16.1

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DOU
Protect 8.33 20-400-204-400

Circuit diagram

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Control

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+UPS2
Protect 8.33 20-400-204-400
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GZ20_3 +UPS2/16.6
GZ20_5 +UPS2/16.7

INV -CAN
INV -sync

-A9
/12.1
/13.1
/14.2
/20.1
/21.1
/22.1

-A50
/12.1
REC interface
8000022025 STR
-X6 1-10
-X7 1-16

-A17
/13.1
INV interface
8000022441 STR
-X6 1-10
-X7 1-16

-A16
/14.2
SBS interface
8000022378 STR
-X6 1-10
-X7 1-16

-A20
Parallel Adapter
8000023378 STR
-X3 1-3
-X4 1-3
-X5 1-4
-X6 1-2
-X1 1-16
-X2 1-16
-X11 1-10
-X12 1-10
-X13 1-10
-X14 1-10

Parallel CAN INV
Parallel CAN REC
DOU-CAN

15.8 / A
A / 20.1
O / 19.1
K / 18.1
L / 18.1

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Control CAN
Protect 8.33 20-400-204-400

Circuit diagram

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sheets 23

Fan control/monitoring

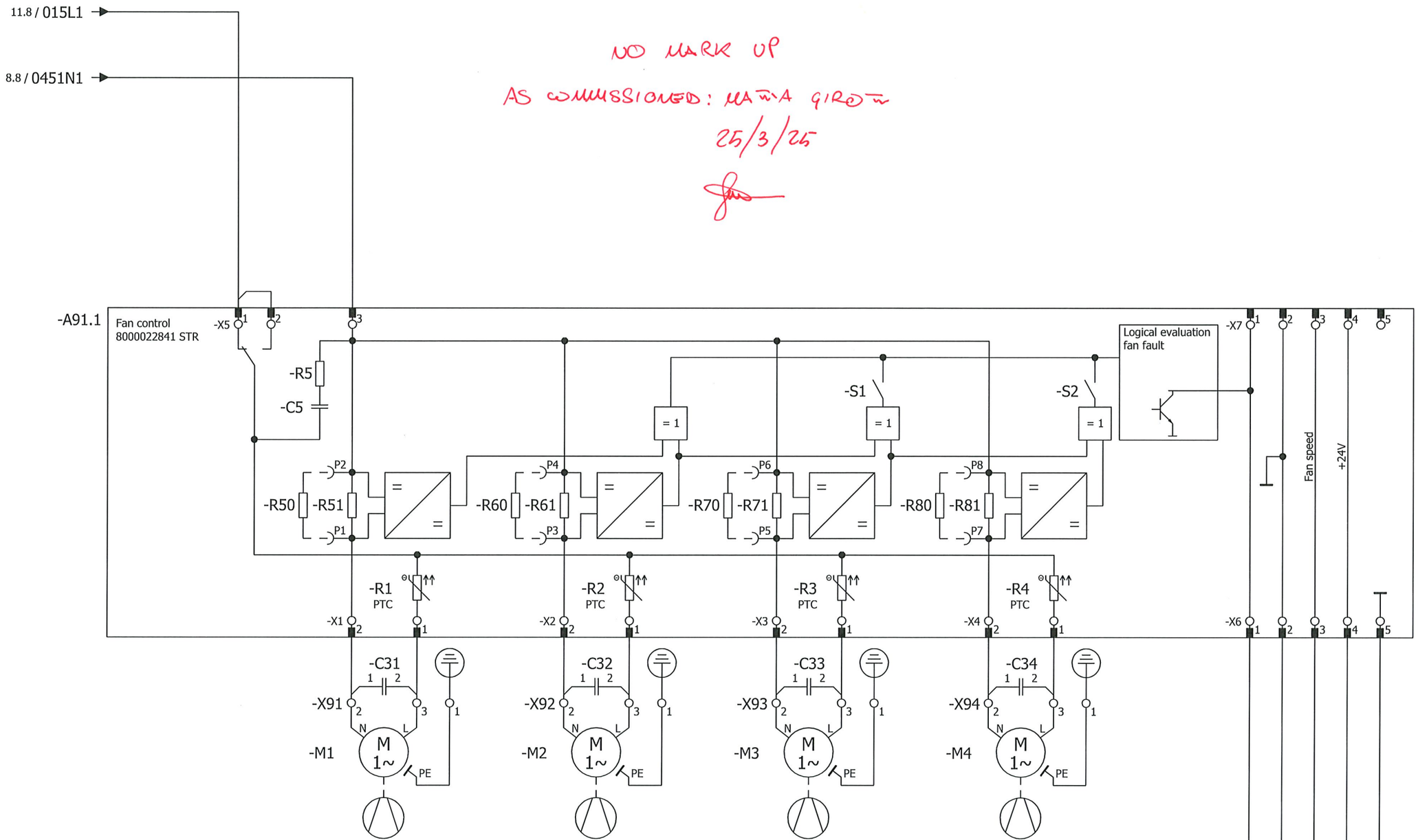
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				Date	14.05.2024
				Editor	EEC
				Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Fan control/monitoring
Protect 8.33 20-400-204-400

Circuit diagram

1000007888.080
10009759

1000007888_080 en

=
+ UPS1
& EFS

A3

sheet 17
sheets 23

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CAE EPLAN Electric P8

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ91_1
+MBC1/2.5

GZ92_1
+MBC1/2.5

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-F91 1
G
F3,15A 2

-F92 1
G
F3,15A 2

11.8 / 06L+ →

→ 07L+ / 19.1

-A24.1
Battery charge monitoring
BLÜ-PRO
(Option)

-A24.2
Battery charge monitoring
BLÜ-PRO
(Option)

-X1 + M

0 ... 5V

-X1 - -X3 1-16 -X4 1-10

16.8 / L →

16.8 / K →

11.8 / 06L- →

→ 07L- / 19.1

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				Date	14.05.2024	ROSETTI MARINO Hollandse Kust Noord (HKN) wind farm	AEG POWER SOLUTIONS	battery charging circuit monitoring Protect 8.33 20-400-204-400 Circuit diagram	=
				Editor	EEC				+ UPS1
				Checked	Ch.Peck			1000007888.080 10009759	1000007888_080 en
Stat	Alteration	Date	Name	Norm					& EFS

A3 | sheet 18 | sheets 23

Control

CAE EPLAN Electric P8

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+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ93_1
+MBC1/2.6

-F93 1
G
F3,15A 2

18.8 / 07L+

-A24.3
BLÜ-PRO battery charging circuit
monitoring system

-X1 + M

0 ... 5V

-X1 - -X3 1-16 -X4 1-10

16.8 / O

18.8 / 07L-

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

battery charging circuit monitoring
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS1
& EFS

A3

sheet 19
sheets 23

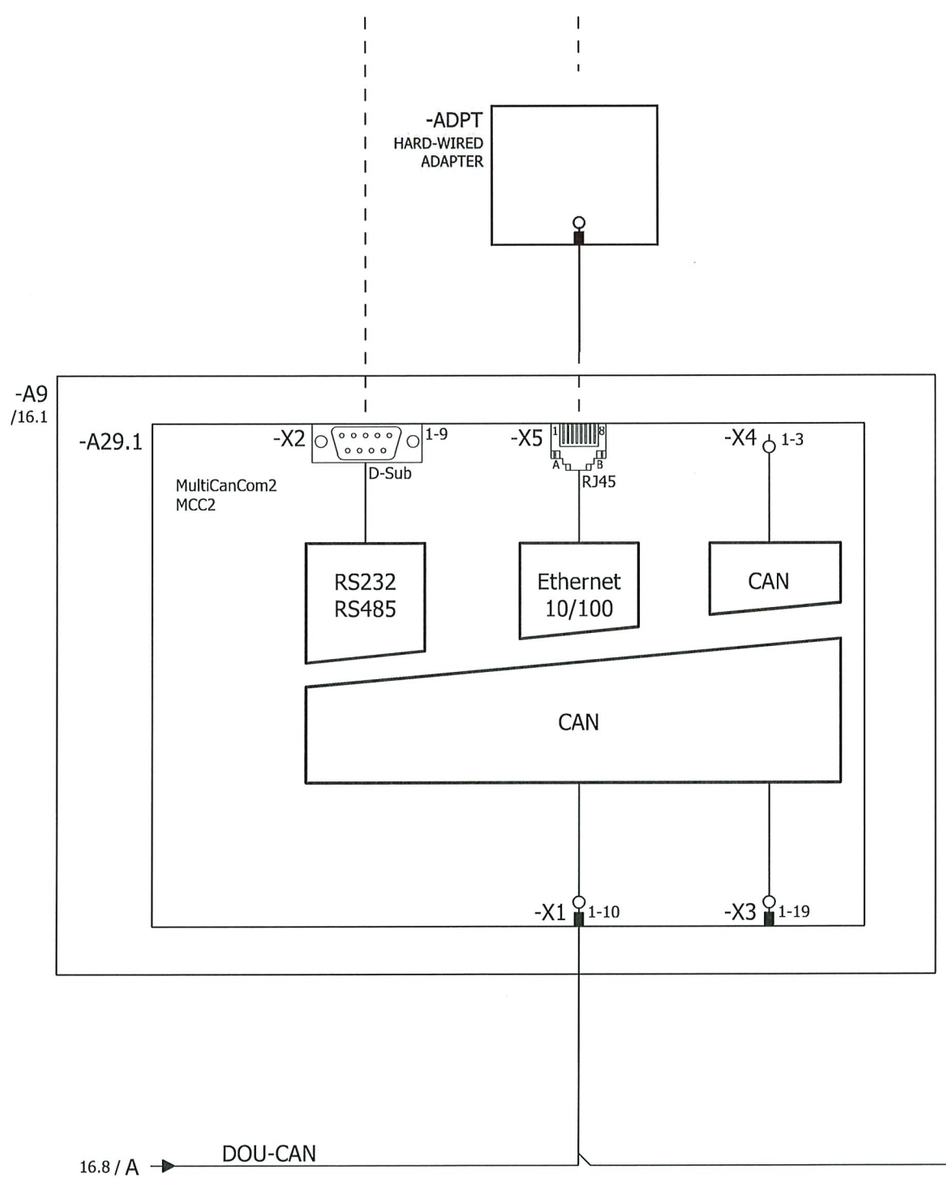
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Control

SNMP adapter
CompuWatch
Service Tools
Modbus

Modbus



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16.8 / A → DOU-CAN → A / 21.1

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

MultiCom
Protect 8.33 20-400-204-400

Circuit diagram

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sheets 23

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Remote signaling

CAN Service

Configuration remote signals
see techn. data sheet

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INV remote off

Common fault

Inverter operation

SBS operation

REC fault

REC mains fault

Battery low

-A9
/16.1

-A12
Remote signaling
8000062777 STR

-X6 1-10

-X5 1 2

-X4 1 2 3

-X3 1 2 3 4 5 6 7 8 9 10 11 12

-K25 -K21 -K22 -K23 -K24

-X1 1-10

-X2 1-16

20.8 / A

B / 22.1

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Remote signaling
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS1
& EFS

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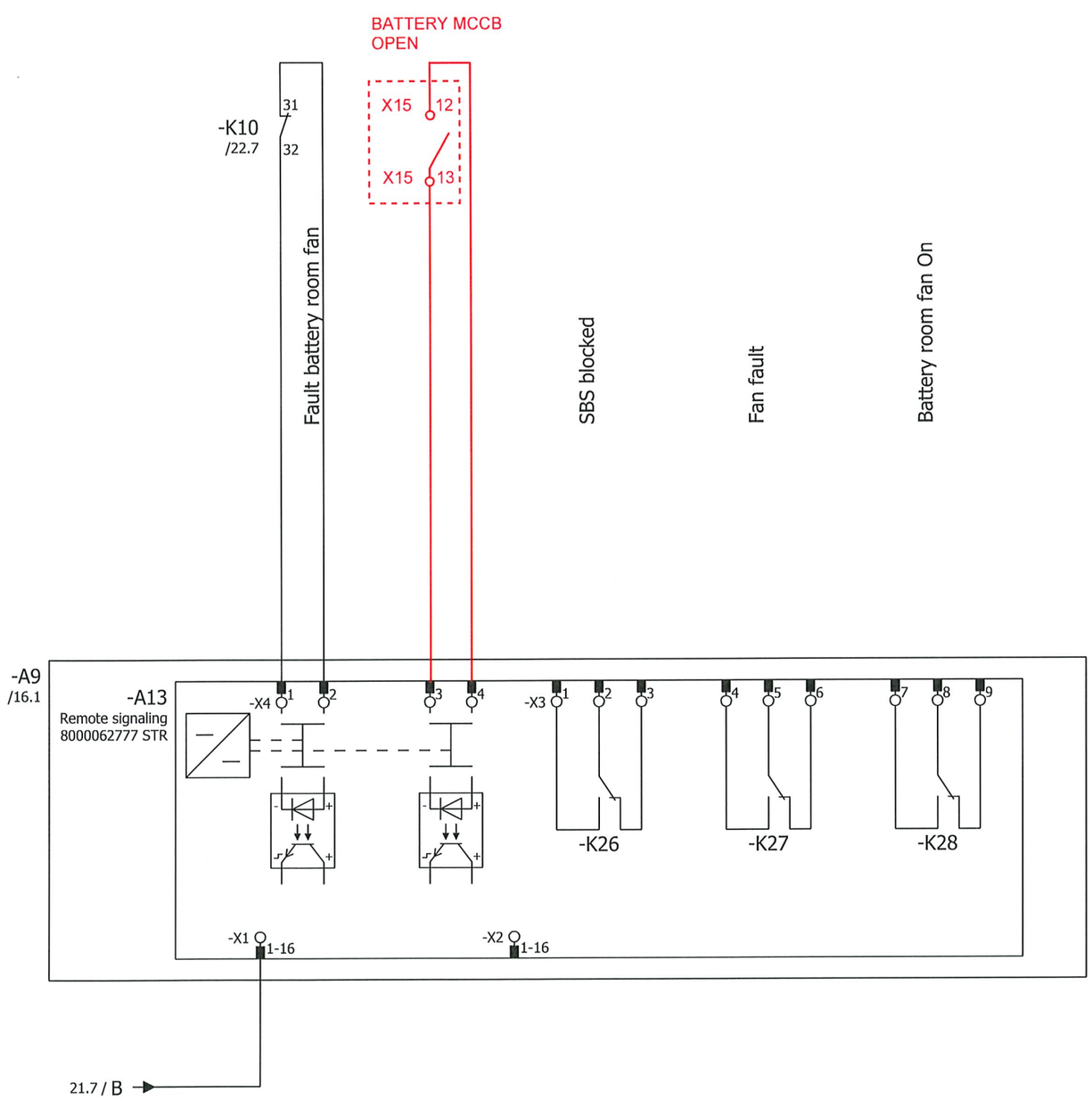
sheet 21
sheets 23

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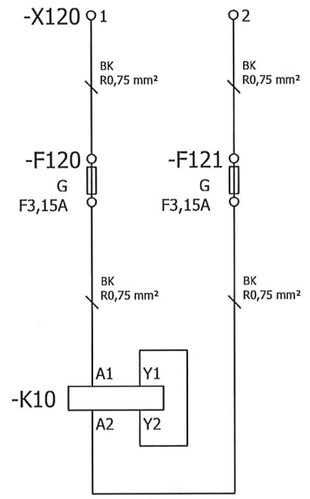
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Remote signaling

Configuration remote signals
see techn. data sheet



24V DC is permanently present
in fault-free operation



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ROSETTI MARINO SpA

PXC.2981020_PSR-SCP- 24DC/ESP4/2X1/1X2
13 — 14
23 — 24
31 — 32 /22.2

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				Date	28.05.2024
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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Remote signaling
Protect 8.33 20-400-204-400

Circuit diagram

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& EFS

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sheets 23

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Control cabinet heating
Mains
110-250V/N/PE~50/60Hz

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ13_1
+MBC1/11.2

GZ13_2
+MBC1/11.3

back-up fuse
gG 10A

BK
R1,5 mm²

BK
R1,5 mm²

-X13 U U N N PE PE

BK
0,75 mm²

-F100 1
G
T6,3A 2

BK
0,75 mm²

BK
0,75 mm²

L
-F85
I
3 2

-A85 -X1 3 2

-R1

-X14 U U N N

BK
0,75 mm²

-F110 1
G
T6,3A 2

BK
0,75 mm²

BK
0,75 mm²

-X114 U N

-W100
H05VV
2x1 mm²
3 m

L N

-H1
Enclosure light

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				Date	14.05.2024
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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

external connection
Protect 8.33 20-400-204-400

Circuit diagram

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& EFS

A3

sheet 23
sheets 23

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Terminal diagram

terminal

=+UPS1-A9-A12-X3

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1						+UPS1&EFS/21.5
				2						+UPS1&EFS/21.5
				3						+UPS1&EFS/21.5
				4						+UPS1&EFS/21.5
				5						+UPS1&EFS/21.6
				6						+UPS1&EFS/21.6
				7						+UPS1&EFS/21.6
				8						+UPS1&EFS/21.6
				9						+UPS1&EFS/21.6
				10						+UPS1&EFS/21.7
				11						+UPS1&EFS/21.7
				12						+UPS1&EFS/21.7

