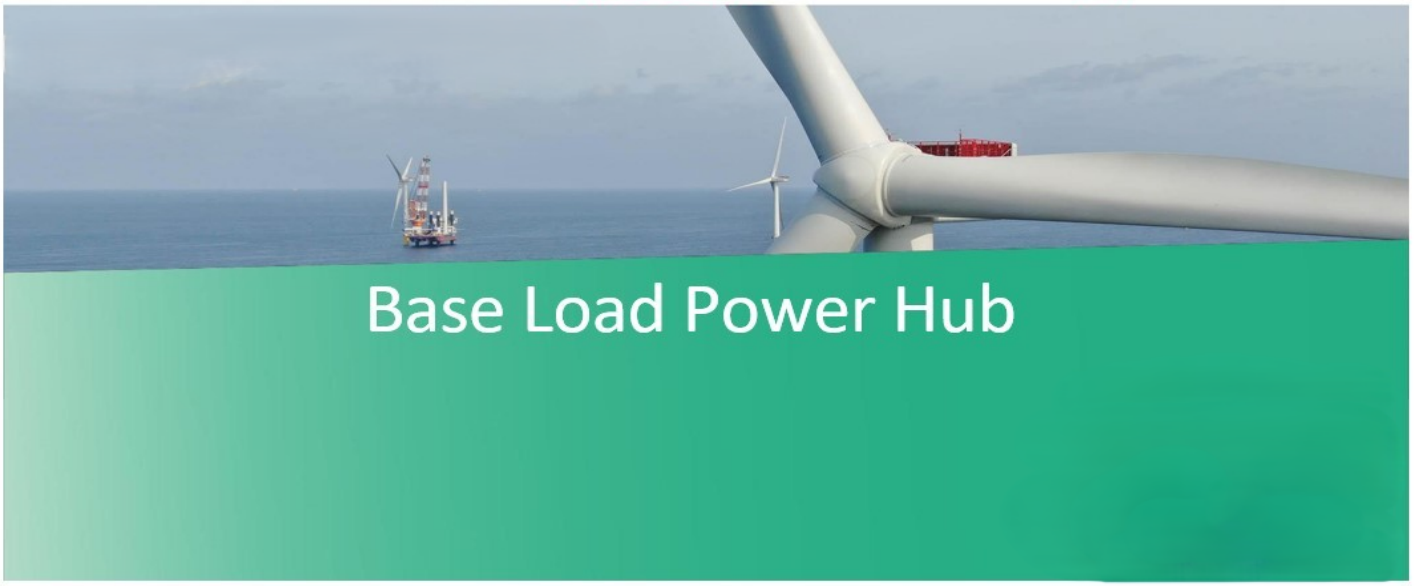
CROSSWIND

ROSETTI MARINO

PROVERUS

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



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM	82 Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

ROSETTI MARINO

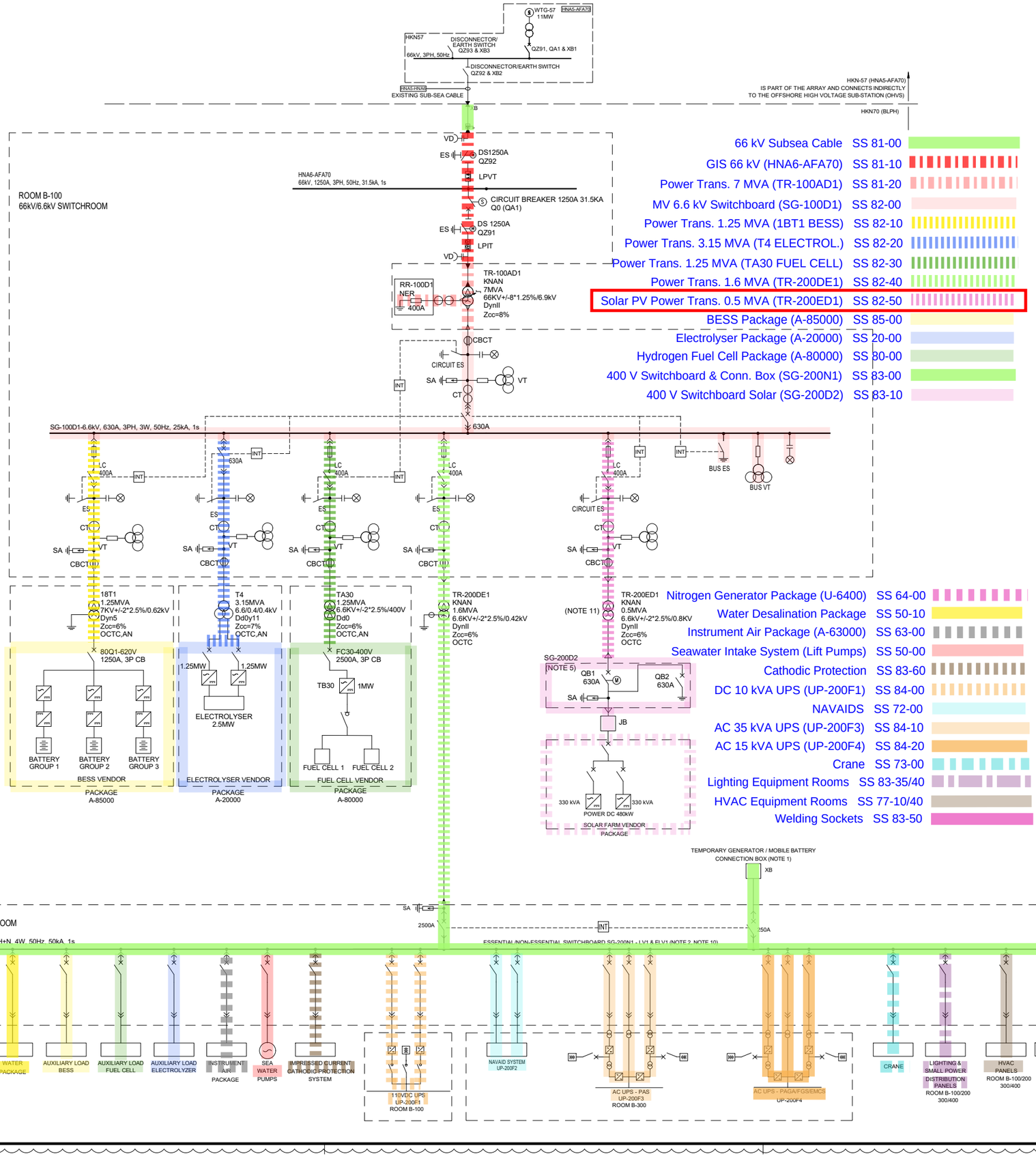
Sub System N°:	82-50	**Tick as appropriate**	ONSHORE	OK
Description:	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		OFFSHORE	

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:*	NA
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	2025-06-05	2025-06-10
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-06-05T14:10:41.682Z	PROVERLIS Digitaly signed by Martin Taylor 2025-06-10T12:01:20.435Z

Section 1 SUB-SYSTEM DEFINITION

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



SYMBOL LEGEND:

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

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

NOTES:

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

REFERENCES:

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

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

CROSSWIND

ROSETTI MARINO

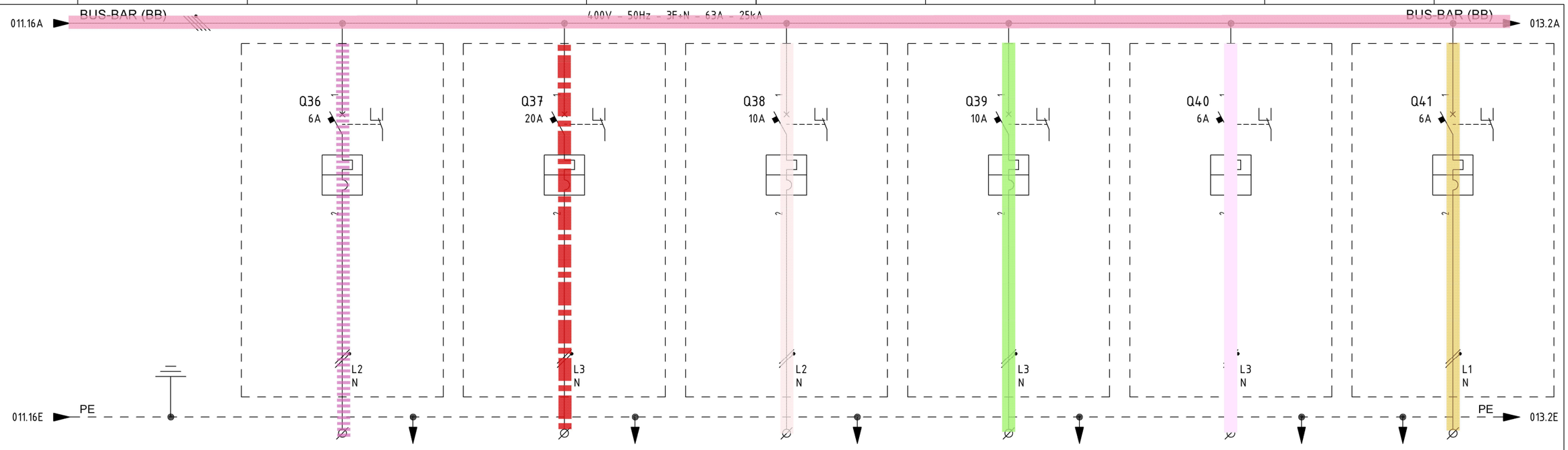
TITLE :

OVERALL/KEY SINGLE LINE DIAGRAM

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

01

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



ITEM			1	CP-200E2	CP-100E1	SG-100D1	SG-200N1	SG-200D2	UP-200F3
UTILITY			2	AUXILIARY TRAFO SOLARE 0.5MVA	AUXILIARY GIS	AUXILIARY 6.6KV SWITCHBOARD	AUXILIARY LV SWITCHBOARD	AUXILIARY LV SWITCHBOARD 800/460V	AC UPS PAS AUXILIARY
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.5 KW | 2.72 A	3 KW | 16.3 A	1 KW | 5.43 A	1 KW | 5.43 A	0.5 KW | 2.72 A	0.2 KW | 0.82 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S302P-C20	S302P-C10	S302P-C10	S302P-C6	S302P-C6
	VERSION		8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS		9	In=6A - Curve C	In=20A - Curve C	In=10A - Curve C	In=10A - Curve C	In=6A - Curve C	In=6A - 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 / 6	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR		mm²	31	3G2.5	3G6	3G2.5	3G2.5	3G2.5	3G2.5

SUBSYSTEM 82-50 | SUBSYSTEM 81-10 | SUBSYSTEM 82-00 | SUBSYSTEM 83-00 | SUBSYSTEM 83-10 | SUBSYSTEM 84-10

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)

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "DP-200N1"

SINGLE LINE DIAGRAM
Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00013

SHEET 012

REV. 03

F.to UNI A3: 420mmx297mm

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

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:	2025-05-28	
System:	82	/	Main Power Distribution Medium Voltage 6.6 kV		
SubSystem:	82-50	/	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		

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	2025-05-29	2025-06-05
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-05-29T08:58:35.147Z	PROVERLIS Digitaly signed by Martin Taylor 2025-06-05T08:25:39.044Z

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 82-50 & process: COMM

Electrical	82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
DP-200N1-Q36	AUX TRAFO SOLAR 0,5 MVA - DP-200N1-Q36	ONSHORE	C10002928	FTR-2	100	2024-10-28	RFO 2
SG-100D1-A2-K1	FEEDER TR-200ED1	ONSHORE	C10004778	FTR-2	100	2024-12-18	RFO 2
		ONSHORE	C10004779	FTR-6	100	2025-02-04	RFO 2
TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	ONSHORE	C10004553	FP02	100	2025-01-13	RFO 2

CROSSWIND

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Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	82	Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000674	A	82006-CEM-1-L1 C10000488	Cable to be connected both side. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2024-12-16	Ecarotenuto 2024-12-16	2024-12-16
C30001555	A	83014-CEC C10002141	the cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001558	A	83013-CEC C10002140	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001562	A	83012-CEC C10002139	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001566	A	83011-CEC C10002138	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30000672	B	82006-CEM-1-L1 C10000488	Missing cable cleats stainless steel with TPE cable protection. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2025-01-03	Ecarotenuto 2025-01-03	2025-01-03
C30000673	B	82006-CEM-1-L1 C10000488	Missing cable tags on external routing. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2025-02-07	Pschintu 2025-02-07	2025-02-07
C30001404	B	83003-CEL-L1 C10001826	Missing cable tags both side .	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001405	B	83003-CEL-L1 C10001826	Identification tag wires missing both side.	.		Gtangianu 2024-12-05	2025-02-15	AAndreani 2025-02-15	2025-02-15

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001406	B	83003-CEL-L2 C10001827	Identification tag wires missing both side .	.		Gtangianu 2024-12-05	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001407	B	83003-CEL-L2 C10001827	Missing cable tags both side.	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001408	B	83003-CEL-L3 C10001828	Identification tag wires missing both side .	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001409	B	83003-CEL-L3 C10001828	Missing cable tags both side.	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001547	B	83117-CEL C10000636	Identification tag wire missing both side the cable (83117-CEL).	.		Gtangianu 2024-12-09	2025-01-30	APolo 2025-01-30	2025-01-30
C30001548	B	83117-CEL C10000636	Missing cable tags both side.(83117-CEL)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001553	B	83014-CEC C10002141	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001554	B	83014-CEC C10002141	Spare cores to be properly isolated both side the cable. (RR-100D1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001556	B	83014-CEC C10002141	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	,		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001557	B	83013-CEC C10002140	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001559	B	83013-CEC C10002140	Spare cores to be properly isolated both side the cable. (TR-200ED1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001560	B	83013-CEC C10002140	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001561	B	83012-CEC C10002139	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001563	B	83012-CEC C10002139	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001564	B	83012-CEC C10002139	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001565	B	83011-CEC C10002138	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001567	B	83011-CEC C10002138	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001568	B	83011-CEC C10002138	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09	2025-04-29	Gtangianu 2025-04-29	2025-04-29

Section 2.2 Exception Punch Lists (per discipline)

Project CROSSWIND

PUNCH LIST REPORT

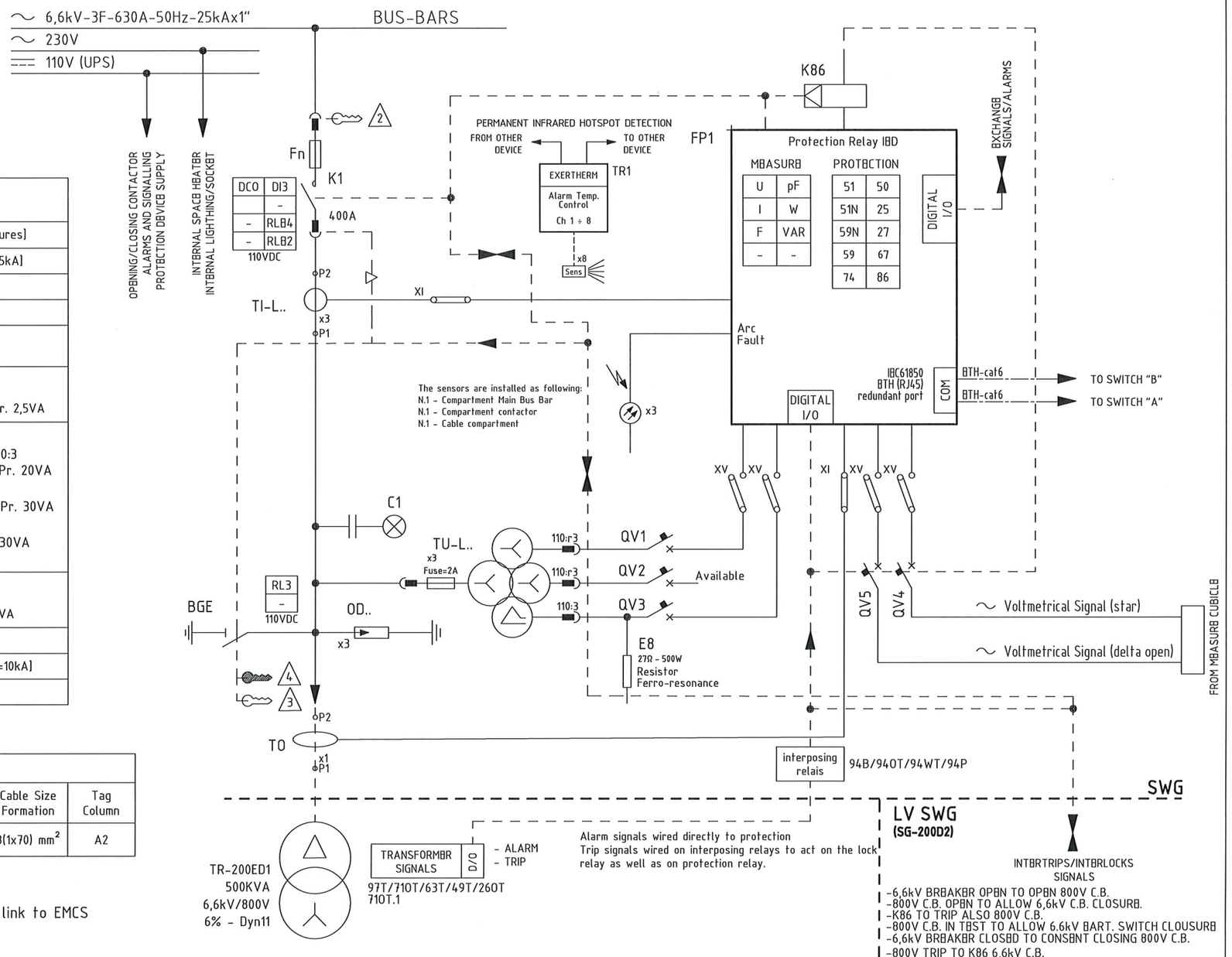
NO DATA AVAILABLE

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

LEGEND:

- Free key with opened Circuit Breaker (Circuit Breaker locked in open position)
- Free key with insolated Circuit Breaker or Contactor (Circuit Breaker or Contactor locked in isolated position)
- Free key with opened Earthing Switch (Earthing Switch locked in open position)
- Free key with closed Earthing Switch (Earthing Switch locked in close position)
- ▷ Mechanical interlock
- DCO — DOUBLE COMMAND OPERATED

SINGLE LINE DIAGRAM
"FEEDER with CONTACTOR"



MAIN EQUIPMENT [Additional Features and Auxiliary Components will be inserted on Functional Diagram]			
Tag	Desciption Tag	Supplier	Type [Technical Features]
K1	Contactor	ABB	VSC7/P [7,2KV - 400A - 25kA]
Fn	Fuse for Contactor	ABB	CEF 63A
BGE	Earthing Switch	ABB	ST-E [12KV - 25kA]
FP1	Protection Relay	ABB	REX640
TI-L..	Current Transformers	ESITAS	ATB 10-BS 7,2kV - 50/1 - 25kA 1°winding : Cl. 0,5+5P15 - Pr. 2,5VA
TU-L..	Voltage Transformers + Fuses	ABB	TJP4.3 [7,2kV - 6,6kV:√3/110:√3-110:√3-110:3 1° winding : Cl. 0,5-3P - Pr. 20VA (110:√3) 2° winding : Cl. 0,5-3P - Pr. 30VA (110:√3) 3° winding : Cl. 3P - Pr. 30VA (110:3)
TO	Omopolar Ring Current Transformer (Internal Diameter 150mm)	ESITAS	KAP-150/250-55 1.2kV - 100/1A - 25kA 1° winding : Cl. 5P5 - Pr. 5VA
TR1	Permanent Infrared Hotspot Detection	EXERTHERM	
OD..	Voltage Discharger	DEHN	SBKW 9/DH I-0 [Ur=9kV-In=10kA]
C1	Voltage Presence Indicator	ABB	VPIS [3÷24kV]

USER DETAILS					
Tag User	Desciption User	User Power	Current Transformer Ratio	Cable Size Formation	Tag Column
TR-200ED1	SOLAR PACKAGE	480KW	50 / 1A	3(1x70) mm²	A2

NOTE :

For SOLAR PACKAGE feeder interlocks and intertrips will be managed via serial link to EMCS

AS COMMISSIONED: MARIA GIRGIU

NO MARK UP 27/3/25

=						
+	4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
DWG n°: 231151/SD/10	3	26/06/2024	Santinelli	Giulietti	Sigismondi	Accepted for Construction (AFC)
Item n°: PF1113279/4	2	14/05/2024	Santinelli	Giulietti	Sigismondi	Issued for review (IFR)
	1	14/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
	0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Column A2 : Solar Package TR-200ED1

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 005

REV. 04

File Name : 1723002197-EL-DG-00010 Rev. 04

F.to UNI A3: 420mmx297mm

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000674	A	82006-CEM-1-L1 C10000488	Cable to be connected both side. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2024-12-16	Ecarotenuto 2024-12-16	2024-12-16
C30001555	A	83014-CEC C10002141	the cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001558	A	83013-CEC C10002140	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001562	A	83012-CEC C10002139	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001566	A	83011-CEC C10002138	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30000672	B	82006-CEM-1-L1 C10000488	Missing cable cleats stainless steel with TPE cable protection. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2025-01-03	Ecarotenuto 2025-01-03	2025-01-03
C30000673	B	82006-CEM-1-L1 C10000488	Missing cable tags on external routing. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2025-02-07	Pschintu 2025-02-07	2025-02-07
C30001404	B	83003-CEL-L1 C10001826	Missing cable tags both side .	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001405	B	83003-CEL-L1 C10001826	Identification tag wires missing both side.	.		Gtangianu 2024-12-05	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001406	B	83003-CEL-L2 C10001827	Identification tag wires missing both side .	.		Gtangianu 2024-12-05	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001407	B	83003-CEL-L2 C10001827	Missing cable tags both side.	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001408	B	83003-CEL-L3 C10001828	Identification tag wires missing both side .	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001409	B	83003-CEL-L3 C10001828	Missing cable tags both side.	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001547	B	83117-CEL C10000636	Identification tag wire missing both side the cable (83117-CEL).	.		Gtangianu 2024-12-09	2025-01-30	APolo 2025-01-30	2025-01-30
C30001548	B	83117-CEL C10000636	Missing cable tags both side.(83117-CEL)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001553	B	83014-CEC C10002141	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001554	B	83014-CEC C10002141	Spare cores to be properly isolated both side the cable. (RR-100D1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001556	B	83014-CEC C10002141	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	,		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001557	B	83013-CEC C10002140	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001559	B	83013-CEC C10002140	Spare cores to be properly isolated both side the cable. (TR-200ED1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001560	B	83013-CEC C10002140	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001561	B	83012-CEC C10002139	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001563	B	83012-CEC C10002139	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001564	B	83012-CEC C10002139	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001565	B	83011-CEC C10002138	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001567	B	83011-CEC C10002138	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001568	B	83011-CEC C10002138	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09	2025-04-29	Gtangianu 2025-04-29	2025-04-29

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000674

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000488	1.4 Discipline	Electrical
1.2 Item	82006-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Cable to be connected both side. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3

Name: Paolo Schintu

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

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

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Cables will be reconnected by commissioning team

Name: Eleonora Carotenuto

Date: 2024-12-16

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001404

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001826	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L1		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side .

Name: Giovanni Tangianu

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

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

C30001405

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001826	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L1		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wires missing both side.

Name: Giovanni Tangianu

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

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

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001406

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001827	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L2		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wires missing both side .

Name: Giovanni Tangianu

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

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

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001407

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001827	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L2		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side.

Name: Giovanni Tangianu

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

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

C30001408

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001828	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L3		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wires missing both side .

Name: Giovanni Tangianu

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

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

C30001409

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001828	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L3		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side.

Name: Giovanni Tangianu

Date: 2024-12-05

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

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

C30001547

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000636	1.4 Discipline	Electrical
1.2 Item	83117-CEL		Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wire missing both side the cable (83117-CEL).

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-30

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001548

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000636	1.4 Discipline	Electrical
1.2 Item	83117-CEL		Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side.(83117-CEL)

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
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

C30001553

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
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

C30001554

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable.
(RR-100D1/SG-100D1 Panel A2)

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001555

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

the cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover.

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001556

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

,

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001557

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001558

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001559

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable.
(TR-200ED1/SG-100D1 Panel A2)

Name: Giovanni Tangianu
Date: 2024-12-09
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani
Date: 2025-02-15
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001560

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
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

C30001561

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001562

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001563

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001564

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
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

C30001565

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001566

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001567

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-04-11

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001568

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

Name:

Date: 2025-04-29

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-29

Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-04-29

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000672

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000488	1.4 Discipline	Electrical
1.2 Item	82006-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable cleats stainless steel with TPE cable protection.
Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3

Name: Paolo Schintu
Date: 2024-11-20
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	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Eleonora Carotenuto
Date: 2025-01-03
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000673

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000488	1.4 Discipline	Electrical
1.2 Item	82006-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags on external routing. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3

Name: Paolo Schintu

Date: 2024-11-20

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	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

INSTALLED

Name: Paolo Schintu

Date: 2025-02-07

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: 82-50 & process: COMM & discipline : E

Electrical	82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
DP-200N1-Q36	AUX TRAFO SOLAR 0,5 MVA - DP-200N1-Q36	ONSHORE	C10002928	FTR-2	100	2024-10-28	RFO 2
SG-100D1-A2-K1	FEEDER TR-200ED1	ONSHORE	C10004778	FTR-2	100	2024-12-18	RFO 2
		ONSHORE	C10004779	FTR-6	100	2025-02-04	RFO 2
TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	ONSHORE	C10004553	FP02	100	2025-01-13	RFO 2

ITEM	Tag	DP-200N1-Q36	: AUX TRAFO SOLAR 0,5 MVA - DP-200N1-Q36			Dwg	1723002197-EL-DG-00013
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	
TASK	code	C10002928	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:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
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:

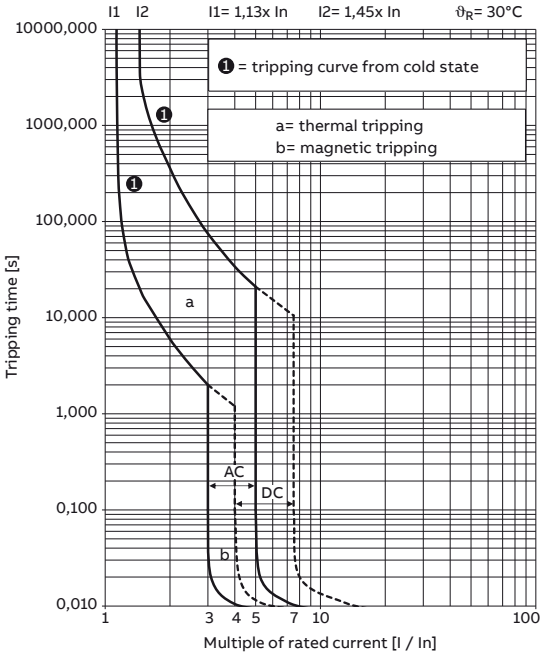
Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-25	2024-10-28	2024-10-28
Signature	Digitaly signed by Mattia Girotti 2024-10-25T08:16:56.217Z	Digitaly signed by Kristian Castellani 2024-10-28T13:09:06.205Z	Digitaly signed by Witness waived 2024-10-28T13:46:09.886Z

Miniature Circuit breakers S300P

Tripping characteristics

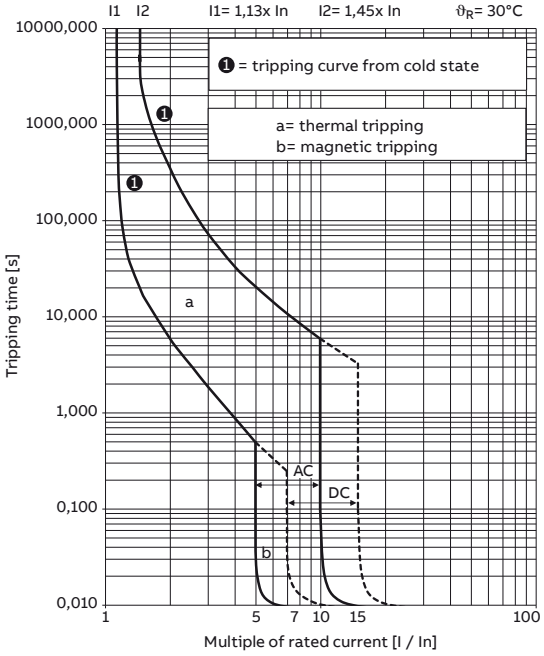
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



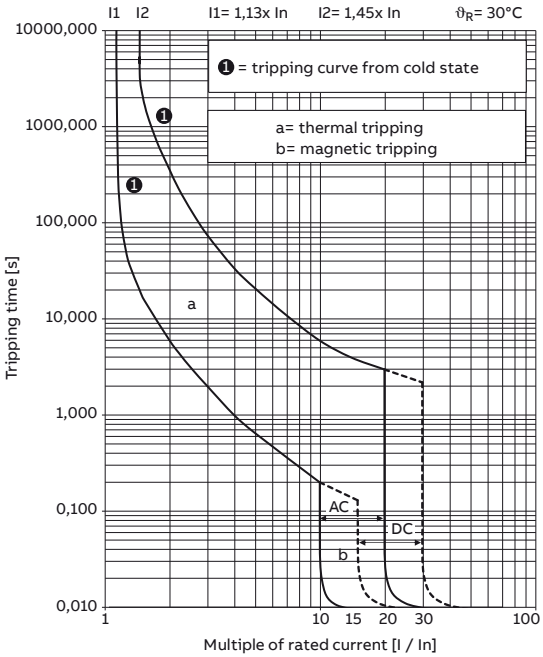
MCB Type S300P - C (5 ... 10 x I_n AC)

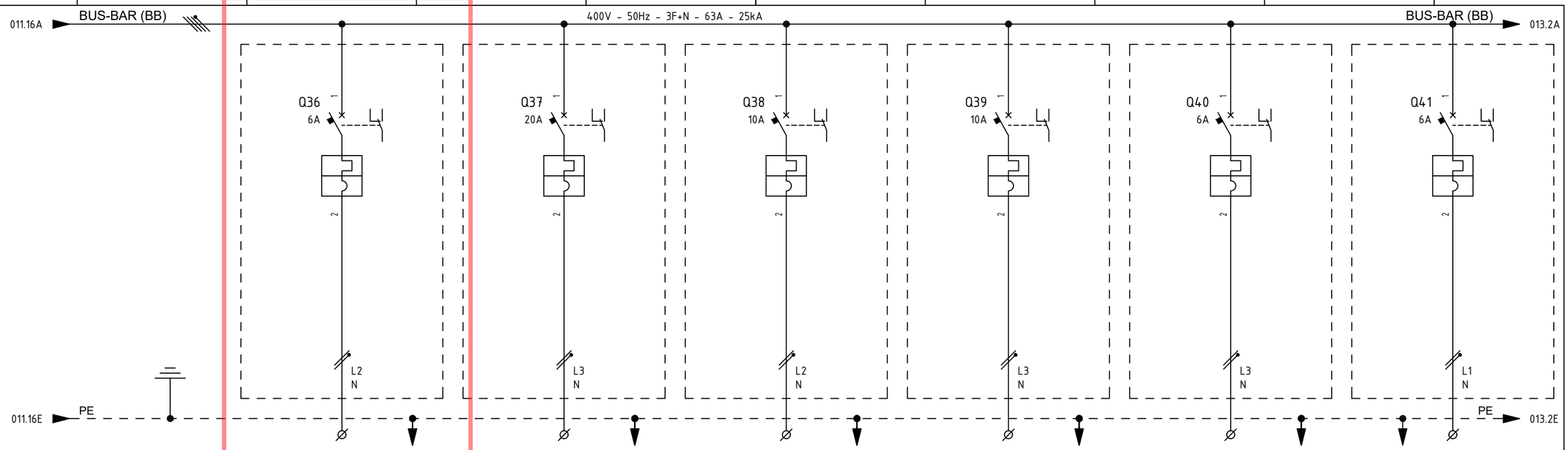
Tripping Characteristic IEC/EN 60898-1



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

Tripping Characteristic IEC/EN 60898-1





ITEM				CP-200E2	CP-100E1	SG-100D1	SG-200N1	SG-200D2	UP-200F3
UTILITY			2	AUXILIARY TRAFO SOLARE 0.5MVA	AUXILIARY GIS	AUXILIARY 6.6KV SWITCHBOARD	AUXILIARY LV SWITCHBOARD	AUXILIARY LV SWITCHBOARD 800/460V	AC UPS PAS AUXILIARY
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.5 KW | 2.72 A	3 KW | 16.3 A	1 KW | 5.43 A	1 KW | 5.43 A	0.5 KW | 2.72 A	0.2 KW | 0.82 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S302P-C20	S302P-C10	S302P-C10	S302P-C6	S302P-C6
	VERSION		8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS		9	In=6A - Curve C	In=20A - Curve C	In=10A - Curve C	In=10A - Curve C	In=6A - Curve C	In=6A - 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 / 6	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR		mm²	31	3G2.5	3G6	3G2.5	3G2.5	3G2.5	3G2.5

=

+

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

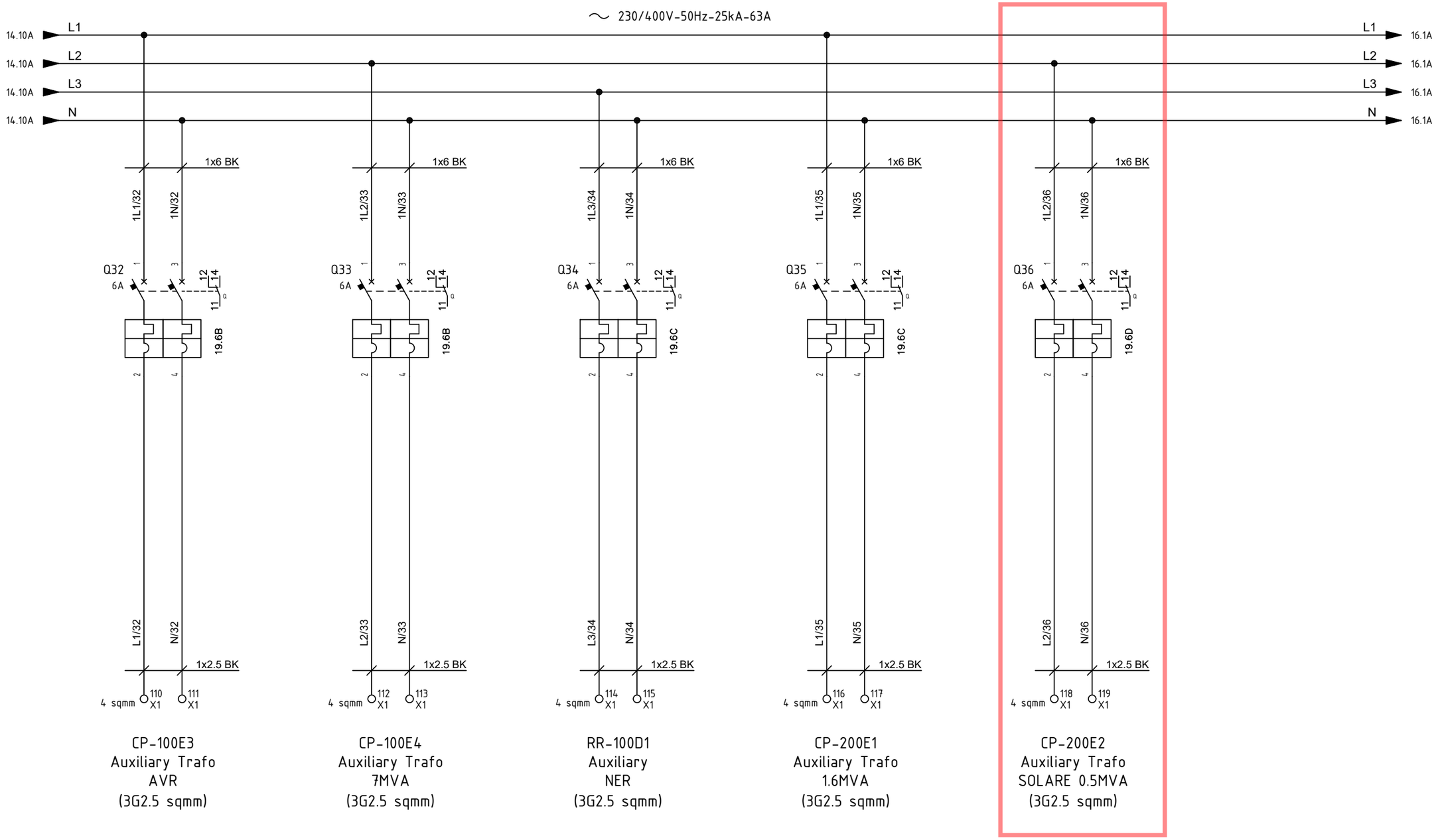
DRAWING NO. 1723002197-EL-DG-00013

SHEET 012

REV. 04

F.to UNI A3: 420mmx297mm

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



CP-100E3
Auxiliary Trafo
AVR
(3G2.5 sqmm)

CP-100E4
Auxiliary Trafo
7MVA
(3G2.5 sqmm)

RR-100D1
Auxiliary
NER
(3G2.5 sqmm)

CP-200E1
Auxiliary Trafo
1.6MVA
(3G2.5 sqmm)

CP-200E2
Auxiliary Trafo
SOLARE 0.5MVA
(3G2.5 sqmm)

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
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)

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 15

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00033 Rev. 02

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	TR-200ED1	: 6,6 / 0,8 kV 0,5 MVA Transformer	Dwg	123A90-DDL-EL-DL-20101		
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	Module	LD		
TASK	code	C10004553	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FP02	Power Transformer

DATA

Manufacturer	MF Trasformatori	Primary V	6.600	Secondary V	800
Serial N°	181023/3	Primary A	43.7	Secondary A	361
Frequency	50HZ	Fault Level	26.67	Tap Range	+-2x2.5
Vector Group	Dyn11	Rating kVA	500	Cooling type	KNAN

FUNCTION TEST REQUIREMENT

1	Check MC activities have been carried out	OK
2	Check equipment for cleaness	OK
3	Check that enclosure is clean	OK
4	Visual check of earthing connection	OK
5	Prerequisites for energizing as per energization procedure	OK
6	Confirm balanced resistance values of transformer windings	OK

- L2	0,5082	Ohm	- L3	0,5063	Ohm	- L1	0,5061	Ohm
---	---	---	---	---	---	---	---	---

7	Remove N - E link and perform winding insulation test (1 min)	OK

MV - LV, E	6150	Mohm	Use 5 kV Megger (Min value 150 Mohm)
LV - HV, E	8680	Mohm	Use 1 kV Megger (Min value 10 Mohm)

8	Short LV windings to earth and pressure test primary connection for 1 min	

Test Voltage	306V	kV DC	Leakage Current	34,43A	mAmps

9	Discharge both LV and HV windings to earth for 30 mins	OK
10	Remove N - E link and perform winding insulation test (1 min)	NA

MV - LV, E	NA	Mohm	Use 5 kV Megger (Min value 150 Mohm)
LV - HV, E	NA	Mohm	Use 1 kV Megger (Min value 10 Mohm)

11	Confirm no deterioration of insulation resistance since pressure test	OK
12	Confirm operation of winding tenperature monitoring system, remote indications, alarms trips and forced fan u	OK
13	Check the space heaters have been running and that no moisture is present inside enclosure	NA
14	Function check ACB/VCB control circuits and verify intertrips and protection trips	OK
15	Confirm tap setting is correct	OK
16	On completion of tests confirm transformer is left in a safe condition	OK

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
TERAohm XA 5KV	22420123		25/10/2025
RMO50TW	21Q719		08/09/2025
IDM-8341	277C088G2		09/09/2025

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	2025-01-13	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2025-01-13T10:05:12.327Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-01-13T14:30:40.708Z	PROVERLIS Digitaly signed by Witness waived 2025-01-13T14:33:28.951Z

Customer:__ROSETTI MARINO

Transformer Nr.:__181023/3 (200ED1)

Rated power:_500

Voltage ratio:_6600 V / 800 V

Date: 06/12/2024

1. Verify integrity of tank / radiators / corrugate wave / bushings

Is necessary to make a visual check of the tank, radiators and bushings. If there are damage is necessary to signal it at MF Trasformatori.