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A9-A12-X3
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

A3

sheet 1
sheets 23

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Terminal diagram

terminal

=+UPS1-A9-A12-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type			Position / Page
				1								+UPS1&EFS/21.4
				2								+UPS1&EFS/21.4
				3								+UPS1&EFS/21.4

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A9-A12-X4
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

A3

sheet 2
sheets 23

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Terminal diagram

terminal

=+UPS1-A9-A12-X5

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1						+UPS1&EFS/21.3
				2						+UPS1&EFS/21.3

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				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A9-A12-X5
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
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sheet 3
sheets 23

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Terminal diagram

terminal

=+UPS1-A9-A12-X6

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-10		-A9-A12-X1				+UPS1&EFS/21.2

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A9-A12-X6
Protect 8.33 20-400-204-400

Terminal diagram

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= +UPS1 & EMA

A3 | sheet 4 | sheets 23

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Terminal diagram

terminal

=+UPS1-A9-A29.1-X2

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-9						+UPS1&EFS/20.2

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				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A9-A29.1-X2
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

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sheet 5
sheets 23

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Terminal diagram

terminal

=+UPS1-A9-A29.1-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-3						+UPS1&EFS/20.3

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A9-A29.1-X4
Protect 8.33 20-400-204-400

Terminal diagram

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& EMA

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sheet 6
sheets 23

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Terminal diagram

terminal

=+UPS1-A9-A29.1-X5

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-8						+UPS1&EFS/20.3

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				Date	03.06.2024
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				Checked	Ch.Peck
				Norm	

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A9-A29.1-X5
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

A3

sheet 7
sheets 23

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Terminal diagram

terminal

=+UPS1-A20-X3

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS2-A20-X3	1-3	1-3						+UPS1&EFS/16.6

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A20-X3
Protect 8.33 20-400-204-400

Terminal diagram

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sheet 8
sheets 23

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Terminal diagram

terminal

=+UPS1-A20-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-3						+UPS1&EFS/16.7

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A20-X4
Protect 8.33 20-400-204-400

Terminal diagram

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sheet 9
sheets 23

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Terminal diagram

terminal

=+UPS1-A20-X5

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS2-A20-X5	1-4	1-4						+UPS1&EFS/16.7

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				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A20-X5
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

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sheet 10
sheets 23

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Terminal diagram

terminal

=+UPS1-A20-X6

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-2						+UPS1&EFS/16.7

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				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-A20-X6
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

A3

sheet 11
sheets 23

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Terminal diagram

terminal

=+UPS1-E1-X1

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U		-E1-X1	U			+UPS1&EFS/1.2
						-Q1	2			
		+MBC1-X1	2U	U		-E1-X1	U			+UPS1&EFS/1.2
				V		-E1-X1	V			+UPS1&EFS/1.2
						-Q1	4			
		+MBC1-X1	2V	V		-E1-X1	V			+UPS1&EFS/1.2
				W		-E1-X1	W			+UPS1&EFS/1.2
						-Q1	6			
		+MBC1-X1	2W	W		-E1-X1	W			+UPS1&EFS/1.2

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				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-E1-X1
Protect 8.33 20-400-204-400

Terminal diagram

1000007888_080 en

= + UPS1 & EMA

A3

sheet 12
sheets 23

1000007888_080

CAE EPLAN Electric P8

Terminal diagram

terminal

=+UPS1-E2-X2

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				L+		-L41	1.2			+UPS1&EFS/4.3
		+MBC1-X2	1L+	L+						+UPS1&EFS/4.3
				L-		-L41	2.2			+UPS1&EFS/4.2
		+MBC1-X2	1L-	L-						+UPS1&EFS/4.2

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Hollandse Kust Noord (HKN) wind farm

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Terminal diagram =+UPS1-E2-X2
Protect 8.33 20-400-204-400

Terminal diagram

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& EMA

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sheet 13
sheets 23

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Terminal diagram

terminal

=+UPS1-E3-X3

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U		-E3-X3	U			+UPS1&EFS/8.2
						-L11	2			
		+MBC1-X5	1U	U		-E3-X3	U			+UPS1&EFS/8.2
				V		-E3-X3	V			+UPS1&EFS/8.2
						-L12	2			
		+MBC1-X5	1V	V		-E3-X3	V			+UPS1&EFS/8.2
				W		-E3-X3	W			+UPS1&EFS/8.2
						-L13	2			
		+MBC1-X5	1W	W		-E3-X3	W			+UPS1&EFS/8.2
				N		-E3-X3	N			+UPS1&EFS/8.3
		+MBC1-X5	1N	N		-E3-X3	N			+UPS1&EFS/8.3

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Hollandse Kust Noord (HKN) wind farm

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Terminal diagram =+UPS1-E3-X3
Protect 8.33 20-400-204-400

Terminal diagram

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& EMA

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sheets 23

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Terminal diagram

terminal

=+UPS1-E4-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U		-E4-X4	U			+UPS1&EFS/8.6
						-A3-X4	1			
		+MBC1-X4	1U	U		-E4-X4	U			+UPS1&EFS/8.6
				V		-E4-X4	V			+UPS1&EFS/8.6
						-A3-X4	2			
		+MBC1-X4	1V	V		-E4-X4	V			+UPS1&EFS/8.6
				W		-E4-X4	W			+UPS1&EFS/8.6
						-A3-X4	3			
		+MBC1-X4	1W	W		-E4-X4	W			+UPS1&EFS/8.6
				N		-E4-X4	N			+UPS1&EFS/8.6
		+MBC1-X4	1N	N		-E4-X4	N			+UPS1&EFS/8.6
		+MBC1-X4	1N	N		-E4-X4	N			+UPS1&EFS/8.6

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-E4-X4
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS1
& EMA

A3 | sheet 15 | sheets 23

1000007888_080

CAE EPLAN Electric P8

Terminal diagram

terminal

=+UPS1-F120

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type			Position / Page
		-K10	A1	1		-X120	1					+UPS1&EFS/22.7

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Hollandse Kust Noord (HKN) wind farm

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Terminal diagram =+UPS1-F120
Protect 8.33 20-400-204-400

Terminal diagram

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& EMA

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sheet 16
sheets 23

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Terminal diagram

terminal

=+UPS1-F121

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		-K10	A2	1		-X120	2			+UPS1&EFS/22.8

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Hollandse Kust Noord (HKN) wind farm

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Terminal diagram =+UPS1-F121
Protect 8.33 20-400-204-400

Terminal diagram

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& EMA

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sheet 17
sheets 23

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Terminal diagram

terminal

=+UPS1-PE

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+MBC1-PE	PE	PE						+UPS1&EFS/4.3
				PE						+UPS1&EFS/8.4
				PE						+UPS1&EFS/1.4

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Hollandse Kust Noord (HKN) wind farm

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Terminal diagram =+UPS1-PE
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

A3 | sheet 18 | sheets 23

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Terminal diagram

terminal

=+UPS1-X12

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1		-A92.1-X3	4			+UPS1&EFS/11.5
				2		-A92.2-X10	2			+UPS1&EFS/11.5
				3		-A92.2-X10	3			+UPS1&EFS/11.5
		-A24.1-X1	+	4	'	-A92.1-X20	2			+UPS1&EFS/11.7
		-A24.1-X1	-	5	'	-A92.1-X20	1			+UPS1&EFS/11.7
				6		-CU	N			+UPS1&EFS/14.7
				7		-A9-A16-X8	5			+UPS1&EFS/14.2
				8		-A9-A16-X8	4			+UPS1&EFS/14.2
				9		-A9-A16-X8	6			+UPS1&EFS/14.2
				10		-A9-A50-X8	1			+UPS1&EFS/12.3
				11		-A9-A50-X8	2			+UPS1&EFS/12.3
						-Q3	96			
				12		-A9-A16-X8	7			+UPS1&EFS/14.2
				15		-A9-A50-X8	3			+UPS1&EFS/12.3
						-Q3	95			

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-X12
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS1
& EMA

A3

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sheets 23

CAE EPLAN Electric P8

Terminal diagram

terminal

=+UPS1-X13

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U		-F100	1:2			+UPS1&EFS/23.2
		-X14	U	U						+UPS1&EFS/23.2
				N		-A85-X1	2			+UPS1&EFS/23.2
		-X14	N	N						+UPS1&EFS/23.3
				PE						+UPS1&EFS/23.3
				PE						+UPS1&EFS/23.3

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-X13
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

A3

sheet 20
sheets 23

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Terminal diagram

terminal

=+UPS1-X14

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		-X13	U	U		-F110	1:2			+UPS1&EFS/23.7
		+MBC1-X13	U	U						+UPS1&EFS/23.7
		-X13	N	N		-X114	N			+UPS1&EFS/23.7
		+MBC1-X13	N	N						+UPS1&EFS/23.7

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-X14
Protect 8.33 20-400-204-400

Terminal diagram

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A3 | sheet 21 | sheets 23

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Terminal diagram

terminal

=+UPS1-X15

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1		-A9-A50-X8	4			+UPS1&EFS/12.6
				1		-C711				+UPS1&EFS/12.7
				2		-C712				+UPS1&EFS/12.7
		+MBC1-X15	2	2		-A9-A50-X5	5			+UPS1&EFS/12.8
		+MBC1-X15	3	3		-A9-A50-X5	6			+UPS1&EFS/12.8

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS1-X15
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS1
& EMA

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sheets 23

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Terminal diagram

terminal

=+UPS1-X120

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1	'	-F120	1:1			+UPS1&EFS/22.7
				2	'	-F121	1:1			+UPS1&EFS/22.8

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Hollandse Kust Noord (HKN) wind farm

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Terminal diagram =+UPS1-X120
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Terminal diagram

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& EMA

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Three-phase input
Attention! Observe sequence of wires, L1, L2, L3 -->
See technical data sheet for required mains fuses

Power section rectifier

mains transformer

Note: Reinforced insulated wire
0,75 mm² unmarked wires

-L61 N=2

Measurement REC Interface -A9-A50-X2
01L1 / 12.6
01L2 / 12.6
01L3 / 12.6
Supply REC Interface -A9-A50-X3
02L1 / 11.1
02L2 / 11.1
02L3 / 11.1

-L22 -T40 -L85.1 -L85.2

-C101.1 -C101.2 -C101.3

-Q1
L=100/85A
I=1,0kA
Icu=50kA

-Q3 /12.3 /12.4

-L23 -L24 -L25
-C23 -C24 -C25
-R23 -R24 -R25

3xR6 mm²

-A80 -A81
Suppression
-R86 -R87 -R88
-R81 -R82 -R83
-V81.1-V81.6
-R84.1 -R84.2
-C84 -C85

-E1
-X1 -A2 -A1
EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3

-L92

Mains
400V;3/PE~50Hz

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ1_1 GZ1_2 GZ1_3

-PE PE busbar Cu 40x5 mm
Rack
Rack GNYE 6 mm²
Rack GNYE 6 mm²
Tür links
Pivot plate

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Rectifier input
Protect 8.33 20-400-204-400

Circuit diagram

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=
+ UPS2
& EFS

A3

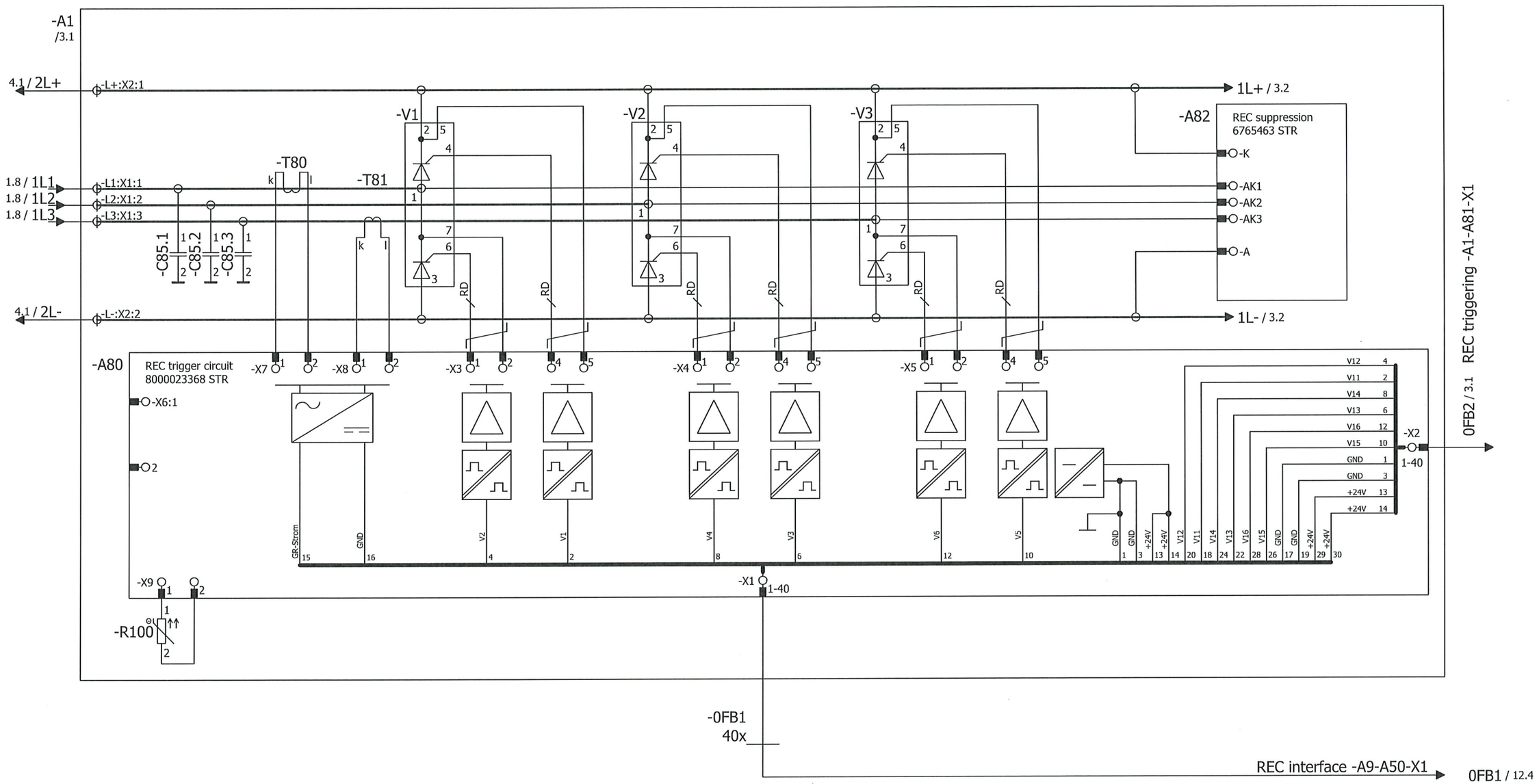
sheet 1
sheets 23

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Power section rectifier

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Power section rectifier
Protect 8.33 20-400-204-400

Circuit diagram

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=
+ UPS2
& EFS

A3

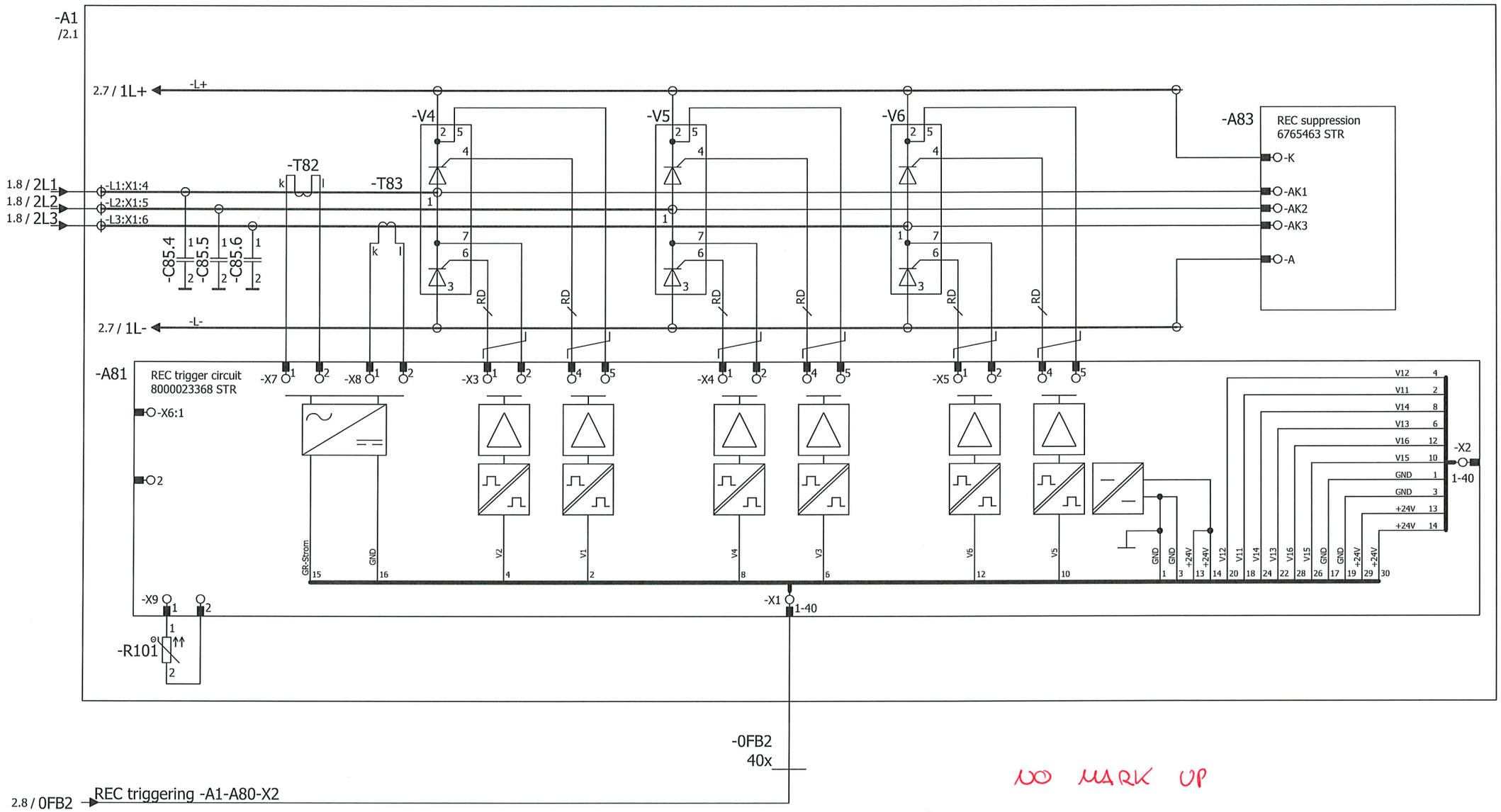
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Power section rectifier