- Tank: RESULT POSITIVE
- Radiators:_ RESULT POSITIVE
- Bushings:__ RESULT POSITIVE

2. Verify presence of oil leaks

Is necessary to make a visual check if there are oil leaks on transformer. If there are leaks is necessary to signal it at MF Trasformatori.

- (if there are some leaks to indicate where):

RESULT POSITIVE

3. Verify if radiators valves are open

Is necessary to check the radiator valves are open. Verify if the arrow on the handle valve indicate the direction of radiator.

VALVES OPEN - RESULT POSITIVE

4. Verify radiators conditions (if necessary to do the vent of radiators)

On the upper part of radiator there is the vent valve. Remove the cap and unscrew the valve. Wait until the oil comes out and close the valve.

RESULT POSITIVE

5. Check oil level

Verify the oil level indicate about the environmental temperature

RESULT POSITIVE

6. Check if there is oil into the DGPT2 (if necessary to do the vent of the device)

Verify if the DGPT2 oil indicator is FULL. If it is empty is necessary to open the vent valve on the upper part of the device and wait until the oil comes out and close the valve.

DGPT2 NOT PRESENT

7. Verify the tap changher maneuverability

Check that the tap-changer position corresponds as much as possible to the effective grid voltage value.

RESULT POSITIVE

8. Measurement of ratio voltage

The voltage ratio of a transformer is the ratio between the line voltage of one winding and the line

voltage of another winding (at no load). The phase voltage ratio is also equal to the turn's ratio:

$$\frac{V1_f}{V2_f} = \frac{N1}{N2}$$

This measurement is usually performed with some instruments called "ratiometer"
The voltage ratio is performed on all the taps of the tap changer (if present); tolerance for voltage ratio are indicated in IEC 60076-1.
Also you can measure ratio with the measurement of secondary voltage.
In the table below mark the position of tap changer ++,+,0,- or - and measure the no load secondary voltage between each phase and neutral.
Divide the value of nominal primary voltage with value measured of secondary voltage and mark the results in the table below.
When you have made the measure on each positions compare the results with the test reports of the FAT.

Position	Phase U	Phase V	Phase W	Result
1	15.069	15.068	15.068	POSITIVE
2	14.707	14.707	14.706	POSITIVE
3	14.344	14.344	14.343	POSITIVE
4	13.982	13.981	13.981	POSITIVE
5	13.620	13.620	13.620	POSITIVE

9. Measurement of insulation resistance of windings

In order to measure the insulation resistance follow the above procedure:

1) Measurement of insulation resistance between MV and LV connected to ground

- short circuit the MV terminals and connect it to megger

- short circuit the LV terminals and connect them to tank and ground Take the measurement applying 5000Vdc for 1 min

2) Measurement of insulation resistance between LV and MV connected to ground

- short circuit the MV terminals and connect them to tank and ground
- short circuit the LV terminals and connect to megger. Take the measurement applying 1000Vdc for 1 min

3) Measurement of insulation resistance between MV and LV insulated from ground

- short circuit the MV terminals and connect to megger
- short circuit the LV terminals and connect to megger

Leave the tank connected to ground.

Take the measurement applying 1000Vdc for 1 min

MV - LV+ground: 5KV 1min Result 6.15 GΩ POSITIVE

LV - MV+ground: 1KV 1min Result 8.68 GΩ POSITIVE

NOTES:__

SILICAL GEL NOT INSTALLED ON THE TRANSFORMER
ALL TEST AND CHECKS POSITIVE

FRANCESCO BUCCHERI

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CERTIFIED MANAGEMENT SYSTEM
ISO 9001 - ISO 14001
THE GLOBAL COMPACT
WE SUPPORT

ROSETTI MARINO SPA

TEST REPORT No. 181023/3

Customer : ROSETTI MARINO SPA **Serial No.:** 181023/3

MF Job No. 524/23 **Project No. :** 500ToECO6,6/0.8 - TR-200ED1

CE

REFERENCE STANDARDS :
EU/548/2014
ECO - TRANSFORMER

Reference Standards: UE/548/2014 & CEI EN 60076 - 1

DATE: 10/11 REVISION: 1

RATING PLATE DATA

Power (kVA) :	500			Type :	OIL
Primary Voltage (kV) :	6,6 ±2×2,5%			Connection Group :	Dyn11
Primary Current (A):	43,7			Short-circuit Voltage (%) :	6
Primary Insul. Class (kV) :	AC 20	BIL	60	Thermal Insulation Class :	A / A
Secondary Voltage (V) :	800			Temperature Rise (K) :	60/65
Secondary Current (A) :	361			Transformer Weight (Kg)	3340
Secondary Insul. Class : (kV) :	AC 3	BIL	0	Oil Weight (Kg) :	540
Frequency (Hz) :	50				

TRANSFORMER RATIO MEASUREMENT AND CHECK OF POLARITY AND CONNECTIONS

Tap-Changer Pos.		Primary Voltage	Secondary Voltage	U-Phase	V-Phase	W-Phase	Nominal Ratio
+ +	1	6930	800	15,074	15,075	15,075	15,00
+	2	6765	800	14,712	14,712	14,712	14,65
0	3	6600	800	14,348	14,348	14,348	14,29
-	4	6435	800	13,988	13,988	13,988	13,93
- -	5	6270	800	13,624	13,624	13,624	13,57

The polarity and connection check have been carried out during the transformer ratio measurement.
Measured Connection: Dyn11

WINDING RESISTANCE MEASUREMENT

MV	R-1U1V	0,5061	Ohm
	R-1V1W	0,5063	Ohm
	R-1W1U	0,5082	Ohm

Measured at ambient temperature : 32,7 ° C

LV	R-2U2V	6,541	mOhm
	R-2V2W	6,527	mOhm
	R-2W2U	6,577	mOhm

CHECK OF AUXILIARIES

Testing	Grounded Winding
auxiliary	Grounded

Test Voltage (V)	Test Frequency	Test Duration
2500	50 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

Name and signature of authorized person:	Date	Witnessed by :
SANDRINI MATTIA	25/07/24	----------

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L. PIGNATELLI ON BEHALF OF CRO 25 WIND

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Witnessed ☒ Reviewed ☐
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

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THE GLOBAL COMPACT WE SUPPORT

Reference Standards: UE/548/2014 & CEI EN 60076 - 1

DATE: 10/11 REVISION: 1

TEST REPORT No. 181023/3

INSULATION TEST WITH APPLIED VOLTAGE

Testing Winding	Grounded Winding	Tap-Changer Position	Test Voltage (V)	Test Frequency	Test Duration
MV	LV	3	20000	50 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

Testing Winding	Grounded Winding	Tap-Changer Position	Test Voltage (V)	Test Frequency	Test Duration
LV	MV	3	3000	50 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

INSULATION TEST WITH INDUCED VOLTAGE

Fed Winding	Tap-Changer Position	Test Voltage (V)	Test Frequency	Test Duration
LV	3	1600	100 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

MEASUREMENT OF NO-LOAD LOSSES AND NO-LOAD CURRENT

Vm Phase Volt	Vm Line Volt	I U-Phase Ampere	I V-Phase Ampere	I W-Phase Ampere	Im Ampere	Losses Watt	Test Frequency	Io %
461,82	800	0,509	0,320	0,482	0,44	440	50 Hz	0,12

Fed Winding
LV

Test Temperature	
32,7	°C

Measured No-Load Losses (W) : 440 Contract No-Load Losses (W) : 459 Tolerance : + 0%

MEASUREMENT OF SHORT-CIRCUIT VOLTAGE, SHORT-CIRCUIT IMPEDANCE AND LOAD-LOSSES

AmbT : 32,7 °C

Vm Phase Volt	Vm Line Volt	I U-Phase Ampere	I V-Phase Ampere	I W-Phase Ampere	Im Ampere	Losses Watt	Test Frequency	Fed Winding	Winding in S/C	Reference Power	
176,50	306	34,426	34,260	34,590	34,43	2044	50 Hz	MV	LV	500	kVA

Detected Load-Losses at 75 °C (W) : 3654 Contract Load-Losses (W) : 3900 Tolerance : + 0%

Detected Short-circuit Voltage at 75 °C (%) : 5,89 Contract Short-circuit Voltage (%) : 6 Tolerance : ± 10 %

Measured Total Losses (W) : 4094 Contract Total Losses (W) : 4359 Tolerance : + 0%

TIGHTNESS TEST / OIL LEAKAGE TEST

An adequate pressure of 30kPa was applied and maintained for 8 hours. This pressure was applied using a column of liquid (oil).

Result of check : POSITIVE

Name and signature of authorized person:	Date	Witnessed by :
SANDRINI MATTIA	25/07/24	----------

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L. PIGNATELLI ON BEHALF OF CROSS WIND

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Witnessed ☒ Reviewed ☐
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

MF Trasformatori srl

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THE GLOBAL COMPACT WE SUPPORT

Reference Standards: UE/548/2014 & CEI EN 60076 - 1

DATE: 10/11 REVISION: 1

TEST REPORT No. 181023/3

MEASUREMENT OF INSULATION RESISTANCE ----- MV - (LV + G) ------

5 kV - 1 minute : 1,67 GΩ

MEASUREMENT OF INSULATION RESISTANCE ----- LV - (MV + G) ------

1 kV - 1 minute : 3,21 GΩ

TIGHTNESS TEST

Result of check : POSITIVE

MEASUREMENT OF CAPACITANCE AND DISSIPATION FACTOR ----- MV - (LV+ G) ------

C : 5,601 nF @ 12 kV Dissipation Factor : 0,379% @ 12 kV

MEASUREMENT OF CAPACITANCE AND DISSIPATION FACTOR ----- LV - (MV+ G) ------

C : 8,374 nF @ 1 kV Dissipation Factor : 0,425% @ 1 kV

L. PIGNATELLI ON BEHALF OF ☐ INFORMATION ☐ SPOT WITNESS ☐ WITNESS ☐ REVIEW DATE 22/7/2024

MEASUREMENT OF ZERO-SEQUENCE IMPEDANCE

V : 4,3606 I1 : 123,40 I2 : 123,17 Im : 123,285 Z (V/Im) : 0,0354 Z (ZX3) : 0,10611 Ω/PHASE
106,11 mΩ/PHASE

ENCLOSURE PAINTING CHECK

Enclosure painting : RAL 7031 CHECK POSITIVE

FUNCTIONAL TEST ON ALL ACCESSORIES

THE FUNCTIONALITY OF THE AUXILIARY ACCESSORIES WAS CHECKED DURING THE FAT CHECK POSITIVE

MEASUREMENT OF INSULATION RESISTANCE & APPLIED MAGNETIC CORE - (TANK - CORE-FRAME)

2,5 kV - 1 min. 50 Hz During the test no voltage failure occurred. Result : POSITIVE

MEASUREMENT OF INSULATION RESISTANCE & APPLIED MAGNETIC CORE-FRAME - (TANK - CORE)

2,5 kV - 1 min. 50 Hz During the test no voltage failure occurred. Result : POSITIVE

Name and signature of authorized person:	Date	Witnessed by :
SANDRINI MATTIA	25/07/24	----------

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Witnessed ☒ Reviewed ☐
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

Directive 2009/125/EU

DECLARATION OF CONFORMITY

No. 292/24

WE

MF Trasformatori srl

DECLARE THAT

the transformer 500ToECO6,6/0.8 - TR-200ED1 no. 181023/3

Type

OIL

L. PIGNATELLI ON BEHALF OF CROSS UNITS

☐ WITNESS ☐ INFORMATION

☑ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Respects requirements of the Directive 2009/125/EU

with reference to Regulation

EU/548/2014

Other Specifications

.....

.....

Name and signature of authorized person

Ing. Festa M.

Date

25/07/24

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Witnessed ☐ Reviewed ☒
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

Directive 2014/30/EU

DECLARATION OF CONFORMITY

No. 292/24

WE

MF Trasformatori srl

DECLARE THAT

the transformer 500ToECO6,6/0.8 - TR-200ED1 no. 181023/3

Type

OIL

L. PIGNATELLI ON BEHALF OF CROSS WINDS

☐ WITNESS ☐ INFORMATION
☑ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Respects the electromagnetic compatibility requirements Directive 2014/30/EU

with reference to the harmonized standards
EN61000-6-1 Electromagnetic compatibilty emissions
EN61000-6-3 Electromagnetic compatibility immunity

Name and signature of authorized person
Ing. Festa M.

Date

25/07/24

Mauro Festa

MF Trasformatori srl
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Witnessed ☐ Reviewed ☒
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

MF Trasformatori srl

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Oil Certificate

Calcinato, 25/07/24

WE

MF Trasformatori s.r.l.

DECLARE THAT

the oil contained inside the MF transformer no. 181023/3

TYPE

MIDEL 7131

is in conformity with the Standards CEI EN 60296

" Fluids for electrotechnical applications - new mineral insultating oils for transformers"

L. PIGNATELLI ON BEHALF OF CROSSWIND

☐ WITNESS ☐ INFORMATION
☒ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Signature and stamp
Ing. Festa M.

MF Trasformatori srl
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Witnessed ☐ Reviewed ☒
Lastene Bevoni
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Date 25-07-2024

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WARRANTY

Calcinato, 25/07/24

Starting from this date the transformer is guaranteed for 36 MAX 48 against any manufacturing defect (accessories not included).
The incorrect use and/or modifications, which have not been expressly approved by the manufacturer - the removal of trade marks included - imply automatically the expiration of this guarantee.

Transformer No.: *181023/3*

L. PIGNATELLI ON BEHALF OF CROSS WINDS

☐ WITNESS ☐ INFORMATION
☑ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Signature and stamp
Ing. Festa M.

Mauro Festa

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Witnessed ☐ Reviewed ☒
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

L. PIGNATELLI ON BEHALF OF CROSSWIND

☐ WITNESS ☐ INFORMATION
☑ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

MF Trasformatori srl

Test Instruments
ROSETTI MARINO S.p.A. 25/07/24

Instrument	*Code*	*Type*	*MEASURE*	*TEST*	*Calibration Frequency (years)*	*Last calibration date*	*Next calibration date*	*USE*
VT capacitive ICAR 600kV n° 18607 mod. DCv 600 kV	HS 19 A	measuring	voltage measurement	LIGHTING IMPULSE TEST. -Applied Voltage Test	5	12/03/2022	10/09/2027	COMPLIANCE
3 CT FTM 50-100/5 nr 06143338-39-40	HS 27A-B-C	measuring	current measurement	current measurement	3	30/12/2022	30/12/2025	COMPLIANCE
VT Asea n° 7428502	HS 52 C	measuring	voltage measurement	Applied Voltage Test	3	30/12/2022	30/12/2025	52C COMPLIANCE FOR TESTING DIELECTRIC
3 VT FTM 1000/100 nr 06143344-45-46	HS 53A-B-C	measuring	voltage measurement	voltage measurement	3	30/12/2022	30/12/2025	COMPLIANCE
3 CT FTM 250-500/5 nr 06143341-42-43	HS 55A-B-C	measuring	current measurement	current measurement	3	30/12/2022	30/12/2025	COMPLIANCE
VT Scarpa Magnano mod. TVG nr 81776	HS 56	measuring	voltage measurement	Applied Voltage Test	3	21/12/2022	21/12/2025	COMPLIANCE FOR TESTING DIELECTRIC
3 CT FTM 5-10/5 nr 09193965-66-67	HS 86A-B-C	measuring	current measurement	current measurement	3	30/12/2022	30/12/2025	COMPLIANCE
HCL2804 Fully Automatic precision N° C11034	HS 90	measuring	TAN δ	TAN δ	5	23/02/2021	23/02/2026	COMPLIANCE
Ratiometer DVPOWER mod.TRT33A n° 12X160	HS 91	measuring	Ratio & connection measurement	Ratio & connection measurement	3	10/01/2022	10/01/2025	COMPLIANCE
TERMOMETER VWR mod. 060-1585 nr 230251117	HS 102	measuring	Measurement TEMPERATURE	Measurement TEMPERATURE	2	11/04/2023	11/04/2025	COMPLIANCE
Sound Level Meter DELTA OHM mod. HD2010PNE2 nr 16022344335	HS 112	measuring	noise test	noise test	2	07/01/2023	07/02/2025	COMPLIANCE
Digital Multimeter RS COMPONENT mod IDM-8341 n° 727C088G2	HS 119	measuring	voltage measurement	Insulation Test	3	09/09/2022	09/09/2025	COMPLIANCE
Wattmeter NEWTONS4TH mod. 5530-TE n° 176162845	HS 125	measuring	voltage/current/power measurement	load & no-load losses measurement	3	10/05/2021	10/05/2025	COMPLIANCE
Ohmmetro DV POWER mod. RMO50TW N°21Q719	HS 127	measuring	Misura resistenza avvolgimenti	Misura resistenza avvolgimenti	3	08/09/2022	08/09/2025	COMPLIANCE
Misuratore di resistenza mod Teraohm XA 5kV n° 22420123	HS 130	measuring	Misura resistenze d'isolamento	Misura resistenze d'isolamento	3	25/10/2022	25/10/2025	COMPLIANCE
thickness gauge mod. TE 1250-0,1F	HS 131	measuring	Paint thickness measurement	Paint thickness measurement	-	before each use	before each use	COMPLIANCE

Witnessed ☐ Reviewed ☒
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

ITEM	Tag	SG-100D1-A2-K1	:	FEEDER TR-200ED1	Dwg	1723002197-EL-DG-00020	
	S/Sys	82-50	:	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	Module		
TASK	code	C10004778	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°:	1VHR81041857	Relay type:	REX640
Auxiliary supply:	110Vdc	Location:	B100	Cubicle:	A2
Switchboard:	SG-100D1				

Current transformers

Tag	Number of	Ratio	Location
TI-L1		50/1A	SG-100D1-A2
TI-L2		50/1A	SG-100D1-A2
TI-L3		50/1A	SG-100D1-A2

Voltage transformers

Tag	Number of	Ratio	Location
TU-L1		6600/110V	SG-100D1-A2
TU-L2		6600/110V	SG-100D1-A2
TU-L3		6600/110V	SG-100D1-A2

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
67-1 - DPHLPDOC1	50A	50A		700ms	722ms
67-2 - DPHLDOC2	50A	50A		100ms	125ms
51N - EFLPTOC1	0.1A	0.106A		100ms	120ms
50-1 - PHIPTOC1	200A	206A		250ms	259ms
51-1 - PHLPTOC1	60A	65A		24565ms	24910ms

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
OMICRON CMC 356	DJ297G		

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	2024-12-10	2024-12-17	2024-12-18
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-12-10T12:03:25.982Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-12-17T13:05:01.555Z	PROVERLIS Digitaly signed by Witness waived 2024-12-18T14:23:49.315Z

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

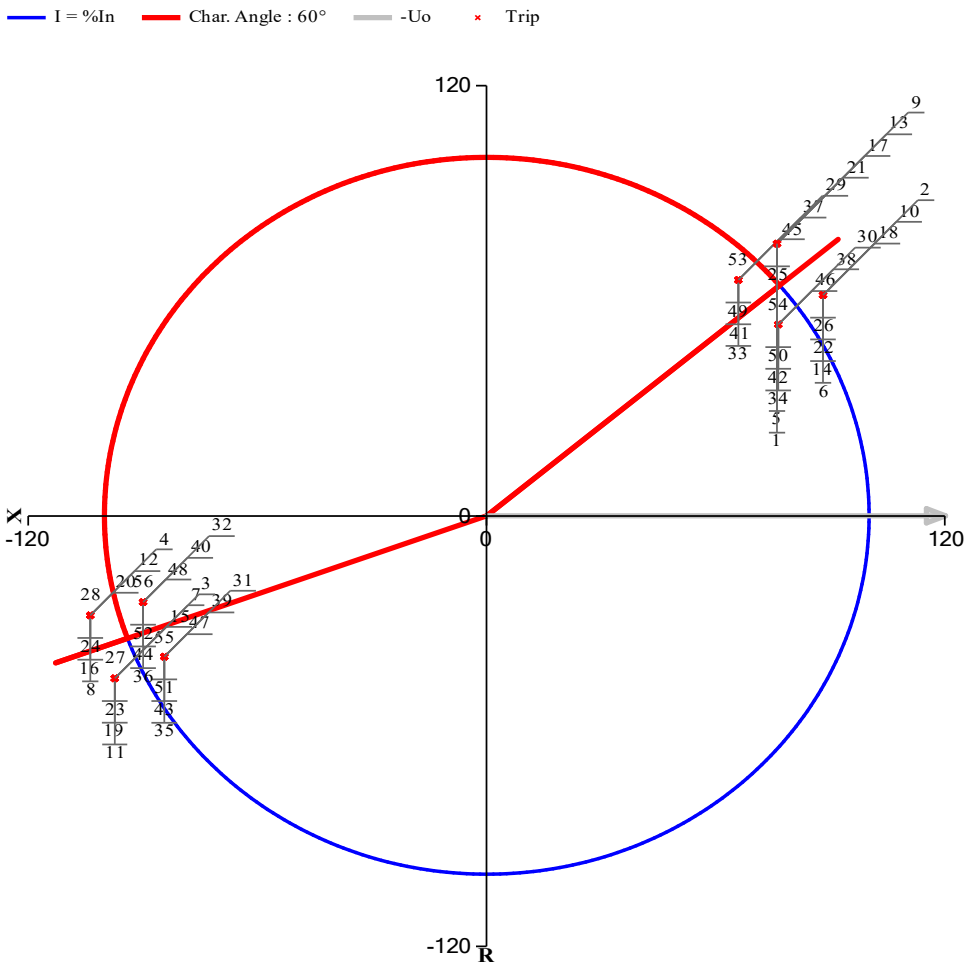
EQUIPMENT DESCRIPTION : -TR-200ED1

ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857



IEC61850 : DPHLPDOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
Primary Current : 50 A
Nominal current : 43.7 A
Reset delay time : 20 msec
Minimum operate time : 20 msec
Allow non direction : False
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 1.00 xIn
Start value mult. : 1.00
Directional mode : Reverse
Operate curve type : IEC Definite Time
Operate delay time : 700 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	1.074	45	1.074	-75	1.074	165	0.953	0	0.953	240	0.953	120	700	720	2.86
2	1.074	35	1.074	-85	1.074	155	0.953	0	0.953	240	0.953	120	0	0	0
3	1.074	-155	1.074	85	1.074	-35	0.953	0	0.953	240	0.953	120	0	0	0
4	1.074	-165	1.074	75	1.074	-45	0.953	0	0.953	240	0.953	120	700	721	3
5	1.074	75	1.074	-105	0	120	0.953	-20.71	0.953	-99.29	63.509	120	700	721	3
6	1.074	65	1.074	-115	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
7	1.074	-125	1.074	55	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
8	1.074	-135	1.074	45	0	120	0.953	-20.71	0.953	-99.29	63.509	120	700	722	3.14
9	0	0	1.074	-45	1.074	135	63.509	0	0.953	-140.71	0.953	140.71	700	722	3.14

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : DPHLPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	1.074	-55	1.074	125	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
11	0	0	1.074	115	1.074	-65	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
12	0	0	1.074	105	1.074	-75	63.509	0	0.953	-140.71	0.953	140.71	700	725	3.57
13	1.074	15	0	240	1.074	-165	0.953	20.71	63.509	240	0.953	99.29	700	720	2.86
14	1.074	5	0	240	1.074	-175	0.953	20.71	63.509	240	0.953	99.29	0	0	0
15	1.074	175	0	240	1.074	-5	0.953	20.71	63.509	240	0.953	99.29	0	0	0
16	1.074	165	0	240	1.074	-15	0.953	20.71	63.509	240	0.953	99.29	700	723	3.29
17	1.074	45	0	0	0	0	0.953	0	63.509	240	63.509	120	700	721	3
18	1.074	35	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
19	1.074	-155	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
20	1.074	-165	0	0	0	0	0.953	0	63.509	240	63.509	120	700	720	2.86
21	0	0	1.074	-75	0	0	63.509	0	0.953	240	63.509	120	700	723	3.29
22	0	0	1.074	-85	0	0	63.509	0	0.953	240	63.509	120	0	0	0
23	0	0	1.074	85	0	0	63.509	0	0.953	240	63.509	120	0	0	0
24	0	0	1.074	75	0	0	63.509	0	0.953	240	63.509	120	700	722	3.14
25	0	0	0	0	1.074	165	63.509	0	63.509	240	0.953	120	700	719	2.71
26	0	0	0	0	1.074	155	63.509	0	63.509	240	0.953	120	0	0	0
27	0	0	0	0	1.074	-35	63.509	0	63.509	240	0.953	120	0	0	0
28	0	0	0	0	1.074	-45	63.509	0	63.509	240	0.953	120	700	722	3.14
29	0.931	45	0.931	-75	0.931	165	0.953	0	0.953	240	0.953	120	0	0	0
30	0.931	35	0.931	-85	0.931	155	0.953	0	0.953	240	0.953	120	0	0	0
31	0.931	-155	0.931	85	0.931	-35	0.953	0	0.953	240	0.953	120	0	0	0
32	0.931	-165	0.931	75	0.931	-45	0.953	0	0.953	240	0.953	120	0	0	0
33	0.931	75	0.931	-105	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
34	0.931	65	0.931	-115	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
35	0.931	-125	0.931	55	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
36	0.931	-135	0.931	45	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
37	0	0	0.931	-45	0.931	135	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
38	0	0	0.931	-55	0.931	125	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
39	0	0	0.931	115	0.931	-65	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
40	0	0	0.931	105	0.931	-75	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
41	0.931	15	0	240	0.931	-165	0.953	20.71	63.509	240	0.953	99.29	0	0	0
42	0.931	5	0	240	0.931	-175	0.953	20.71	63.509	240	0.953	99.29	0	0	0
43	0.931	175	0	240	0.931	-5	0.953	20.71	63.509	240	0.953	99.29	0	0	0
44	0.931	165	0	240	0.931	-15	0.953	20.71	63.509	240	0.953	99.29	0	0	0
45	0.931	45	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
46	0.931	35	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
47	0.931	-155	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : DPHLPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
48	0.931	-165	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
49	0	0	0.931	-75	0	0	63.509	0	0.953	240	63.509	120	0	0	0
50	0	0	0.931	-85	0	0	63.509	0	0.953	240	63.509	120	0	0	0
51	0	0	0.931	85	0	0	63.509	0	0.953	240	63.509	120	0	0	0
52	0	0	0.931	75	0	0	63.509	0	0.953	240	63.509	120	0	0	0
53	0	0	0	0	0.931	165	63.509	0	63.509	240	0.953	120	0	0	0
54	0	0	0	0	0.931	155	63.509	0	63.509	240	0.953	120	0	0	0
55	0	0	0	0	0.931	-35	63.509	0	63.509	240	0.953	120	0	0	0
56	0	0	0	0	0.931	-45	63.509	0	63.509	240	0.953	120	0	0	0

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

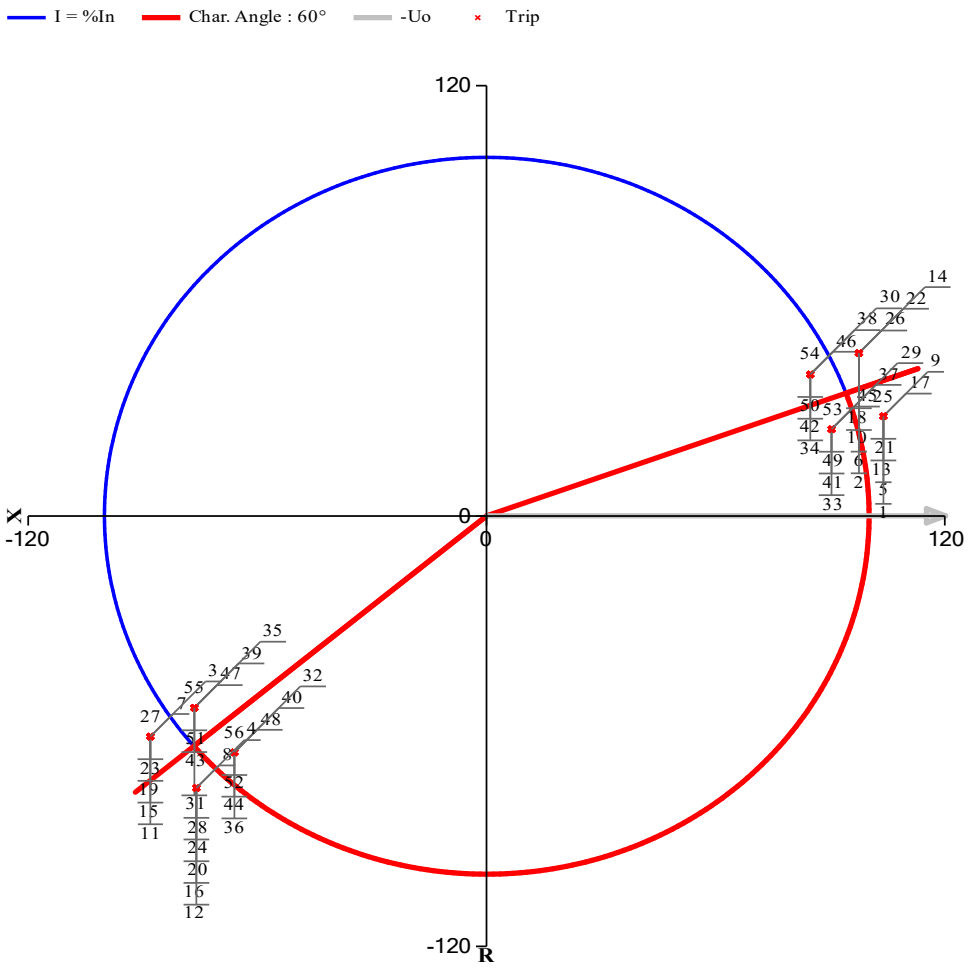
EQUIPMENT DESCRIPTION : -TR-200ED1

ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857



IEC61850 : DPHLPDOC2
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
Primary Current : 50 A
Nominal current : 43.7 A
Reset delay time : 20 msec
Minimum operate time : 20 msec
Allow non direction : False
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 1.00 xIn
Start value mult. : 1.00
Directional mode : Forward
Operate curve type : IEC Definite Time
Operate delay time : 100 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	1.074	15	1.074	-105	1.074	135	0.953	0	0.953	240	0.953	120	100	118	18
2	1.074	25	1.074	-95	1.074	145	0.953	0	0.953	240	0.953	120	0	0	0
3	1.074	-145	1.074	95	1.074	-25	0.953	0	0.953	240	0.953	120	0	0	0
4	1.074	-135	1.074	105	1.074	-15	0.953	0	0.953	240	0.953	120	100	122	22
5	1.074	45	1.074	-135	0	120	0.953	-20.71	0.953	-99.29	63.509	120	100	121	21
6	1.074	55	1.074	-125	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
7	1.074	-115	1.074	65	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
8	1.074	-105	1.074	75	0	120	0.953	-20.71	0.953	-99.29	63.509	120	100	125	25
9	0	0	1.074	-75	1.074	105	63.509	0	0.953	-140.71	0.953	140.71	100	124	24