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Power section rectifier
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS2
& EFS

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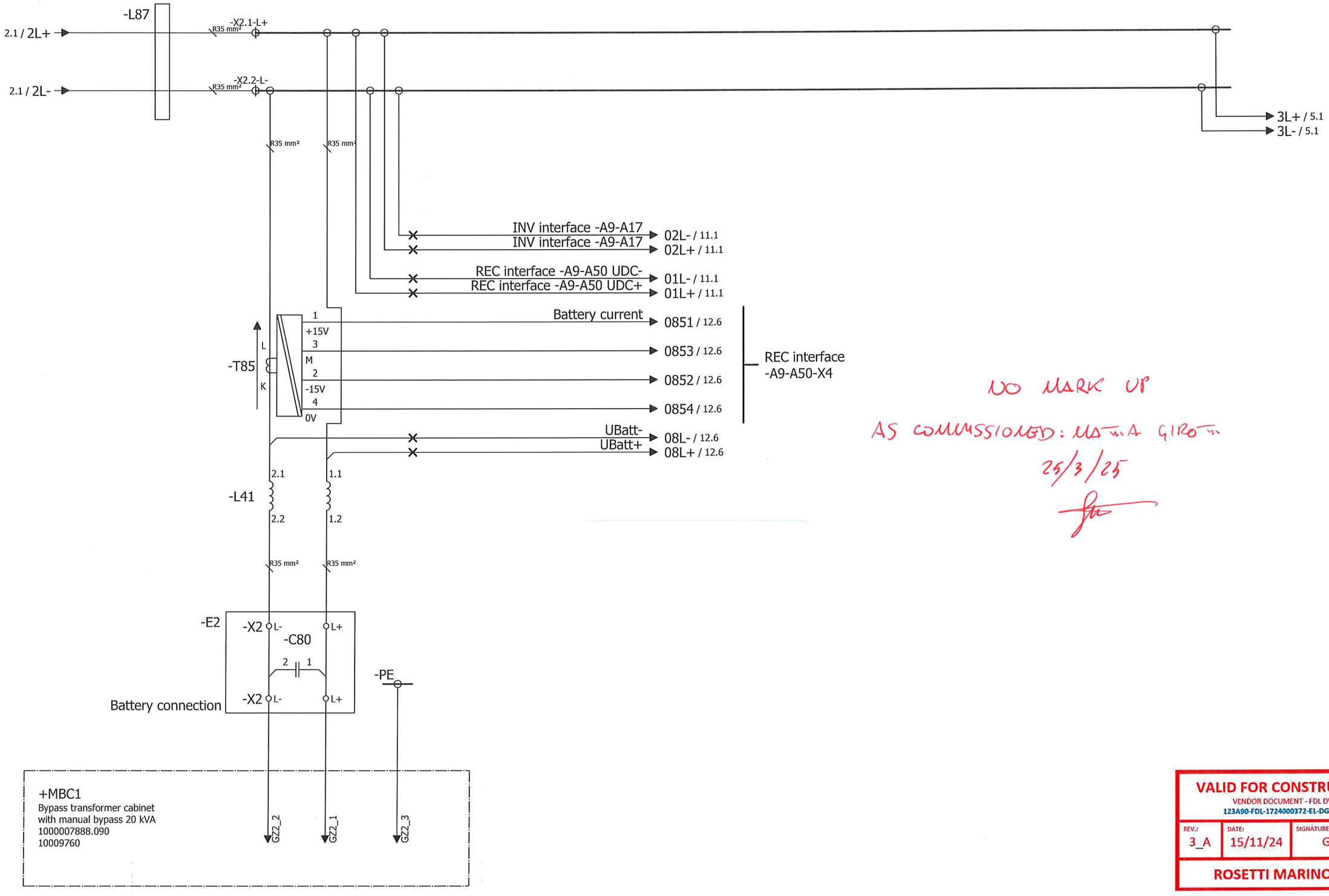
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Power section rectifier
Battery connection



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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Battery connection
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS2
& EFS

A3

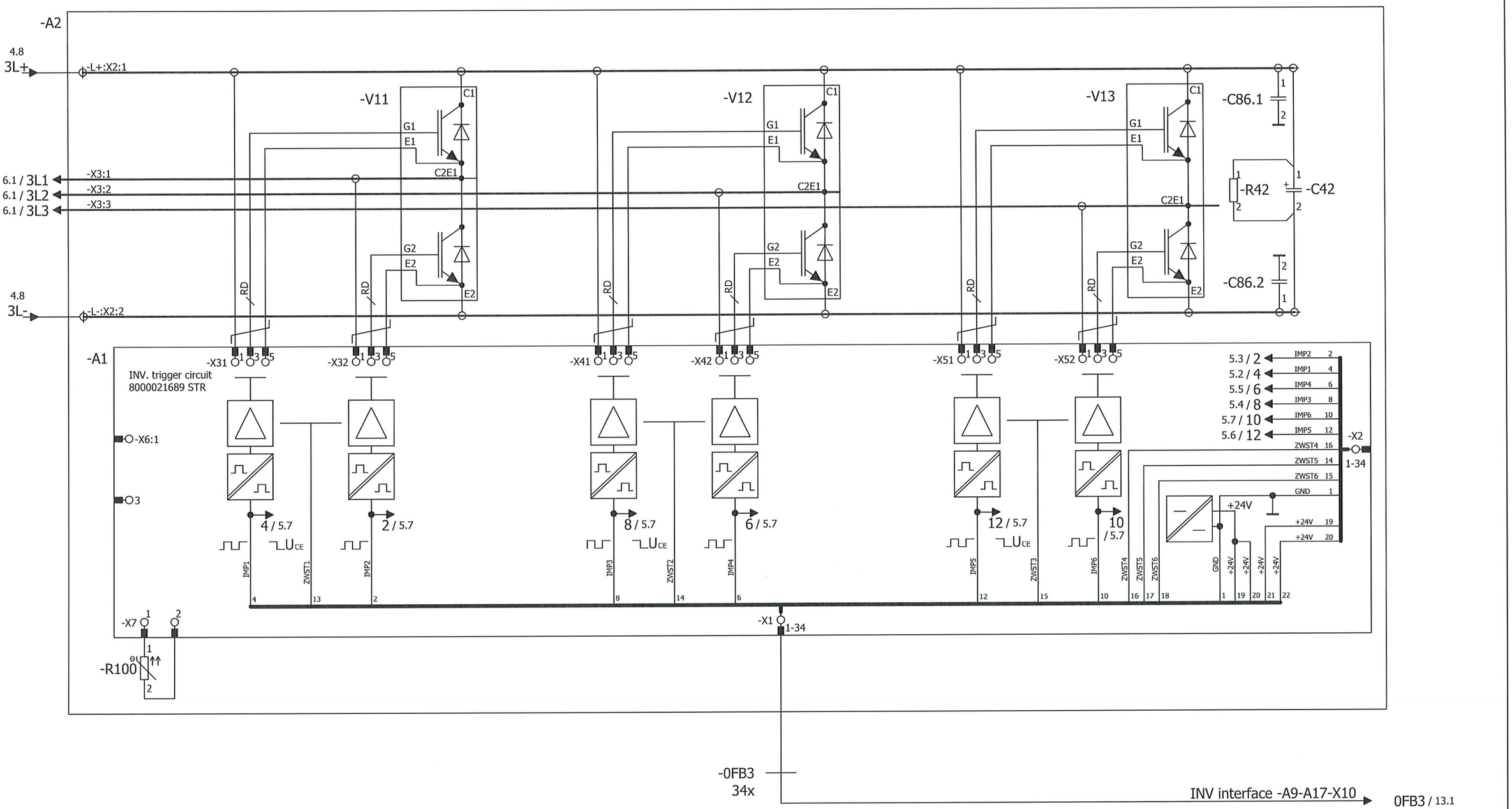
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Power section inverter



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Power section inverter
Protect 8.33 20-400-204-400

Circuit diagram

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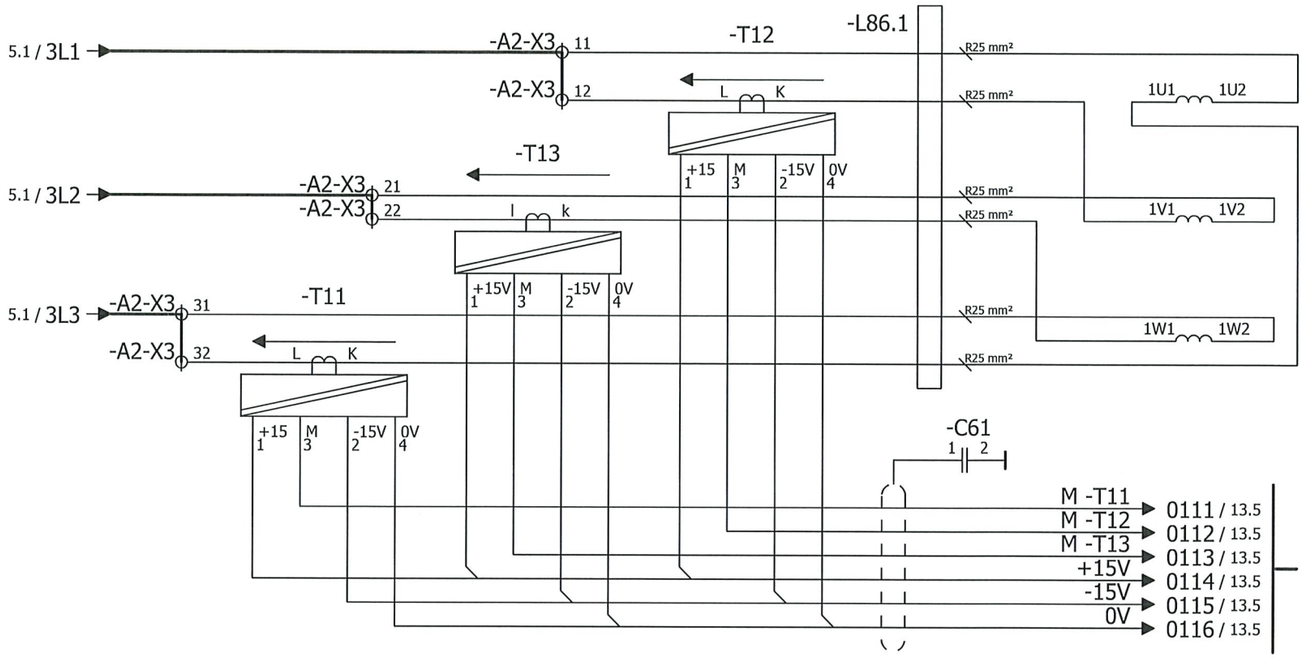
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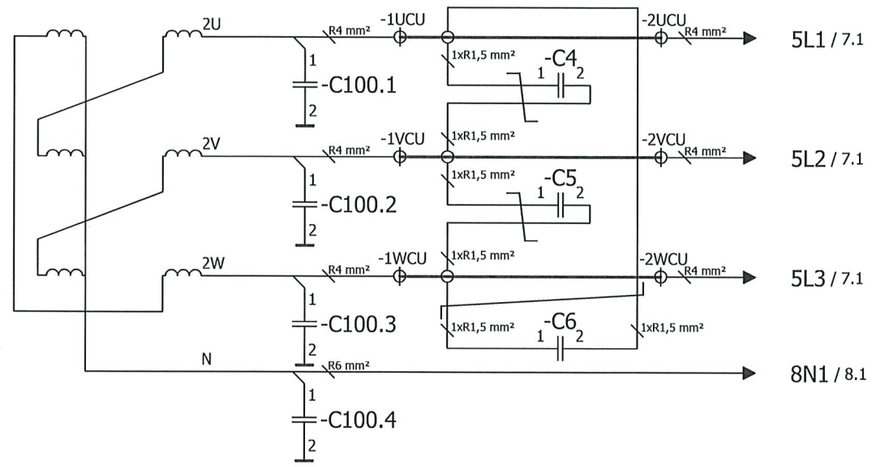
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Power section inverter

Measuring INV current dynamic



-T1



INV interface
-A9-A17-X19

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Hollandse Kust Noord (HKN) wind farm

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Inverter output
Protect 8.33 20-400-204-400

Circuit diagram

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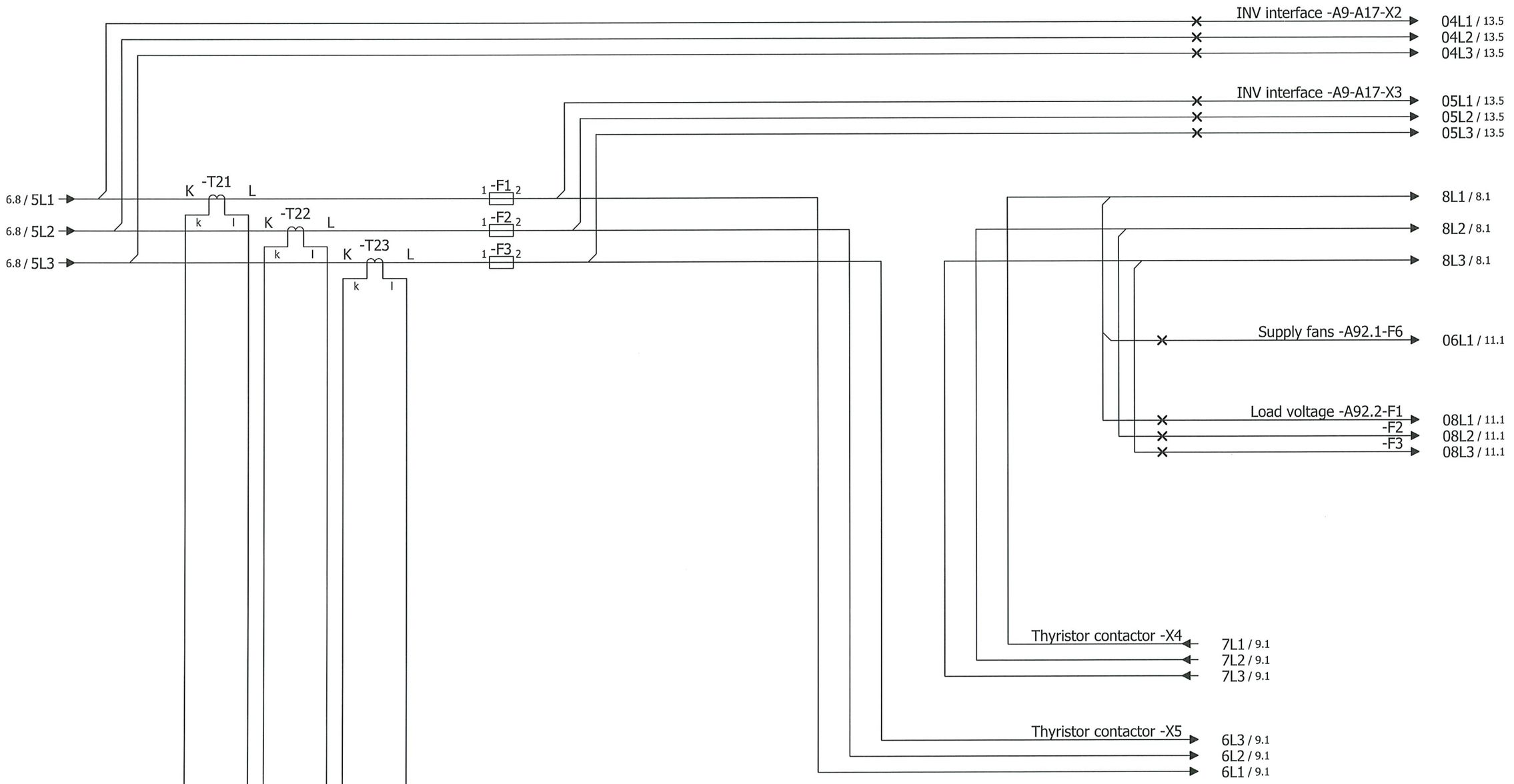
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Power section inverter