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : DPHLPDOC2

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	1.074	-65	1.074	115	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
11	0	0	1.074	125	1.074	-55	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
12	0	0	1.074	135	1.074	-45	63.509	0	0.953	-140.71	0.953	140.71	100	124	24
13	1.074	-15	0	240	1.074	165	0.953	20.71	63.509	240	0.953	99.29	100	120	20
14	1.074	-5	0	240	1.074	175	0.953	20.71	63.509	240	0.953	99.29	0	0	0
15	1.074	-175	0	240	1.074	5	0.953	20.71	63.509	240	0.953	99.29	0	0	0
16	1.074	-165	0	240	1.074	15	0.953	20.71	63.509	240	0.953	99.29	100	118	18
17	1.074	15	0	0	0	0	0.953	0	63.509	240	63.509	120	100	119	19
18	1.074	25	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
19	1.074	-145	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
20	1.074	-135	0	0	0	0	0.953	0	63.509	240	63.509	120	100	120	20
21	0	0	1.074	-105	0	0	63.509	0	0.953	240	63.509	120	100	120	20
22	0	0	1.074	-95	0	0	63.509	0	0.953	240	63.509	120	0	0	0
23	0	0	1.074	95	0	0	63.509	0	0.953	240	63.509	120	0	0	0
24	0	0	1.074	105	0	0	63.509	0	0.953	240	63.509	120	100	124	24
25	0	0	0	0	1.074	135	63.509	0	63.509	240	0.953	120	100	122	22
26	0	0	0	0	1.074	145	63.509	0	63.509	240	0.953	120	0	0	0
27	0	0	0	0	1.074	-25	63.509	0	63.509	240	0.953	120	0	0	0
28	0	0	0	0	1.074	-15	63.509	0	63.509	240	0.953	120	100	123	23
29	0.934	15	0.934	-105	0.934	135	0.953	0	0.953	240	0.953	120	0	0	0
30	0.934	25	0.934	-95	0.934	145	0.953	0	0.953	240	0.953	120	0	0	0
31	0.934	-145	0.934	95	0.934	-25	0.953	0	0.953	240	0.953	120	0	0	0
32	0.934	-135	0.934	105	0.934	-15	0.953	0	0.953	240	0.953	120	0	0	0
33	0.934	45	0.934	-135	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
34	0.934	55	0.934	-125	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
35	0.934	-115	0.934	65	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
36	0.934	-105	0.934	75	0	120	0.953	-20.71	0.953	-99.29	63.509	120	0	0	0
37	0	0	0.934	-75	0.934	105	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
38	0	0	0.934	-65	0.934	115	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
39	0	0	0.934	125	0.934	-55	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
40	0	0	0.934	135	0.934	-45	63.509	0	0.953	-140.71	0.953	140.71	0	0	0
41	0.934	-15	0	240	0.934	165	0.953	20.71	63.509	240	0.953	99.29	0	0	0
42	0.934	-5	0	240	0.934	175	0.953	20.71	63.509	240	0.953	99.29	0	0	0
43	0.934	-175	0	240	0.934	5	0.953	20.71	63.509	240	0.953	99.29	0	0	0
44	0.934	-165	0	240	0.934	15	0.953	20.71	63.509	240	0.953	99.29	0	0	0
45	0.934	15	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
46	0.934	25	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
47	0.934	-145	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : DPHLPDOC2

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
48	0.934	-135	0	0	0	0	0.953	0	63.509	240	63.509	120	0	0	0
49	0	0	0.934	-105	0	0	63.509	0	0.953	240	63.509	120	0	0	0
50	0	0	0.934	-95	0	0	63.509	0	0.953	240	63.509	120	0	0	0
51	0	0	0.934	95	0	0	63.509	0	0.953	240	63.509	120	0	0	0
52	0	0	0.934	105	0	0	63.509	0	0.953	240	63.509	120	0	0	0
53	0	0	0	0	0.934	135	63.509	0	63.509	240	0.953	120	0	0	0
54	0	0	0	0	0.934	145	63.509	0	63.509	240	0.953	120	0	0	0
55	0	0	0	0	0.934	-25	63.509	0	63.509	240	0.953	120	0	0	0
56	0	0	0	0	0.934	-15	63.509	0	63.509	240	0.953	120	0	0	0

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

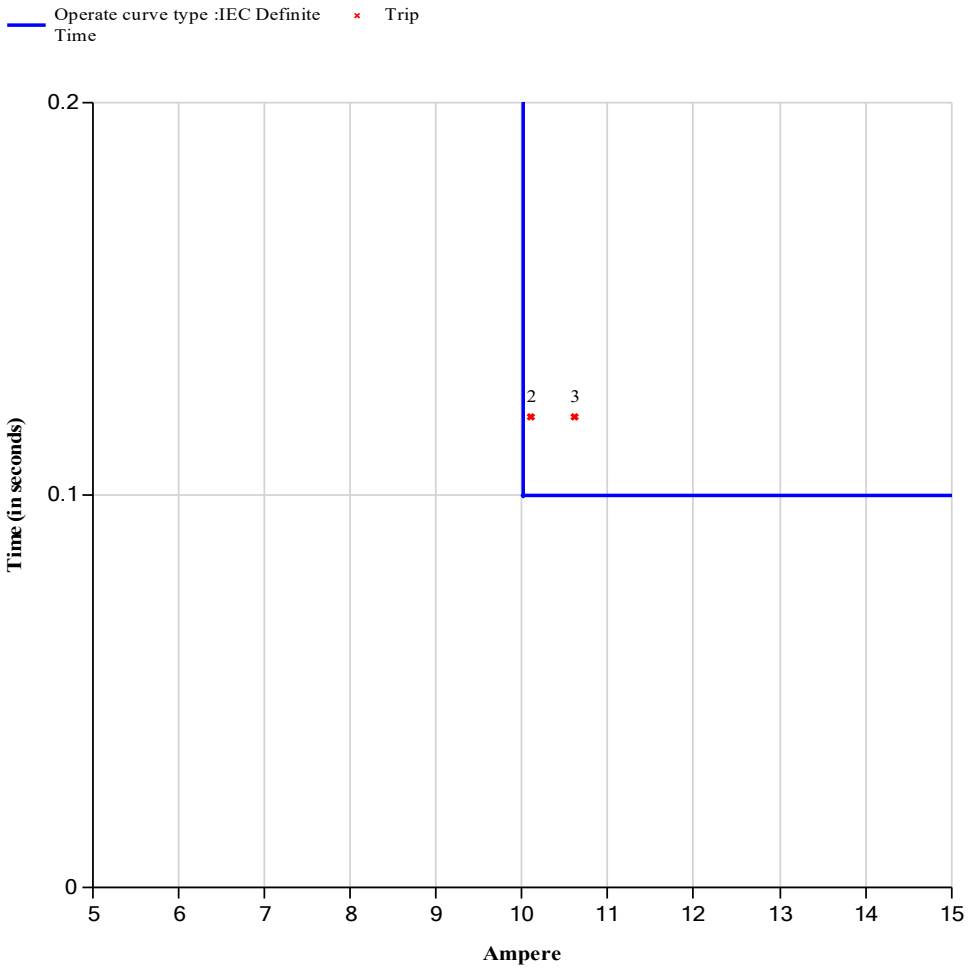
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : EFLPTOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 100 / 1 A
Nominal current : 43.7 A
Minimum operate time : 100 ms
Measured mode : DFT
Io signal Sel : Measured Io
Start value : 0.100 xIn
Operate delay time : 100 ms
Operate curve type : IEC Definite Time
Type of reset : Immediate



N.	I0	I0"(A)	I0(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	9.77	0.098	0	0	0	0
2	10.1	0.101	0	100	120	20
3	10.61	0.106	0	100	120	20

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			
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PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

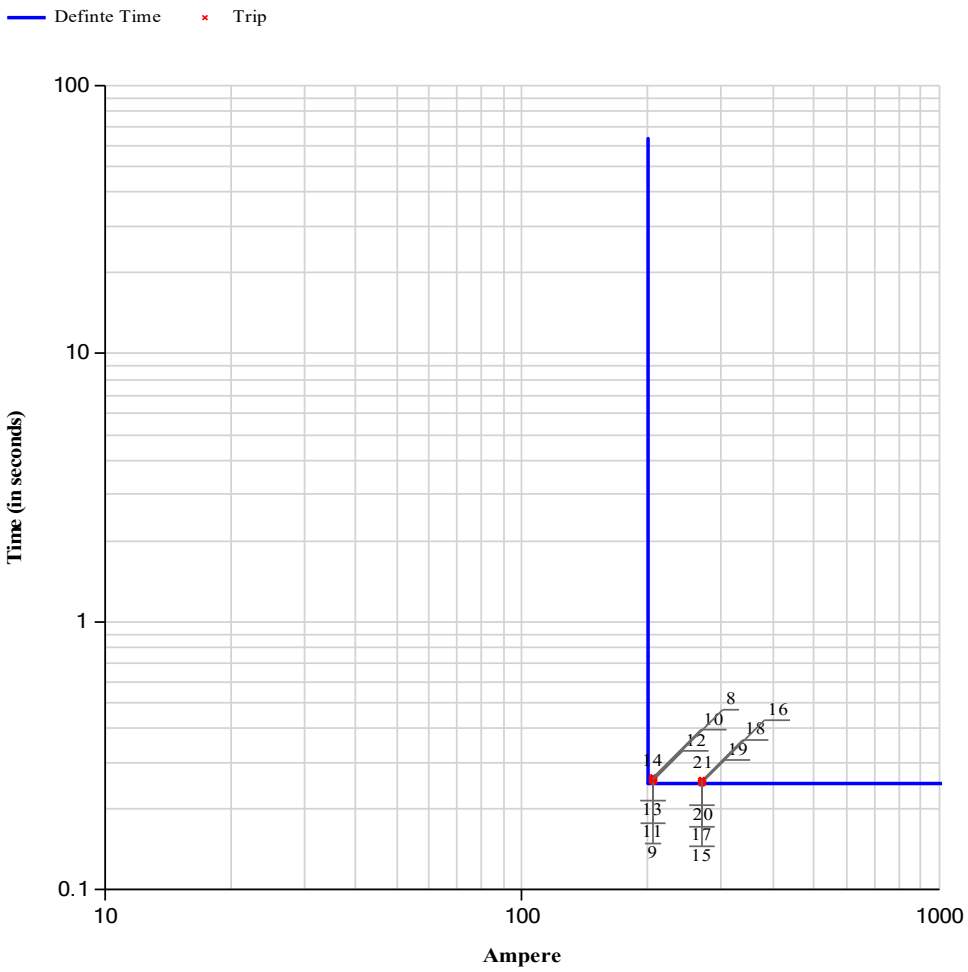
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : PHIPTOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 50 / 1 A
Nominal current : 43.7 A
Num of start phases : 1 Out of 3
Reset delay time : 20 ms
Start value : 4.00 xIn
Start valure Mult : 1.0
Operate delay time : 250 ms



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	196	3.918	0	0	0	0	0	0	0	0	0	0
2	0	0	0	196	3.918	240	0	0	0	0	0	0
3	0	0	0	0	0	0	196	3.918	120	0	0	0
4	196	3.918	0	196	3.918	180	0	0	0	0	0	0
5	0	0	0	196	3.918	240	196	3.918	60	0	0	0
6	196	3.918	300	0	0	0	196	3.918	120	0	0	0
7	196	3.918	0	196	3.918	240	196	3.918	120	0	0	0
8	206	4.111	0	0	0	0	0	0	0	250	259	3.6
9	0	0	0	206	4.111	240	0	0	0	250	255	2

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : PHIPTOC1

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0	0	0	0	206	4.111	120	250	263	5.2
11	206	4.111	0	206	4.111	180	0	0	0	250	260	4
12	0	0	0	206	4.111	240	206	4.111	60	250	256	2.4
13	206	4.111	300	0	0	0	206	4.111	120	250	262	4.8
14	206	4.111	0	206	4.111	240	206	4.111	120	250	257	2.8
15	269	5.384	0	0	0	0	0	0	0	250	257	2.8
16	0	0	0	269	5.384	240	0	0	0	250	252	0.8
17	0	0	0	0	0	0	269	5.384	120	250	252	0.8
18	269	5.384	0	269	5.384	180	0	0	0	250	256	2.4
19	0	0	0	269	5.384	240	269	5.384	60	250	252	0.8
20	269	5.384	300	0	0	0	269	5.384	120	250	252	0.8
21	269	5.384	0	269	5.384	240	269	5.384	120	250	252	0.8

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

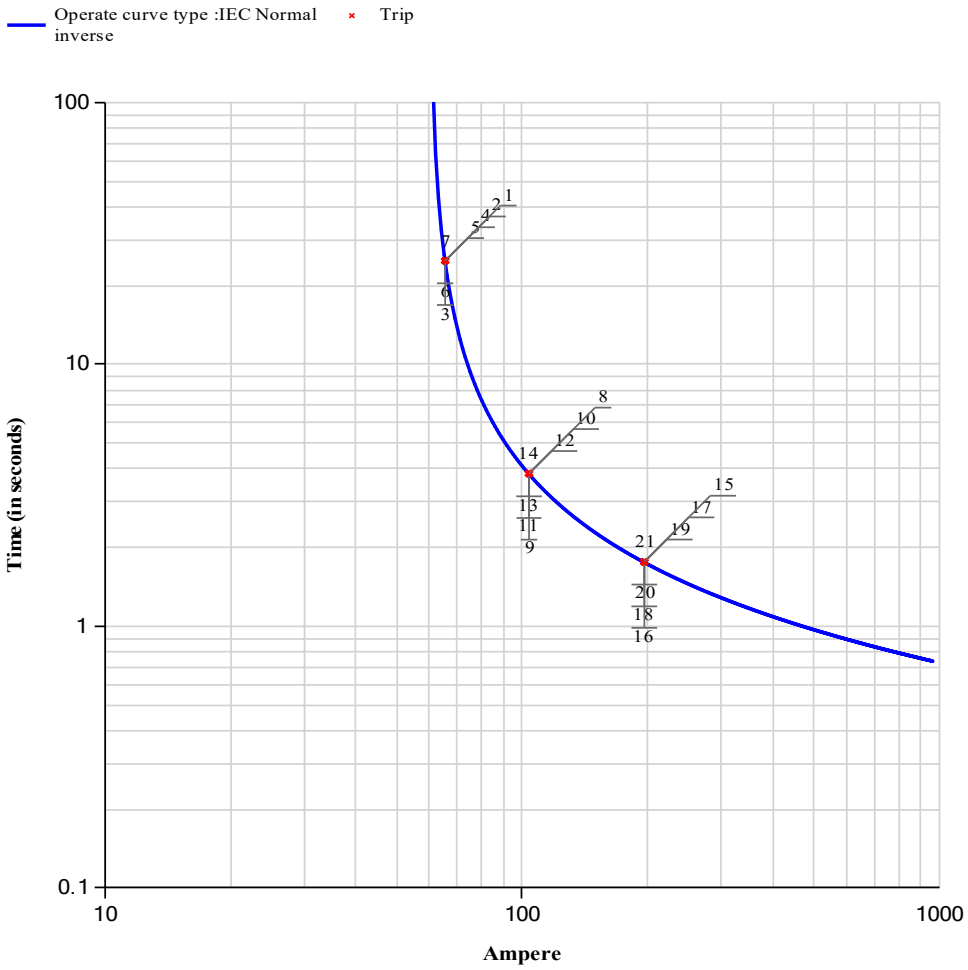
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : PHLPTOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 50 / 1 A
Nominal current : 43.7 A
Num. start phases : 1 out of 3
Minimum operate time : 300 msec
Reset delay time : 20 msec
Measurement mode : DFT
Start value : 1.20 xIn
Start value mult. : 1.00
Time multiplier : 0.30
Operate curve type : IEC Normal inverse
Type of reset : Immediate



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	65	1.307	0	0	0	0	0	0	0	24565	24910	1.4
2	0	0	0	65	1.307	240	0	0	0	24565	24910	1.4
3	0	0	0	0	0	0	65	1.307	120	24565	24923	1.46
4	65	1.307	0	65	1.307	240	0	0	120	24565	24909	1.4
5	0	0	0	65	1.307	240	65	1.307	120	24565	24912	1.41
6	65	1.307	0	0	0	240	65	1.307	120	24565	24912	1.41
7	65	1.307	0	65	1.307	240	65	1.307	120	24565	24912	1.41
8	104	2.075	0	0	0	0	0	0	0	3813	3832	0.5
9	0	0	0	104	2.075	240	0	0	0	3813	3831	0.47

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : PHLPTOC1

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0	0	0	0	104	2.075	120	3813	3838	0.66
11	104	2.075	0	104	2.075	240	0	0	120	3813	3828	0.39
12	0	0	0	104	2.075	240	104	2.075	120	3813	3832	0.5
13	104	2.075	0	0	0	240	104	2.075	120	3813	3829	0.42
14	104	2.075	0	104	2.075	240	104	2.075	120	3813	3829	0.42
15	196	3.918	0	0	0	0	0	0	0	1754	1765	0.63
16	0	0	0	196	3.918	240	0	0	0	1754	1763	0.51
17	0	0	0	0	0	0	196	3.918	120	1754	1766	0.68
18	196	3.918	0	196	3.918	240	0	0	120	1754	1760	0.34
19	0	0	0	196	3.918	240	196	3.918	120	1754	1759	0.29
20	196	3.918	0	0	0	240	196	3.918	120	1754	1763	0.51
21	196	3.918	0	196	3.918	240	196	3.918	120	1754	1759	0.29

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI ----------	OMICRON CMC 356 **Sn. :** DJ297G	----------	----------	----------

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

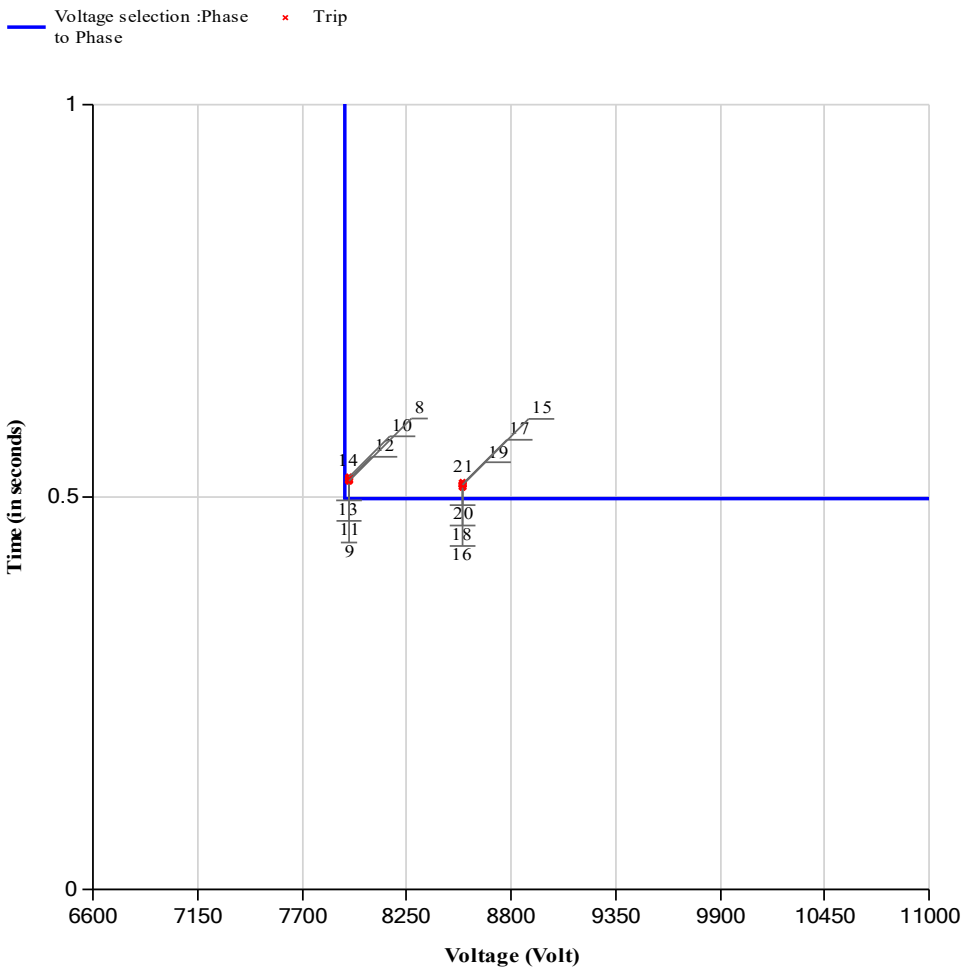
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : PHPTOV1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
VT RATIO : 6600 / 110 V
Num of start phases : 1 out of 3
Reset delay time : 20 ms
Voltage selection : Phase to Phase
Relative hysteresis : 4.0 %
Start value : 1.20 xUn
Time multiplier : 1.00
Operate delay time : 500 ms
Operating curve type : IEC Def. Time
Type of reset curve : Immediate
Type of time reset : Freeze Op timer



N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	5262	87.705	0	3811	63.509	240	3811	63.509	120	0	0	0
2	3811	63.509	0	5262	87.695	240	3811	63.509	120	0	0	0
3	3811	63.509	0	3811	63.509	240	5261	87.682	120	0	0	0
4	4555	75.919	0	4555	75.919	240	3811	63.509	120	0	0	0
5	3811	63.509	0	4556	75.928	240	4556	75.928	120	0	0	0
6	4556	75.928	0	3811	63.509	240	4556	75.928	120	0	0	0
7	4555	75.922	0	4555	75.922	240	4555	75.922	120	0	0	0
8	5322	88.701	0	3811	63.509	240	3811	63.509	120	500	521	4.2
9	3811	63.509	0	5323	88.715	240	3811	63.509	120	500	522	4.4

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : PHPTOV1

N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	3811	63.509	0	3811	63.509	240	5322	88.7	120	500	526	5.2
11	4587	76.458	0	4587	76.458	240	3811	63.509	120	500	522	4.4
12	3811	63.509	0	4587	76.455	240	4587	76.455	120	500	523	4.6
13	4587	76.458	0	3811	63.509	240	4587	76.458	120	500	525	5
14	4587	76.453	0	4587	76.453	240	4587	76.453	120	500	521	4.2
15	5975	99.579	0	3811	63.509	240	3811	63.509	120	500	516	3.2
16	3811	63.509	0	5975	99.586	240	3811	63.509	120	500	513	2.6
17	3811	63.509	0	3811	63.509	240	5975	99.578	120	500	517	3.4
18	4933	82.21	0	4933	82.21	240	3811	63.509	120	500	516	3.2
19	3811	63.509	0	4933	82.214	240	4933	82.214	120	500	516	3.2
20	4933	82.21	0	3811	63.509	240	4933	82.21	120	500	519	3.8
21	4932	82.208	0	4932	82.208	240	4932	82.208	120	500	514	2.8

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

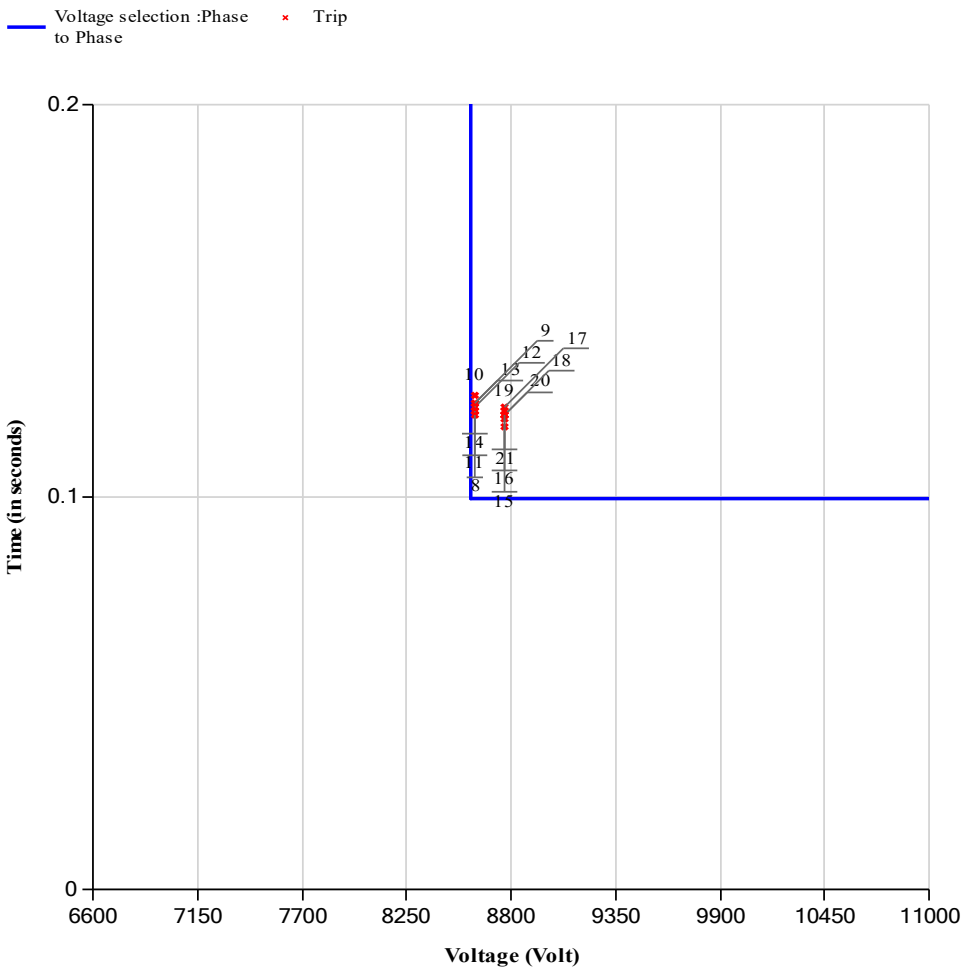
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : PHPTOV2
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
VT RATIO : 6600 / 110 V
Num of start phases : 1 out of 3
Reset delay time : 20 ms
Voltage selection : Phase to Phase
Relative hysteresis : 4.0 %
Start value : 1.30 xUn
Time multiplier : 1.00
Operate delay time : 100 ms
Operating curve type : IEC Def. Time
Type of reset curve : Immediate
Type of time reset : Freeze Op timer



N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	5975	99.585	0	3811	63.509	240	3811	63.509	120	0	0	0
2	3811	63.509	0	5975	99.58	240	3811	63.509	120	0	0	0
3	3811	63.509	0	3811	63.509	240	5975	99.586	120	0	0	0
4	4932	82.2	0	4932	82.2	240	3811	63.509	120	0	0	0
5	3811	63.509	0	4932	82.205	240	4932	82.205	120	0	0	0
6	4932	82.201	0	3811	63.509	240	4932	82.201	120	0	0	0
7	4932	82.208	0	4932	82.208	240	4932	82.208	120	0	0	0
8	6045	100.758	0	3811	63.509	240	3811	63.509	120	100	121	21
9	3811	63.509	0	6044	100.738	240	3811	63.509	120	100	124	24

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			
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PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : PHPTOV2

N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	3811	63.509	0	3811	63.509	240	6045	100.75	120	100	126	26
11	4969	82.824	0	4969	82.824	240	3811	63.509	120	100	122	22
12	3811	63.509	0	4969	82.823	240	4969	82.823	120	100	123	23
13	4970	82.831	0	3811	63.509	240	4970	82.831	120	100	124	24
14	4970	82.827	0	4970	82.827	240	4970	82.827	120	100	122	22
15	6214	103.567	0	3811	63.509	240	3811	63.509	120	100	121	21
16	3811	63.509	0	6214	103.561	240	3811	63.509	120	100	120	20
17	3811	63.509	0	3811	63.509	240	6214	103.572	120	100	123	23
18	5060	84.331	0	5060	84.331	240	3811	63.509	120	100	121	21
19	3811	63.509	0	5060	84.337	240	5060	84.337	120	100	122	22
20	5060	84.337	0	3811	63.509	240	5060	84.337	120	100	121	21
21	5060	84.332	0	5060	84.332	240	5060	84.332	120	100	118	18

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

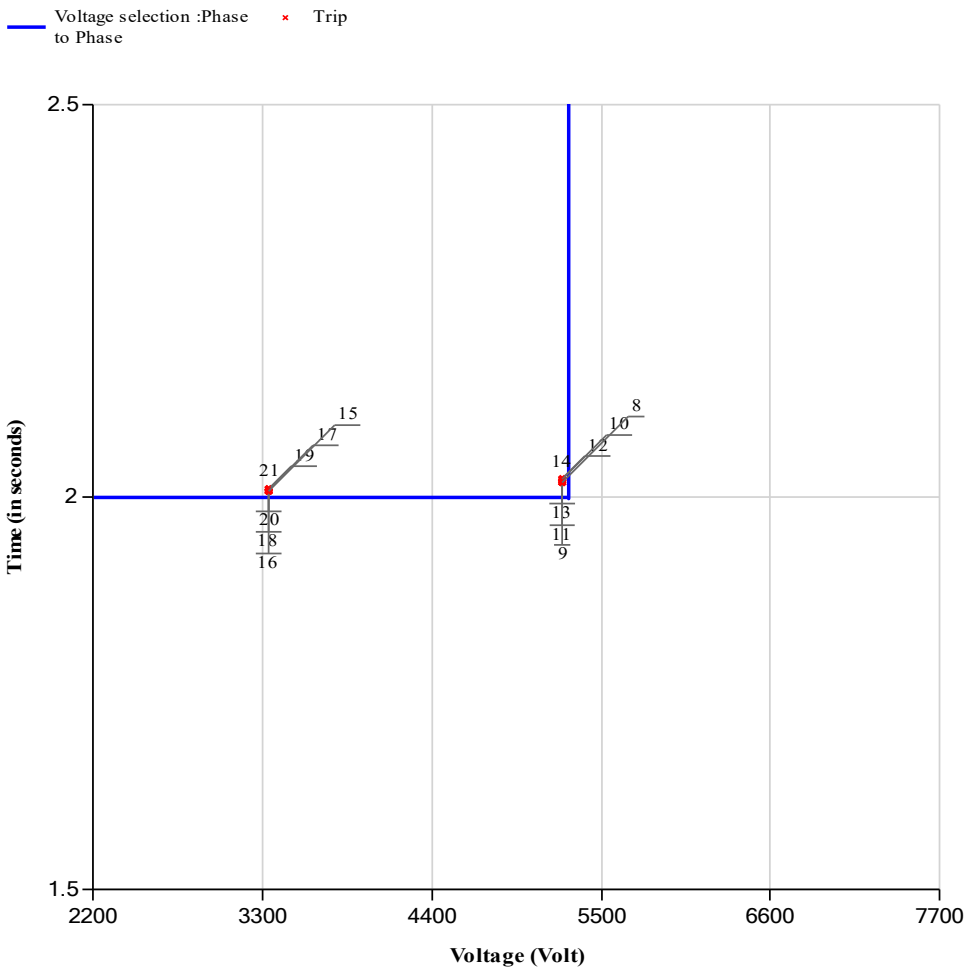
EQUIPMENT DESCRIPTION : -TR-200ED1

ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857



IEC61850 : PHPTUV1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
VT RATIO : 6600 / 110 V
Num of start phases : 1 Out of 3
Minimum operate time : 60 msec
Reset delay time : 20 msec
Voltage block value : 0.20 xUn
Enable block value : True
Voltage selection : Phase to Phase
Relative hysteresis : 4.0 %
Start value : 0.80 xUn
Time multiplier : 1.00
Operating delay time : 2000 msec
Operate curve type : IEC Def. Time
Type of reset curve : Immediate
Type of time reset : Freeze Op timer

N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	2272	37.87	0	3811	63.509	240	3811	63.509	120	0	0	0
2	3811	63.509	0	2273	37.876	240	3811	63.509	120	0	0	0
3	3811	63.509	0	3811	63.509	240	2272	37.875	120	0	0	0
4	3074	51.228	0	3074	51.228	240	3811	63.509	120	0	0	0
5	3811	63.509	0	3074	51.227	240	3074	51.227	120	0	0	0
6	3074	51.231	0	3811	63.509	240	3074	51.231	120	0	0	0
7	3074	51.232	0	3074	51.232	240	3074	51.232	120	0	0	0
8	2171	36.181	0	3811	63.509	240	3811	63.509	120	2000	2019	0.95
9	3811	63.509	0	2171	36.19	240	3811	63.509	120	2000	2019	0.95

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI ----------	OMICRON CMC 356 **Sn. :** DJ297G	----------	----------	----------

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : PHPTUV1

N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	3811	63.509	0	3811	63.509	240	2172	36.196	120	2000	2023	1.15
11	3028	50.464	0	3028	50.464	240	3811	63.509	120	2000	2021	1.05
12	3811	63.509	0	3028	50.466	240	3028	50.466	120	2000	2024	1.2
13	3028	50.47	0	3811	63.509	240	3028	50.47	120	2000	2021	1.05
14	3028	50.467	0	3028	50.467	240	3028	50.467	120	2000	2019	0.95
15	0	0	0	3811	63.509	240	3811	63.509	120	2000	2008	0.4
16	3811	63.509	0	0	0	240	3811	63.509	120	2000	2008	0.4
17	3811	63.509	0	3811	63.509	240	0	0	120	2000	2010	0.5
18	1927	32.115	0	1927	32.115	240	3811	63.509	120	2000	2008	0.4
19	3811	63.509	0	1927	32.116	240	1927	32.116	120	2000	2011	0.55
20	1927	32.115	0	3811	63.509	240	1927	32.115	120	2000	2011	0.55
21	1927	32.116	0	1927	32.116	240	1927	32.116	120	2000	2008	0.4

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

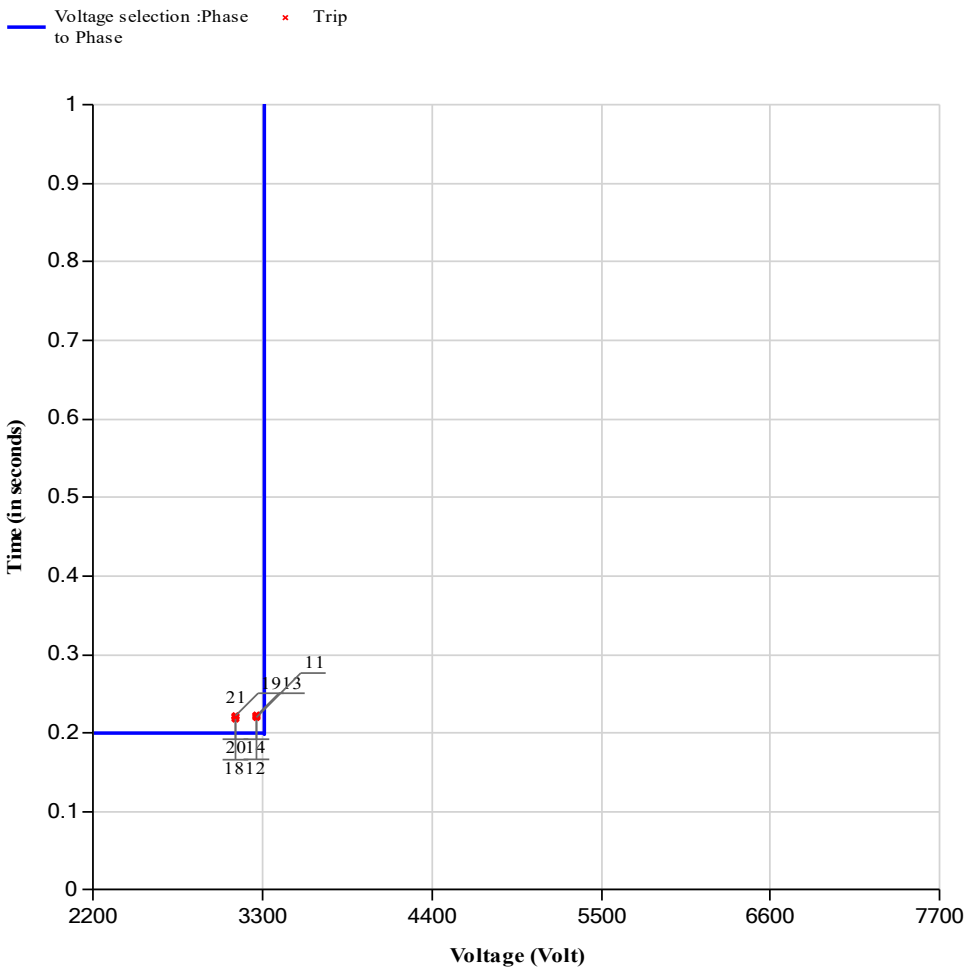
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : PHPTUV2
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
VT RATIO : 6600 / 110 V
Num of start phases : 1 Out of 3
Minimum operate time : 60 msec
Reset delay time : 20 msec
Voltage block value : 0.20 xUn
Enable block value : True
Voltage selection : Phase to Phase
Relative hysteresis : 4.0 %
Start value : 0.50 xUn
Time multiplier : 1.00
Operating delay time : 200 msec
Operate curve type : IEC Def. Time
Type of reset curve : Immediate
Type of time reset : Freeze Op timer