Measurement INV current static

Output fuse



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Hollandse Kust Noord (HKN) wind farm

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Inverter output
Protect 8.33 20-400-204-400

Circuit diagram

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Power section inverter

Parallel preventive choke coil

7.8 / 8L1
7.8 / 8L2
7.8 / 8L3
6.8 / 8N1

-L11 -L12 -L13

R4 mm² R25 mm² 2xR35 mm²

SBS Output → 10L1 / 10.1, 10L2 / 10.1, 10L3 / 10.1

SBS Input → 9L1 / 10.1, 9L2 / 10.1, 9L3 / 10.1

-A105
-C56 -C57 -C58
-X1 -X2 -X3 -X4

fan neutral conductor → 0451N1 / 17.1

neutral conductor -A9 → 04N1 / 13.5

-E3
-X3 U V W N
-A4 -X4 EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3
-L93
-A3 -X4 EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3
Load
400V;3/N/PE~50Hz
-X3 U V W N
GZ3_1 GZ3_2 GZ3_3 GZ3_4

-PE

-E4
-X4 U V W N
-A4 -X4 EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3
-L94
-A3 -X4 EMI capacitor 4-pole 8000022634 STR
-C4 -C5 -C1 -C6 -C2 -C7 -C3 -C8 -C9 -C10
-X1 -X2 -X3
Mains
400V;3/N/PE~50Hz
-X4 U V W N
GZ4_1 GZ4_2 GZ4_3 GZ4_4

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
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Load output / SBS circuit
Protect 8.33 20-400-204-400

Circuit diagram

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Power section inverter
Inverter output contactor

-A4

-A37 SBS suppression 8000028996 STR

-A3 -K3 -AK3 -A2 -K2 -AK2 -A1 -K1 -AK1

-V31 -V33 -V35

-X4:1A -X4:1 -X4:1K
-X4:2A -X4:2 -X4:2K
-X4:3A -X4:3 -X4:3K

A K AK G2 K2 K1 G1

7.7 / 7L1
7.7 / 7L2
7.7 / 7L3

RD

-X2 -X3 -X4

-A36 SBS trigger circuit 8000028563 STR

-X5:1
2

GND EUE_EIN GND GND +24V +24V 1 2 3 4 5 6 7 8 9 10

-X6 1 2
-R100
-X1 1-10
-0FB10 10x

-X6:5
-X6:6
-X6:3
-X6:4
-X6:1
-X6:2

7.7 / 6L3 -X5:3
7.7 / 6L2 -X5:2
7.7 / 6L1 -X5:1

INV interface -A9-A17-X1 0FB10 / 13.1

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Inverter output contactor
Protect 8.33 20-400-204-400

Circuit diagram

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Power section SBS

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-A3

-A37 SBS suppression 8000028996 STR

-A3 -K3 -AK3 -A2 -K2 -AK2 -A1 -K1 -AK1

SBS mains voltage -A92.2-F6 → 010L1 / 11.1
-A92.2-F7 → 010L2 / 11.1
-A92.2-F8 → 010L3 / 11.1

8.8 / 9L1 SBS mains
8.8 / 9L2 SBS mains
8.8 / 9L3 SBS mains

-V31 -V33 -V35

-X4:1A -X4:1 -X4:1K
-X4:2A -X4:2 -X4:2K
-X4:3A -X4:3 -X4:3K

A K AK G2 K2 K1 G1 RD

-X2 -X3 -X4

-A36 SBS trigger circuit 8000028563 STR

-X5:1
2

GND EUE_EIN GND GND +24V +24V 1 2 3 4 5 6 7 8 9 10

-X1 1-10

-X6 1 2

-R100

SBS interface -A9-A16-X1 → 0FB9 / 14.3

-X6:5 -X6:6 -X6:3 -X6:4 -X6:1 -X6:2

8.8 / 10L3 UPS Output
8.8 / 10L2
8.8 / 10L1

-X5:3 -X5:2 -X5:1

SBS interface -A9-A16-X4 → 03151L / 14.3
-A9-A16-X4 → 03151K / 14.3
-A9-A16-X4 → 03352L / 14.3
-A9-A16-X4 → 03352K / 14.3
-A9-A16-X4 → 03553L / 14.3
-A9-A16-X4 → 03553K / 14.3

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Power section SBS
Protect 8.33 20-400-204-400

Circuit diagram

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Fuse boards

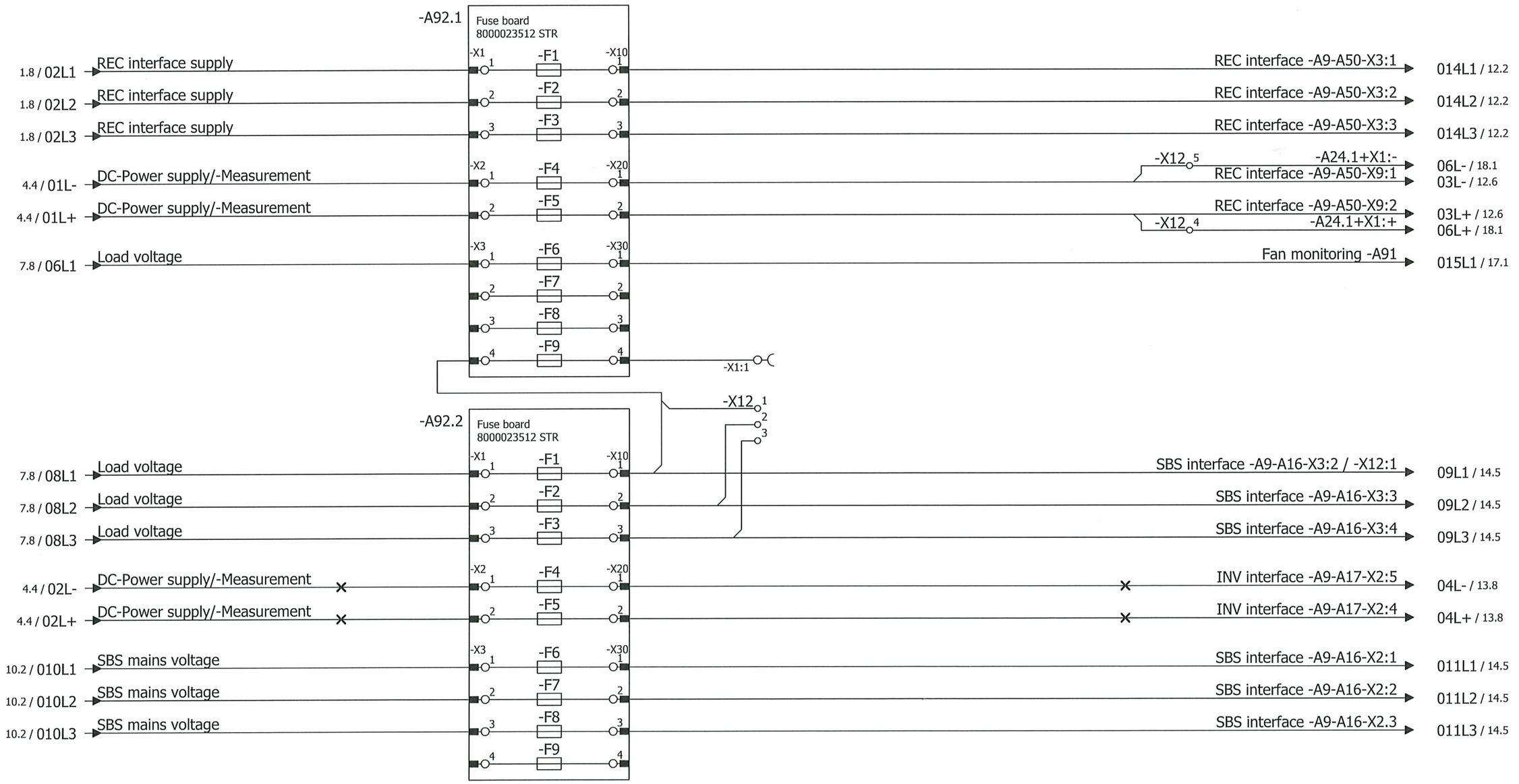
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Fuse boards
Protect 8.33 20-400-204-400
Circuit diagram

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Rectifier control

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-A9
/16.1

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4.4 / 0854
4.4 / 0851
4.4 / 0853
4.4 / 0852
Battery current transformer -T85

4.4 / 08L+
4.4 / 08L-
UBatt+
UBatt-

11.8 / 03L+
11.8 / 03L-
UIC+ A92.1-F5
UIC- A92.1-F4

1.8 / 01L3
1.8 / 01L2
1.8 / 01L1
-Q1 REC input voltage

11.8 / 014L3
11.8 / 014L2
11.8 / 014L1
-T40 sec. supply REC

2.8 / 0FB1
REC trigger circuit -A1-A80-X1

-A50
/16.2
REC interface
8000022025 STR

-X3 1 2 3
-X5 7 8
-X1 1-40
-X2 1 3 5
-X9 1 2
-X4 1 2 3 4
-15V +15V

GND V1 GND V2 V3 V4 V5 V6 +24V +24V GND V11 GND V12 V13 V14 V15 V16 +24V +24V REC current GND REC current GND
1 2 3 4 6 8 10 12 13 14 17 18 19 20 22 24 26 28 29 30 15 16 31 32
+24V
+24V
-R204
-R206
REC current stack A1
REC current stack A2

15 19 18 31 32 33 34 35 36 39 40 41 42 43 44
40 39 36 35 34 33 44 43 42 41 38

-X11 1-50
-A50X11 50x
-X12 1-50
-A50X12 50x

-A1
REC control
8000014119 STR

-X11 1-50
15 18 19 31 32 33 34 35 36 39 40 41 42 43 44
-X12 1-50
40 39 36 35 34 33 44 43 42 41 38

-X19 1 2 3
-X15 1 4
-X8 1 2 3
-X5 3 4 +24V DC
-X8 5 6
-X8 4 5 6
-X5 5 6

-X130 1 2
-X12 10 11 15
-Q3
/1.4
96 98
95
-Q1 C1 C2

BK R1,5 mm²
-C711 220000µF
-C712 220000µF
BK R2,5 mm²
BK R1,5 mm²
BK R1,5 mm²
0V
BK R2,5 mm²
-X15 1 1
-X15 2 2 3
(+) (-)
*1

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760
GZ130_1 +MBC1/3.7
GZ130_2 +MBC1/3.7

+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760
GZ15_2 +MBC1/3.4
GZ15_3 +MBC1/3.4

*1 Attention! In the event of battery undervoltage < 130 V, the UPS automatically switches off battery isolator Q2.
If this happens, switch X15:3 must be switched into the open position (undervoltage trip blocked).
For restart, please refer to the chapter in the UPS operating instructions (charging the DC link capacitors).
Unlock the tripped switch Q2 by switching to open position.
After charging the DC link capacitors, switch on Q2.
Attention! When the battery voltage reaches > 200 V, switch X15:3 must be switched back to the closed position.

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Rectifier control
Protect 8.33 20-400-204-400

Circuit diagram

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Inverter control

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INV current static

INV current dynamic

7.8 / 05L1 INV output voltage reference
7.8 / 05L2
7.8 / 05L3
8.8 / 04N1 neutral conductor → N → 05N1 / 14.5
7.8 / 04L1 INV output voltage
7.8 / 04L2
7.8 / 04L3

7.3 / 023L Transformer -T23
7.3 / 023K
7.3 / 022L Transformer -T22
7.3 / 022K
7.3 / 021L Transformer -T21
7.3 / 021K

6.5 / 0116 Transformer -T11...-T13
6.5 / 0115
6.5 / 0113
6.5 / 0112
6.5 / 0111
6.5 / 0114

INV. trigger circuit
-A2-A1-X1
5.8 / 0FB3

Trigger circuit
-A4-A36-X1
9.7 / 0FB10

11.8 / 04L+ UIC+
11.8 / 04L- UIC-

-A9
/16.1

-A17
/16.3
INV interface
8000022441 STR

-X1 1-10
GND SBS_ON GND GND +24V +24V
+24V

-X10 1-34
IMP1 IMP2 IMP5 IMP6 ZVST1 ZVST3 +24V +24V GND
+24V

-X4 1 2 3 4 5 6 -X8 6
-X13 2 3 1 4
-15V +15V

-R203 -R205 -R207
-R204 -R206 -R208

INV current static

-X20 4 1 2 3 5 6
+15V -15V

-S201
-S202
-S203

-X19 4 1 2 3 5 6
+15V -15V

INV current dynamic

-X2 1W 2V 3U -X3 1N 2U 3V 4W

-X2 5 4

-X11 1-50
-A17X11___50x

-X12 1-50
-A17X12___50x

-A1
INV control
8000042636 STR

-X11 1-50
48 14 13 12 17 21 23 49

27 28 21 22 19 20 23 48 46 50 47 45 49 32 29 30 31 39 38 37 1 2

-X12 1-50

-X15 1 4

-X5 1 2 (+)

-X5 5 6 (+)

-X8 8 7

-X5 3 4 (+)

-X8 1 2

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Inverter control
Protect 8.33 20-400-204-400

Circuit diagram

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Control SBS

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-A9 /16.1

10.4 / 03553L Transformer -T35
10.4 / 03553K
10.4 / 03352L Transformer -T33
10.4 / 03352K
10.4 / 03151L Transformer -T31
10.4 / 03151K

11.8 / 09L1 Load voltage
11.8 / 09L2
11.8 / 09L3

13.8 / 05N1 neutral conductor → -X1:3, -X12 6

11.8 / 011L1 SBS mains voltage
11.8 / 011L2
11.8 / 011L3

10.2 / 0FB9 SBS trigger circuit -A3-A36-X1

-L62

-A16 /16.4 SBS interface 8000022378 STR

-X1 1-10: 1 GND, 2 SBS_ON, 3 GND, 4 GND, 5 +24V, 6 +24V, 7 8 9 10; +24V

-X4 1 2 3 4 5 6

-X2 1U 2V -X3 3W 1N 2U 3V 4W

SBS current

-R201 -R203 -R205
-R202 -R204 -R206

-X12 12 → -X8 7

7 → 5
8 → 4
9 → 6
-X18 1
-R120 1 2
2

-X11 1-50: 15 16 26 17 → -A16X11 50x

-X12 1-50: 21 29 30 27 45 46 35 36 33 41 42 39 → -A16X12 50x

-A1 SBS control 8000008845 STR

-X11 1-50: 15 16 26 17
-X12 1-50: 21 29 30 27 45 46 35 36 33 41 42 39

-X15 1 2 3 +24V 4 5

Fan control -A92.1-X6
091.11 / 17.7
091.12 / 17.7
091.13 / 17.7
091.14 / 17.7
091.15 / 17.7

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Control SBS
Protect 8.33 20-400-204-400
Circuit diagram

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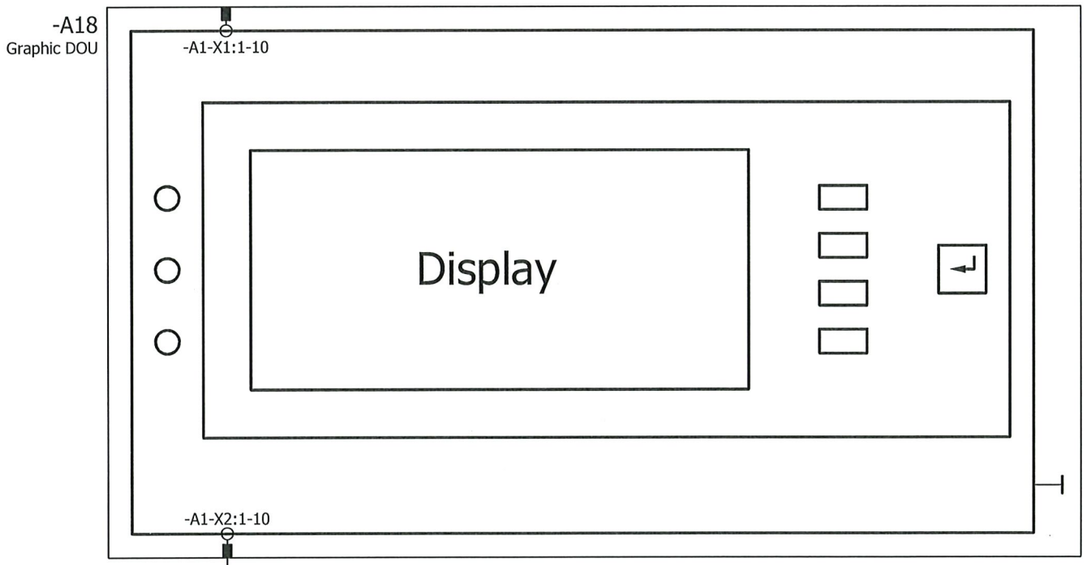
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Protect 8.33 20-400-204-400

Circuit diagram

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+UPS1
Protect 8.33 20-400-204-400
1000007888.080
10009759