N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	0	0	0	3811	63.509	240	3811	63.509	120	0	0	0
2	3811	63.509	0	0	0	240	3811	63.509	120	0	0	0
3	3811	63.509	0	3811	63.509	240	0	0	120	0	0	0
4	1927	32.117	0	1927	32.117	240	3811	63.509	120	0	0	0
5	3811	63.509	0	1927	32.117	240	1927	32.117	120	0	0	0
6	1927	32.117	0	3811	63.509	240	1927	32.117	120	0	0	0
7	1927	32.116	0	1927	32.116	240	1927	32.116	120	0	0	0
8	0	0	0	3811	63.509	240	3811	63.509	120	0	0	0
9	3811	63.509	0	0	0	240	3811	63.509	120	0	0	0

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

RELAY TYPE : ABB REX640

ITEM : UNIT A2

Sn. : 1VHR81041857

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

IEC61850 : PHPTUV2

N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	3811	63.509	0	3811	63.509	240	0	0	120	0	0	0
11	1881	31.351	0	1881	31.351	240	3811	63.509	120	200	220	10
12	3811	63.509	0	1881	31.353	240	1881	31.353	120	200	223	11.5
13	1881	31.351	0	3811	63.509	240	1881	31.351	120	200	222	11
14	1881	31.351	0	1881	31.351	240	1881	31.351	120	200	221	10.5
15	0	0	0	3811	63.509	240	3811	63.509	120	0	0	0
16	3811	63.509	0	0	0	240	3811	63.509	120	0	0	0
17	3811	63.509	0	3811	63.509	240	0	0	120	0	0	0
18	1802	30.04	0	1802	30.04	240	3811	63.509	120	200	218	9
19	3811	63.509	0	1803	30.042	240	1803	30.042	120	200	222	11
20	1803	30.043	0	3811	63.509	240	1803	30.043	120	200	221	10.5
21	1802	30.04	0	1802	30.04	240	1802	30.04	120	200	220	10

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

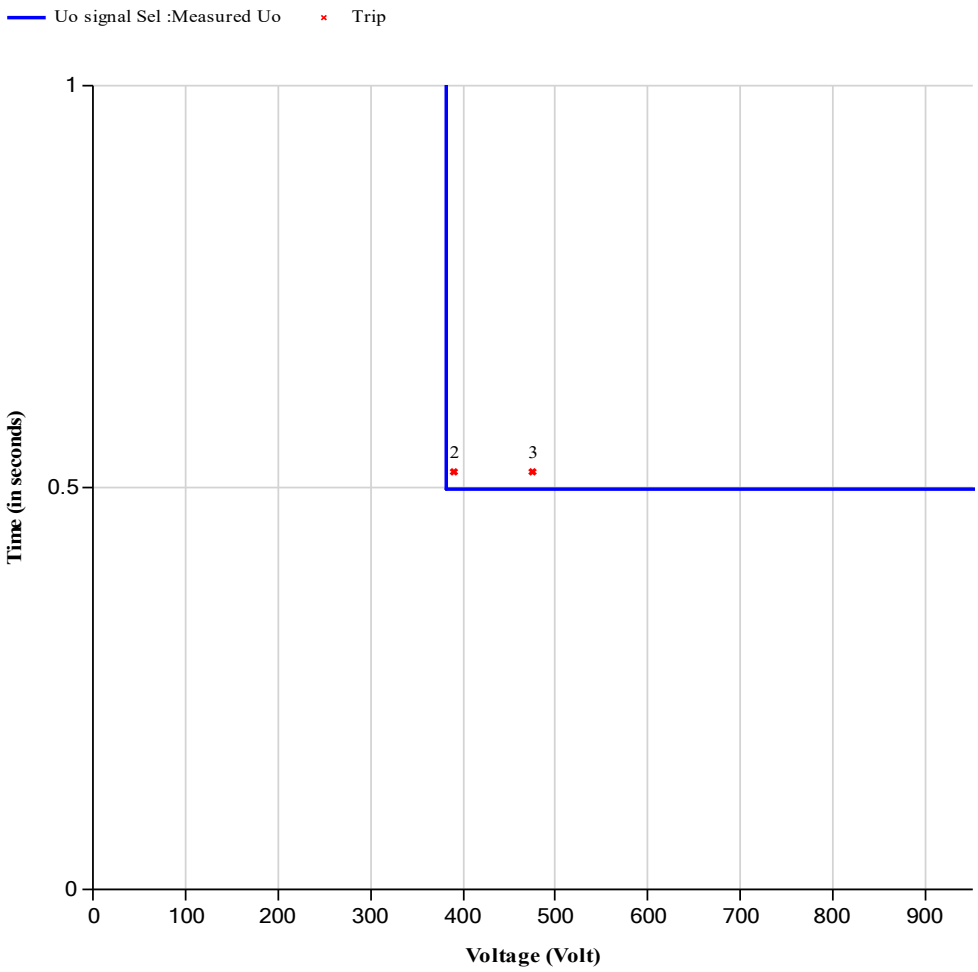
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : ROVPTOV1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
VT RATIO : 6600 / 110 V
Reset delay time : 20 msec
Uo signal Sel : Measured Uo
Start value : 0.10 xUn
Operate delay time : 500 msec



NB : ALARM ONLY

N.	V0(V)	V0(V)	Exp.(ms)	Trip(ms)	Dev.(%)
1	371	10.714	0	0	0
2	390	11.26	500	520	4
3	475	13.717	500	520	4

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI ----------	OMICRON CMC 356 **Sn. :** DJ297G	----------	----------	----------

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200ED1

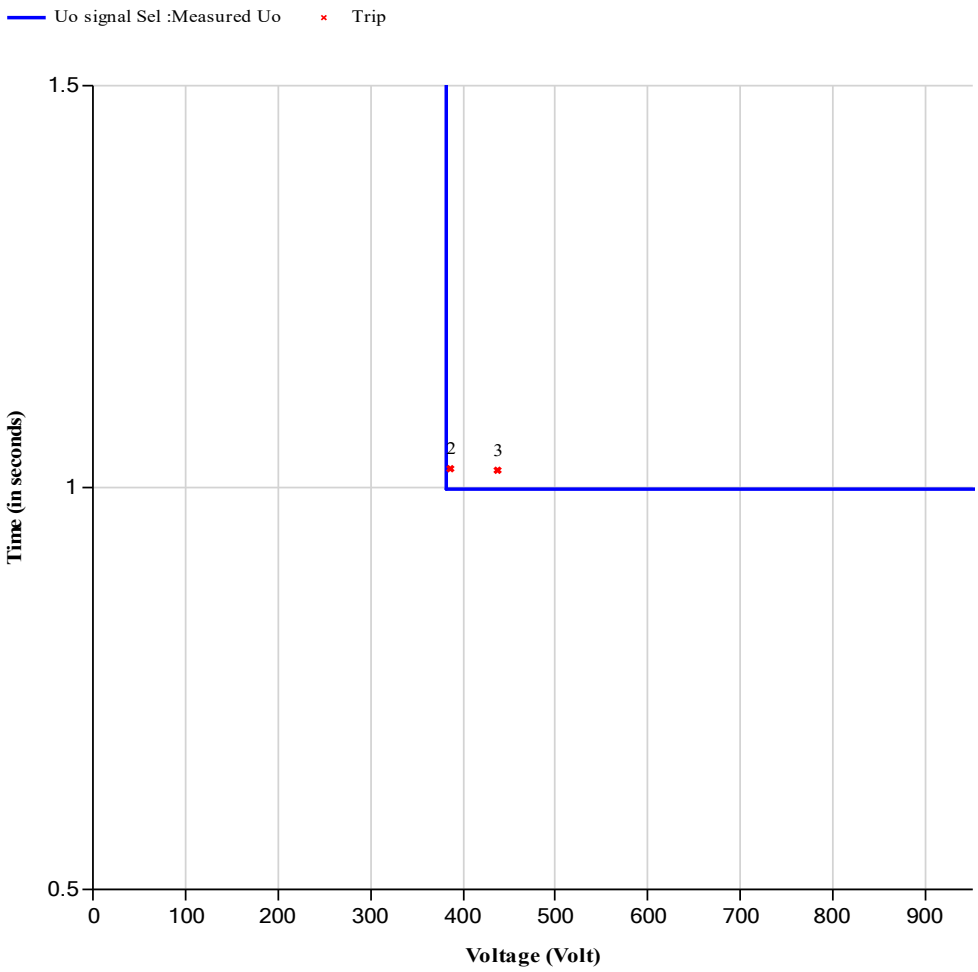
ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857

IEC61850 : ROVPTOV2
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
VT RATIO : 6600 / 110 V
Reset delay time : 20 msec
Uo signal Sel : Measured Uo
Start value : 0.10 xUn
Operate delay time : 1000 msec



N.	V0(V)	V0(V)	Exp.(ms)	Trip(ms)	Dev.(%)
1	373	10.768	0	0	0
2	386	11.151	1000	1024	2.4
3	437	12.625	1000	1022	2.2

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

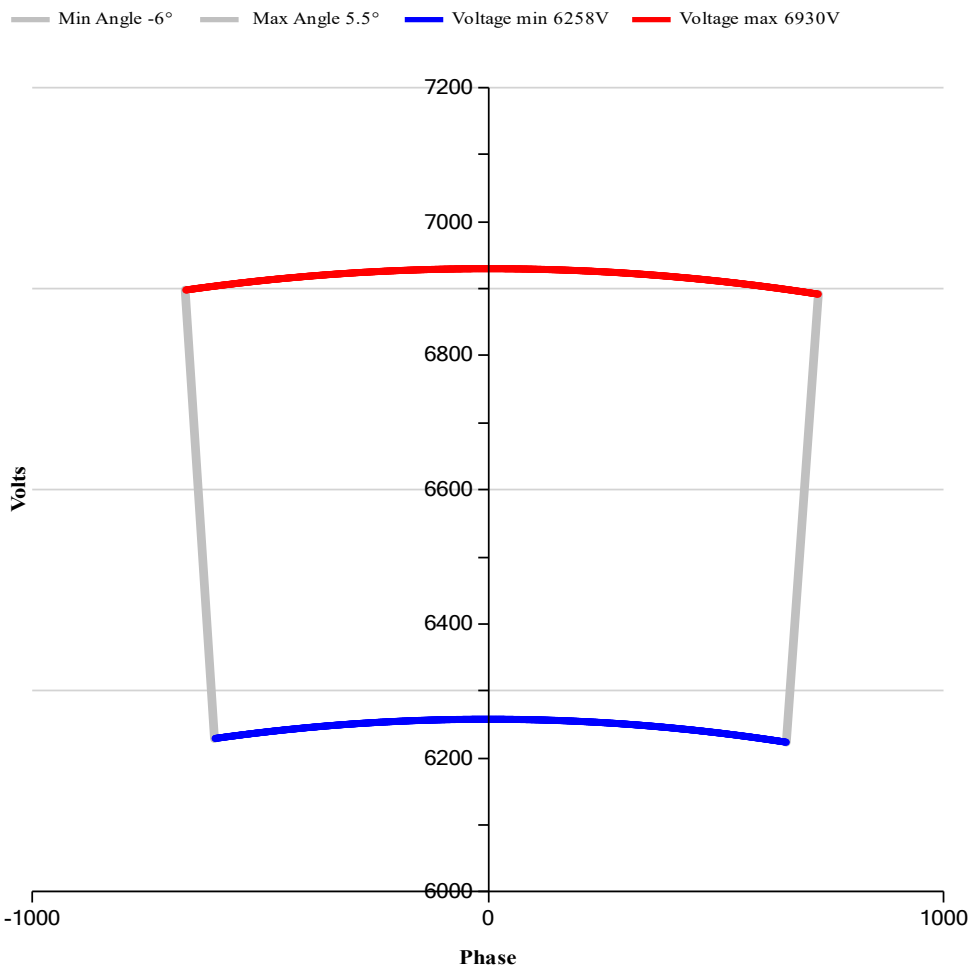
EQUIPMENT DESCRIPTION : -TR-200ED1

ITEM : UNIT A2

REFERENCE DOCUMENT : 123A90-DDL-EL-RE-20168 Rev.02

RELAY TYPE : ABB REX640

Sn. : 1VHR81041857



IEC61850 : SECRSYN
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
VT RATIO : 6600 / 110 V
Synchro check Mode : Asynchronous
Control Mode : Continuous
Dead line value : 0.10 xUn
Live line value : 0.50 xUn
Dead bus value : 0.10 xUn
Live bus value : 0.50 xUn
Close pulse : 200 ms
Max energizing V : 0.64 xUn
Phase shift : 0 deg
Minimum Syn time : 10000 ms
Maximum Syn time : 5000 ms
Energizing time : 100 ms
Closing time CB : 50 ms
Live dead mode : Not Both Live
Difference voltage : 0.05 xUn
Difference frequency : 0.010 xFn
Difference angle : 5 deg

N.	V1(V)	V1"(V)	V1(°)	V2(V)	V2"(V)	V2(°)	V3(V)	V3"(V)	V3(°)	V4(V)	V4"(V)	V4(°)	F (Hz)
1	3811	63.509	0	3811	63.509	240	3811	63.509	120	6258	104.3	30	50
2	3811	63.509	0	3811	63.509	240	3811	63.509	120	6930	115.5	30	50
3	3811	63.509	0	3811	63.509	240	3811	63.509	120	6600	110	24	50
4	3811	63.509	0	3811	63.509	240	3811	63.509	120	6600	110	35.5	50
5	3811	63.509	0	3811	63.509	240	3811	63.509	120	6600	110	30	49.5
6	3811	63.509	0	3811	63.509	240	3811	63.509	120	6600	110	30	50.5

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			
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ITEM	Tag	SG-100D1-A2-K1	: FEEDER TR-200ED1		Dwg	1723002197-EL-DG-00020	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module		
TASK	code	C10004779	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline Electrical	Form	FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SG-100D1-A2-K1	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								
									Status Check					
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)	Event (Y/N)	Alarm (Y/N)	Fault (Y/N)	Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
1	EMERGENCY OPENING BY SIS	HW	DO	SG-100D1_XM:51-52	B400-SIS-001_TB-XS-000:33-34	NA	NA	NA	NA	Y	NA	NA	NA	NA
2														
3														
4														
5														
6														
7														
8														

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

Comments: NOTE1: See attachments for full signals and for others information see the OTP: 6,6kV Switchgear & Transformer System PHASE 7.

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	2025-02-04	2025-02-04	2025-02-04
Signature	Digitaly signed by Davide Zucconelli 2025-02-04T10:32:33.819Z	Digitaly signed by Kristian Castellani 2025-02-04T13:23:45.806Z	Digitaly signed by Witness waived 2025-02-04T13:40:54.585Z

Step	Description	Result	Verified by	Date
177	Internal Lighting test. The internal lighting is installed only inside the auxiliary compartment. There is a limit switch LS that switch on light with opened door and switch off it with door closed. - Verify and confirm.....☐			
178	Internal space heater test The internal space heater is installed only inside the auxiliary compartment. The thermostat HGR is installed inside the same compartment, its range is -10 ÷ +80°C. Decrease the set point till switch on the space heater and KGR relay will be ON. - Verify and confirm.....☐ - Led-12 "SPACE HEATER ON" on protection relay REX640 HMI will turn to red .....☐			
179	Internal 230Vac Socket test The internal 230Vac Socket XS1 is installed only inside the auxiliary compartment. Take a Multimeter and measure the voltage between socket poles. - Verify and confirm (230Vac).....☐			

5.4.7.4 SIS Safety Instrumented System - I/O signal from SIS to SG-100D1 UNIT A2

The following I/O list represent the hardwired signals that are connected on Unit A2 and they come from the SIS (Emergency Shut Down).

SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	ITEM TAG
TRANSFORMER FEEDER TR-200ED1 "A2"		
EMERGENCY OPEN BY SIS TRANSFORMER FEEDER TR-200ED1	DIGITAL	82XS001

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

5.4.7.5 EMCS IEC61850 - Electrical Monitoring & Control System

The EMCS will be tested with the 6.6kV SWBD: In detail it will be tested the functionalities provided on I/O lists vendor document 1723002197-EL-LIS-00041 with the A2 Solar PV Package Power Transformer TR-200ED1.

5.4.7.6 EMCS IEC61850 – A2 Unit I/O List

The following data list is a part of redundant networking in ethernet technology from the electrical PROTECTIONS Relay REX640

DESCRIPTION	SIGNAL TYPE	SIGNAL TAG
TRANSFORMER FEEDER TR-200ED1 "A2"		
PROTECTION TRIPPED "50-1"	DIGITAL	LD0.PHIPTOC1.ST.Op.general
PROTECTION TRIPPED "51-1"	DIGITAL	LD0.PHLPTOC1.ST.Op.general
PROTECTION TRIPPED "51N"	DIGITAL	LD0.EFLPTOC1.ST.Op.general
SYNCHRO "OK"	DIGITAL	LD0.LEDGGIO1.ST.Ind3.stVal
PROTECTION TRIPPED "59N-1"	DIGITAL	LD0.ROVPTOV1.ST.Op.general
PROTECTION TRIPPED "59N-2"	DIGITAL	LD0.ROVPTOV2.ST.Op.general
PROTECTION TRIPPED "27-1"	DIGITAL	LD0.PHPTUV1.ST.Op.general
PROTECTION TRIPPED "27-2"	DIGITAL	LD0.PHPTUV2.ST.Op.general
PROTECTION TRIPPED "59-1"	DIGITAL	LD0.PHPTOV1.ST.Op.general
PROTECTION TRIPPED "59-2"	DIGITAL	LD0.PHPTOV2.ST.Op.general
PROTECTION TRIPPED "67-1"	DIGITAL	LD0.DPHLPDOC1.ST.Op.general
PROTECTION TRIPPED "67-2"	DIGITAL	LD0.DPHLPDOC2.ST.Op.general
SELECTOR SWITCH IN LOCAL POSITION	DIGITAL	LD0.MVGAPC1.ST.SPCSO6.stVal

DESCRIPTION	SIGNAL TYPE	SIGNAL TAG
SELECTOR SWITCH IN REMOTE POSITION	DIGITAL	LD0.MVGAPC1.ST.SPCSO7.stVal
Line Current (L1)	ANALOG	LD0.CMMXU1.A.phsA.cVal.mag.f
Line Current (L2)	ANALOG	LD0.CMMXU1.A.phsB.cVal.mag.f
Line Current (L3)	ANALOG	LD0.CMMXU1.A.phsC.cVal.mag.f
Line Volts MAIN BUS BAR (L1-l2)	ANALOG	LD0.VMMXU1.PPV.phsAB.cVal.mag.f
Line Volts MAIN BUS BAR (L2-L3)	ANALOG	LD0.VMMXU1.PPV.phsBC.cVal.mag.f
Line Volts MAIN BUS BAR (L3-L1)	ANALOG	LD0.VMMXU1.PPV.phsCA.cVal.mag.f
Frequency	ANALOG	LD0.FMMXU1.Hz.mag.f
APPARENT POWER (kVA)	ANALOG	LD0.PEMMXU1.TotVA.mag.f
REAL POWER (kW)	ANALOG	LD0.PEMMXU1.TotW.mag.f
REACTIVE POWER (kVAR)	ANALOG	LD0.PEMMXU1.TotVAr.mag.f
POWER FACTOR	ANALOG	LD0.PEMMXU1.TotPF.mag.f
TRANSFORMER PROTECTION TRIPPED "BUCHHOLZ"	DIGITAL	LD0.SCBIGGIO1.ST.Ind7.stVal
TRANSFORMER PROTECTION ALARM "BUCHHOLZ"	DIGITAL	LD0.SCBIGGIO1.ST.Ind6.stVal
TRANSFORMER PROTECTION TRIPPED "OIL TEMPERATURE"	DIGITAL	LD0.SCBIGGIO1.ST.Ind9.stVal
TRANSFORMER PROTECTION ALARM "OIL TEMPERATURE"	DIGITAL	LD0.SCBIGGIO1.ST.Ind8.stVal
TRANSFORMER PROTECTION TRIP "OIL PRESSURE"	DIGITAL	LD0.SCBIGGIO1.ST.Ind12.stVal
TRANSF. OIL LEVEL VERY LOW ALARM	DIGITAL	LD0.SCBIGGIO1.ST.Ind11.stVal
TRANSFORMER PROTECTION ALARM "OIL PRESSURE"	DIGITAL	N.A.
TRANSF. PROTECTION TRIPPED "WINDING TEMPERATURE"	DIGITAL	LD0.SCBIGGIO1.ST.Ind14.stVal

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File: 123A90-PML-COM-PRO-03046

DESCRIPTION	SIGNAL TYPE	SIGNAL TAG
TRANSF. PROTECTION ALARM "WINDING TEMPERATURE	DIGITAL	LD0.SCBIGGIO1.ST.Ind13.stVal
TRANSF. GENERAL ALARM	DIGITAL	LD0.SDBIGGIO1.ST.Ind7.stVal
WATCHDOG PROTECTION RELAY	DIGITAL	LD0.LPHD1.PhyHealth.stVal
V.T. HEALTLY CIRCUIT	DIGITAL	LD0.SCBIGGIO1.ST.Ind2.stVal
INTERTRIP SEND TO L.V. SWITCHBOARD	DIGITAL	LD0.MVGAPC1.ST.SPCSO4.stVal
K86 TRIPPED	DIGITAL	LD0.SBBIGGIO1.ST.Ind7.stVal
Contactor CLOSED AND INSERTED	DIGITAL	LD0.MVGAPC1.ST.SPCSO8.stVal
Contactor OPENED OR ISOLATED	DIGITAL	LD0.MVGAPC2.ST.SPCSO2.stVal
MCB'S CLOSED	DIGITAL	LD0.MVGAPC2.ST.SPCSO3.stVal
Contactor READY (TCS)	DIGITAL	LD0.TCSSCBR1.ST.CircAlm.stVal
Contactor READY TO CLOSE	DIGITAL	LD0.MVGAPC2.ST.SPCSO1.stVal
OPENING COMMAND	DIGITAL	LD0.SPCGAPC1.SPCSO2.stVal
CLOSING COMMAND	DIGITAL	LD0.SPCGAPC1.SPCSO1.stVal
PROTECTION RELAY UNIT 1 HEALTHY	DIGITAL	LD0.SDBIGGIO1.ST.Ind8.stVal
SELECTOR SWITCH OF OVERRIDE IN OFF (SIL ENABLED)	DIGITAL	LD0.SDBIGGIO1.ST.Ind9.stVal

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

5.4.7.7 EMCS MODBUS TCP-IP

The following signals data type represent the thermal temperature of copper BUS BAR and CABLE Unit of the 6.6kV SWBD.

DESCRIPTION	SLAVE ADDRESS	MODBUS REGISTER	UNIT
TRANSFORMER FEEDER TR-200ED1 "A2"			
Phase L1 - Temperature Detection - cable Compart.	11	40117	ΔT
Phase L2 - Temperature Detection - cable Compart.	11	40118	ΔT
Phase L3 - Temperature Detection - cable Compart.	11	40119	ΔT
Phase L1 - Temperature Detection - Contactor Compart.	11	40120	ΔT
Phase L2 - Temperature Detection - Contactor Compart.	11	40121	ΔT
Phase L3 - Temperature Detection - Contactor Compart.	11	40122	ΔT
Phase L1 - Temperature Detection - Main Bus Bar	11	40123	ΔT
Phase L3 - Temperature Detection - Main Bus Bar	11	40124	ΔT

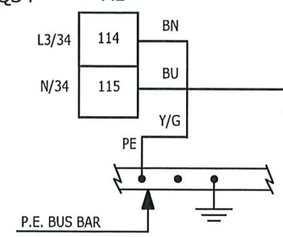
Step	Description	Result	Verified by	Date
182	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☐		

Section 4.2 Electrical
“As-Commissioned” interconnection diagrams

FROM	TO

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

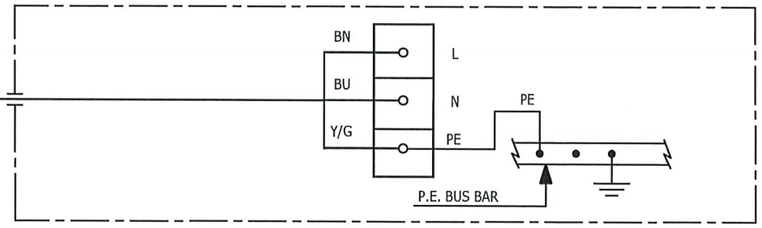
CUBICLE/CB: +03/Q34



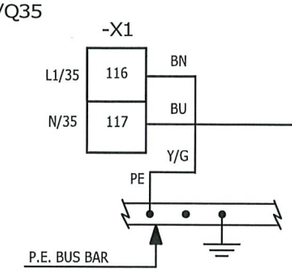
83115-CEL
3G2.5 mm²

NO MARK UP
MARCO MORETTO
21/3/25

DESCRIPTION: AUXILIARY NER
TAG NUMBER: RR-100D1



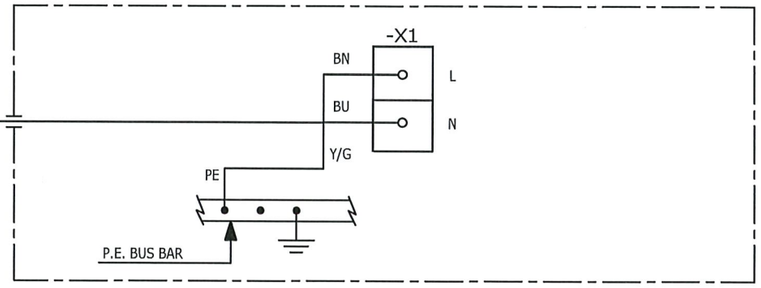
CUBICLE/CB: +03/Q35



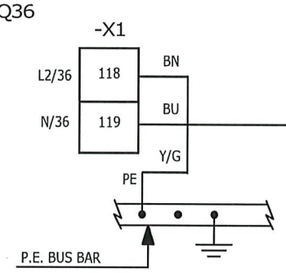
83116-CEL
3G2.5 mm²

NO MARK UP
MARCO MORETTO
7/03/25

DESCRIPTION: AUXILIARY TRAFO 1,6MVA
TAG NUMBER: CP-200E1



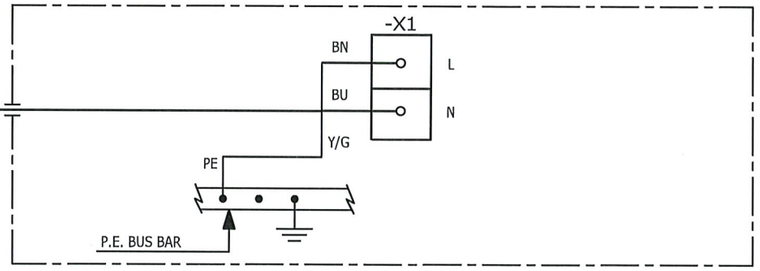
CUBICLE/CB: +03/Q36



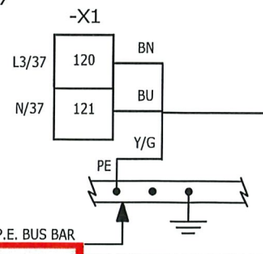
83117-CEL
3G2.5 mm²

NO MARK UP
MARCO MORETTO
7/03/25

DESCRIPTION: AUXILIARY TRAFO SOLAR 0,5MVA
TAG NUMBER: CP-200E2



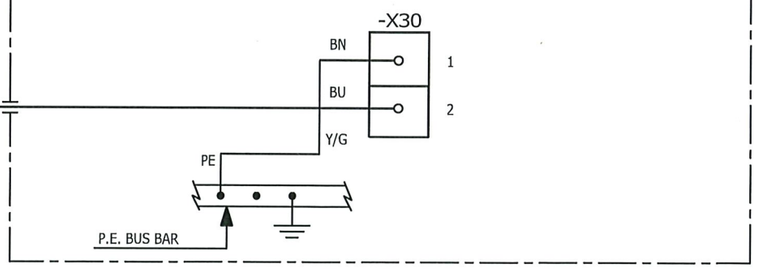
CUBICLE/CB: +03/Q37



83118-CEL
3G6 mm²

NO MARK UP
MARCO MORETTO
21/3/25

DESCRIPTION: AUXILIARY GIS
TAG NUMBER: CP-100E1



AS COMMISSIONED: NATALIA GHIOTTI
21/3/25

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 055

REV. 02

F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

TAG COLUMN: A4

L1	Arm.	BK	82002-CEM-1-L1 1C X 70 mm²	BK → Arm. 1U
L2		BK	82002-CEM-1-L2 1C X 70 mm²	BK → 1V
L3		BK	82002-CEM-1-L3 1C X 70 mm²	BK → 1W

DESCRIPTION: 6.6/0.42 KV, 1.6MVA TRANSFORMER NO MARK UP
TAG NUMBER: TR-200DE1 MARCO MORETTO 7/3/25
HV TERMINAL BOX OF TR-200DE1

TAG COLUMN: A7

L1	Arm.	BK	82003-CEM-1-L1 1C X 70 mm²	BK → Arm. 1U
L2		BK	82003-CEM-1-L2 1C X 70 mm²	BK → 1V
L3		BK	82003-CEM-1-L3 1C X 70 mm²	BK → 1W

DESCRIPTION: 6.6/0.4 KV, 1.25MVA TRANSFORMER NO MARK UP
TAG NUMBER: TA30 MARCO MORETTO 20/3/25
HV TERMINAL BOX OF TA30

TAG COLUMN: A1

L1	Arm.	BK	82004-CEM-1-L1 1C X 150 mm²	BK → Arm. 1U
L2		BK	82004-CEM-1-L2 1C X 150 mm²	BK → 1V
L3		BK	82004-CEM-1-L3 1C X 150 mm²	BK → 1W

DESCRIPTION: 6.6/0.4/0.4 KV, 3.15MVA TRANSFORMER MARCO MORETTO
TAG NUMBER: ~~T4~~ TR-01A100 19/3/25
HV TERMINAL BOX OF T4

TAG COLUMN: A3

L1	Arm.	BK	82005-CEM-1-L1 1C X 70 mm²	BK → Arm. 1U
L2		BK	82005-CEM-1-L2 1C X 70 mm²	BK → 1V
L3		BK	82005-CEM-1-L3 1C X 70 mm²	BK → 1W

DESCRIPTION: 6.6/0.62 KV, 1.25MVA TRANSFORMER NO MARK UP
TAG NUMBER: 18T1 MARCO MORETTO 20/3/25
HV TERMINAL BOX OF 18T1

TAG COLUMN: A2

L1	Arm.	BK	82006-CEM-1-L1 1C X 70 mm²	BK → Arm. 1U
L2		BK	82006-CEM-1-L2 1C X 70 mm²	BK → 1V
L3		BK	82006-CEM-1-L3 1C X 70 mm²	BK → 1W

DESCRIPTION: 6.6/0.8 KV, 0.5MVA TRANSFORMER NO MARK UP
TAG NUMBER: TR-200ED1 MARCO MORETTO 7/3/25
HV TERMINAL BOX OF TR-200ED1

AS COMMISSIONED: MARCO GIOTTI 21/3/25

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
6.6KV HV SWITCHGEAR

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

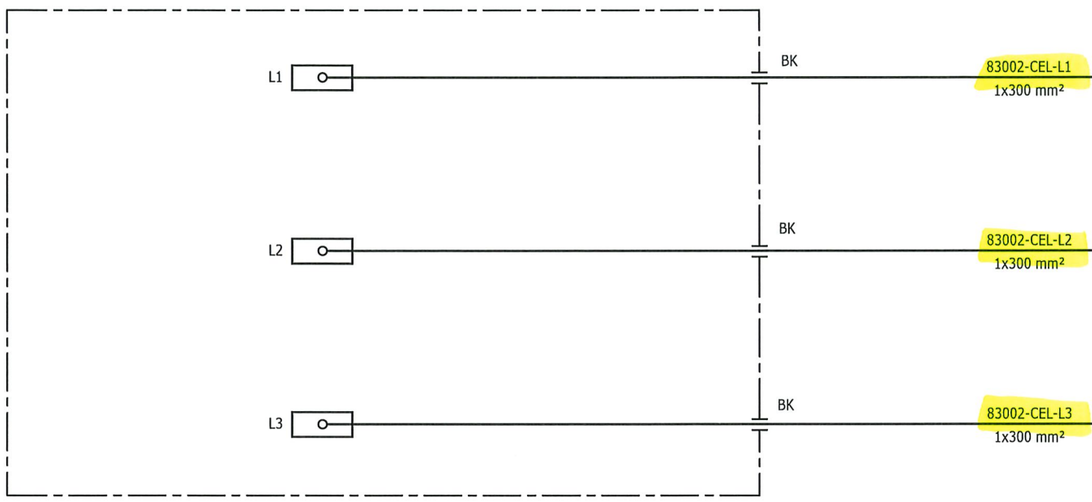
A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DG-20149	016	02

F.to UNI A3: 420mmx297mm

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

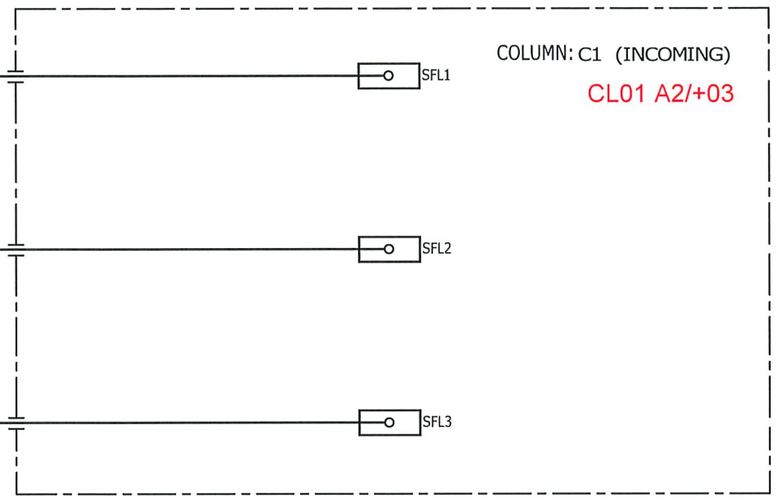
FROM	TO

DESCRIPTION: SOLAR PV POWER CABLE JB
TAG NUMBER: JB-200E1

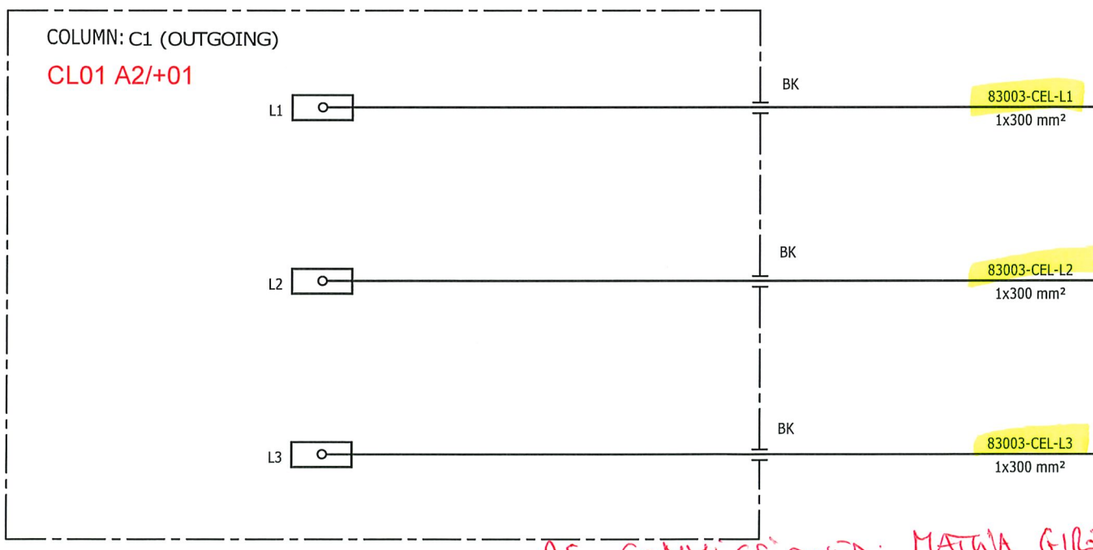


NO MARK UP
MARCO MORETTO
18/3/25

DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2

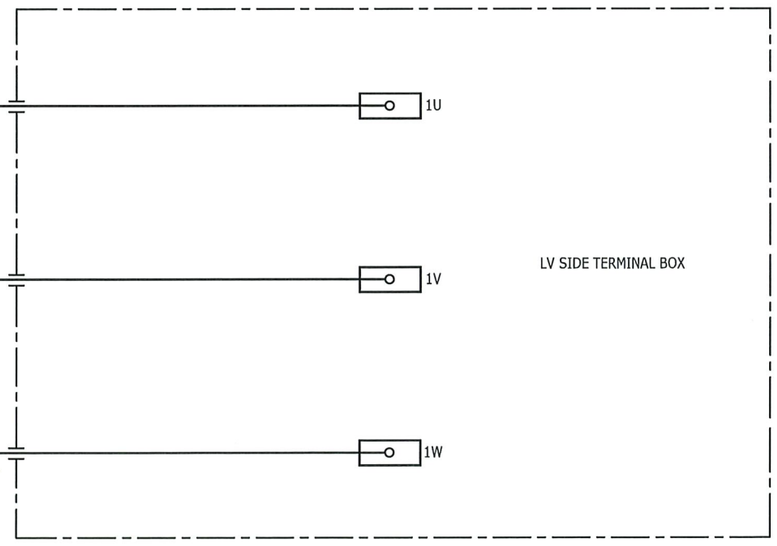


DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2



NO MARK UP
MARCO MORETTO
7/03/25

DESCRIPTION: 6.6/0.8 KV TRANSFORMER
TAG NUMBER: TR-200ED1



AS COMMISSIONED: MATHIJS GIRETH
21/3/25

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
SOLAR PV POWER CABLE JB & LV SWBD 800/460V

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	018	02

F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: SOLAR TRANSFORMER
TAG NUMBER: CP-200E2

COLUMN/CUBIC.: -

ALARMS 97T, 26OT, 71OT TO PROTECTION -X1

BUCHHOLZ RELAY ALARM	X1 / 02	1
	X1 / 03	2
	X1 / 08	3
OIL THERMOMETER ALARM	X1 / 09	4
	X1 / 14	5
OIL LEVEL (MIN.) ALARM	X1 / 15	6
		7

BK — 83011-CEC 7C X 1.5 mm² — BK

NO MARK UP
MARCO MORETTO
7/03/25

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

COLUMN/CUBIC.: A2

-XM

1	XM / 33	ALARM 97T
2	XM / 34	
3	XM / 35	ALARM 26OT
4	XM / 36	
5	XM / 37	ALARM 71OT
6	XM / 38	
7		

ALARMS, 49T TO PROTECTION -X1

WIND. TEMPERATURE ALARM	X1 / 31	1
	X1 / 33	2
OIL LEVEL VERY LOW ALARM	X1 / 17	3
	X1 / 18	4
	X1 / 40	5
TRANSFORMER GENERAL ALARM	X1 / 41	6
		7

BK — 83012-CEC 7C X 1.5 mm² — BK

AS COMMISSIONED: MARIA GIROTTI
22/3/25

-XM

1	XM / 41	ALARM 49T
2	XM / 42	
3	XM / 39	ALARM 71OT_1
4	XM / 40	
5	XM / 49	REMOTE OPENING COMMAND
6	XM / 50	TRANSFORMER GENERAL ALARM
7		

MARCO MORETTO
10/1/25

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
CP-200ED1A SOLAR TRANSFORMER ALARMS PROTECTION

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

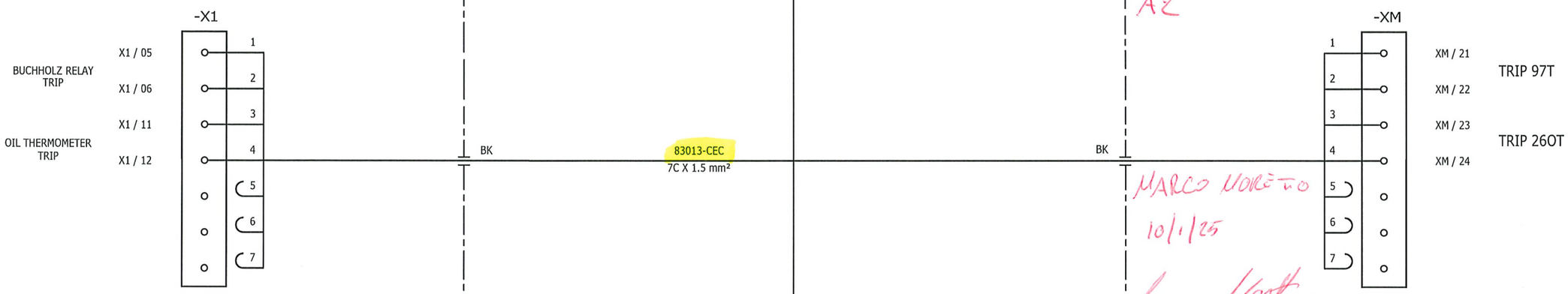
A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DG-20149	082	02

F.to UNI A3: 420mmx297mm

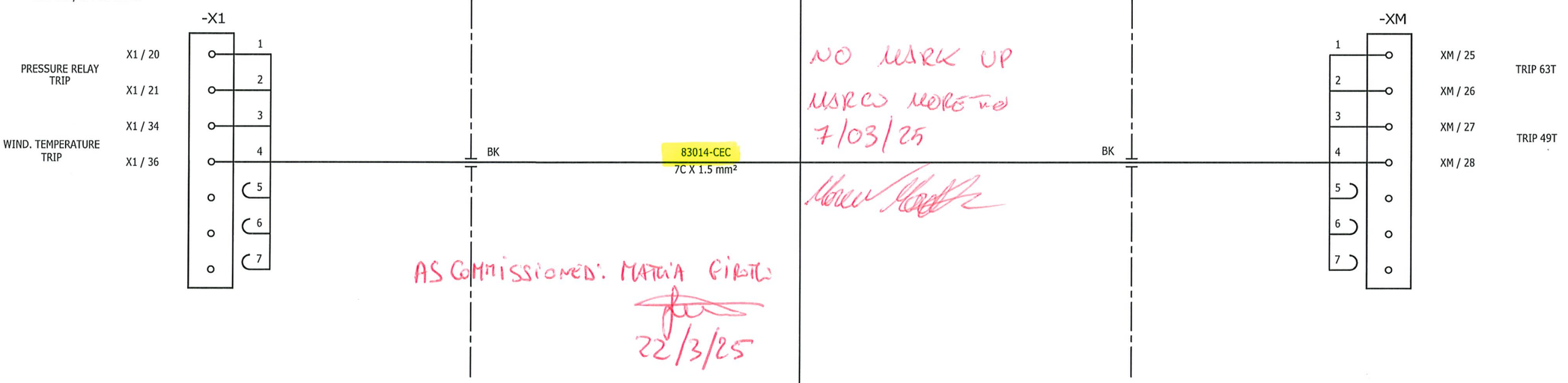
File Name : 123A90-DDL-EL-DG-20149 Rev. 02

FROM	TO
DESCRIPTION: SOLAR TRANSFORMER TAG NUMBER: CP-200E2	DESCRIPTION: 6.6KV HV SWITCHGEAR TAG NUMBER: SG-100D1

TRIP 97T, 26OT, TO RELAY



TRIP 63T, 49T TO RELAY



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
CP–200ED1A SOLAR TRANSFORMER TRIP PROTECTION

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 083 | REV. 02

F.to UNI A3: 420mmx297mm

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

"SG-100D1" MV SWBD 6,6kV

INTERCONNECTING

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
26/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	28/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for construction (AFC)
1	23/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

DWG n°: 231151/SD/22

Item n°: PF1113279

CROSSWIND

ROSETTI MARINO

TITLE : SG-100D1 – INTERCONNECTING

Cover

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00022

SHEET 1

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00022 Rev.03

AS COMMISSIONED NO MARK UP
GIROTTI MATTIA 26/03/2025

INDEX

Sheet	Description	Revision 0	1	2	3	4	5	6	7	8
1	Cover	X	X	X	X					
2	Index	X	X	X	X					
3	Table of reference documents	X	X	X	X					
4	Intercolumn Wiring	X	X	X	X					
5	Intercolumn Wiring	X	X	X	X					
6	Intercolumn Wiring	X	X	X	X					
7	Network architecture IEC 61850	X	X	X	X					
8	Network architecture Modbus TCP/IP	X	X	X	X					

Sheet	Description	Revision 0	1	2	3	4	5	6	7	8

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+						
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)	
2	28/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for construction (AFC)	
1	23/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)	
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n°: 231151/SD/22

Item n°: PF1113279

TITLE : SG-100D1 – INTERCONNECTING

Index

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00022

SHEET 2

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00022 Rev.03

TABLE OF REFERENCES		
Document nr. Client	Document nr. Supplier	Document title
1723002197-EL-DA-00006	231151/SD/6	SG-100D1 GENERAL ARRANGEMENTS
1723002197-EL-DG-00010	231151/SD/10	SG-100D1 ELECTRICAL SINGLE LINE DIAGRAM
1723002197-EL-DG-00015	231151/SD/15	SG-100D1 MV SWG FUNCTIONAL DIAGRAM - INCOMING FEEDER
1723002197-EL-DG-00016	231151/SD/16	SG-100D1 MV SWG FUNCTIONAL DIAGRAM - BUS BAR METERING
1723002197-EL-DG-00017	231151/SD/17	SG-100D1 MV SWG FUNCTIONAL DIAGRAM - BESS FEEDER
1723002197-EL-DG-00018	231151/SD/18	SG-100D1 MV SWG FUNCTIONAL DIAGRAM - ELECTROLYSER FEEDER
1723002197-EL-DG-00019	231151/SD/19	SG-100D1 MV SWG FUNCTIONAL DIAGRAM - FUEL CELL FEEDER
1723002197-EL-DG-00020	231151/SD/20	SG-100D1 MV SWG FUNCTIONAL DIAGRAM - TRANSFORMER FEEDER TR200ED1
1723002197-EL-DG-00021	231151/SD/21	SG-100D1 MV SWG FUNCTIONAL DIAGRAM - TRANSFORMER FEEDER TR200DE1

NOTE: To better understand this document you have to use in conjuction with the documents listed on the table above

AS COMMISSIONED
CIROTTI MATTIA
NO MARK UP
26/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	28/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for construction (AFC)
1	23/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n°: 231151/SD/22
Item n°: PF1113279

TITLE : SG-100D1 - INTERCONNECTING
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CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00022

SHEET 3

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00022 Rev.03

	ELECTROLYSER "A1"	SOLAR "A2"	BESS PACKAGE "A3"	TRANSF. 1,6MVA TR-200DE1 "A4"	VT BUS BARS "A5"	INCOMING "A6"	FUEL CELL "A7"
V.aux 110Vdc	1 XC XC-2/A1 — 2 XC	XC-1/A2 RD 1x6 1 XC — 2 XC XC-2/A2	XC-1/A3 1 XC — 2 XC XC-2/A3	XC-1/A4 RD 1x6 1 XC — 2 XC XC-2/A4	XC-1/A5 RD 1x6 1 XC — 2 XC XC-2/A5	XC-1/A6 1 XC — 2 XC XC-2/A6	XC-1/A7 RD 1x6 1 XC — 2 XC
	3 XC XC-4/A1 — 4 XC	XC-3/A2 WH 1x6 3 XC — 4 XC XC-4/A2	XC-3/A3 3 XC — 4 XC XC-4/A3	XC-3/A4 WH 1x6 3 XC — 4 XC XC-4/A4	XC-3/A5 WH 1x6 3 XC — 4 XC XC-4/A5	XC-3/A6 3 XC — 4 XC XC-4/A6	XC-3/A7 WH 1x6 3 XC — 4 XC
V.aux 24Vdc	5 XC XC-6/A1 — 6 XC	XC-5/A2 RD 1x1,5 5 XC — 6 XC XC-6/A2	XC-5/A3 5 XC — 6 XC XC-6/A3	XC-5/A4 RD 1x1,5 5 XC — 6 XC XC-6/A4	XC-5/A5 RD 1x1,5 5 XC — 6 XC XC-6/A5	XC-5/A6 5 XC — 6 XC XC-6/A6	XC-5/A7 RD 1x1,5 5 XC — 6 XC
	7 XC XC-8/A1 — 8 XC	XC-7/A2 WH 1x1,5 7 XC — 8 XC XC-8/A2	XC-7/A3 7 XC — 8 XC XC-8/A3	XC-7/A4 WH 1x1,5 7 XC — 8 XC XC-8/A4	XC-7/A5 WH 1x1,5 7 XC — 8 XC XC-8/A5	XC-7/A6 7 XC — 8 XC XC-8/A6	XC-7/A7 WH 1x1,5 7 XC — 8 XC
V.aux 230Vac	9 XC XC-10/A1 — 10 XC	XC-9/A2 BK 1x6 9 XC — 10 XC XC-10/A2	XC-9/A3 9 XC — 10 XC XC-10/A3	XC-9/A4 BK 1x6 9 XC — 10 XC XC-10/A4	XC-9/A5 BK 1x6 9 XC — 10 XC XC-10/A5	XC-9/A6 9 XC — 10 XC XC-10/A6	XC-9/A7 BK 1x6 9 XC — 10 XC
	11 XC XC-12/A1 — 12 XC	XC-11/A2 BK 1x6 11 XC — 12 XC XC-12/A2	XC-11/A3 11 XC — 12 XC XC-12/A3	XC-11/A4 BK 1x6 11 XC — 12 XC XC-12/A4	XC-11/A5 BK 1x6 11 XC — 12 XC XC-12/A5	XC-11/A6 11 XC — 12 XC XC-12/A6	XC-11/A7 BK 1x6 11 XC — 12 XC
VOLTMETRICAL LINE FROM MAIN BUS BAR 110:1,73Vac	13 XC XC-14/A1 — 14 XC	XC-13/A2 BK 1x1.5 13 XC — 14 XC XC-14/A2	XC-13/A3 13 XC — 14 XC XC-14/A3	XC-13/A4 BK 1x1.5 13 XC — 14 XC XC-14/A4	XC-13/A5 BK 1x1.5 13 XC — 14 XC XC-14/A5	XC-13/A6 13 XC — 14 XC XC-14/A6	XC-13/A7 BK 1x1.5 13 XC — 14 XC
	15 XC XC-16/A1 — 16 XC	XC-15/A2 BK 1x1.5 15 XC — 16 XC XC-16/A2	XC-15/A3 15 XC — 16 XC XC-16/A3	XC-15/A4 BK 1x1.5 15 XC — 16 XC XC-16/A4	XC-15/A5 BK 1x1.5 15 XC — 16 XC XC-16/A5	XC-15/A6 15 XC — 16 XC XC-16/A6	XC-15/A7 BK 1x1.5 15 XC — 16 XC
	17 XC XC-18/A1 — 18 XC	XC-17/A2 BK 1x1.5 17 XC — 18 XC XC-18/A2	XC-17/A3 17 XC — 18 XC XC-18/A3	XC-17/A4 BK 1x1.5 17 XC — 18 XC XC-18/A4	XC-17/A5 BK 1x1.5 17 XC — 18 XC XC-18/A5	XC-17/A6 17 XC — 18 XC XC-18/A6	XC-17/A7 BK 1x1.5 17 XC — 18 XC
	19 XC XC-20/A1 — 20 XC	XC-19/A2 BK 1x1.5 19 XC — 20 XC XC-20/A2	XC-19/A3 19 XC — 20 XC XC-20/A3	XC-19/A4 BK 1x1.5 19 XC — 20 XC XC-20/A4	XC-19/A5 BK 1x1.5 19 XC — 20 XC XC-20/A5	XC-19/A6 19 XC — 20 XC XC-20/A6	XC-19/A7 BK 1x1.5 19 XC — 20 XC
VOLTMETRICAL LINE FROM MAIN BUS BAR 110:3Vac	21 XC XC-22/A1 — 22 XC	XC-21/A2 BK 1x1.5 21 XC — 22 XC XC-22/A2	XC-21/A3 21 XC — 22 XC XC-22/A3	XC-21/A4 BK 1x1.5 21 XC — 22 XC XC-22/A4	XC-21/A5 BK 1x1.5 21 XC — 22 XC XC-22/A5	XC-21/A6 21 XC — 22 XC XC-22/A6	XC-21/A7 BK 1x1.5 21 XC — 22 XC
	23 XC XC-24/A1 — 24 XC	XC-23/A2 BK 1x1.5 23 XC — 24 XC XC-24/A2	XC-23/A3 23 XC — 24 XC XC-24/A3	XC-23/A4 BK 1x1.5 23 XC — 24 XC XC-24/A4	XC-23/A5 BK 1x1.5 23 XC — 24 XC XC-24/A5	XC-23/A6 23 XC — 24 XC XC-24/A6	XC-23/A7 BK 1x1.5 23 XC — 24 XC
EARTH.SWITCH OPEN (VT BUS BARS UNIT)	25 XC XC-25/A1 — BK 1x1.5 — XC-27/A5 BK 1x1.5 27 XC						
	26 XC XC-26/A1 — BK 1x1.5 — XC-28/A5 BK 1x1.5 28 XC						
		25 XC XC-25/A2 — BK 1x1.5 — XC-29/A5 BK 1x1.5 29 XC					
		26 XC XC-26/A2 — BK 1x1.5 — XC-30/A5 BK 1x1.5 30 XC					
			25 XC XC-25/A3 — BK 1x1.5 — XC-31/A5 BK 1x1.5 31 XC				
			26 XC XC-26/A3 — BK 1x1.5 — XC-32/A5 BK 1x1.5 32 XC				

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
26/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	28/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for construction (AFC)
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IMESA ELECTRICAL ENGINEERING

DWG n°: 231151/SD/22

Item n°: PF1113279

CROSSWIND

ROSETTI MARINO

TITLE : SG-100D1 – INTERCONNECTING

Intercolumn Wiring

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00022

SHEET 4

REV. 03

File Name : 1723002197-EL-DG-00022 Rev.03

F.to UNI A3: 420mmx297mm

1	2	3	4	5	6	7	8	9	10
	ELECTROLYSER "A1"	SOLAR "A2"	BESS PACKAGE "A3"		TRANSF. 1,6MVA TR-200DE1 "A4"	VT BUS BARS "A5"	INCOMING "A6"	FUEL CELL "A7"	

A

B

C

D

E

EARTH.SWITCH OPEN (FROM VT BUS BARS UNIT)

ENABLING COMMAND EARTHING SWITCH VT BUS BARS UNIT

SIGNALS FROM VT BUS BARS UNIT TO CELL PAKAGE UNIT

25 XC — XC-25/A4 — XC-33/A5 BK 1x1.5 — 33 XC

26 XC — XC-26/A4 — XC-34/A5 BK 1x1.5 — 34 XC

35 XC — XC-35/A5 BK 1x1.5 — XC-25/A6 — 25 XC

36 XC — XC-36/A5 BK 1x1.5 — XC-26/A6 — 26 XC

37 XC — XC-37/A5 BK 1x1.5 — XC-25/A7 — 25 XC

38 XC — XC-38/A5 BK 1x1.5 — XC-26/A7 — 26 XC

28 XC — XC-28/A1 — XC-27/A2 BK 1x1.5 — 27 XC

28 XC — XC-28/A2 — XC-27/A3 BK 1x1.5 — 27 XC

28 XC — XC-28/A3 — XC-27/A4 BK 1x1.5 — 27 XC

28 XC — XC-28/A4 — XC-25/A5 BK 1x1.5 — 25 XC

26 XC — XC-26/A5 — XC-27/A6 BK 1x1.5 — 27 XC

28 XC — XC-28/A6 — XC-27/A7 BK 1x1.5 — 27 XC

27 XC — XC-27/A1 BK 1x1.5 — XC-28/A7 BK 1x1.5 — 28 XC

45 XC — XC-45/A5 BK 1x1.5 — XC-29/A7 — 29 XC

46 XC — XC-46/A5 BK 1x1.5 — XC-30/A7 — 30 XC

49 XC — XC-49/A5 BK 1x1.5 — XC-31/A7 — 31 XC

50 XC — XC-50/A5 BK 1x1.5 — XC-32/A7 — 32 XC

41 XC — XC-41/A5 BK 1x1.5 — XC-33/A7 — 33 XC

42 XC — XC-42/A5 BK 1x1.5 — XC-34/A7 — 34 XC

43 XC — XC-43/A5 BK 1x1.5 — XC-35/A7 — 35 XC

44 XC — XC-44/A5 BK 1x1.5 — XC-36/A7 — 36 XC

47 XC — XC-47/A5 BK 1x1.5 — XC-37/A7 — 37 XC

48 XC — XC-48/A5 BK 1x1.5 — XC-38/A7 — 38 XC

39 XC — XC-39/A5 BK 1x1.5 — XC-39/A7 — 39 XC

40 XC — XC-40/A5 BK 1x1.5 — XC-40/A7 — 40 XC

51 XC — XC-51/A5 BK 1x1.5 — XC-41/A7 — 41 XC

52 XC — XC-52/A5 BK 1x1.5 — XC-42/A7 — 42 XC

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
26/03/2025

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3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)		
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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n°: 231151/SD/22

Item n°: PF1113279

TITLE : SG-100D1 – INTERCONNECTING

Intercolumn Wiring

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00022

SHEET 5

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00022 Rev.03

1	2	3	4	5	6	7	8	9	10

	ELECTROLYSER "A1"	SOLAR "A2"	BESS PACKAGE "A3"	TRANSF. 1,6MVA TR-200DE1 "A4"	VT BUS BARS "A5"	INCOMING "A6"	FUEL CELL "A7"
A	29 XC-29/A1 XC BK 1x1.5						XC-47/A7 BK 1x1.5 47 XC
	30 XC-30/A1 XC BK 1x1.5						XC-48/A7 BK 1x1.5 48 XC
	31 XC-31/A1 XC BK 1x1.5	XC-29/A2 29 XC					
	32 XC-32/A1 XC BK 1x1.5	XC-30/A2 30 XC					
B	PROTECTION RELAY HEALTHY	31 XC-31/A2 XC BK 1x1.5	XC-29/A3 29 XC				
		32 XC-32/A2 XC BK 1x1.5	XC-30/A3 30 XC				
			31 XC-31/A3 XC BK 1x1.5	XC-29/A4 29 XC			
			32 XC-32/A3 XC BK 1x1.5	XC-30/A4 30 XC			
			37 XC-37/A3 XC BK 1x1.5	XC-31/A4 31 XC			
			38 XC-38/A3 XC BK 1x1.5	XC-32/A4 32 XC			
C						31 XC-31/A6 XC BK 1x1.5	XC-45/A7 45 XC
						32 XC-32/A6 XC BK 1x1.5	XC-46/A7 46 XC
	230Vac AUXILIARY SUPPLY HEALTHY	33 XC-33/A1 XC BK 1x1.5	XC-33/A2 BK 1x1.5 34 XC	34 XC-34/A2 XC BK 1x1.5	XC-34/A3 34 XC	33 XC-33/A3 XC BK 1x1.5	XC-33/A4 33 XC
		34 XC-34/A1 XC BK 1x1.5				34 XC-34/A4 XC BK 1x1.5	XC-54/A5 54 XC
						53 XC-53/A5 XC BK 1x1.5	XC-33/A6 33 XC
						34 XC-34/A6 XC BK 1x1.5	XC-43/A7 43 XC
							XC-44/A7 44 XC
D	OPENING COMMAND FROM INCOMING	35 XC-35/A1 XC BK 1x1.5				XC-35/A6 35 XC	
		36 XC-36/A1 XC BK 1x1.5				XC-36/A6 36 XC	

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
26/03/2025

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+							
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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

CROSSWIND

ROSETTI MARINO

IMESA ELECTRICAL ENGINEERING

DWG n°: 231151/SD/22

Item n°: PF1113279

TITLE : SG-100D1 – INTERCONNECTING

Intercolumn Wiring

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

SCALE : NTS

A3

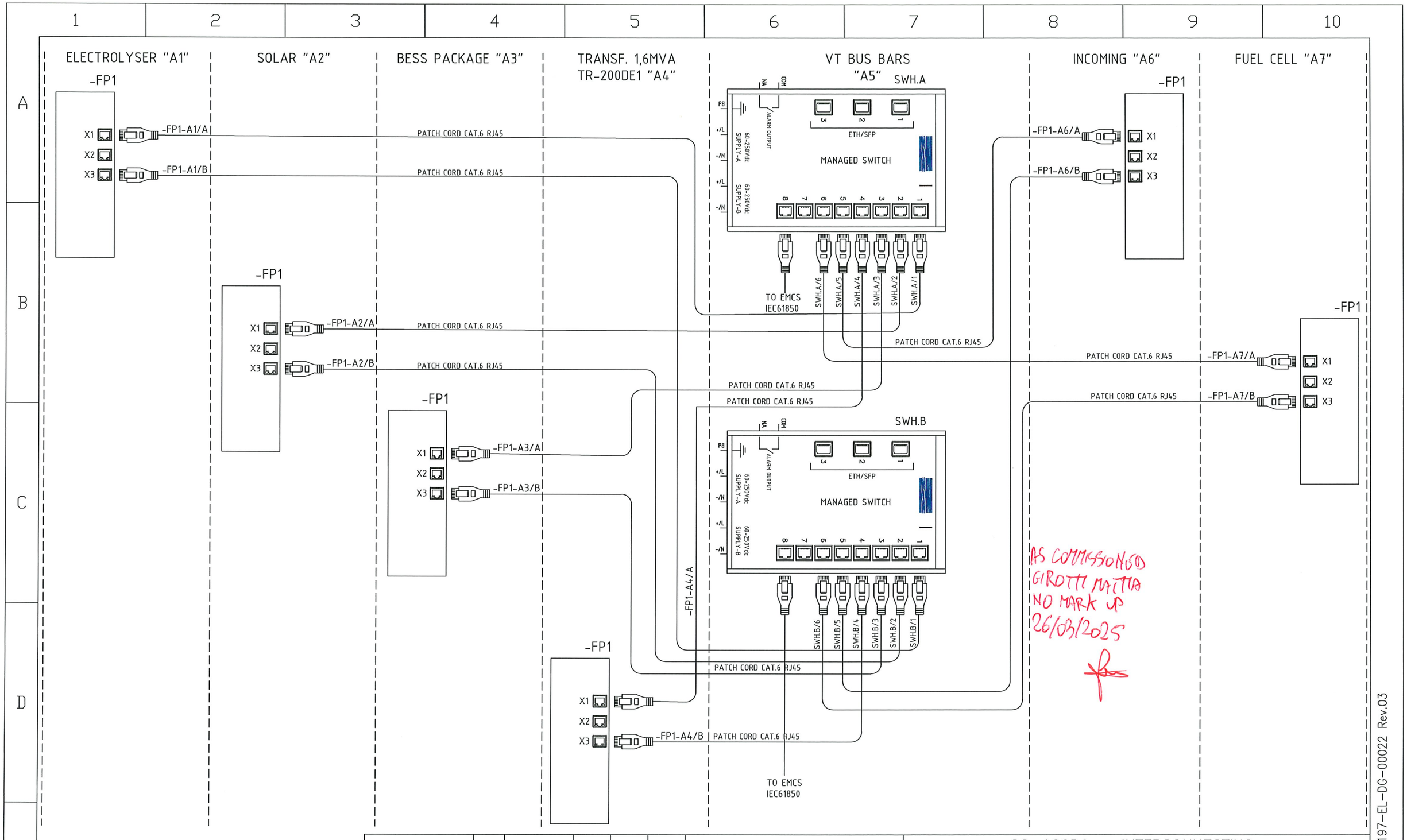
DRAWING NO. 1723002197-EL-DG-00022

SHEET 6

REV. 03

File Name : 1723002197-EL-DG-00022 Rev.03

F.to UNI A3: 420mmx297mm



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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+					
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

ROSETTI MARINO

IMESA ELECTRICAL ENGINEERING

DWG n°: 231151/SD/22

Item n°: PF1113279

TITLE : SG-100D1 - INTERCONNECTING

Network architecture IEC 61850

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00022

SHEET 7

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00022 Rev.03

ELECTROLYSER "A1"

SOLAR "A2"

BESS PACKAGE "A3"

TRANSF. 1,6MVA
TR-200DE1 "A4"

VT BUS BARS
"A5"

INCOMING "A6"

FUEL CELL "A7"

-TR1

CARD 11

X0

X1

-TR1-A1/2

PATCH CORD CAT.6 RJ45

-TR1

CARD 12

X0

X1

-TR1-A2/1

-TR1-A2/2

PATCH CORD CAT.6 RJ45

-TR1

CARD 13

X0

X1

-TR1-A3/1

-TR1-A3/2

PATCH CORD CAT.6 RJ45

-TR1

CARD 14

X0

X1

-TR1-A4/1

-TR1-A4/2

PATCH CORD CAT.6 RJ45

DP1

ALARM RELAY MODULE XL
ARM XL

+V

-0V

PB

COM

Y2

Y3

Y4

Y5

MODBUS RS485

MODBUS TCP/IP

-DP1-A5/DB9

RJ45 TO DB9 ARM-XL COMM. CABLE

SW1

ABB
SWICON

PD1

PDCOM

-ETH-SW

-PD1-A5

PATCH CORD CAT.6 RJ45

SWH.C

HIRSCHMANN

ETHERNET SWITCH

ETH/SFP

SPW

to EMCS

MODBUS TCP/IP

-ETH-TR1

-ETH-SW

230VAC
SUPPLY

PATCH CORD CAT.6 RJ45

-TR1

CARD 10

X0

X1

-TR1-A5/1

-TR1-A5/2

-TR1-A6/1

-TR1-A6/2

-TR1

CARD 15

X0

X1

-TR1-A7/1

-TR1-A7/2

PATCH CORD CAT.6 RJ45

-TR1

CARD 16

X0

X1

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
26/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n°: 231151/SD/22

Item n°: PF1113279

TITLE : SG-100D1 - INTERCONNECTING

Network architecture Modbus TCP/IP

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00022

SHEET 8

REV. 03

File Name : 1723002197-EL-DG-00022 Rev.03

F.to UNI A3: 420mmx297mm

Section 4.3 Instrumentation functional test sheets index

NOT APPLICABLE

Section 4.4 Instrumentation “As-Commissioned” interconnection diagrams

NOT APPLICABLE

Section 4.5 Telecommunication functional test sheets index

NOT APPLICABLE

Section 4.6 Telecommunication
“As-Commissioned” I.C.D. / TSLD's

NOT APPLICABLE

Section 5 SITE / OPERATIONAL

Section 5.1 Operational Test Procedure

CROSSWIND	**123A90 - HOLLANDSE KUST NOORD WIND PARK BLPH Project** **COMMISSIONING DOSSIER INDEX**	ROSETTI MARINO

Main reference document **123A90-PML-COM-PRO-**03046_ **OTP – 6.6 KV Switchgear & Transformer System** has been uploaded in the

Subsystem 82-00 Commissioning Dossier Sect. 5.1

Section 5.2 Operational Test Certificates

NOT APPLICABLE

Section 6 PIPING AND VESSEL PREPARATION

Section 6.1 Final Mechanical / Vessel Inspection Checks Index

NOT APPLICABLE

Section 6.2 Leak Test / Drying / Inerting Test Sheets Index

NOT APPLICABLE

Section 6.3 Chemical Loading & First Fill records Index

NOT APPLICABLE

Section 6.4 Chemical Cleaning Reports and Records Index

NOT APPLICABLE

Section 6.5 Lubrication Schedule

NOT APPLICABLE

Section 7 VENDOR

Section 7.1 Vendor Package Summary Index

NOT APPLICABLE

Section 7.2 SAT Procedure with associated punch list and reference (Front Page)

Customer:__ROSETTI MARINO

Transformer Nr.:__181023/3 (200ED1)

Rated power:_500

Voltage ratio:_6600 V / 800 V

Date: 06/12/2024

1. Verify integrity of tank / radiators / corrugate wave / bushings

Is necessary to make a visual check of the tank, radiators and bushings. If there are damage is necessary to signal it at MF Trasformatori.

- Tank: RESULT POSITIVE
- Radiators:_ RESULT POSITIVE
- Bushings:__ RESULT POSITIVE

2. Verify presence of oil leaks

Is necessary to make a visual check if there are oil leaks on transformer. If there are leaks is necessary to signal it at MF Trasformatori.

- (if there are some leaks to indicate where):

RESULT POSITIVE

3. Verify if radiators valves are open

Is necessary to check the radiator valves are open. Verify if the arrow on the handle valve indicate the direction of radiator.

VALVES OPEN - RESULT POSITIVE

4. Verify radiators conditions (if necessary to do the vent of radiators)

On the upper part of radiator there is the vent valve. Remove the cap and unscrew the valve. Wait until the oil comes out and close the valve.

RESULT POSITIVE

5. Check oil level

Verify the oil level indicate about the environmental temperature

RESULT POSITIVE

6. Check if there is oil into the DGPT2 (if necessary to do the vent of the device)

Verify if the DGPT2 oil indicator is FULL. If it is empty is necessary to open the vent valve on the upper part of the device and wait until the oil comes out and close the valve.

DGPT2 NOT PRESENT

7. Verify the tap changher maneuverability

Check that the tap-changer position corresponds as much as possible to the effective grid voltage value.