GZ20_3 +UPS1/16.6
GZ20_5 +UPS1/16.7

-A9
/12.1
/13.1
/14.2
/20.1
/21.1
/22.1

-A50
/12.1
REC interface
8000022025 STR

-A17
/13.1
INV interface
8000022441 STR

-A16
/14.2
SBS interface
8000022378 STR

INV -CAN
INV -sync

-A20
Parallel Adapter
8000023378 STR

-X3 1-3 -X4 1-3 -X5 1-4 -X6 1-2

-X6 1-10 -X7 1-16
-X6 1-10 -X7 1-16
-X6 1-10 -X7 1-16

-X1 1-16 -X2 1-16 -X11 1-10 -X12 1-10 -X13 1-10 -X14 1-10

Parallel CAN INV

Parallel CAN REC

DOU-CAN

15.8 / A

A / 20.1
O / 19.1
K / 18.1
L / 18.1

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Control CAN
Protect 8.33 20-400-204-400

Circuit diagram

1000007888.080
10009759

1000007888_080 en

=
+ UPS2
& EFS

A3

sheet 16
sheets 23

Fan control/monitoring

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11.8 / 015L1

8.8 / 0451N1

-A91.1
Fan control
8000022841 STR

-X5 1 2 3

-R5
-C5

-S1
-S2

Logical evaluation
fan fault

-X7 1 2 3 4 5

Fan speed
+24V

= 1

P2 P4 P6 P8

-R50 -R51 -R60 -R61 -R70 -R71 -R80 -R81

P1 P3 P5 P7

-R1 PTC
-R2 PTC
-R3 PTC
-R4 PTC

-X1 -X2 -X3 -X4 2 1

-C31 -C32 -C33 -C34

-X91 -X92 -X93 -X94 2 3 1

N L PE

-M1 -M2 -M3 -M4
M 1~

-X6 1 2 3 4 5

14.6 / 091.11
14.6 / 091.12
14.6 / 091.13
14.6 / 091.14
14.6 / 091.15

SBS interface -A9-A16-X15

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				Date	27.05.2024	ROSETTI MARINO Hollandse Kust Noord (HKN) wind farm	AEG POWER SOLUTIONS	Fan control/monitoring Protect 8.33 20-400-204-400 Circuit diagram	=
				Editor	Beckschäfer				+ UPS2
				Checked	Ch.Peck			1000007888.080 10009759	1000007888_080 en
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+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ91_1
+MBC1/3.5

GZ92_1
+MBC1/3.5

-F91 1
G
F3,15A 2

-F92 1
G
F3,15A 2

11.8 / 06L+

07L+ / 19.1

-A24.1
Battery charge monitoring
BLÜ-PRO
(Option)

-X1 +
M
-
0 ... 5V
-X1 -
-X3 1-16
-X4 1-10

-A24.2
Battery charge monitoring
BLÜ-PRO
(Option)

-X1 +
M
-
0 ... 5V
-X1 -
-X3 1-16
-X4 1-10

16.8 / L

16.8 / K

11.8 / 06L-

07L- / 19.1

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

battery charging circuit monitoring
Protect 8.33 20-400-204-400

Circuit diagram

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& EFS

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Control

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+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ93_1
+MBC1/3.6

-F93 1
G
F3,15A 2

18.8 / 07L+

-A24.3
BLÜ-PRO battery charging circuit
monitoring system

-X1 + M

-

0 ... 5V

-X1 -
-X3 1-16
-X4 1-10

16.8 / O

18.8 / 07L-

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

battery charging circuit monitoring
Protect 8.33 20-400-204-400

Circuit diagram

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=
+ UPS2
& EFS

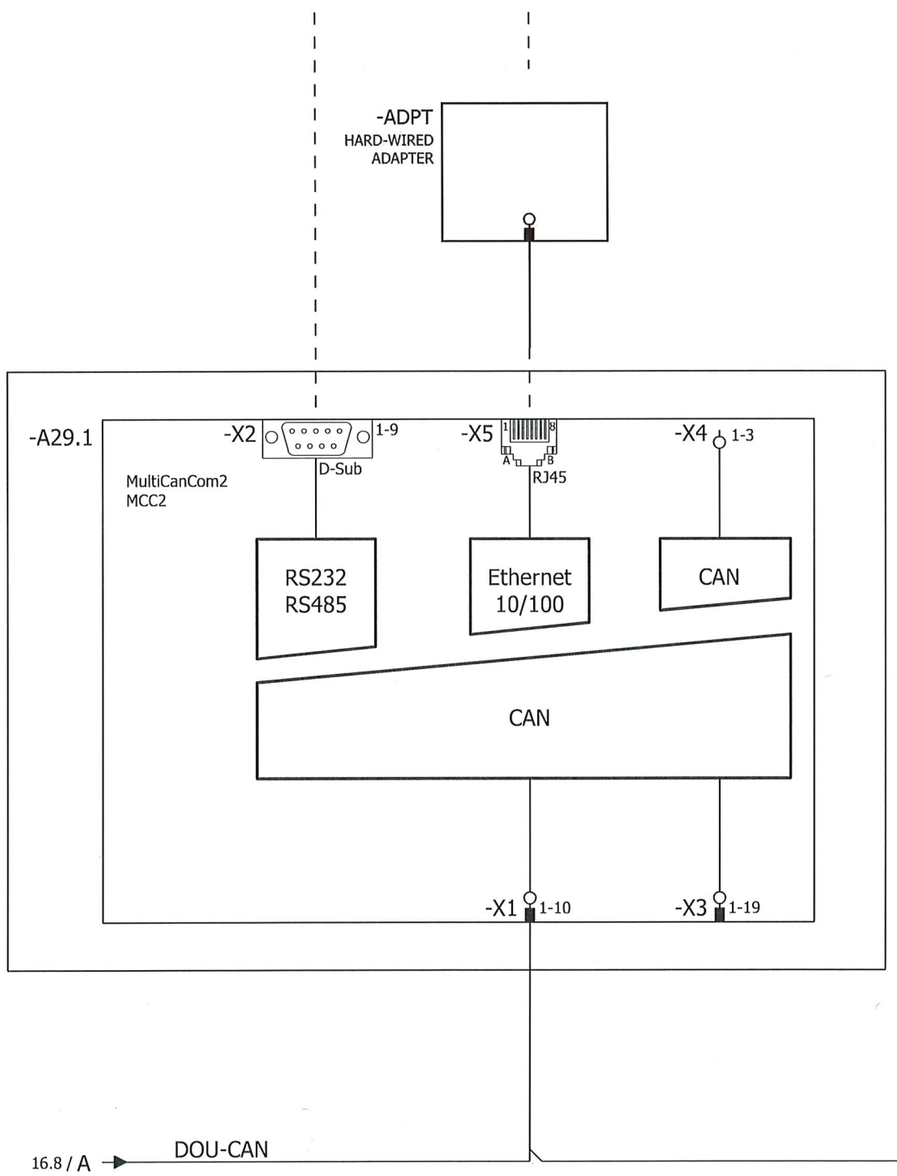
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Control

SNMP adapter
CompuWatch
Service Tools
Modbus

Modbus



16.8 / A → DOU-CAN → A / 21.1

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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

MultiCom
Protect 8.33 20-400-204-400

Circuit diagram

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& EFS

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Remote signaling

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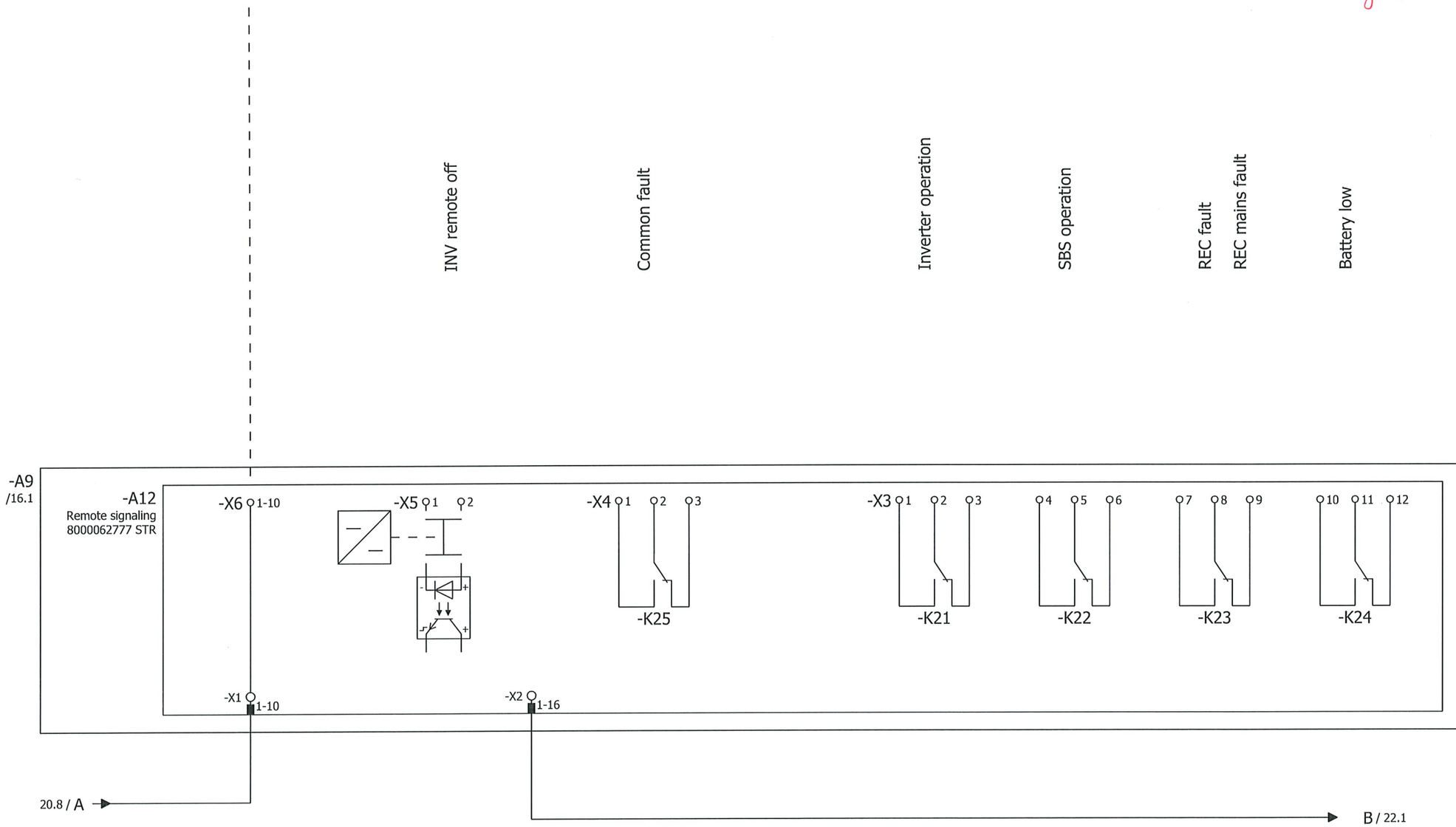
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CAN Service

Configuration remote signals
see techn. data sheet

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INV remote off
Common fault
Inverter operation
SBS operation
REC fault
REC mains fault
Battery low



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Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Remote signaling
Protect 8.33 20-400-204-400

Circuit diagram

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+ UPS2
& EFS

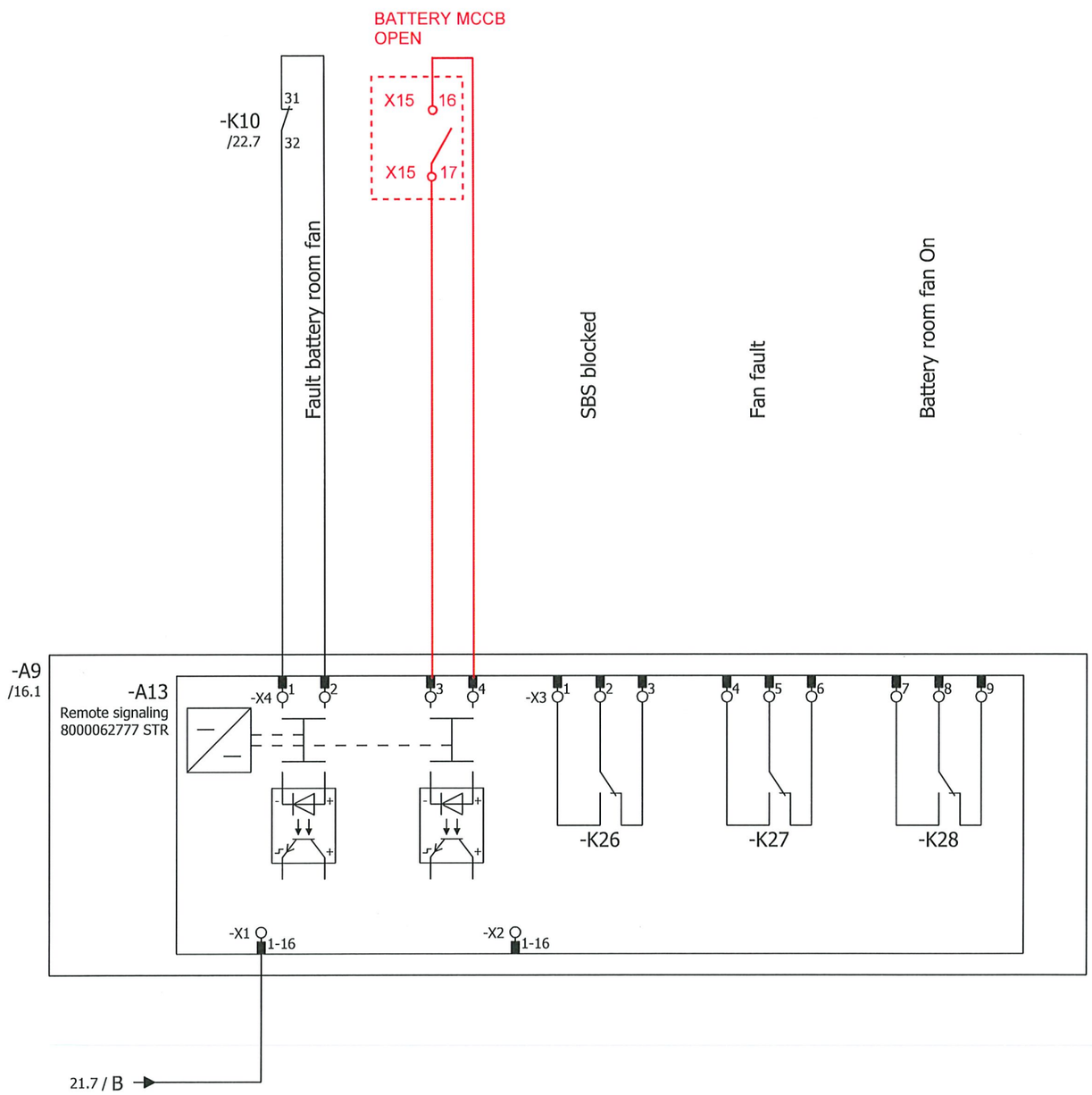
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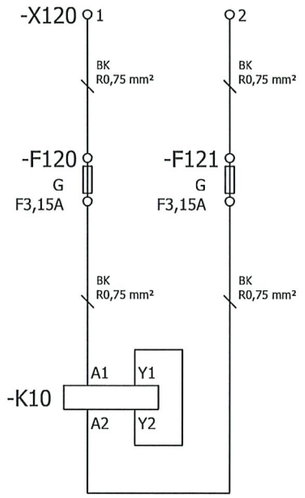
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Configuration remote signals see techn. data sheet



24V DC is permanently present in fault-free operation



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PXC.2981020_PSR-SCP- 24DC/ESP4/2X1/1X2
13 — 14
23 — 24
31 — 32 /22.2

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				Editor	Beckschäfer			
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		+ UPS2			
		& EFS	A3	sheet	22
				sheets	23

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+MBC1
Bypass transformer cabinet
with manual bypass 20 kVA
1000007888.090
10009760

GZ13_1
+MBC1/11.6

GZ13_2
+MBC1/11.7

BK
R1,5 mm²

BK
R1,5 mm²

-X13 U U N N PE PE

BK
0,75 mm²

-F100 1
G
T6,3A 2

BK
0,75 mm²

L
-F85
3 2

BK
0,75 mm²

-A85 -X1 3 2
-R1

-X14 U U N N

BK
0,75 mm²

-F110 1
G
T6,3A 2

BK
0,75 mm²

BK
0,75 mm²

-X114 U N

-W100
H05VV
2x1 mm²
3 m

L N
-H1
Enclosure light

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

external connection
Protect 8.33 20-400-204-400

Circuit diagram

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=
+ UPS2
& EFS

A3

sheet 23
sheets 23

CAE EPLAN Electric P8

Terminal diagram

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terminal
=+UPS2-A9-A12-X3

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable type	Cable name	Position / Page
				1						+UPS2&EFS/21.5
				2						+UPS2&EFS/21.5
				3						+UPS2&EFS/21.5
				4						+UPS2&EFS/21.5
				5						+UPS2&EFS/21.6
				6						+UPS2&EFS/21.6
				7						+UPS2&EFS/21.6
				8						+UPS2&EFS/21.6
				9						+UPS2&EFS/21.6
				10						+UPS2&EFS/21.7
				11						+UPS2&EFS/21.7
				12						+UPS2&EFS/21.7