RESULT POSITIVE

8. Measurement of ratio voltage

The voltage ratio of a transformer is the ratio between the line voltage of one winding and the line

voltage of another winding (at no load). The phase voltage ratio is also equal to the turn's ratio:

$$\frac{V1_f}{V2_f} = \frac{N1}{N2}$$

This measurement is usually performed with some instruments called "ratiometer"
The voltage ratio is performed on all the taps of the tap changer (if present); tolerance for voltage ratio are indicated in IEC 60076-1.
Also you can measure ratio with the measurement of secondary voltage.
In the table below mark the position of tap changer ++,+,0,- or - and measure the no load secondary voltage between each phase and neutral.
Divide the value of nominal primary voltage with value measured of secondary voltage and mark the results in the table below.
When you have made the measure on each positions compare the results with the test reports of the FAT.

Position	Phase U	Phase V	Phase W	Result
1	15.069	15.068	15.068	POSITIVE
2	14.707	14.707	14.706	POSITIVE
3	14.344	14.344	14.343	POSITIVE
4	13.982	13.981	13.981	POSITIVE
5	13.620	13.620	13.620	POSITIVE

9. Measurement of insulation resistance of windings

In order to measure the insulation resistance follow the above procedure:

1) Measurement of insulation resistance between MV and LV connected to ground

- short circuit the MV terminals and connect it to megger

- short circuit the LV terminals and connect them to tank and ground Take the measurement applying 5000Vdc for 1 min

2) Measurement of insulation resistance between LV and MV connected to ground

- short circuit the MV terminals and connect them to tank and ground

- short circuit the LV terminals and connect to megger. Take the measurement applying 1000Vdc for 1 min

3) Measurement of insulation resistance between MV and LV insulated from ground

- short circuit the MV terminals and connect to megger

- short circuit the LV terminals and connect to megger

Leave the tank connected to ground.

Take the measurement applying 1000Vdc for 1 min

MV - LV+ground: 5KV 1min Result 6.15 GΩ POSITIVE

LV - MV+ground: 1KV 1min Result 8.68 GΩ POSITIVE

NOTES:___

SILICAL GEL NOT INSTALLED ON THE TRANSFORMER
ALL TEST AND CHECKS POSITIVE

FRANCESCO BUCCHERI

MF Trasformatori srl
Località S. Anna N. 22/24
25011 CALCINATO BRESCIA
Tel. +39 (0)30-9636596
Codice Fiscale 01547220176
Partita IVA IT 03550350171
Cod. Univoco EH1R83N

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°	**1723001697-EL-LIS-00017**	Rev. **2**	Rev. Date **06/11/2024**	Status **AFC** / Class **2**

The equipment consists of the following units/components

1	Tag no.	TR100-AD1	TR200-DE1	TR200-ED1			
2	Tag description	66/6,6kV Power Transformer	6,6/0,42kV Power Transformer	6,6/0,8kV Power Transformer			
3	Manufacturer model/type no.						
4	Manufacturer serial no.	181023/1	181023/2	181023/3			
5	No. of units	1	1	1			

Supplier:	MF TRASFORMATORI SRL	PO Number:	1723001697	PO description:	MANUAL GLOBE AND PISTON CHECK VALVES	Contact name:	Mr. Claudio Toniolo
Address:	LOC. S. ANNA 22-24 CALCINATO - BRESCIA ITALY			Supplier telephone no:	+39 0309636020	Contact mobile no:	
				E-mail:	claudio.toniolo@mftrasformatori.it	WEBSITE	http://www.mftrasformatori.it

General Information:

6 Quantity of parts FITTED / INSTALLED per unit/component

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref. Project Datasheet no.	Parts/drawing ref. Project Detail dwg. no.	Parts/drawing ref. Item ref.	Material	Certiciate Type (if applicable)	Certiciate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks	1	2	3	4	5
																				MATERIALS DATA							
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
1	1	66kV H.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00006	1	Epoxy resin											R900AR-8-L/J*CS620		NEXANS	0	1					3	
2	1	6,9kV H.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00006	2	Porcellaine											UNEL12kV/630A		EMC	0	1					4	
3	1	6,6kV H.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00007	1	Porcellaine											UNEL12kV/250A		EMC	0	1				3		
4	1	6,6kV H.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00008	13	Porcellaine											UNEL12kV/250A		EMC	0	1				3		
5	1	420V L.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00007	2	Porcellaine											DIN1kV/3150A		EMC	0	1				5		
6	1	800V L.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00007	2	Porcellaine											DIN1kV/630A		EMC	0	1				4		
7	1	Dehydrating breather (Silicagel)	1723001697-EL-TDS-00005	1723001697-EL-DA-00006	6	/											ESDB 14C		COMEM	0	1		1				
8	1	Dehydrating breather (Silicagel)	1723001697-EL-TDS-00005	1723001697-EL-DA-00007	11	/											EM1DB		COMEM	0	1			1			
9	1	Dehydrating breather (Silicagel)	1723001697-EL-TDS-00005	1723001697-EL-DA-00008	11	/											EM1DB		COMEM	0	1				1		
10	1	Buchholz relay	1723001697-EL-TDS-00005	1723001697-EL-DA-00006	12	/											BR50 - L		COMEM	0	1		1				
11		Paint	1723001697-EL-TDS-00005	1723001697-EL-DA-00006		Epoxy paint											RAL7031		MF	0	20						
12																											
13																											
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Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Section 7.4 Vendor Data / Operations / Maintenance Manuals References

RLMU LIST

REV. 03A: Sheets 27

"SG-100D1" HV SWBD 6,6kV (UNIT A2)

FUNCTIONAL DIAGRAM

TRANSFORMER FEEDER TR-200ED1

NO MARK UP
AS COMMISSIONED: MATTIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=
+A2
DWG n° : 231151/SD/20
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	21/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Cover

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 1

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

NO MARK UP AS COMMISSIONED: MARIA GIRONI 27/3/25

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Sheet	Description	Revision 0	1	2	3	4	5	6	7	8
27	Emergency Opening by "SIS"	X	X	X	X					
28	Availables Signals	X	X	X	X					
29	Terminal stripes	X	X	X	X					
30	Terminal stripes	X	X	X	X					
31	Terminal stripes	X	X	X	X					
32	Terminal stripes	X	X	X	X					
33	Terminal stripes	X	X	X	X					
34	Bill of Materials	X	X	X	X					
35	Bill of Materials	X	X	X	X					
36	Bill of Materials	X	X	X	X					
37	Bill of Materials	X	X	X	X					

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VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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+A2
DWG n° : 231151/SD/20
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Sheets Index

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 2

REV. 03

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File Name : 1723002197-EL-DG-00020 Rev.03

ACRONIMUS LEGEND

ITEM	DESCRIPTION
BB	ARC SENSOR PROTECTION ON MAIN BUS BARS
BGE	EARTHING SWITCH
C1	VOLTAGE PRESENCE
CB	ARC SENSOR PROTECTION ON C.B. / CONTACTOR COMPARTMENT
CC	ARC SENSOR PROTECTION ON CABLE COMPARTMENT
DCO	DOUBLE COMMAND OPERATED CONTACTOR
DI3	UNDERVOLTAGE CONTACTOR
DP1	ALARM RELAY MODULE TEMPERATURE
E1	INTERNAL LIGHT
E8	RESISTOR FERRO-RESONANCE
EH1	INTERNAL SPACE HEATER
Fn	MV FUSE
FP1	PROTECTION RELAY
GS1	DC/DC CONVERTER
HGR	THERMOSTAT
Kn	AUXILIARY RELAY
K1	MV CONTACTOR
K86	BLOCK RELAY
KT1	DE-ENERGIZATION TIMER
LS	MICRO SWITCH ON AUXILIARY DOOR
MAS	MOTOR SPRING CHARGER
MBC	CLOSING COIL
MBO1	OPENING COIL
MBU	UNDERVOLTAGE
ODn	VOLTAGE DISCHARGER
PU1	MEASURING VOLTAGE INSTRUMENT

ITEM	DESCRIPTION
PTT	V.T. TRUCK
QM	MV CIRCUIT-BREAKER
QDn	M.C.B. CIRCUITS PROTECTION
QVn	M.C.B FOR V.T. PROTECTION
RLE1	COIL FOR CONSET CLOSING CIRCUIT-BREAKER
RLE2	COIL FOR UNLOCKING RACK-IN/OUT OPERATION
RLE3	COIL FOR UNLOCKING OPERATION EARTHING
RLE4	COIL FOR UNLOCKING ENCLOSURE DOOR OPERATION
SU1	VOLTAGE SELECTOR
SWH...	ETHERNET SWITCH
TI-Ln	CURRENT TRANSFORMER
TO	OMOPOLAR RING CURRENT TRANSFORMER
TR1	TEMPERATURE CONTROL DEVICE

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FUNCTIONAL OF THE PROTECTION RELAY OUTPUT CONTACTS:

SLOT "G":
RF = WATCHDOG RELAY
S01 = EARTHING SWITCH UNLOCKING
S02 = C.B. or CONTACTOR READY TO CLOSE
POSP1 = CLOSING COMMAND
S03 = C.B. or CONTACTOR TRUCK UNLOCKED
PODP1 = OPENING COMMAND
SLOT "B":
S01 = TRIP PROTECTION TO LOCKOUT RELAY
S02 = EARTHING SWITCH CLOSED
S03 = AVAILABLE OUTPUT (ON TERMINAL STRIP)
S04 = RESET LOCKOUT RELAY

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SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
Legend

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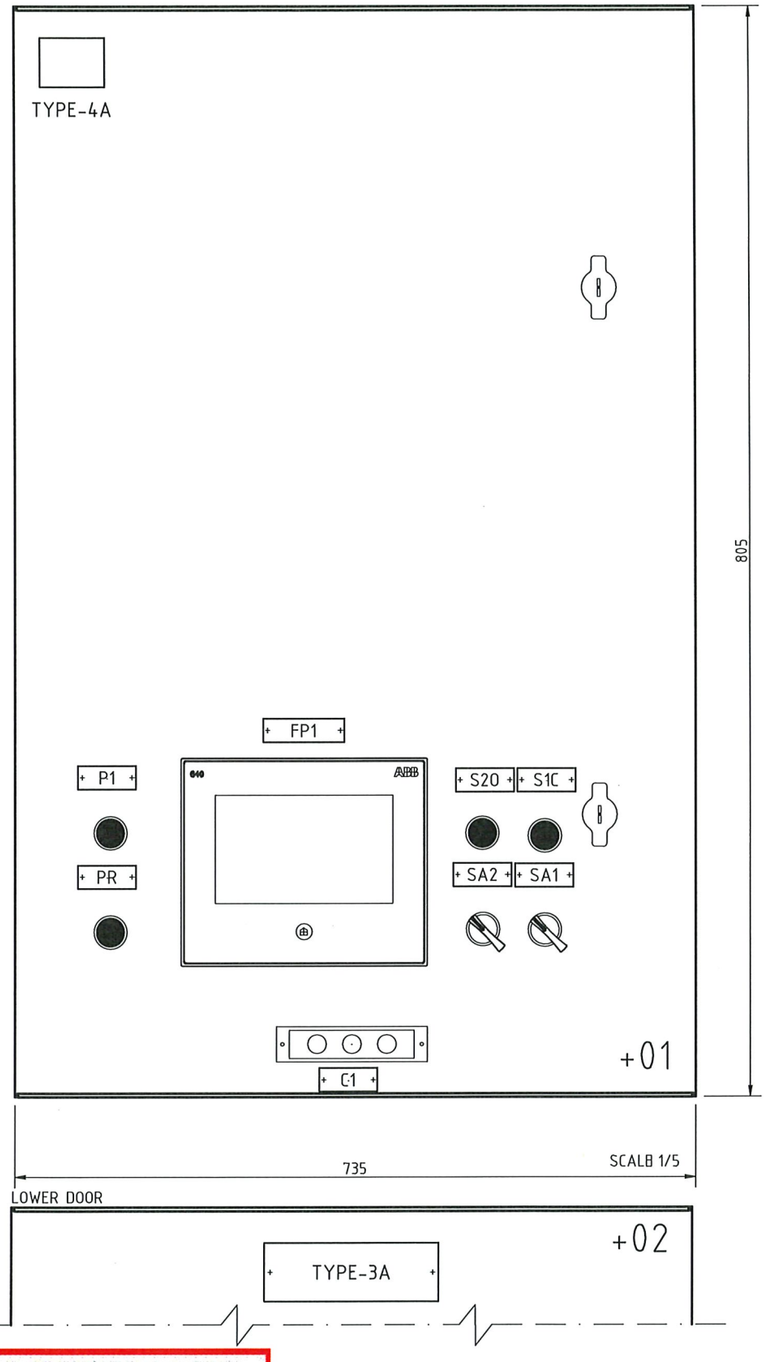
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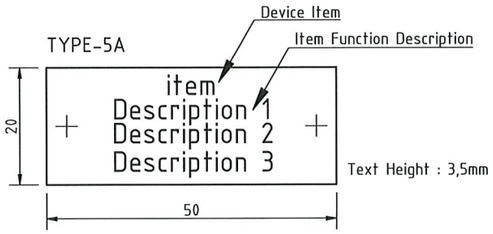
F.to UNI A3: 420mmx297mm

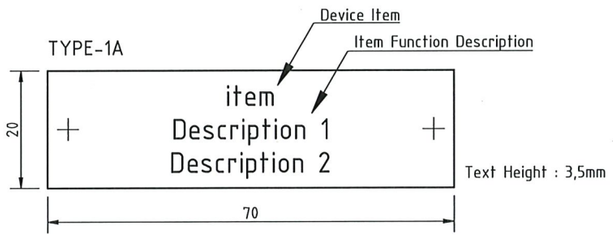
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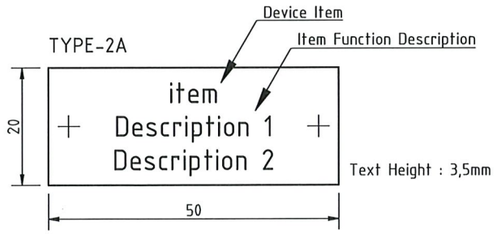
DOOR LAY-OUT

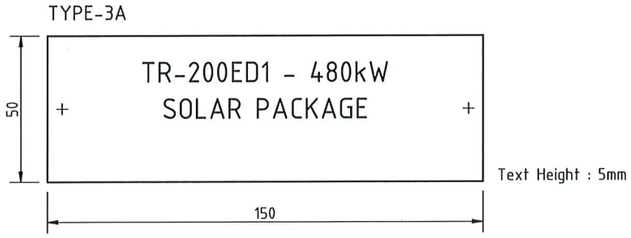
DEVICES name plate					
ITEM	COMPONENT	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	NOTE
FP1	PROTECTION RELAY	PROTECTION RELAY			TYPE-1A
S2.0	PUSH BUTTON	OPEN	COMMAND	CONTACTOR	TYPE-5A
S1.C	PUSH BUTTON	CLOSE	COMMAND	CONTACTOR	TYPE-5A
SA1	SELECTOR SWITCH	LOCAL / REMOTE			TYPE-2A
SA2	SELECTOR SWITCH	OVERRIDE ESD	OFF - ON		TYPE-2A
PR	LIGHT PUSH BUTTON	RESET	LOCK-OUT	TRIP LOCK-OUT	TYPE-5A
C1	PILOT LIGHT	VOLTAGE	PRESENCE		TYPE-2A
P1	PUSH BUTTON	TRUCK-DOOR	ENABLING	ENABLING	TYPE-5A

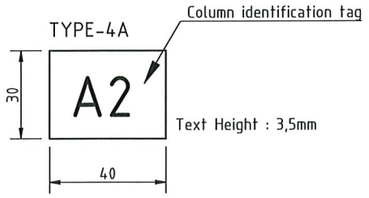












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CROSSWIND

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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Door Layout

CONTRACT NO./TITLE CW-1-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

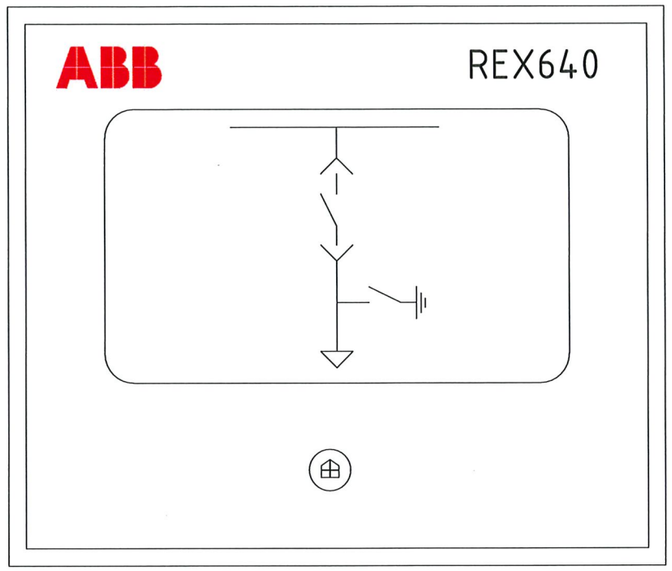
SHEET 4

REV. 03

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PROTECTION DISPLAY



LHMI - TOUCH DISPLAY

- COMMANDS "CLOSE CONTACTOR " AND "OPEN CONTACTOR" NOT ENABLED
- PUSH BUTTON "REMOTE / LOCAL" NOT ENABLED

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27/3/25

LEDs PAGE 1				
Item	NAME PLATE	COLOUR		Note
		ALARM	OK	
LED-1	27-1/27-2/59-1/59-2 - VOLTAGE PROTECTION	RED	-	ALARM = OVER/UNDER VOLTAGE PROTECTION
LED-2	CONTACTOR READY (TCS)	-	GREEN	OK = TCS OK (CONTACTOR READY)
LED-3	SYNCHRO CHECK		GREEN	OK = SYNCHRONISM
LED-4	CONTACTOR READY TO CLOSE	-	GREEN	OK = CONTACTOR READY TO CLOSE
LED-5	50-1/51-1/67-1/67-2 - TRIPPED	RED	-	ALARM = OVERCURRENT PROTECTION TRIPPED
LED-6	51N/59N-1/59N-2 - TRIPPED	RED	-	ALARM = EARTH PROTECTION TRIPPED
LED-7	EARTHING SWITCH UNLOCKED	-	GREEN	OK = EARTHING SWITCH UNLOCKED
LED-8	RACK-IN/OUT ENABLED	-	GREEN	OK = CONTACTOR TRUCK UNLOCKED
LED-9	ARC PROTECTION TRIPPED	RED	-	ALARM = TRIP ARC PROTECTION
LED-10	GOOSE ALARM	RED	-	ALARM = GOOSE FAULT
LED-11	EMERGENCY OPENING BY SIS (ESD)	RED	-	ALARM = ESD TRIPPED

LEDs PAGE 2				
Item	NAME PLATE	COLOUR		Note
		ALARM	OK	
LED-12	SPACE HEATER "ON"	RED	-	ALARM = SPACE HEATER "ON"
LED-13	TRANSF. PROTECTIONS	RED		ALARM = PROTECTIONS TRIP
LED-14	FUSES TRIP	RED		ALARM = FUSES TRIP
LED-15	TRIP FROM L.V.	RED		ALARM = L.V. TRIP
LED-16				
LED-17				
LED-18				
LED-19				
LED-20				
LED-21				
LED-22				

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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Protection Display REX640

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

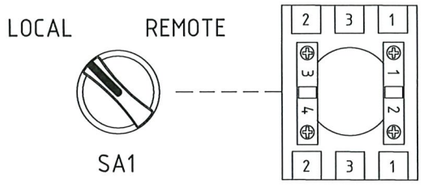
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F.to UNI A3: 420mmx297mm

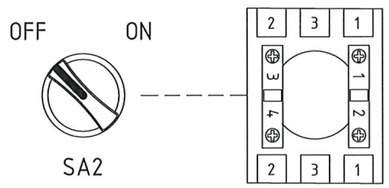
File Name : 1723002197-EL-DG-00020 Rev.03

SELECTORS SWITCH DIAGRAM

REAR VIEW



REAR VIEW



NO MARK UP
AS COMMISSIONED MARIA GIRETTI
27/3/25

NOTES

THE DIAGRAM INDICATES THE FOLLOWING CONDITIONS:
-INSERTED CONTACTOR IN OPEN POSITION
-DE-ENERGIZED CIRCUITS
-EARTHING SWITCH OPEN

THE AUXILIARY CIRCUITS WILL HAVE THE FOLLOWING CHARACTERISTICS:
-110+ / 24+ 1,5mmq RED TYPE CABLE SH-W
-110- / 24- 1,5mmq WHITE TYPE CABLE SH-W
-AUXILIARY CONTACTS TO TERMINAL STRIP 1,5mmq BLACK TYPE CABLE SH-W
-230Vac 1,5mmq BLACK TYPE SH-W
-VOLTMETRICAL CIRCUITS 1,5mmq BLACK TYPE CABLE SH-W
-AMMETRICAL CIRCUIT 2,5mmq BLACK TYPE CABLE SH-W

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ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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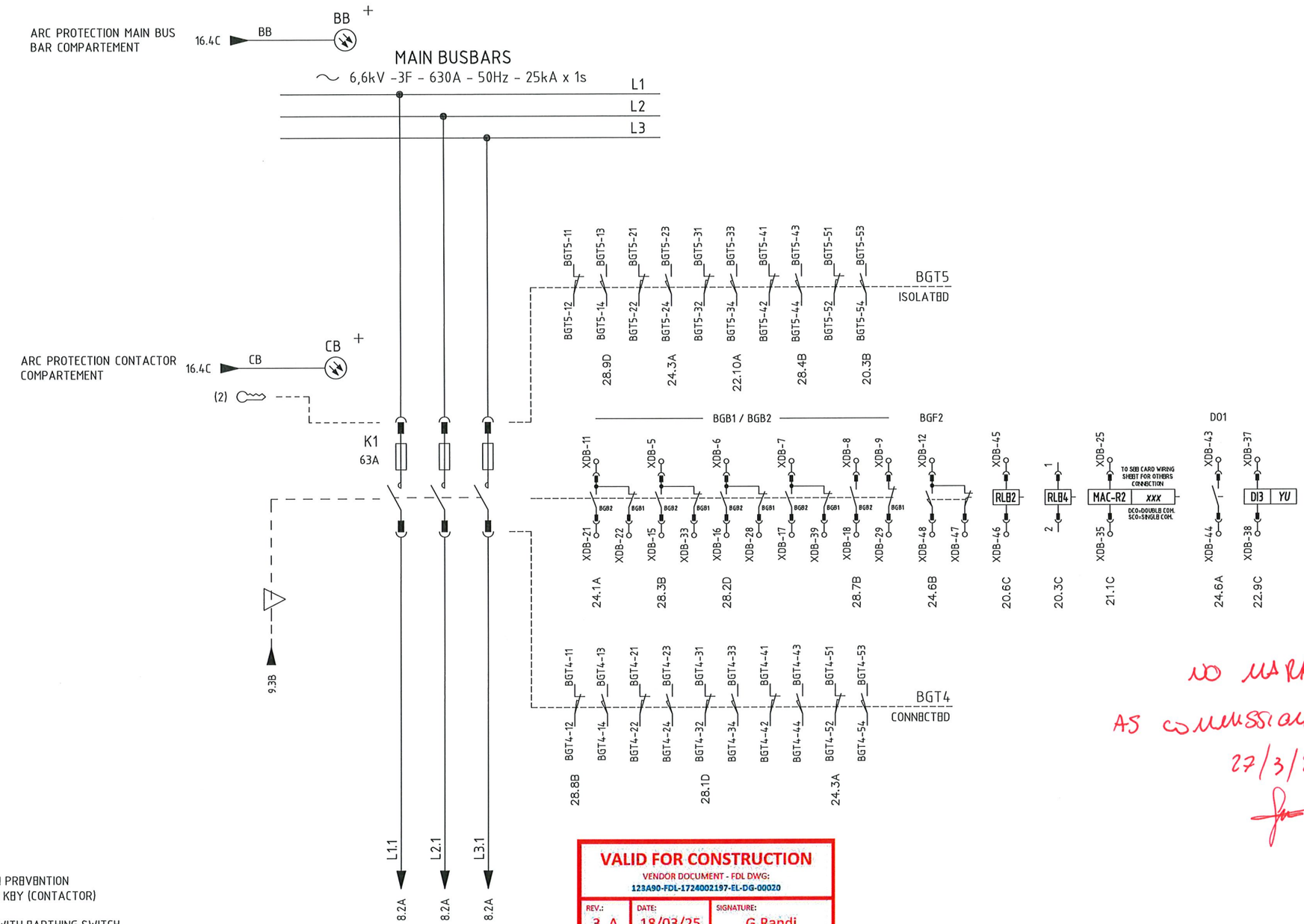
TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
Selector Switch Diagram

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

	DRAWING NO.	SHEET	REV.
A3	1723002197-EL-DG-00020	6	03

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File Name : 1723002197-EL-DG-00020 Rev.03



(2) RACKING IN PREVENTION LOCK WITH KEY (CONTACTOR)

(3) FREE KEY WITH EARTHING SWITCH IN OPEN POSITION

(4) FREE KEY WITH EARTHING SWITCH IN CLOSED POSITION

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SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Power Diagram

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SCALE : NTS

A3

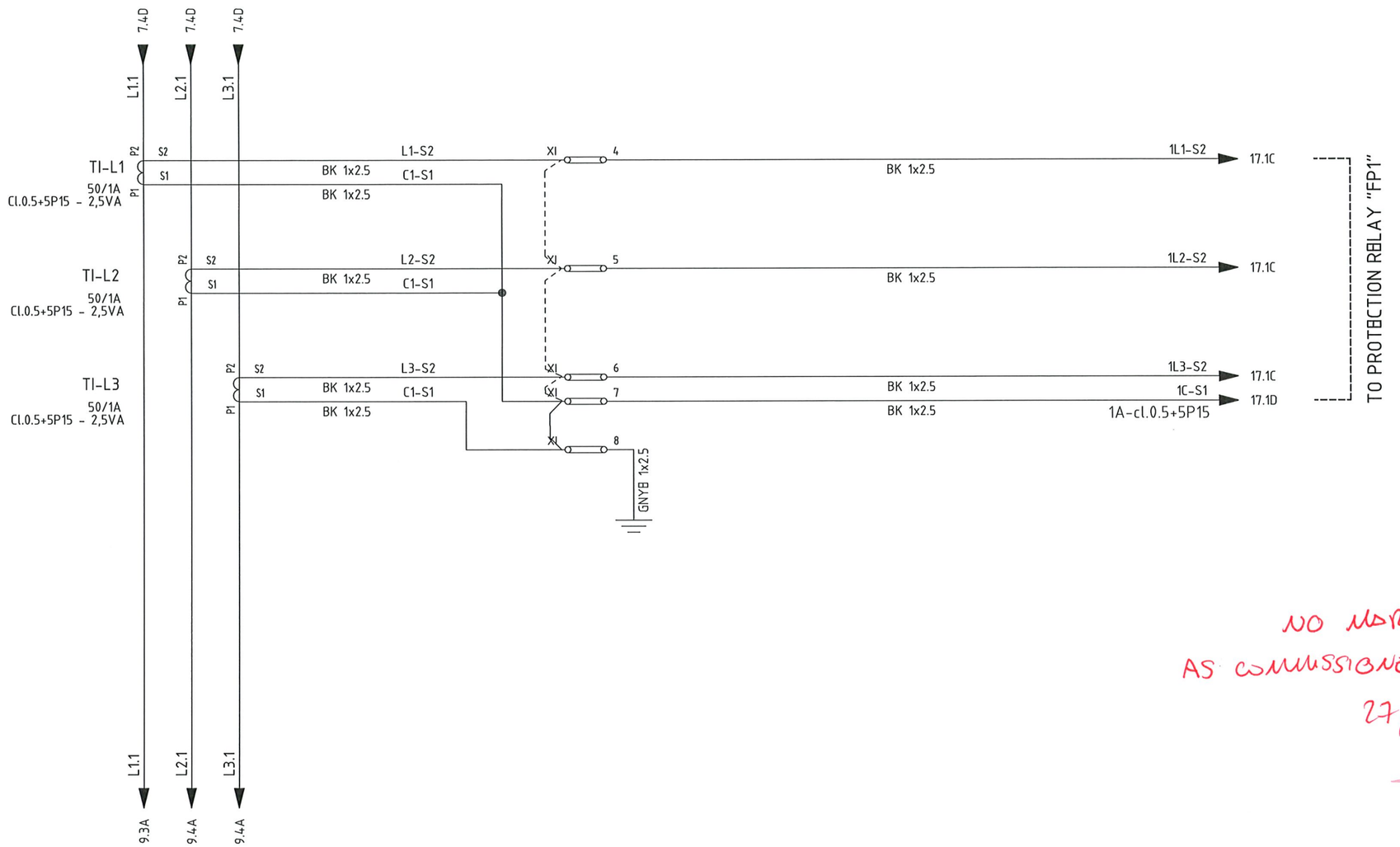
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SHEET 7

REV. 03

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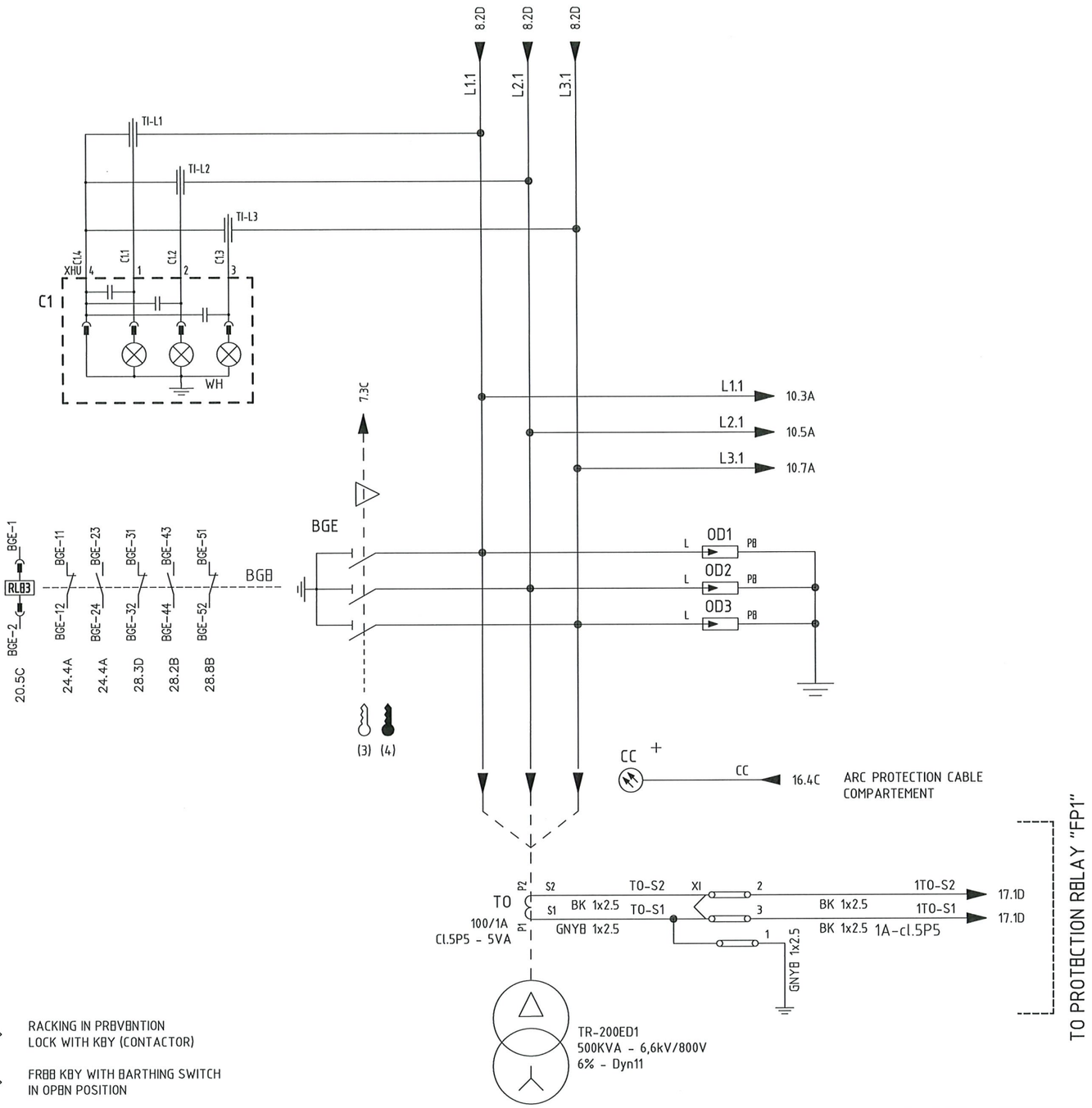
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SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Power Diagram

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A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 8 | REV. 03

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(2) RACKING IN PREVENTION LOCK WITH KEY (CONTACTOR)

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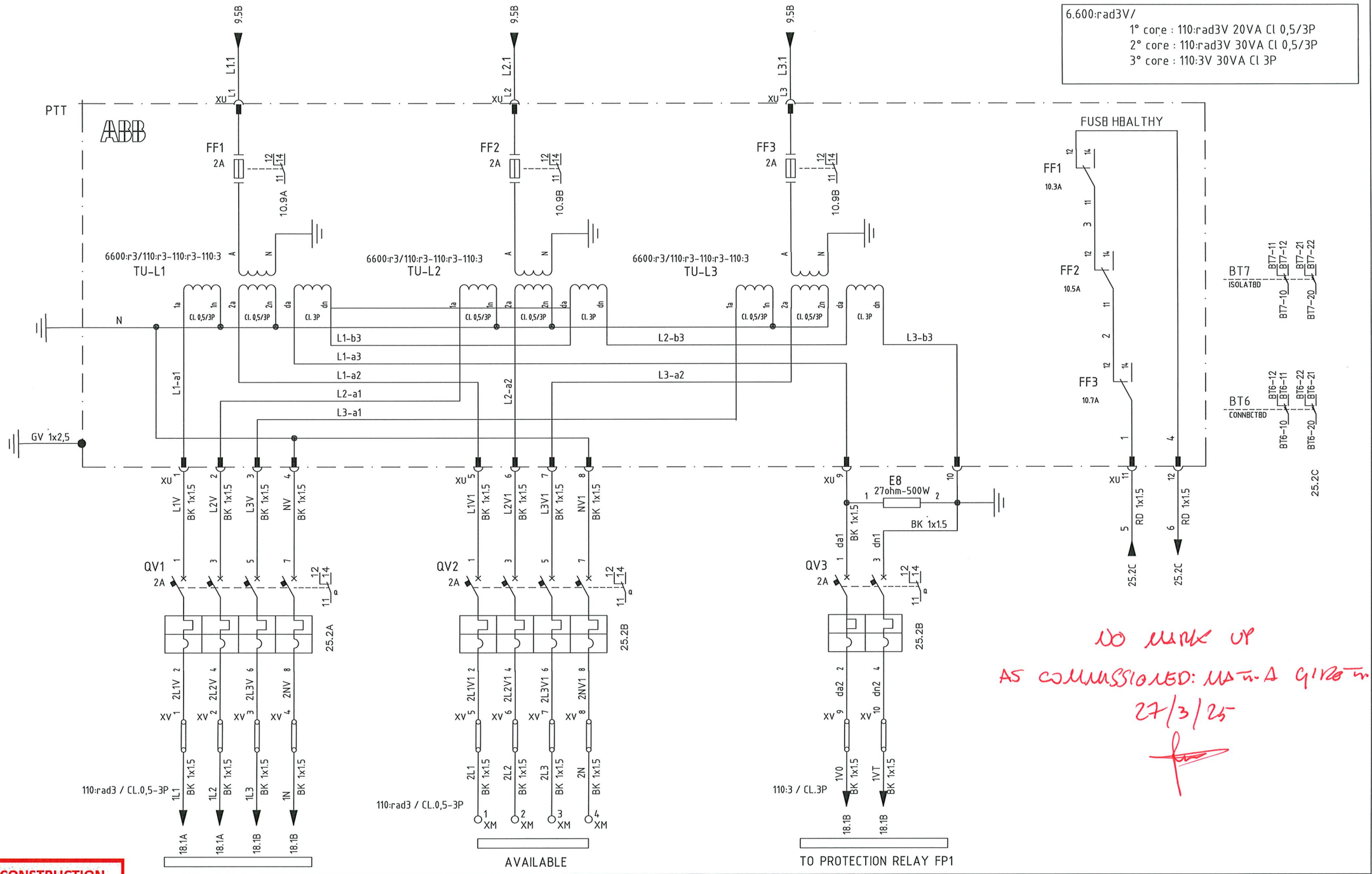
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SHEET 9

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2	21/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
Power Diagram

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

A3
DRAWING NO. 1723002197-EL-DG-00020
SHEET 1.0
REV. 03

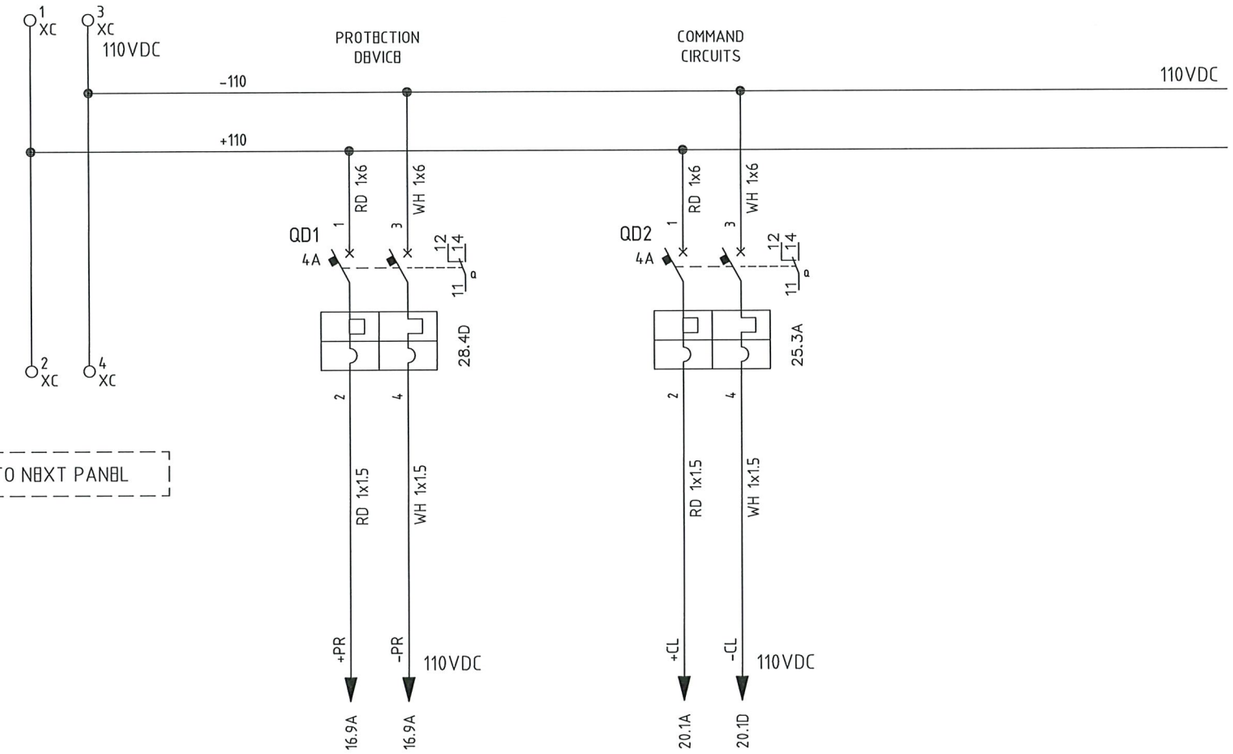
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

110VDC DISTRIBUTION VOLTAGE

110Vdc Auxiliary Voltage
from Measuring Bus Bar Unit

FROM PREVIOUS PANEL

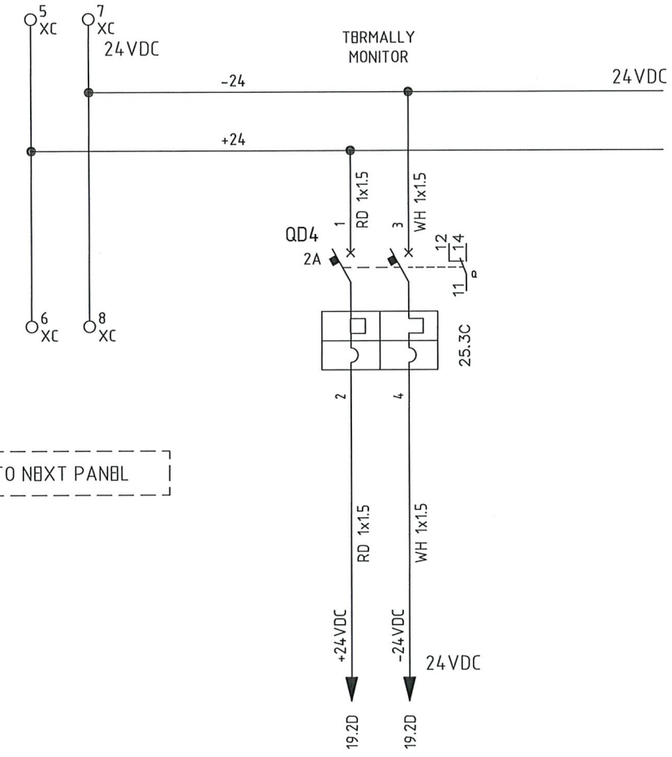


TO NEXT PANEL

24VDC DISTRIBUTION VOLTAGE

24Vdc Auxiliary Voltage
from Measuring Bus Bar Unit

FROM PREVIOUS PANEL



TO NEXT PANEL

NO MARK UP
AS COMMISSIONED: MARIA GIRON
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=
+A2
DWG n° : 231151/SD/20
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
110Vdc / 24Vdc Distribution Voltage

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 1.1

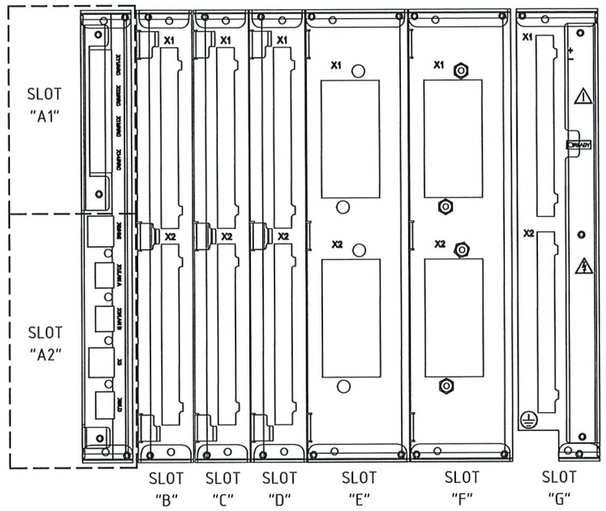
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

COMPOSITION RELAY REX640

RACK VIEW



REX640B10NN+COM1+ARC1+BIO1+BIO1+BIO2+AIM1+AIM1+PSM3+MCT1+SCT1+CMP2+LNG1+PCL4

NO MARK UP
AS COMMISSIONED: MOTA GIROTH
27/3/25

LEGEND

SLOT	Module Type	Description Module
A1	ARC1001	n° 4 x ARC sensor inputs
A2	COM1001	n° 1 x RJ-45 (LHMI port) + n° 3 x RJ-45 + n° 1 x SFP100M LC
B	BIO1001	n° 14 Binary Input + n° 8 x SO
C	BIO1001	n° 14 Binary Input + n° 8 x SO
D	BIO1002	n° 9 Binary Input + n° 6 x SPO + n° 2 x SPO(TCS)
E	AIM1001	n° 4 x CT + n° 1 x CT (sensitive, for residual current only) + n° 5 x VT
F	AIM1001	n° 4 x CT + n° 1 x CT (sensitive, for residual current only) + n° 5 x VT
G	PSM1003	77...150 VDC, n° 3 x PO (TCS) + n° 2 x PO + n° 3 x SO + n° 2 x SSO
	PO = Power Output SO = Signal Output SPO = Static Power Output SSO = Static Signal Output	

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=
+A2
DWG n° : 231151/SD/20
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Composition Relay REX640

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 12 | REV. 03

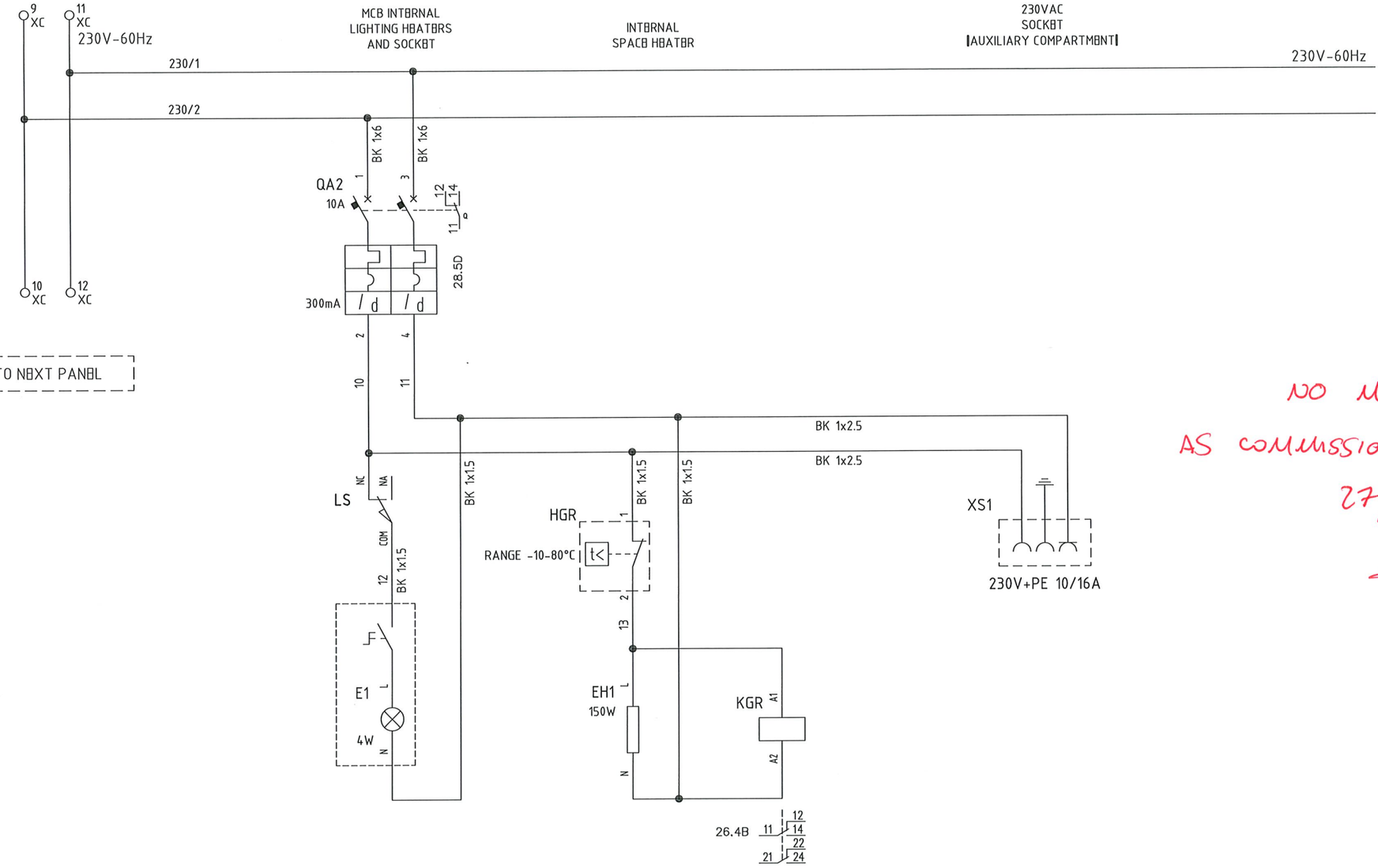
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

230VAC DISTRIBUTION VOLTAGE

230Vac Auxiliary Voltage
from Measuring Bus Bar

FROM PREVIOUS PANEL



NO MARK UP
AS COMMISSIONED: MARIS GIRETTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	
+A2	
DWG n° :	231151/SD/20
Item n° :	PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
230Vac Distribution Voltage

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 1.3 | REV. 03

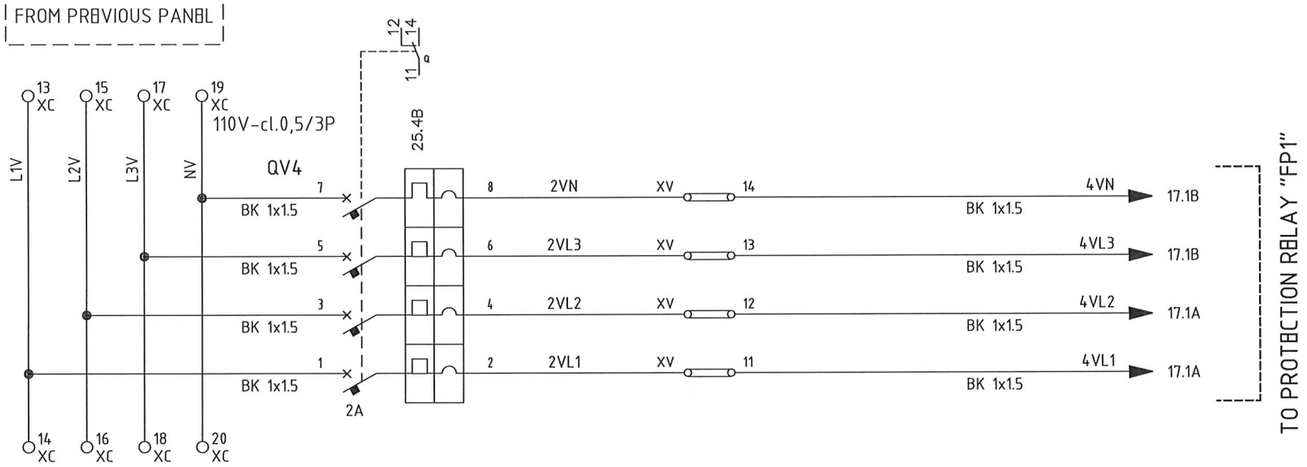
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

110V: 1,73 DISTRIBUTION VOLTAGE VT'S FROM MAIN BUS BAR

MAIN BUS BAR
110:√3V VOLTMETRIC LINE - STAR
(FOR PROTECTION/MEASURE)

FROM PREVIOUS PANEL



TO PROTECTION RELAY "FP1"

TO NEXT PANEL

NO MARK UP
AS COMMISSIONED: MARIA GIROTA
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=
+A2
DWG n° : 231151/SD/20
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
110V Protection/Measure Distribution Voltage

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 14 | REV. 03

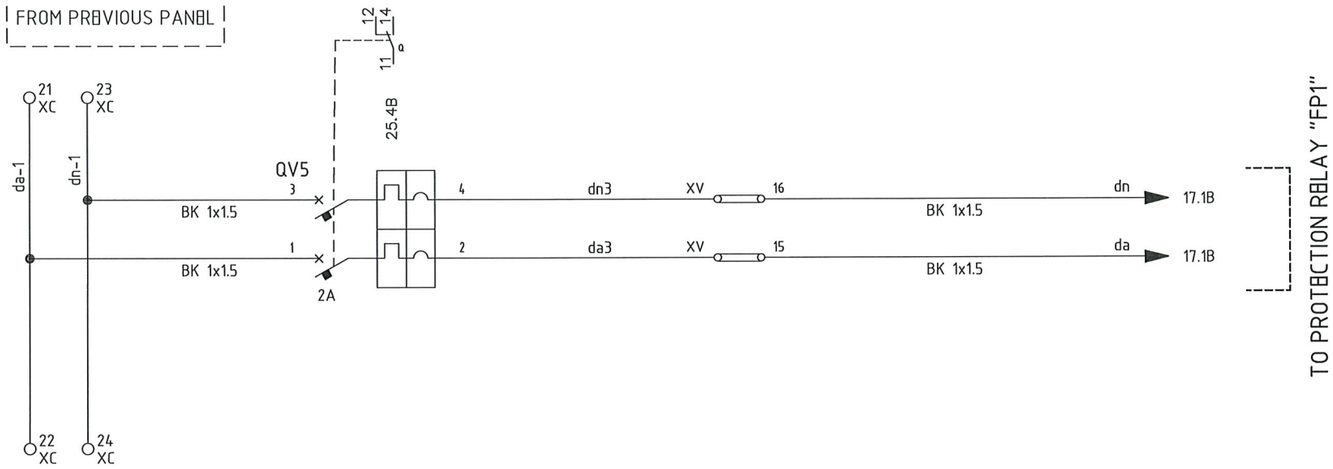
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

110V:3 DISTRIBUTION VOLTAGE VT'S FROM MAIN BUS BAR

MAIN BUS BAR
110:3V VOLTMETRIC LINE -
DELTA OPEN
(FOR PROTECTION/MEASURE)

FROM PREVIOUS PANEL



TO PROTECTION RELAY "FP1"

TO NEXT PANEL

NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	
+A2	
DWG n° :	231151/SD/20
Item n° :	PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
110V Protection/Measure Distribution Voltage

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

A3	DRAWING NO.	SHEET	REV.
	1723002197-EL-DG-00020	15	03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

"REX640" PROTECTION WIRING

FP1

PSM1003
COM1001
slot G

X1
X1-1 (+ Uaux)
X1-2 (- Uaux)
GND
1x6 GNYE

11.2D +PR → +PR → 24.1A
11.3D -PR → -PR → 24.1D
110VDC

RD 1x1.5
WH 1x1.5

PROTECTION FUNCTION

51	50
51N	25
59N	86
74	27
59	67

ETH PORT (IEC61850)
X1
X2
X3
X0

PATCH CORD cat.6 RJ45 — FP1-A2/A — FROM MEASURE CUBICLE A5
PATCH CORD cat.6 RJ45 — FP1-A2/B — FROM MEASURE CUBICLE A5
PATCH CORD cat.7 RJ45 — ETH.1

ARC1001
slot A1

ARC DETECTOR SENSOR
X11 BB → 7.3A — BUS BAR COMPARTEMENT
X12 CB → 7.3B — C.B. COMPARTEMENT
X13 CC → 9.5D — CABLE COMPARTEMENT
X14
arc detectors

REX640

FP1

PSM1003

RF	SO1	SO2	SSO1	SSO2	POSP1	POSP2	SO3	PODP1	PODP2	PODP3
X1-4 / X1-3	X1-7 / X1-6	X1-9 / X1-10	X1-11 / X1-12	X1-13 / X1-14	X1-15 / X1-16	X1-17 / X1-18	X2-2 / X2-1	X2-6 / X2-5	X2-11 / X2-10	X2-16 / X2-15
								X2-4 / X2-8 (TCS1)	X2-9 / X2-13 (TCS2)	X2-14 / X2-18 (TCS3)
									X2-12	X2-17
23.4A	20.5C	28.6D			21.9B		20.6B	21.8B		

slot G
REX640

X3
+
-
GNYE 1x6

X1.1
640
ABB

LHMI
Local HMI
7" color Touch screen

NO MARK UP
AS COMMISSIONED: NATALIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	
+A2	
DWG n° :	231151/SD/20
Item n° :	PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
"REX640" Protection Wiring

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

SCALE : NTS

A3

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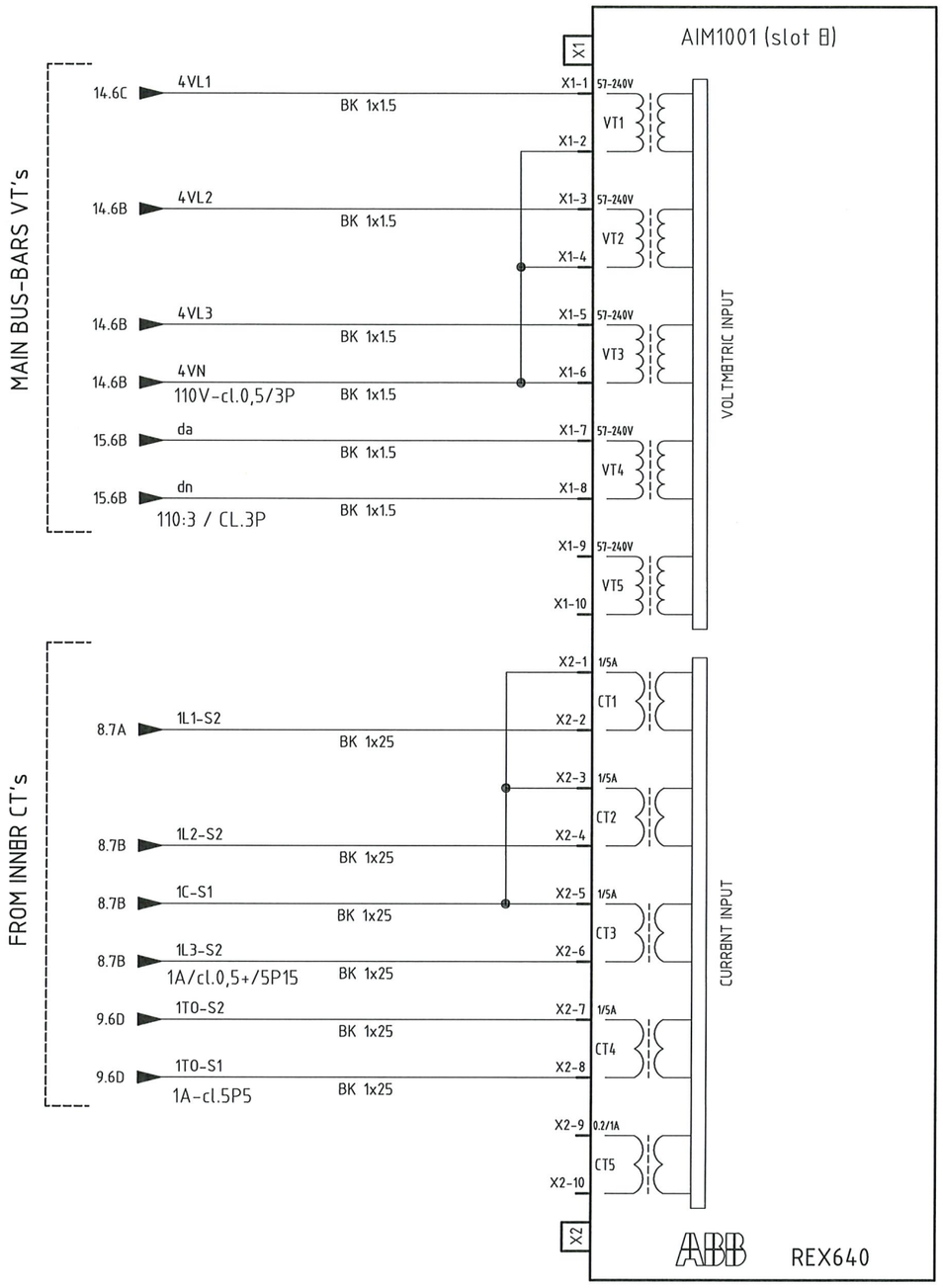
SHEET 1.6

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

"REX640" PROTECTION WIRING



NO MARK UP

AS COMMISSIONED: MATIA GIROTTI

27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=
+A2
DWG n°: 231151/SD/20
Item n°: PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
"REX640" Protection Wiring

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

SCALE : NTS

A3

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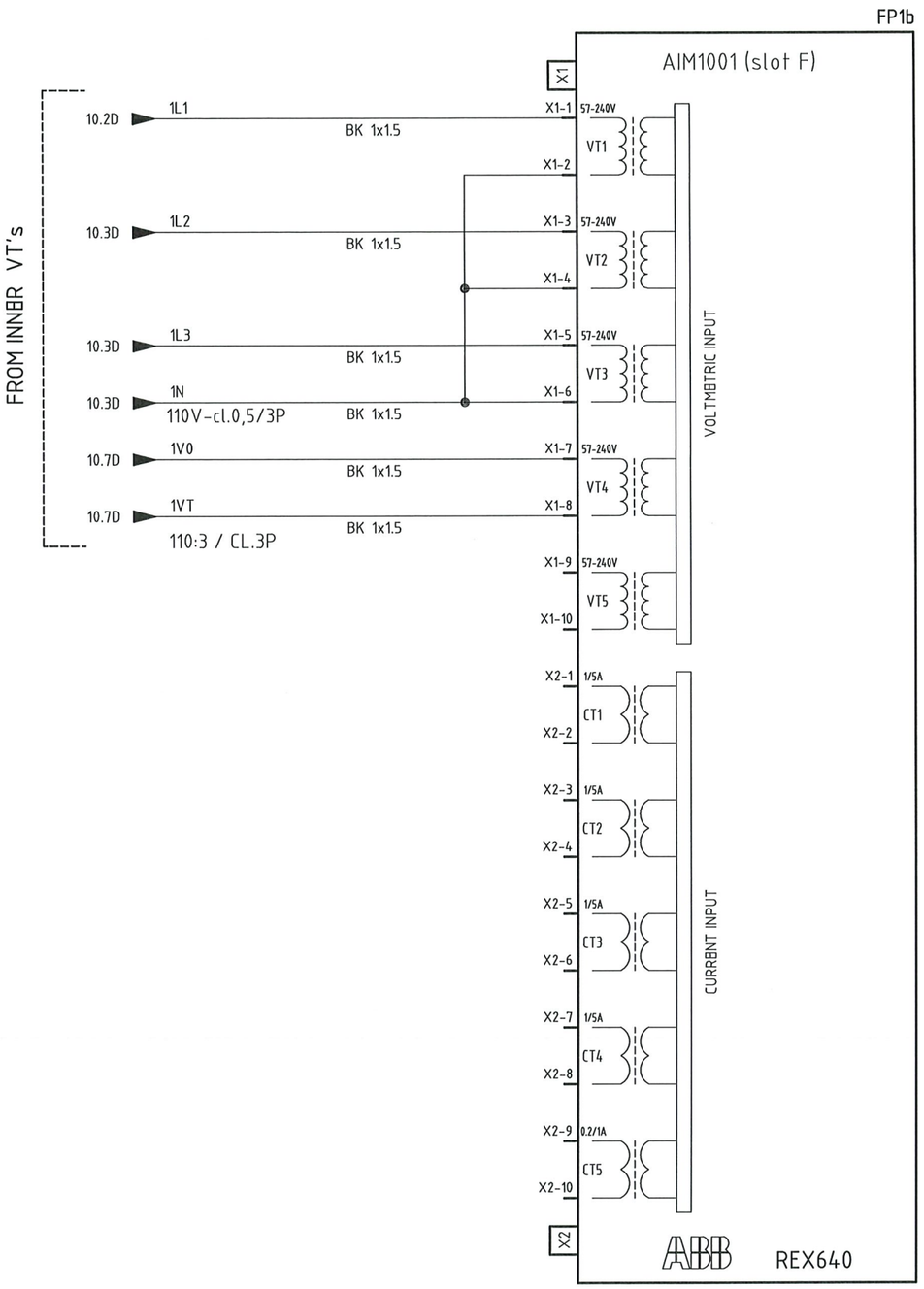
SHEET 1.7

REV. 03

File Name : 1723002197-EL-DG-00020 Rev.03

F.to UNI A3: 420mmx297mm

"REX640" PROTECTION WIRING



NO MARK UP
AS COMMISSIONED: MARIO GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	
+A2	
DWG n° :	231151/SD/20
Item n° :	PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
"REX640"' Protection Wiring

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

SCALE : NTS

A3

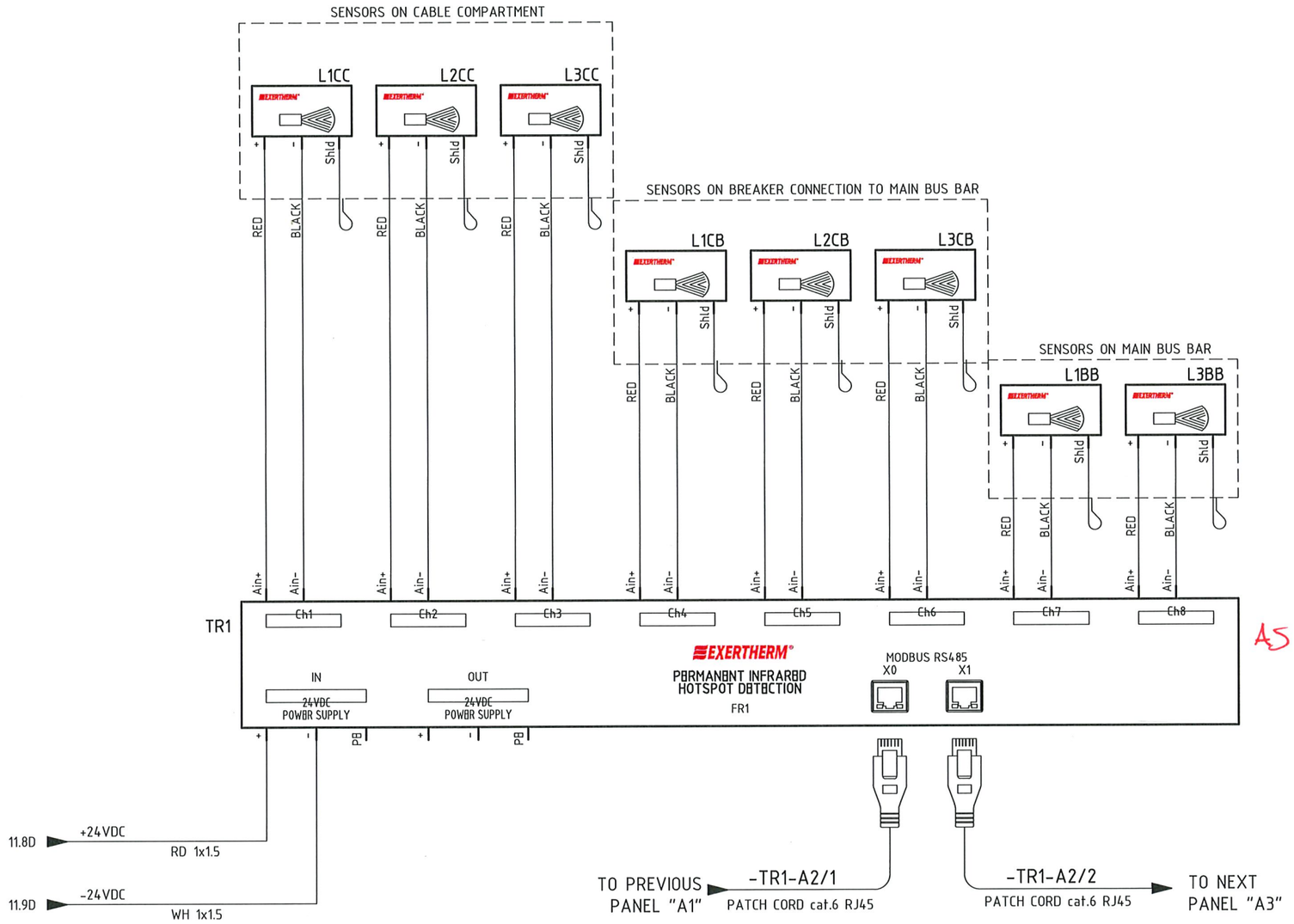
DRAWING NO. 1723002197-EL-DG-00020

SHEET 18

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03



NO MARK UP

AS COMMISSIONED: MATIA GIROTTI

27/3/25

VALID FOR CONSTRUCTION

VENDOR DOCUMENT - FDL DWG:

123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=

+A2

DWG n° : 231151/SD/20

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE :

SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1

Extherm Device

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 19

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

COMMAND CIRCUITS

ENABLING CONTACTOR TRUCK ENCLOSURE DOOR AND EARTHING SWITCH

UNLOCKING CONTACTOR ENCLOSURE DOOR

ENABLING EARTHING SWITCH COMMAND

ENABLING RACK-IN AND RACK-OUT CONTACTOR (LOCKING MAGNET)

11.4D +CL 110VDC (CL)

+CL 21.1A

RD 1x1.5

P1 BK E 13 14

KT1 20.2D 16 18 30" 15

21 RD 1x1.5

K1 ISOLATED BGT5 7.4B BGT5-53 BGT5-54

5 XM 6 XM 23

FP1 16.3A S01 RBX640 X1 Slot G X1-7 X1-8

FP1 16.3A S03 RBX640 X2 Slot G X2-2 X2-3 X2-1

25 7 XM 8 XM 26

RD 1x1.5 20 RD 1x1.5 22 RD 1x1.5 24 RD 1x1.5 26 RD 1x1.5

BGB-1 BGB-2 XDB-45 XDB-46

K1 RLE4 7.4B 1 2

BGE RLE3 9.3C

K1 RLE2 7.4B

KT1 A1 A2 B1 30"

11.4D -CL

-CL 21.1B

WH 1x1.5

20.3A 15 16 18

24.9A 25 26 28

NO MARK UP
AS COMMISSIONED: MARIO GIRONI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

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+A2

DWG n°: 231151/SD/20
Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Command Circuit

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

SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 20 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

CLOSING/OPENING COMMAND CIRCUITS

POWER SUPPLY MAC-R2 CARD

20.10A +CL 110VDC (CL)

RD 1x1.5

LOCAL OPENING COMMAND

S20 23 24 E 26.2A

K86 TRIP RELAY

K86 40A 41A 4A 22.2D

AVAILABLE OPENING COMMAND

9 XM 10 XM EXT

AVAILABLE OPENING COMMAND

11 XM 12 XM EXT

AVAILABLE OPENING COMMAND

13 XM 14 XM EXT

30

FP1 16.3A Slot G

PODP1

PO1_TCS

RBX640 X2 (PSM)

X2-4 X2-6 X2-5 X2-7 X2-8 29

OPENING COMMAND

CLOSING COMMAND

FP1 16.3A X1-15 POSP1 RBX640 X1 Slot G X1-16

+CL 22.1A

RD 1x1.5

31

XDB-25 XDB-43 XDB-4 XDB-41 XDB-31 XDB-13

K1

DO 1

BGT3 BGF1

BGF1 BGB2

MBO MBC

OPENING COIL CLOSING COIL

XDB40-1 XDB40-2

0 PGC Electric Counter

AA 7.4B

DI 1 CLOSING

DI 2 OPENING

CONTROL UNIT
Type MAC R2
(DCO - Double Command Operated)

XDB-35 XDB-44 XDB-14 XDB-30 XDB-1 GNYB 1x2.5 XDB-40 GNYB 1x2.5

20.10D -CL

WH 1x1.5

-CL 22.1D

NO MARK UP
AS COMMISSIONED: MATIA GIROU.
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= +A2

DWG n° : 231151/SD/20

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	21/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :

SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1

Command Circuit

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 21

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

COMMAND CIRCUITS

OUTPUT PROTECTION RELAY | AVAILABLE | AVAILABLE | TRANSFORMER TRIP BUCHHOLZ | TRANSFORMER TRIP OIL TEMPERATURE | TRANSFORMER TRIP PRESSURE RELAY | TRANSFORMER TRIP WINDING TEMPERATURE | LOCAL RESET | REMOTE RESET | TRIP LOCK-OUT RELAY | SELECTOR SWITCH OF OVERRIDE | EMERGENCY OPENING BY SIS | UNDERVOLTAGE | CONTACTOR ISOLATED