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A9-A12-X3
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 1
sheets 23

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Terminal diagram

terminal
=+UPS2-A9-A12-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type			Position / Page
				1								+UPS2&EFS/21.4
				2								+UPS2&EFS/21.4
				3								+UPS2&EFS/21.4

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A9-A12-X4
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS2
& EMA

A3

sheet 2
sheets 23

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Terminal diagram

terminal
=+UPS2-A9-A12-X5

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1						+UPS2&EFS/21.3
				2						+UPS2&EFS/21.3

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A9-A12-X5
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 3
sheets 23

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Terminal diagram

terminal
=+UPS2-A9-A12-X6

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-10		-A9-A12-X1				+UPS2&EFS/21.2

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A9-A12-X6
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 4
sheets 23

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Terminal diagram

terminal

=+UPS2-A9-A29.1-X2

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-9						+UPS2&EFS/20.2

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A9-A29.1-X2
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 5
sheets 23

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Terminal diagram

terminal
=+UPS2-A9-A29.1-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-3						+UPS2&EFS/20.3

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A9-A29.1-X4
Protect 8.33 20-400-204-400

Terminal diagram

1000007888_080 en

=
+ UPS2
& EMA

A3

sheet 6
sheets 23

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Terminal diagram

terminal
=+UPS2-A9-A29.1-X5

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-8						+UPS2&EFS/20.3

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				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A9-A29.1-X5
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 7
sheets 23

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Terminal diagram

terminal
=+UPS2-A20-X3

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-A20-X3	1-3	1-3						+UPS2&EFS/16.6

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Terminal diagram

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terminal

=+UPS2-A20-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1-3						+UPS2&EFS/16.7

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ROSETTI MARINO SpA

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ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A20-X4
Protect 8.33 20-400-204-400

Terminal diagram

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& EMA

A3

sheet 9
sheets 23

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Terminal diagram

terminal
=+UPS2-A20-X5

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+UPS1-A20-X5	1-4	1-4						+UPS2&EFS/16.7

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REV.: 3_A | DATE: 15/11/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

Stat	Alteration	Date	Name		
				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A20-X5
Protect 8.33 20-400-204-400

Terminal diagram

1000007888_080 en

= + UPS2 & EMA

A3

sheet 10
sheets 23

1000007888_080

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Terminal diagram

terminal

=+UPS2-A20-X6

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type			Position / Page
				1-2								+UPS2&EFS/16.7

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Stat	Alteration	Date	Name		
				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-A20-X6
Protect 8.33 20-400-204-400

Terminal diagram

1000007888_080 en

=
+ UPS2
& EMA

A3

sheet 11
sheets 23

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Terminal diagram

terminal
=+UPS2-E1-X1

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U		-E1-X1	U			+UPS2&EFS/1.2
						-Q1	2			
				U		-E1-X1	U			+UPS2&EFS/1.2
				V		-E1-X1	V			+UPS2&EFS/1.2
						-Q1	4			
				V		-E1-X1	V			+UPS2&EFS/1.2
				W		-E1-X1	W			+UPS2&EFS/1.2
						-Q1	6			
				W		-E1-X1	W			+UPS2&EFS/1.2

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Stat	Alteration	Date	Name

Date	03.06.2024
Editor	Beckschäfer
Checked	Ch.Peck
Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-E1-X1
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 12
sheets 23

1000007888_080

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Terminal diagram

terminal
=+UPS2-E2-X2

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				L+		-L41	1.2			+UPS2&EFS/4.3
				L+						+UPS2&EFS/4.3
				L-		-L41	2.2			+UPS2&EFS/4.2
				L-						+UPS2&EFS/4.2

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				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-E2-X2
Protect 8.33 20-400-204-400

Terminal diagram

1000007888_080 en

=
+ UPS2
& EMA

A3

sheet 13
sheets 23

NO MARK UP
AS COMMISSIONED: MEMA GIROM 26/3/25

Terminal diagram

terminal
=+UPS2-E3-X3

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				U		-E3-X3	U			+UPS2&EFS/8.2
						-L11	2			
				U		-E3-X3	U			+UPS2&EFS/8.2
				V		-E3-X3	V			+UPS2&EFS/8.2
						-L12	2			
				V		-E3-X3	V			+UPS2&EFS/8.2
				W		-E3-X3	W			+UPS2&EFS/8.2
						-L13	2			
				W		-E3-X3	W			+UPS2&EFS/8.2
				N		-E3-X3	N			+UPS2&EFS/8.3
				N		-E3-X3	N			+UPS2&EFS/8.3

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				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-E3-X3
Protect 8.33 20-400-204-400

Terminal diagram

1000007888_080 en

=
+ UPS2
& EMA

A3

sheet 14
sheets 23

NO MARK UP

AS COMMISSIONED: MARIA GIRON. 26/3/25

Terminal diagram

terminal

=+UPS2-E4-X4

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type			Position / Page
				U		-E4-X4	U					+UPS2&EFS/8.6
						-A3-X4	1					
				U		-E4-X4	U					+UPS2&EFS/8.6
				V		-E4-X4	V					+UPS2&EFS/8.6
						-A3-X4	2					
				V		-E4-X4	V					+UPS2&EFS/8.6
				W		-E4-X4	W					+UPS2&EFS/8.6
						-A3-X4	3					
				W		-E4-X4	W					+UPS2&EFS/8.6
				N		-E4-X4	N					+UPS2&EFS/8.6
				N		-E4-X4	N					+UPS2&EFS/8.6

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3_A	15/11/24	G.Randi

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Stat	Alteration	Date	Name		
				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-E4-X4
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 15
sheets 23

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Terminal diagram

terminal
=+UPS2-F120

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		-K10	A1	1		-X120	1			+UPS2&EFS/22.7

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ROSETTI MARINO SpA

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				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-F120
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 16
sheets 23

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AS COMMISSIONED: MARIA GIROTTI 26/3/25

Terminal diagram

terminal
=+UPS2-F121

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		-K10	A2	1		-X120	2			+UPS2&EFS/22.8

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				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-F121
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 17
sheets 23

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Terminal diagram

terminal
=+UPS2-PE

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				PE						+UPS2&EFS/4.3
				PE						+UPS2&EFS/8.4
				PE						+UPS2&EFS/1.4

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				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-PE
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 18
sheets 23

1000007888_080

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AS COMMISSIONED: MATIA GIROTTI. 26/3/25

Terminal diagram

terminal
=+UPS2-X12

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1		-A92.1-X3	4			+UPS2&EFS/11.5
				2		-A92.2-X10	2			+UPS2&EFS/11.5
				3		-A92.2-X10	3			+UPS2&EFS/11.5
		-A24.1-X1	+	4	'	-A92.1-X20	2			+UPS2&EFS/11.7
		-A24.1-X1	-	5	'	-A92.1-X20	1			+UPS2&EFS/11.7
				6		-CU	N			+UPS2&EFS/14.7
				7		-A9-A16-X8	5			+UPS2&EFS/14.2
				8		-A9-A16-X8	4			+UPS2&EFS/14.2
				9	┐	-A9-A16-X8	6			+UPS2&EFS/14.2
				10		-A9-A50-X8	1			+UPS2&EFS/12.3
				11		-A9-A50-X8	2			+UPS2&EFS/12.3
						-Q3	96			
				12	┘	-A9-A16-X8	7			+UPS2&EFS/14.2
				15		-A9-A50-X8	3			+UPS2&EFS/12.3
						-Q3	95			

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				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-X12
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 19
sheets 23

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Terminal diagram

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terminal
=+UPS2-X13

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		+MBC1-X14	U	U		-F100	1:2			+UPS2&EFS/23.2
		-X14	U	U						+UPS2&EFS/23.2
		+MBC1-X14	N	N		-A85-X1	2			+UPS2&EFS/23.3
		-X14	N	N						+UPS2&EFS/23.3
				PE						+UPS2&EFS/23.3
				PE						+UPS2&EFS/23.3

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123A90-FDL-1724000372-EL-DG-00009
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Stat	Alteration	Date	Name		
				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-X13
Protect 8.33 20-400-204-400

Terminal diagram

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=
+ UPS2
& EMA

A3

sheet 20
sheets 23

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AS COMMISSIONED: MATIA GIROTTI 26/3/25

Terminal diagram

terminal
=+UPS2-X14

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
		-X13	U	U		-F110	1:2			+UPS2&EFS/23.6
				U						+UPS2&EFS/23.6
		-X13	N	N		-X114	N			+UPS2&EFS/23.7
				N						+UPS2&EFS/23.7

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				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-X14
Protect 8.33 20-400-204-400

Terminal diagram

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A3

sheet 21
sheets 23

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Terminal diagram

terminal

=+UPS2-X15

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1		-A9-A50-X8	4			+UPS2&EFS/12.6
				1		-C711				+UPS2&EFS/12.7
				2		-C712				+UPS2&EFS/12.7
		+MBC1-X15	6	2		-A9-A50-X5	5			+UPS2&EFS/12.8
		+MBC1-X15	7	3		-A9-A50-X5	6			+UPS2&EFS/12.8

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VENDOR DOCUMENT - FDL DWG:
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REV.:	DATE:	SIGNATURE:
3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

Stat	Alteration	Date	Name		
				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-X15
Protect 8.33 20-400-204-400

Terminal diagram

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A3

sheet 22
sheets 23

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Terminal diagram

terminal
=+UPS2-X120

Cable name	Cable type	Destination mark External	Connection	Terminal	Bridge	Destination mark Internal	Connection	Cable name	Cable type	Position / Page
				1	'	-F120	1:1			+UPS2&EFS/22.7
				2	'	-F121	1:1			+UPS2&EFS/22.8

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Stat	Alteration	Date	Name		
				Date	03.06.2024
				Editor	Beckschäfer
				Checked	Ch.Peck
				Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Terminal diagram =+UPS2-X120
Protect 8.33 20-400-204-400

Terminal diagram

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+ UPS2
& EMA

A3 | sheet 23 | sheets 23

1000007888_080

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	AC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 7 of 19 Date: 02/02/2025 Rev: 06

Base Load Power Hub (BLPH)

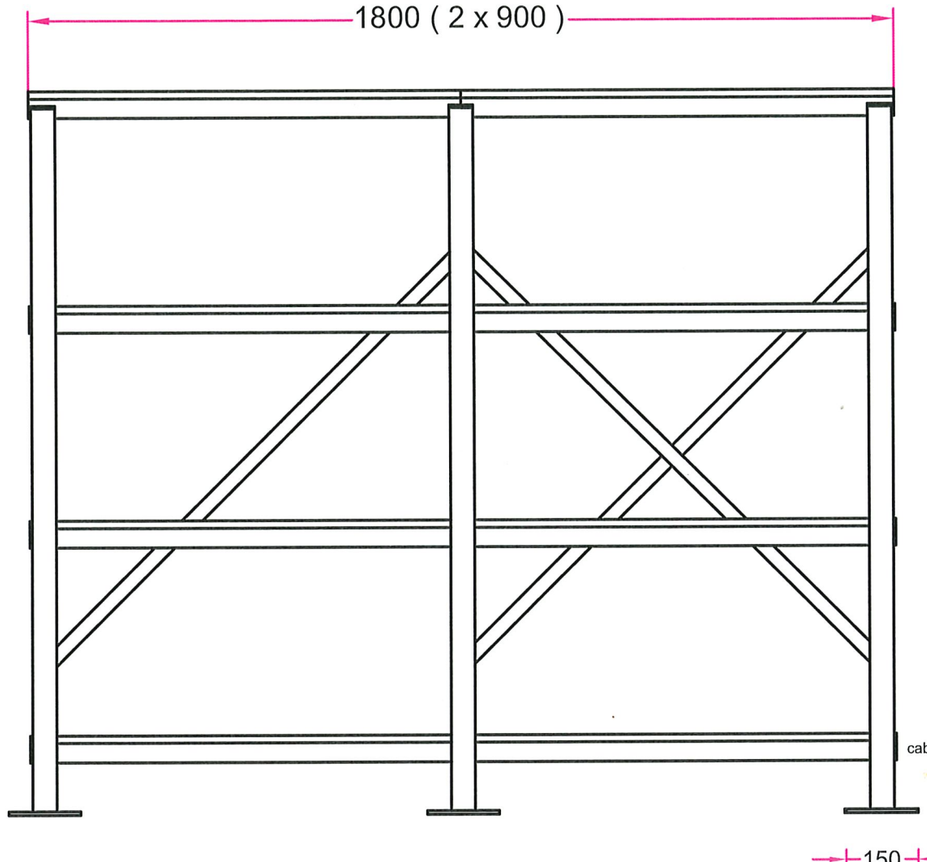
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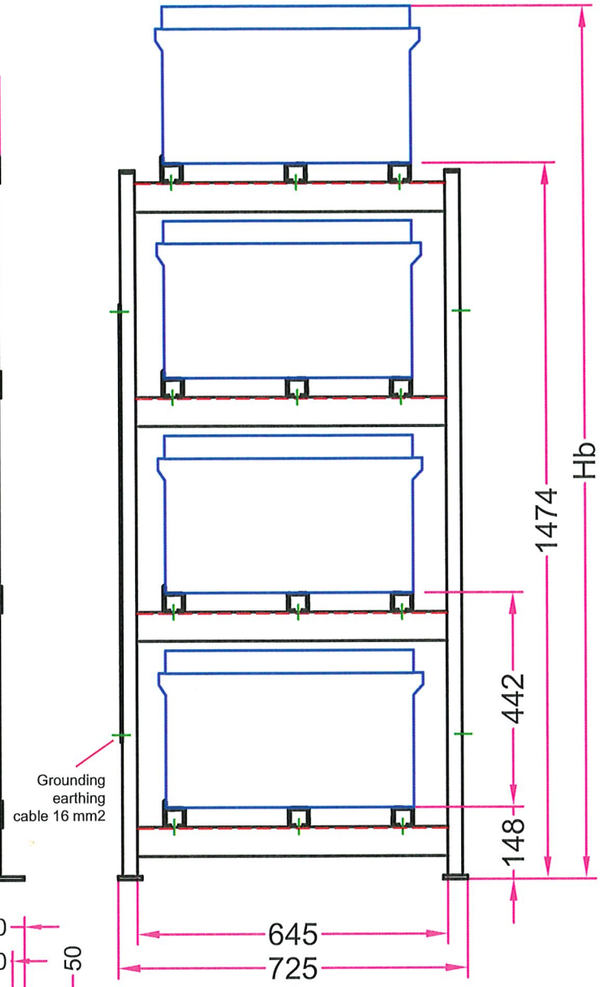
BATTERY LAYOUT AND INTERCONNECTION DIAGRAM

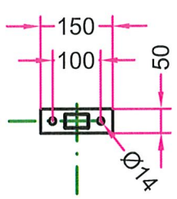
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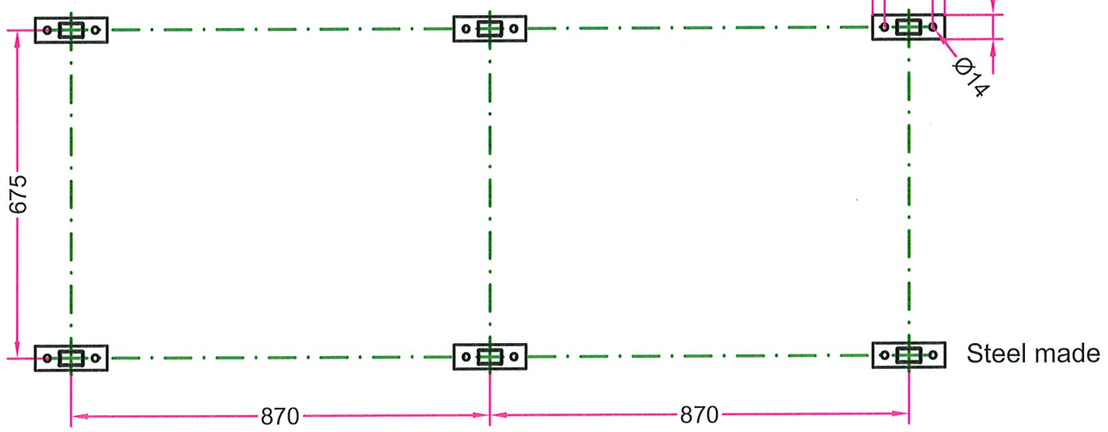
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Battery Rack
BA-200F4 A/B