21.10A +CL 110VDC (OP) — +CL 23.1A

FP1c 24.1C X2-4 — S01 RBX640 X2 Slot B — X2-3 — 35

15 XM — 17 XM — 16 XM — 18 XM

K94B 23.5D — K94OT 23.6D — K94P 23.7D — K94WT 23.8D — 12 14 11 — RD 1x1.5

RD 1x1.5

PR 13 14 X1 X2 22.7D — 36 RD 1x1.5

FP1c 24.1C X2-10 — S04 RBX640 X1 Slot B — X2-9 — RD 1x1.5

K86 22.2D — 40B 41B — 48 RD 1x1.5

SA2 OFF ON 23 24 — RD 1x1.5 — 38

KSIL 26.7B 27.5B — 13 14

20 XM — 19 XM

KIRF 23.4D — 22 24 21 — 39 40 — 30B 31B — 38

K86 22.2D

XDB-37 — K1 — DI 3 7.4B OPENING — XDB-38

K1 ISOLATED BGT5 7.4B — BGT5-33 — BGT5-34 — 41 RD 1x1.5

K86 B1 C S B2 — C RESET — 1

21.10B -CL — WH 1x1.5 — -CL 23.1D

PR 22.5A X1 X2 — 37 RD 1x1.5

20A
2A 21A
30A
3A 31A
40A
21.5B 4A 41A
10B
28.6B 1B 11B
20B
24.5A 2B 21B
30B
22.9B 3B 31B
40B
22.7B 4B 41B

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
27/3/25

3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

= +A2

DWG n°: 231151/SD/20
Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
Command Circuit

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

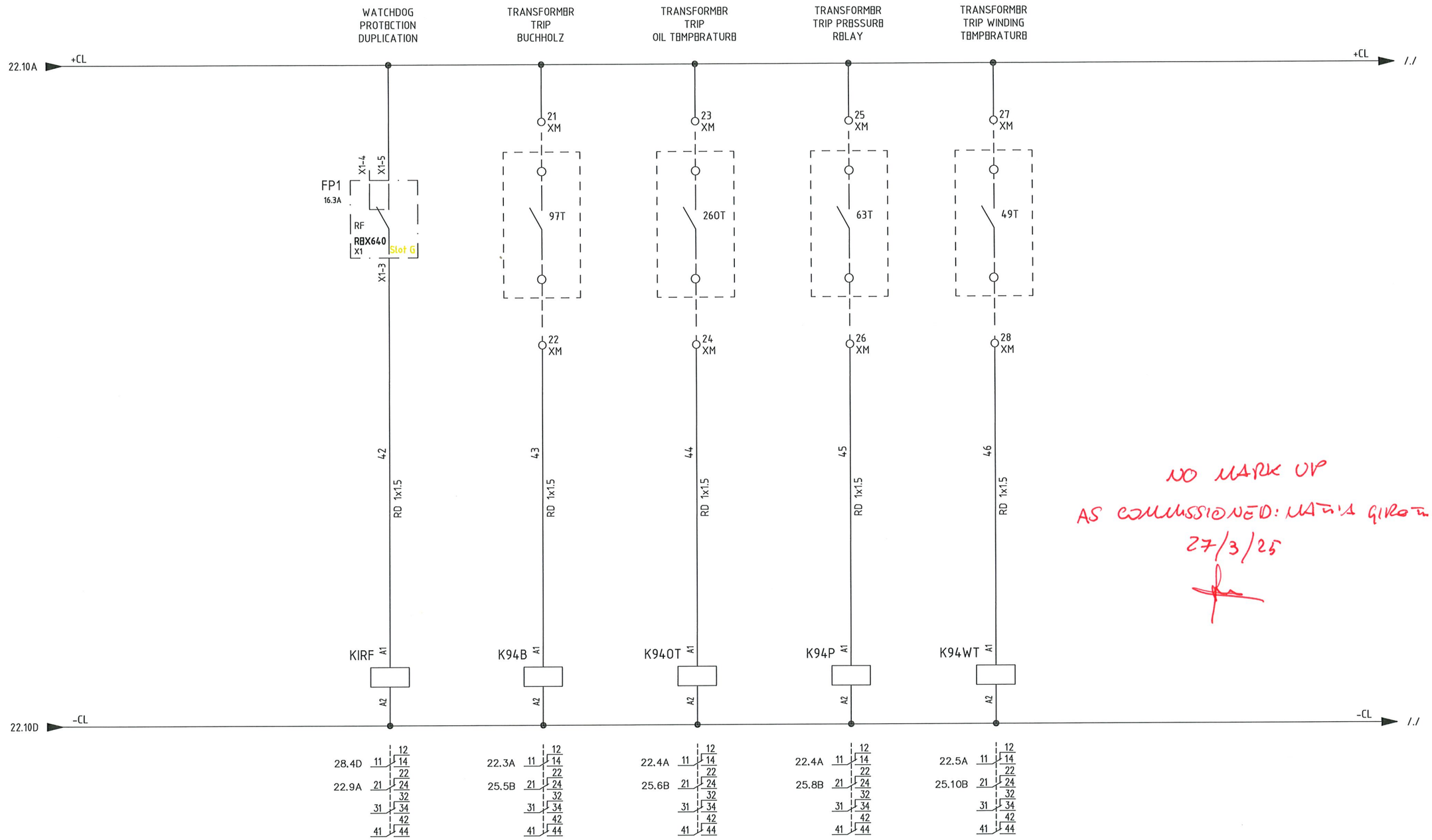
SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 22 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

COMMAND CIRCUITS



NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	
+A2	
DWG n° :	231151/SD/20
Item n° :	PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
Command Circuit

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

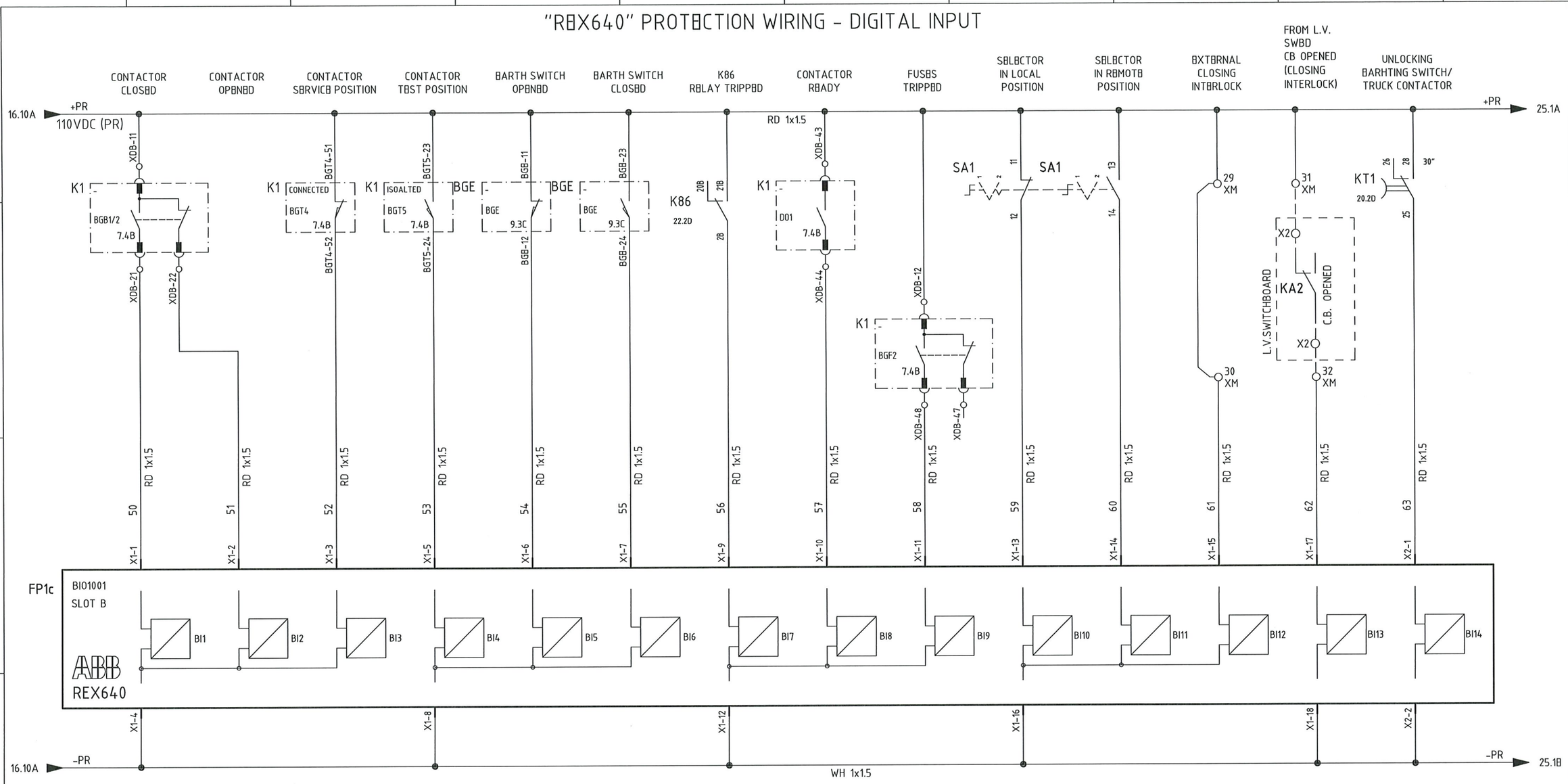
SHEET 23

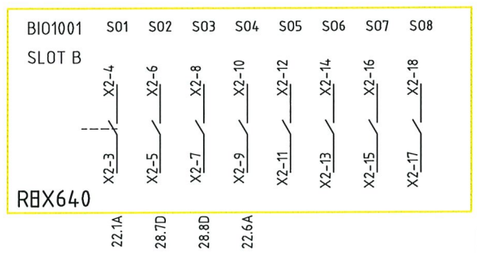
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

"REX640" PROTECTION WIRING - DIGITAL INPUT





VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

NO MARK UP
AS COMMISSIONED: MATTIA GIROTTI
27/3/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

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+A2

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231151/SD/20
Item n° : PF1113279

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
"REX640" Protection Wiring - Digital Input

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 24

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

NO MARK UP AS COMMISSIONED: MARINA GIROTTI 27/3/25

"REX640" PROTECTION WIRING - DIGITAL INPUT

EMERGENCY OPENING BY SIS | VT HEALTY CIRCUIT | BARTING SWITCH OPEN (FROM MEASURING UNIT) | CLOSED AUXILIARY CIRCUIT MCB's | CLOSED AUXILIARY V.T. SECONDARY MCB's | TRANSFORMER ALARM BUCHHOLZ | TRANSFORMER TRIP BUCHHOLZ | TRANSFORMER ALARM OIL TEMPERATURE | TRANSFORMER TRIP OIL TEMPERATURE | TRANSFORMER ALARM OIL LEVEL | TRANSFORMER OIL LEVEL VERY LOW ALARM | TRANSFORMER TRIP OIL PRESSURE | TRANSFORMER ALARM WINDING TEMPERATURE | TRANSFORMER TRIP WINDING TEMPERATURE

24.10A +PR 110VDC (PR) — RD 1x1.5 — +PR 26.1A

KSIL 27.5B — QV1 10.2C — QV2 10.4C — QV3 10.7C — PTT 10.2A (BT6-22, BT6-21) — 10.9C 5 — 10.9C 6

QD2 11.4B — QD4 11.8B — QV5 15.2B — QV4 14.2C

25 XC — 29 XC — BGE — 30 XC — 26 XC

33 XM 97T 34 XM — K94B 23.5D — 35 XM 260T 36 XM — K94OT 23.6D — 37 XM 710T 38 XM — 39 XM 710T_1 40 XM — K94P 23.7D — 41 XM 49T 42 XM — K94WT 23.8D

64 68 69 70 71 72 73 74 75 76 77 78 79 80 81 — RD 1x1.5

X1-1 X1-2 X1-3 X1-5 X1-6 X1-7 X1-9 X1-10 X1-11 X1-13 X1-14 X1-15 X1-17 X2-1

FP1d — BIO1001 SLOT C — ABB REX640 — BI1 BI2 BI3 BI4 BI5 BI6 BI7 BI8 BI9 BI10 BI11 BI12 BI13 BI14

X1-4 X1-8 X1-12 X1-16 X1-18 X2-2

24.10D -PR — WH 1x1.5 — -PR 26.1D

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG: 123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= +A2
DWG n°: 231151/SD/20
Item n°: PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
"REX640" Protection Wiring - Digital Input

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 25 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

"REX640" PROTECTION WIRING - DIGITAL INPUT

S1C LOCAL CLOSING COMMAND
S20 LOCAL OPENING COMMAD
FROM L.V. SWBD CB TEST POSITION
FROM L.V. SWBD TRIPPED
SPACE HEATER ON
AVAILABLE REMOTE OPENING COMMAND
TRANSFORMER GENERAL ALARM
MCB AND WATCHDOG PROTECTION RELAY (A1)
SELECTOR SWITCH OF OVERRIDE (SIL ENABLED)

25.10A +PR 110VDC (PR) — RD 1x1.5 — +PR /./

S1C GR 13 14
S20 21.4B RD 13 14
43 XM — X2 — QB1 C.B. IN TEST POSITION — X2 — 44 XM — L.V.SWITCHBOARD
45 XM — X2 — KA1 TRIP — X2 — 46 XM — L.V.SWITCHBOARD
KGR 13.5D 12 14 11
47 XM — 48 XM
49 XM — 50 XM
29 XC — XC 31 — QD1 — KIRF — XC 32 — 30 XC — FROM UNIT A1
22.7A OFF ON 11 12 SA2

	82	83	84	85	86	87	88	89	90
	RD 1x1.5	RD 1x1.5	RD 1x1.5	RD 1x1.5	RD 1x1.5	RD 1x1.5	RD 1x1.5	RD 1x1.5	RD 1x1.5
	X1-1	X1-2	X1-3	X1-5	X1-6	X1-7	X1-9	X1-10	X1-11

FP1e
BI01002
SLOT D
ABB REX640
BI1 BI2 BI3 BI4 BI5 BI6 BI7 BI8 BI9

SP01	SP02	SP03	SP04	SP05	SP06	SP07	SP08
X2-4 +	X2-6 +	X2-8 +	X2-10 +	X2-12 +	X2-14 + TCS	X2-16 +	X2-18 + TCS
X2-3 -	X2-5 -	X2-7 -	X2-9 -	X2-11 -	X2-13 -	X2-15 -	X2-17 -

X1-4 X1-8 X1-12

25.10B -PR — WH 1x1.5 — -PR /./

NO MARK UP
AS COMMISSIONED: MARIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= +A2
DWG n°: 231151/SD/20
Item n°: PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

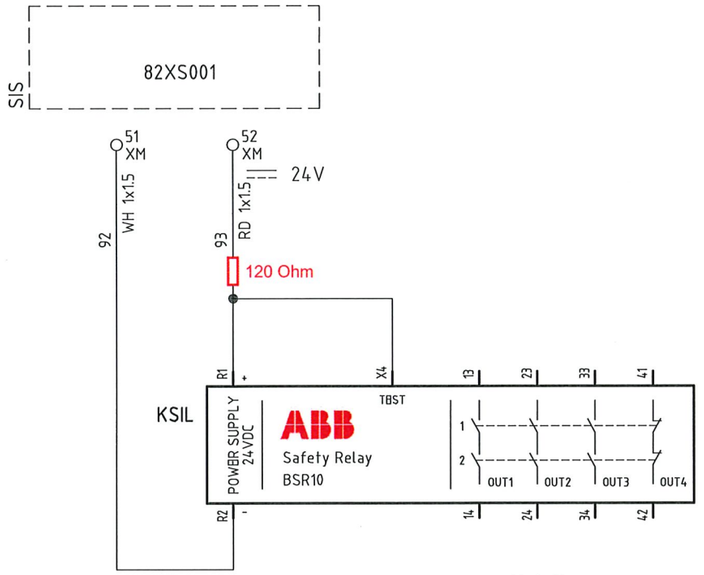
TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
"REX640" Protection Wiring - Digital Input

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK
SCALE : NTS
A3
DRAWING NO. 1723002197-EL-DG-00020
SHEET 26
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

EMERGENCY OPENING BY "SIS"



22.8A 14 13
25.1B 24 23
34 33
42 41

NO MARK UP
AS COMMISSIONED: MATTIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= +A2

DWG n° : 231151/SD/20

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Emergency Opening by "SIS"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

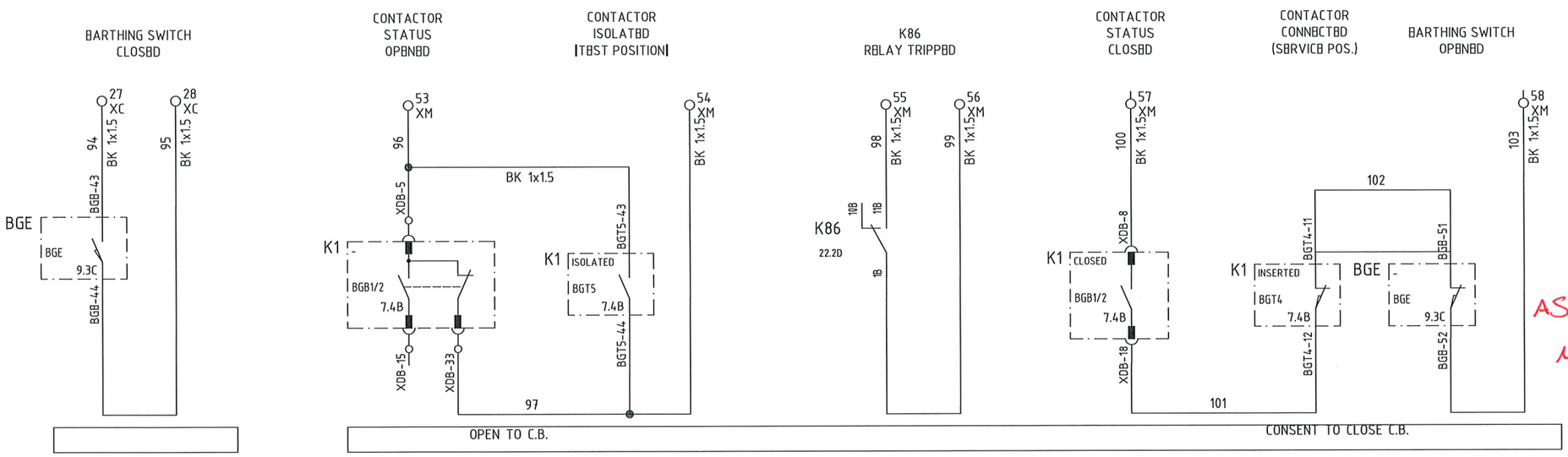
SHEET 27

REV. 03

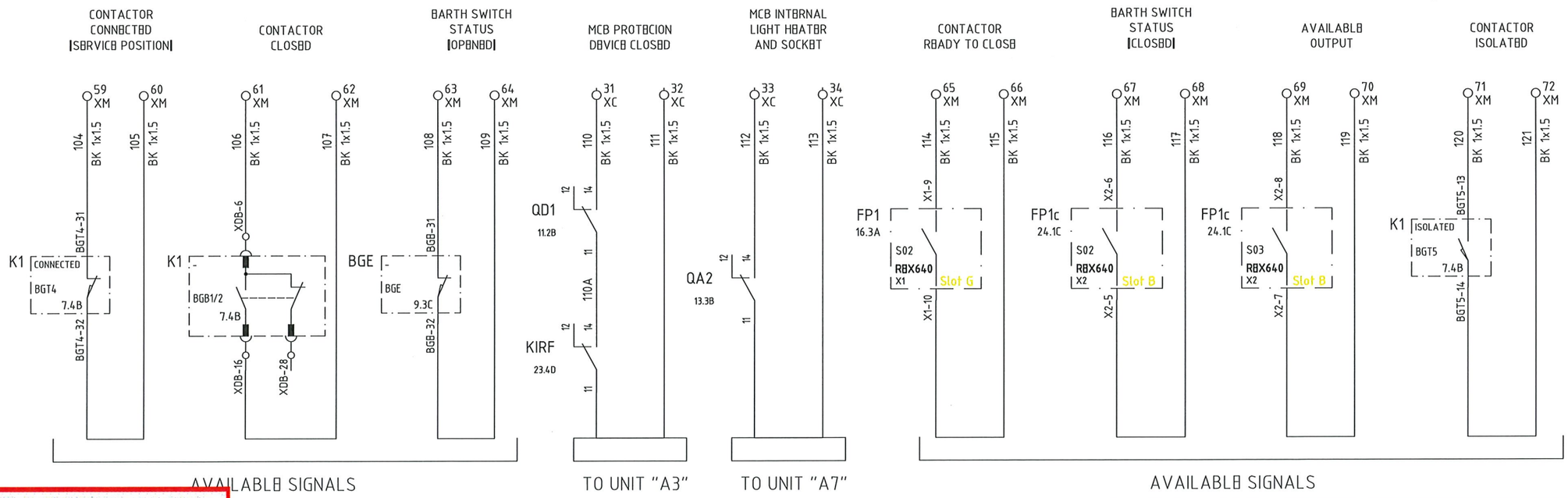
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

AVAILABLE SIGNALS



NO MARK UP AS COMMISSIONED: MARINA GIRETTI 27/3/25



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= +A2
DWG n°: 231151/SD/20
Item n°: PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
Availables Signals

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 28 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

TYP - TR200ED1

XI

Ammeter Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	9.5D	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
2	9.5D	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
3	9.5D	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
			HL201GR	Cabur	HLD.2/PT/GR End section - Grey
4	8.4A	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
5	8.4B	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
6	8.4B	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
7	8.4B	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
8	8.4B	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
			HL201GR	Cabur	HLD.2/PT/GR End section - Grey

TYP - TR200ED1

XV

Voltmetric Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	10.2D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
2	10.3D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
3	10.3D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
4	10.3D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
			HB201GR	Cabur	HSCB.6/PT/GR End section - Grey
5	10.4D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
6	10.5D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
7	10.5D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
8	10.5D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
			HB201GR	Cabur	HSCB.6/PT/GR End section - Grey
9	10.7D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
10	10.7D	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
			HB201GR	Cabur	HSCB.6/PT/GR End section - Grey
11	14.4C	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
12	14.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
13	14.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
14	14.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
			HB201GR	Cabur	HSCB.6/PT/GR End section - Grey
15	15.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
16	15.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
			HB201GR	Cabur	HSCB.6/PT/GR End section - Grey

NO MARK UP
AS COMMISSIONED: MATIA GIRARDI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= +A2

DWG n° : 231151/SD/20

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Terminal stripes

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 29 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

TYP - TR200ED1
XC
Interconnection Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	11.1B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
2	11.1C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
3	11.1B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
4	11.1C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
			HM321GR	Cabur	HMT.6/PT/GR End section - Grey
5	11.7B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
6	11.7C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
7	11.7B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
8	11.7C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
			HM321GR	Cabur	HMT.6/PT/GR End section - Grey
9	13.1A	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
10	13.1B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
11	13.2A	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
12	13.2B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
			HM321GR	Cabur	HMT.6/PT/GR End section - Grey
13	14.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
14	14.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
15	14.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
16	14.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
17	14.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
18	14.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
19	14.2B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
20	14.2C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey
21	15.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
22	15.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
23	15.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
24	15.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey
25	25.3A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
26	25.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
27	28.2A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
28	28.2A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
29	26.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
30	26.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
31	28.4C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
32	28.4C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
33	28.5C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
34	28.5C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey

NO MARK UP
AS COMMISSIONED: MATIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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+A2
DWG n° : 231151/SD/20
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	21/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Terminal stripes

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 3,0 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

TYP - TR200ED1

XM

Interface Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	10.4E	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
2	10.5E	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
3	10.5E	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
4	10.5E	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey
5	20.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
6	20.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
7	20.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
8	20.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
9	21.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
10	21.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
11	21.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
12	21.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
13	21.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
14	21.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
15	22.2A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
16	22.2B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
17	22.3A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
18	22.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
19	22.8B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
20	22.8A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
21	23.5A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
22	23.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
23	23.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
24	23.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
25	23.7A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
26	23.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
27	23.8A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
28	23.8B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
29	24.8A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
30	24.8B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
31	24.9A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
32	24.9B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
33	25.5A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
34	25.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
35	25.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
36	25.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
37	25.7A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
38	25.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
39	25.8A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
40	25.8B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type

NO MARK UP

AS COMMISSIONED: MA m. A GIROm

27/3/25

VALID FOR CONSTRUCTION

VENDOR DOCUMENT - FDL DWG:

123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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DWG n° : 231151/SD/20

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	21/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :

SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1

Terminal stripes

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 31

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

TYP - TR200ED1

XM

Interface Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
41	25.9A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
42	25.9B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
43	26.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
44	26.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
45	26.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
46	26.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
47	26.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
48	26.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
49	26.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
50	26.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
51	27.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
52	27.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
53	28.3A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
54	28.5A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
55	28.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
56	28.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
57	28.7A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
58	28.9A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
59	28.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
60	28.2C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
61	28.2C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
62	28.3C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
63	28.3C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
64	28.3C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
65	28.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
66	28.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
67	28.7C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
68	28.7C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
69	28.8C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
70	28.8C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
71	28.9C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
72	28.9C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
73		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
74		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
75		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
76		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
77		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
78		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
79		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
80		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
81		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type

NO MARK UP

AS COMMISSIONED: MARIA GIRO

27/3/25

VALID FOR CONSTRUCTION

VENDOR DOCUMENT - FDL DWG:

123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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+A2

DWG n° : 231151/SD/20

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	21/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :

SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1

Terminal stripes

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00020

SHEET 32

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

TYP - TR200ED1

XM

Interface Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
82		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey

NO MARK UP

AS COMMISSIONED: MS TM/A GIROTM.

27/3/25

VALID FOR CONSTRUCTION

VENDOR DOCUMENT - FDL DWG:

123A90-FDL-1724002197-EL-DG-00020

REV.:	DATE:	SIGNATURE:
3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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+A2	
DWG n° :	231151/SD/20
Item n° :	PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	21/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

TITLE :

SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1

Terminal stripes

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

	DRAWING NO.	SHEET	REV.
A3	1723002197-EL-DG-00020	33	03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

NO MARK UP AS COMMISSIONED: MARIA GIROTTI 27/3/25

Nome/Item	Fg/Sh	Tipo/Type	Q.tà	Descrizione/Description	Costruttore/Manufacturer	Ubicazione (descrizione)	Quadro (descrizione)
BB	7	1VCF698000R0012	1	OPTICAL FIBER CABLE PRE-MANUFACT. LENS L=5M	ABB	A2	TRANSFORMER FEEDER TR-200ED1
BGE	9	1VCF599700R0131	1	EARTHING SWITCH ST-E 17.31 150	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599505R0001	1	5 AUX CONTACTS FOR EARTHING SWITCH	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599504R0063	1	KEY LOCKS ON EARTHING SWITCH	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599700R0290	1	EARTHING SWITCH OPERATING LEVER	ABB	A2	TRANSFORMER FEEDER TR-200ED1
C1	9	43931118	1	VPIS 3,3÷36KV - DEVICE SIGNALLING VOLTAGE PRESENT KIT	ELECTRONSYSTEM	A2	TRANSFORMER FEEDER TR-200ED1
CB	7	1VCF698000R0012	1	OPTICAL FIBER CABLE PRE-MANUFACT. LENS L=5M	ABB	A2	TRANSFORMER FEEDER TR-200ED1
CC	9	1VCF698000R0012	1	OPTICAL FIBER CABLE PRE-MANUFACT. LENS L=5M	ABB	A2	TRANSFORMER FEEDER TR-200ED1
E1	13	74041	1	LED LAMP 4W 4000K 313x30x22	Beghelli	A2	TRANSFORMER FEEDER TR-200ED1
E8	10	1VCF501000R0001	1	RESISTOR TR318 27R/J 27ohm 500W L=2,5M	ABB	A2	TRANSFORMER FEEDER TR-200ED1
EH1	13	R1R150230	1	SPACE HEATER SKR 150W ALIM. 220VCA	Torresan	A2	TRANSFORMER FEEDER TR-200ED1
FF1	10	1YMB751209M1502	1	FUSE-LINKS FOR VOLTAGE TRANSFORMER PROTECTION 6/12kV 2A 192x53mm - CEF-VT	ABB	A2	TRANSFORMER FEEDER TR-200ED1
FF2	10	1YMB751209M1502	1	FUSE-LINKS FOR VOLTAGE TRANSFORMER PROTECTION 6/12kV 2A 192x53mm - CEF-VT	ABB	A2	TRANSFORMER FEEDER TR-200ED1
FF3	10	1YMB751209M1502	1	FUSE-LINKS FOR VOLTAGE TRANSFORMER PROTECTION 6/12kV 2A 192x53mm - CEF-VT	ABB	A2	TRANSFORMER FEEDER TR-200ED1
FP1	16	1VCF698331R0001	1	REX640B10NN+AIM1+AIM1+ARC1+BIO1+BIO1+BI+O2+CMP2+COM1+LNG1+MCT1+PCL4+PSM3+SCT	ABB	A2	TRANSFORMER FEEDER TR-200ED1
HGR	13	TRT-10A230V-NC	1	Regolable Thermostat -10÷80°C 1NC IP20 DIN Mounting	Fandis	A2	TRANSFORMER FEEDER TR-200ED1
K1	7	1VCF305661R3200	1	VACUUM CONTACTOR VSC7/P 3P 7,2KV 400A DOUBLE COMMAND (DCO)	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309500R3881	1	VACUUM CONTACTOR FITTED FOR DIN E=442mm FUSES	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309500R0882	1	NAMEPLATE IN ENGLISH LANGUAGE	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309500R1881	1	VACUUM CONTACTOR FOR UNIGEAR/UNISEC	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309503R0881	1	MAC-R2 ELECTRONIC CONTROL MODULE TYPE STANDARD	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309503R1881	1	VACUUM CONTACTOR CONFORMS TO THE IRC 62271-106 STANDARDS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309588R0909	1	POWER SUPPLY VOLTAGE OF MAC-R2 ELECTRONIC CONTROL MODULE 110VDC	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309500R0100	1	OPERATIONS COUNTER FOR VSC/P VERSIONE FOR SHIPPINGS REGISTERS VERSION	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF349700R0407	1	MECHANICAL INTERLOCK WITH DOOR	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF339700R0291	1	POSITION CONTACTS FOR VD4	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF339700R1909	1	LOCKING MAGNET ON THE TRUCK 110Vdc (RL82)	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309503R0251	1	KIT FOR FUSES DIAMETER 87mm	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF309500R0192	1	LIFTING TOOL FOR SHIPPINGS REGISTERS VERSION	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF597111R0140	1	POWER CUBE PB1/E L600 12kV 400A 31.5KA 3S	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599700R0882	1	NAMEPLATE IN ENGLISH LANGUAGE FOR POWERCUBE	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599700R5886	1	PB FOR VSC	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599700R4882	1	PAINTED DOOR	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599504R0042	1	LOCK TO PREVENT RACKING-IN WITH EARTHING SWITCH	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599700R0162	1	58 POLES CONNECTOR + ATOXIC WIRING L=0.8mt	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599505R0111	1	FAIL-SAFE SHUTTER ELEMENTS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF579700R0909	1	ELECTROMECHANICAL ISOLATING INTERLOCK CIRCUIT-BREAKER/DOOR 110Vdc (RL84)	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1VCF599700R0280	1	INTERLOCK FOR DOOR EARTHING SWITCH	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		1YMB711229M4612	1	BACK UP CURRENT LIMITING FUSE LINK 6/12kV 63A 442x65mm - CEF	ABB	A2	TRANSFORMER FEEDER TR-200ED1
K86	22	RMB213-C110T	1	BISTABLE RELAY 110VDC 7SC-5A TROP.	Amra	A2	TRANSFORMER FEEDER TR-200ED1
		PAVM321	1	SOCKET WITH SCREW TO RELAY TYPE PAVM321	Amra	A2	TRANSFORMER FEEDER TR-200ED1
K94B	23	ER 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LED	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		ER 728 6	1	CR-MH1 METAL RETAINING JUMPER	ABB	A2	TRANSFORMER FEEDER TR-200ED1

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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+A2
DWG n°: 231151/SD/20
Item n°: PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Bill of Materials

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 34 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

NO MARK UP AS COMMISSIONED: MARIA GIROTTI 27/3/25

Nome/Item	Fg/Sh	Tipo/Type	Q.tà	Descrizione/Description	Costruttore/Manufacturer	Ubicazione (descrizione)	Quadro (descrizione)
K94OT	23	BR 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LBD	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
K94P	23	BR 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LBD	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
K94WT	23	BR 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LBD	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
KGR	13	BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 552 0	1	CR-M230AC2L SUPPLY 230VAC 2C/O 250V/6A LBD	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
KIRF	23	BR 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LBD	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
KSIL	27	2TLA010040R0000	1	BSR10 Vaux=24VDC SAFBTY RBLAY	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
KT1	20	H3DKM2ACDC24240	1	MULTIFUNCTION TIMBR RBLAY Vaux=24÷240Vac/dc - 2SC	Omron	A2	TRANSFORMBR FBDBR TR-200BD1
L1C	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
L1I	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
L1MS	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
L2C	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
L2I	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
L3C	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
L3I	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
L3MS	19	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A2	TRANSFORMBR FBDBR TR-200BD1
LS	13	Z15GW2-1-1453270	1	MICROSWITCH 1sc	Omron	A2	TRANSFORMBR FBDBR TR-200BD1
		APB-PG	1	COVBR TO MICRO-SWITCH	Omron	A2	TRANSFORMBR FBDBR TR-200BD1
OD1	9	990003	1	MBDIUM VOLTAGB DISCHARGB DMI-9-10-1-L Ur=9kV	DBHN	A2	TRANSFORMBR FBDBR TR-200BD1
OD2	9	990003	1	MBDIUM VOLTAGB DISCHARGB DMI-9-10-1-L Ur=9kV	DBHN	A2	TRANSFORMBR FBDBR TR-200BD1
OD3	9	990003	1	MBDIUM VOLTAGB DISCHARGB DMI-9-10-1-L Ur=9kV	DBHN	A2	TRANSFORMBR FBDBR TR-200BD1
P1	20	KW 080 2	1	MP1-10B BLACK PUSH BUTTON UNSTABLB	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
PR	22	KW 101 6	1	YBLLOW LIGHT PUSH BUTTON	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		KV 022 5	1	MLBL-05W YBLLOW LBD BLOCK INTBGRATBD 110÷130VAC	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
PTT	10	1VCF498412R0100	1	TV/F COMPARTMBNT 12/17kV IP4X L=590mm OUTLBT ON THB BACK WITH N°3 VT + N°14 MAIN CONTACTS + N°2+2 SBRVICB/ISOLATBD POSITION CONTACTS	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		1VCF499800R0302	1	NAMBPLATB IN BNGLISH LANGUAGB FOR TV/F	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
QA2	13	B427917	1	DDA202 AC 25A 300MA BLOCCO DIFFBRBNZIALB 2P	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		A563819	1	S2-CS/H6R CONTATTO DI SBGNALAZIONB/AUX 1SC	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
		S550284	1	S202M C10 INTBRRUTTORB AUTOMATICO 10KA 2P	ABB	A2	TRANSFORMBR FBDBR TR-200BD1
QD1	11	A563819	1	S2-CS/H6R CONTATTO DI SBGNALAZIONB/AUX 1SC	ABB	A2	TRANSFORMBR FBDBR TR-200BD1

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3_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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+A2
DWG n° : 231151/SD/20
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Bill of Materials

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

A3
DRAWING NO. 1723002197