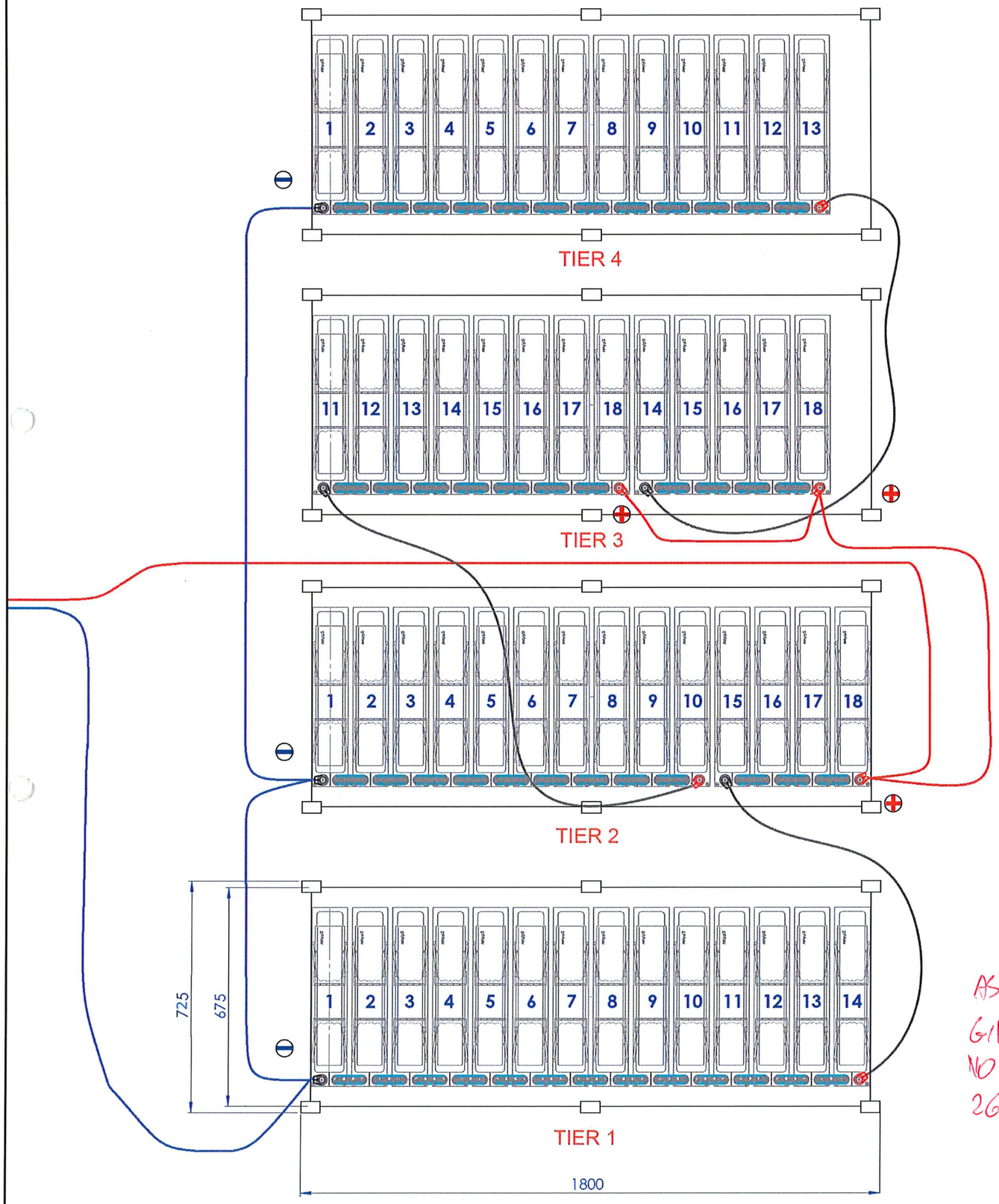
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26/03/2025

Rack weight : 100,6 kg
Battery weight : 2.295,0 kg
Total weight : 2.395,6 kg

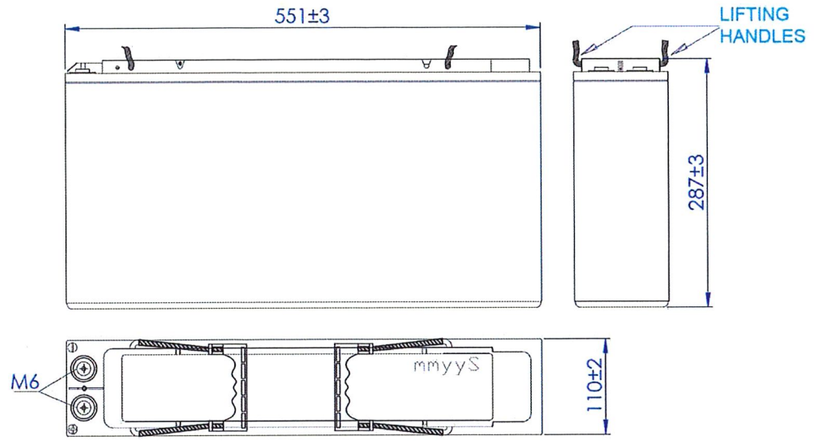
Material:	S235 JR EN 10025 (St-37-2)		Date	Name	Checked	Execution: Rack, Standard	Drawing-/Article No: 4U1187FT	Rev: 00
Coating:	Plastic Coated		16/24	Riedel	St.Selig	Type: 4E-PGU 1-18 HH FT with FIX002		
Tolerance:	DIN ISO 2768 "C"							
Battery:			Scale: none			Production Details: PPCS-01 rev. 0	Welding execution according to WD0002	

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EN 1090 EXC 3



BATTERY BLOCK : FTG12-120



SCALA 1 : 5

BILL OF MATERIALS	CODE	WEIGHT (kg)	Q.TY
CELL FTG12-120	11017386	42,5	54
CELLS CONNECTION CABLE 50mm2	21000191	0,5	15 m
CABLE LUG F6 X 50	41005168	0,3	12
CABLE LUG COVER BLACK 50040	41000243	0,008	6
CABLE LUG COVER RED 50039	41000244	0,008	6

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NO MARK UP
26/03/2025

REV./REV.:	DATA/DATE	PROGETTISTA/DESIGNER	DISEGNATO/DRAWN	APPROVATO/APPROVED	DESCRIZIONE MODIFICHE/DESCRIPTION REVISIONS

TOLLERANZE GENERALI/GENERAL ALLOWANCES: NORMA UNI EN 22768-mk	CARATTERISTICHE ELETTRICHE/ELETTRIC CHARACTERISTICS:	PESO BATT./BTR. WEIGHT: 2295 kg	PROGETTISTA/DESIGNER: P. VECCHIARELLI
RUGOSITA' SUPERFICIALE/SUPERFICIAL ROUGHNESS: NORMA UNI ISO 1302	TIPO ELEMENTO/CELL TYPE: 3x18 FTG12-120	PESO EL./CELL WEIGHT: 42,5 kg	DISEGNATO/DRAWN: P. VECCHIARELLI
FORME E POSIZIONE/FORMS AND POSITION: NORMA UNI ISO 1101	CODICE SAP EL./CELL SAP CODE: 11017386		APPROVATO/APPROVED: F. PAGLIARINI
SCALA/SCALE: 1:10	PROIEZIONE/PROJECTION:	FOGLIO/SHEET: A2	DATA/DATE: 09/01/2024
DESCRIZIONE/DESCRIPTION:			FILE-DISEGNO/FILE-DRAWING: layout 3x18 FTG 12-120 — TAV./TAB.: 1

FAAM

1724000372-EL-DG-00011

AC UPS 15kVA - 3 x 18 x FTG 12-120

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CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	AC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 10 of 19 Date: 02/02/2025 Rev: 06

Base Load Power Hub (BLPH)

AC UPS PAS - TAG: UP-200F3
BATTERY PROTECTION BOX

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MODEL C-225 REV.1

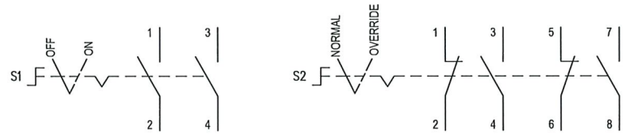
GENERAL NOTES:

-ENCLOSURE: EJBC-5
-MATERIAL: COPPER FREE ALUMINIUM ALLOY
-EXTERNAL PAINTING: RAL7035
-INTERNAL PAINTING: /
-ALL DIMENSION ARE IN mm
-WEIGHT: ≈57kg

BATTERY PROTECTION BOX

CB-200F3 A/B

SELECTOR SWITCHES DETAIL



TRUE TABLE

POSITION	CONTACT	
	1-2	3-4
OFF	O	O
ON	X	X

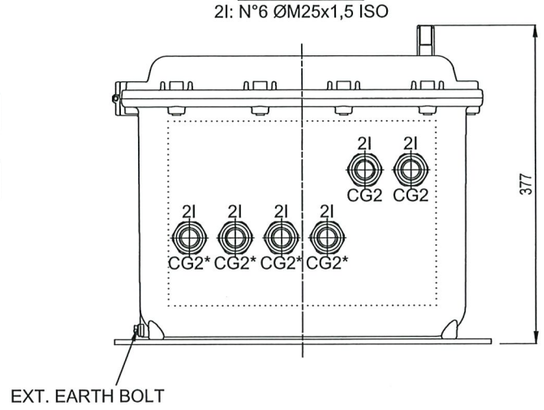
O	CONTACT OPEN
X	CONTACT CLOSED

TRUE TABLE

POSITION	CONTACT			
	1-2	3-4	5-6	7-8
NORMAL	X	O	X	O
OVERRIDE	O	X	O	X

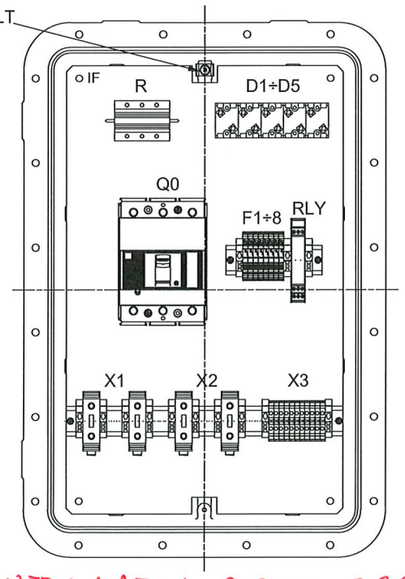
O	CONTACT OPEN
X	CONTACT CLOSED

BOTTOM VIEW
2I: N°6 ØM25x1,5 ISO



N°	Q.TY	CODE	DESCRIPTION
IF	1	BFE-5	ALUMINIUM INTERNAL FRAME
X1	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X2	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X3	11	UT4	PHOENIX TERMINALS SUITABLE FOR 4mm² CABLE
Q0	1	XT3N200TMD3	ABB XT3 MCCB, 3P, 200A, 36kA
	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
CG2*	4	NEV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR ARMORED CABLE Øint. 11-20mm Øext. 20-27,5mm, ARMOR THICKNESS 0,2-1,6mm
CG2	2	NAV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR NOT-ARMORED CABLE Ø11-20mm

INTERNAL VIEW

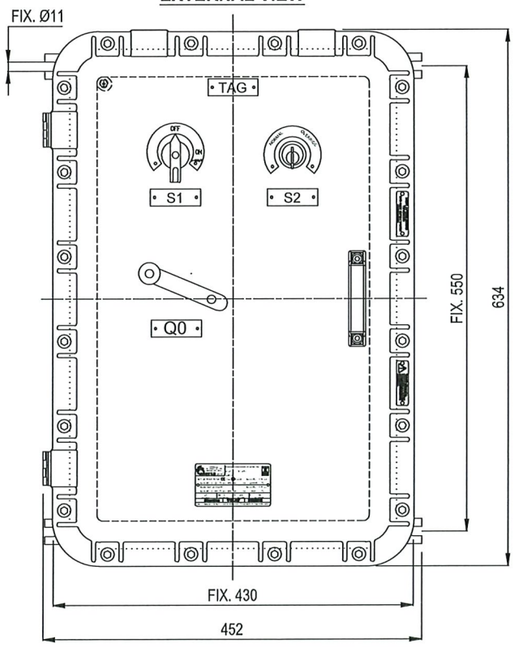


REMARK:
X1/X2 TERMINALS PLACES OVER THE ENTRY HOLES

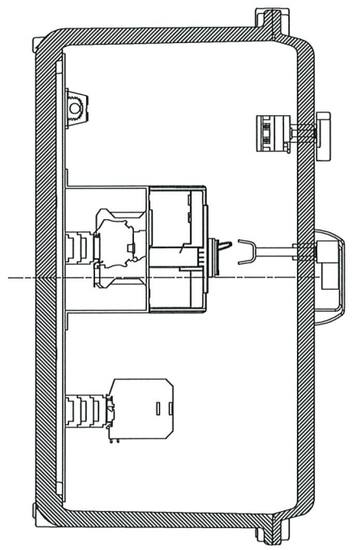
NO MARK UP

AS COMMISSIONED: MARIA GIROTTI 26/3/25

EXTERNAL VIEW



INT. LEFT SIDE VIEW



CERTIFICATE NAMEPLATE



TAG NAMEPLATE
MATERIAL: TRAPHOLITE
DIMENSIONS: 60X20
BLACK TEXT ON WHITE BACKGROUND

N°	TAG N°
TAG	CB-200F4 A
	CB-200F4 B
	CB-200F3 A
	CB-200F3 B
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: AC UPS - TAG: UP-200F3
001 EJBC-5/C2401778/10.
ITEM 10
EXT/INT. LAYOUT

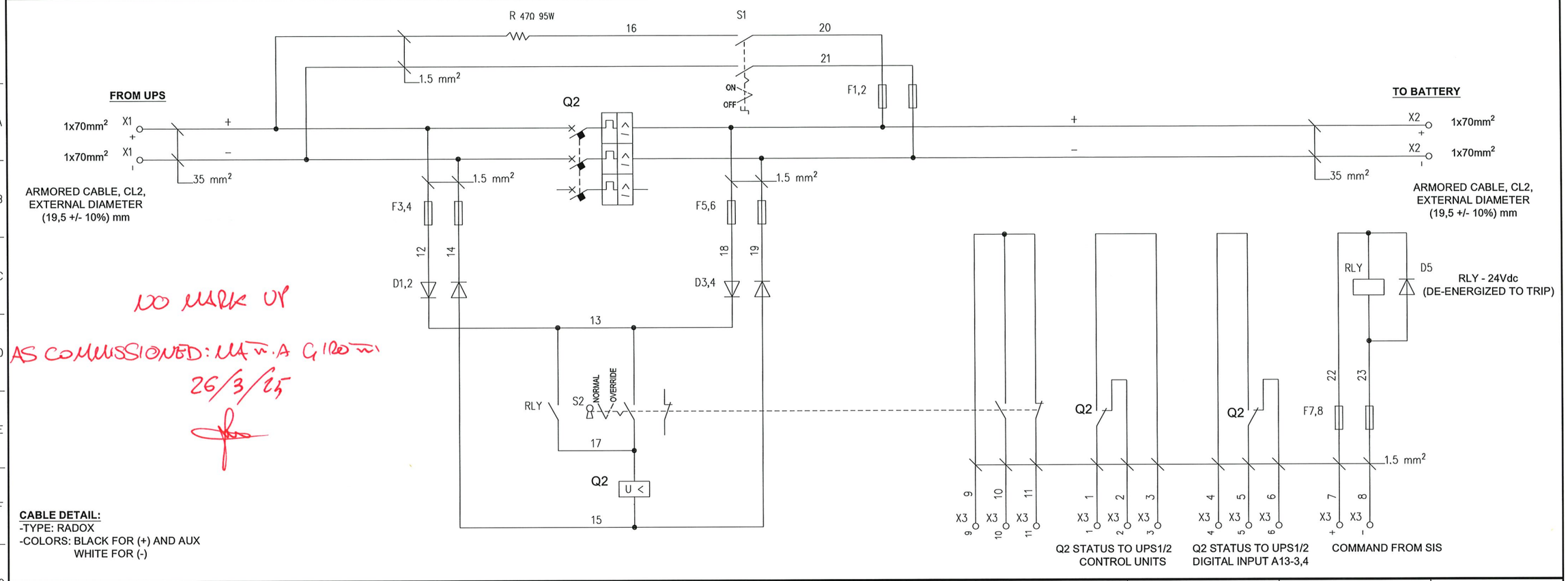
CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 1 NEXT 2 TOT. 4

CORTEM GROUP
cortem
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MODEL C-225 REV.1



NO MARK UP

AS COMMISSIONED: MATCH GIADA
26/3/25

CABLE DETAIL:
-TYPE: RADOX
-COLORS: BLACK FOR (+) AND AUX
WHITE FOR (-)

CIRCUIT	DESCRIPTION			F3,4		Q2		F5,6		F1,2						F7,8			
	NUMBER																		
	PHASE	POWER	kW	+ -		+ -		+ -		+ -						+ -			
SWITCH	MANUFACTURER					ABB													
	TYPE					XT3N200TMD3													
	POLE N.	In	A			3	200												
	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: AC UPS - TAG: UP-200F3

001 EJBC-5/C2401778/10.
ITEM 10
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:	AC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 13 of 19 Date: 02/02/2025 Rev: 06

Base Load Power Hub (BLPH)

AC UPS PAS - TAG: UP-200F3

BLACK START PROCEDURE

NO MARK UP

AS COMMISSIONED: MARIA GIROTTI

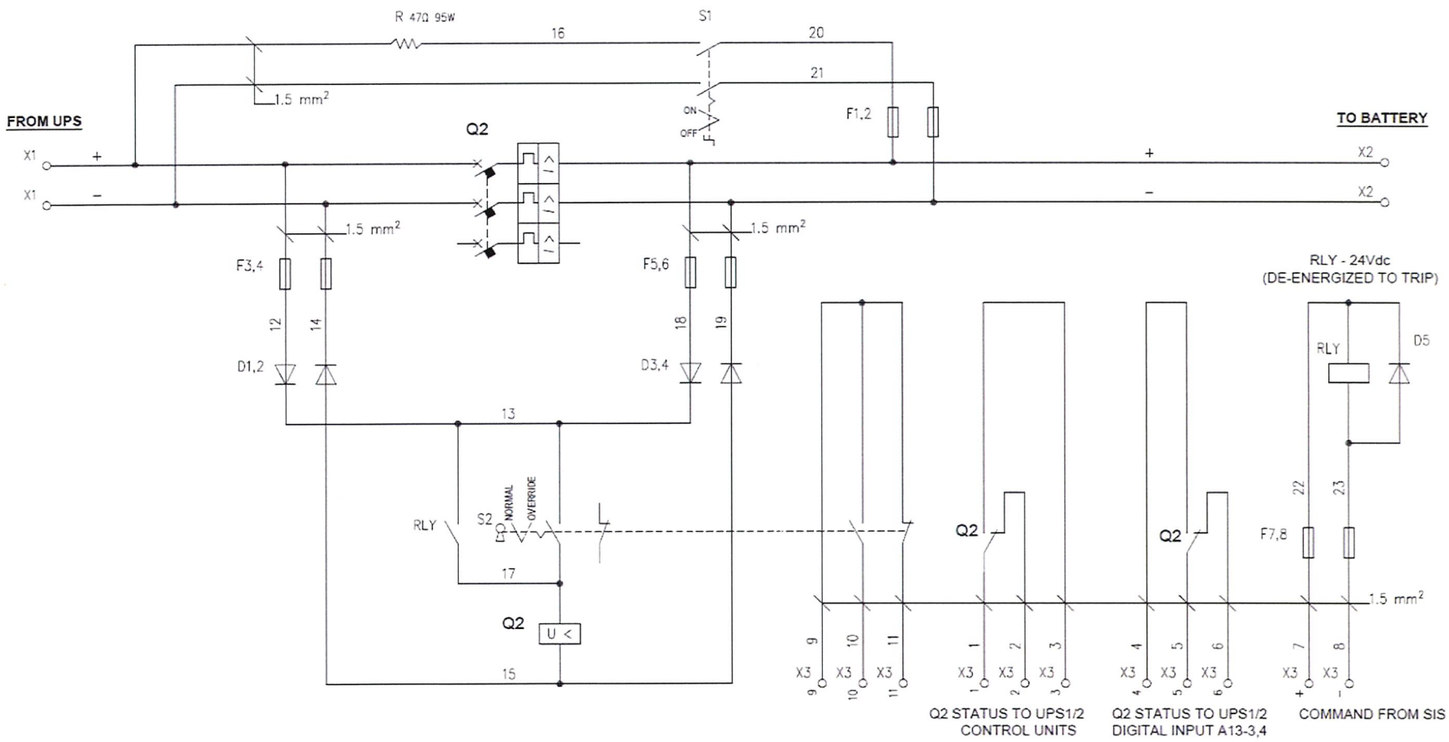
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AEG

POWER
SOLUTIONS

BLACK START PROCEDURE



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 Q2 power contacts is close to 0V (and at least >80% of the system DC nominal voltage), the operator shall close the breaker Q2
- 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

NO MARK UP

AS COMMISSIONED: NATHA GIROTTI

26/3/25

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
Document Title:	AC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 15 of 19 Date: 02/02/2025 Rev: 06

Base Load Power Hub (BLPH)

AC UPS F&G - TAG: UP-200F4

BATTERY PROTECTION BOX

NO MARK UP

AS COMMISSIONED: MARIA GIROTTI

26/3/25

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MODEL C-225 REV.1

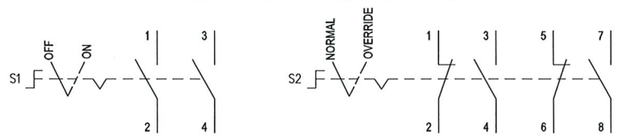
BATTERY PROTECTION BOX

CB-200F4 A/B

GENERAL NOTES:

-ENCLOSURE: EJBC-5
-MATERIAL: COPPER FREE ALUMINIUM ALLOY
-EXTERNAL PAINTING: RAL7035
-INTERNAL PAINTING: /
-ALL DIMENSION ARE IN mm
-WEIGHT: ≈57kg

SELECTOR SWITCHES DETAIL



TRUE TABLE

POSITION	CONTACT	
	1-2	3-4
OFF	O	O
ON	X	X

O	CONTACT OPEN
X	CONTACT CLOSED

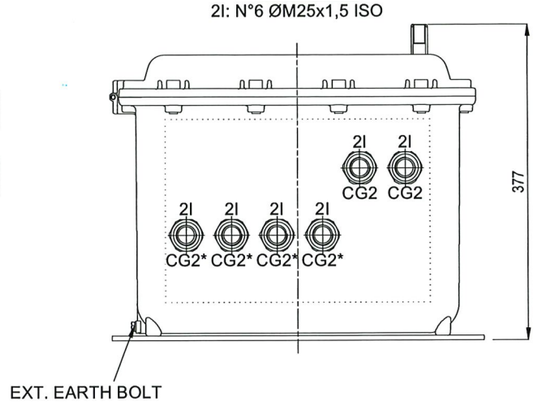
TRUE TABLE

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

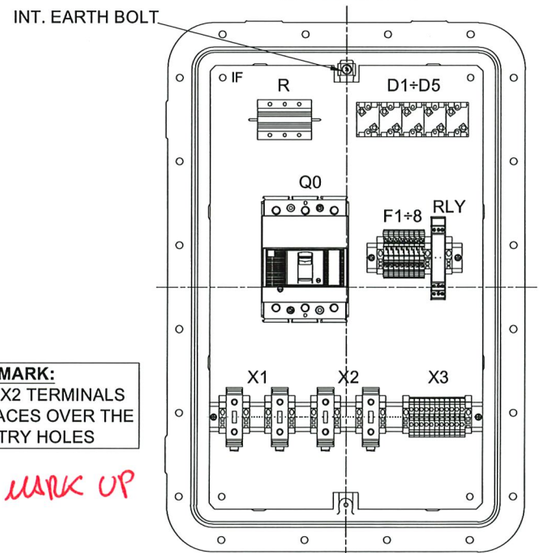
BOTTOM VIEW

2I: N°6 ØM25x1,5 ISO



N°	Q.TY	CODE	DESCRIPTION
IF	1	BFE-5	ALUMINIUM INTERNAL FRAME
X1	2	UKH95	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X2	2	UKH95	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X3	11	UT4	PHOENIX TERMINALS SUITABLE FOR 4mm² CABLE
Q0	1	XT3N200TMD3	ABB XT3 MCCB, 3P, 200A, 36kA
	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
CG2*	4	NEV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR ARMORED CABLE Øint. 11-20mm Øext. 20-27,5mm, ARMOR THICKNESS 0,2-1,6mm
CG2	2	NAV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR NOT-ARMORED CABLE Ø11-20mm

INTERNAL VIEW

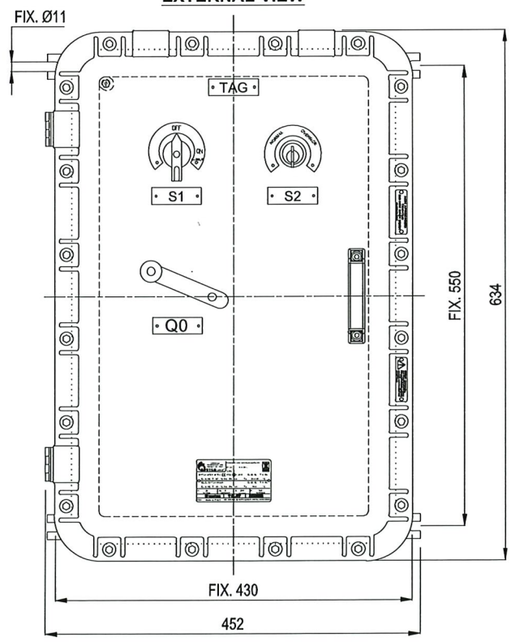


REMARK:
X1/X2 TERMINALS PLACES OVER THE ENTRY HOLES

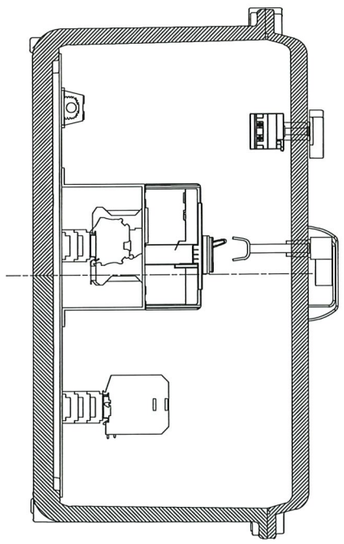
NO MARK UP

AS COMMISSIONED: MATTIA GIROTTI
26/3/25

EXTERNAL VIEW



INT. LEFT SIDE VIEW



CERTIFICATE NAMEPLATE



TAG NAMEPLATE
MATERIAL: TRAPHOLITE
DIMENSIONS: 60X20
BLACK TEXT ON WHITE BACKGROUND

N°	TAG N°
TAG	CB-200F4 A
	CB-200F4 B
	CB-200F3 A
	CB-200F3 B
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: AC UPS TAG: UP-200F4
001 EJBC-5/C2401778/10.
ITEM 10
EXT/INT. LAYOUT

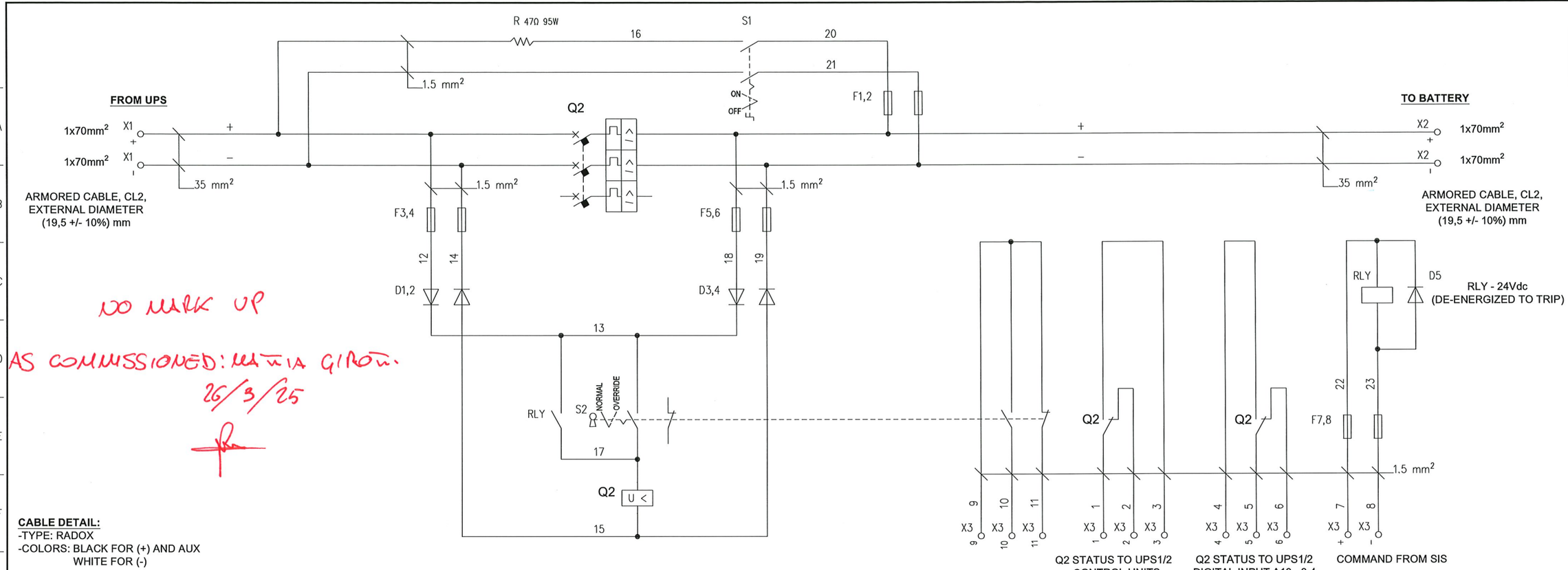
CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 1 NEXT 2
TOT. 4

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MODEL C-225 REV.1



NO MARK UP

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26/3/25

CABLE DETAIL:
-TYPE: RADOX
-COLORS: BLACK FOR (+) AND AUX
WHITE FOR (-)

CIRCUIT	DESCRIPTION		F3,4		Q2		F5,6		F1,2						F7,8			
	NUMBER																	
	PHASE	POWER kW	+ -		+ -		+ -		+ -						+ -			
SWITCH	MANUFACTURER				ABB													
	TYPE				XT3N200TMD3													
	POLE N.	In A			3	200												
	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: AC UPS - TAG: UP-200F4
001 EJBC-5/C2401778/10.
ITEM 10
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:	AC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM	Sheet 18 of 19 Date: 02/02/2025 Rev: 06

Base Load Power Hub (BLPH)

AC UPS F&G - TAG: UP-200F4

BLACK START PROCEDURE

NO MARK UP

AS COMMISSIONED: MARIA GIROTTI

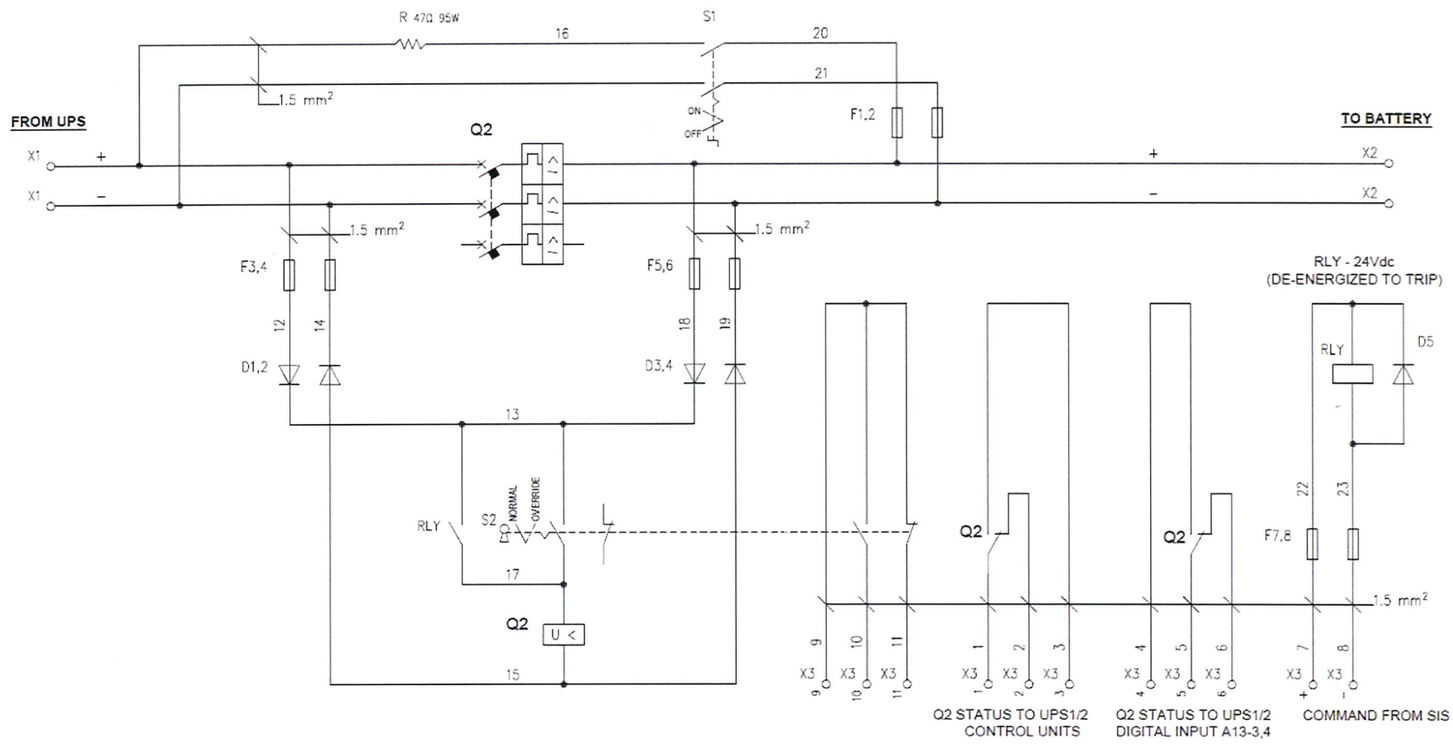
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AEG

POWER
SOLUTIONS

BLACK START PROCEDURE



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 Q2 power contacts is close to 0V (and at least >80% of the system DC nominal voltage), the operator shall close the breaker Q2
- 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

NO MARK UP

AS COMMISSIONED: MATIA GIROTTI

26/3/25

Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE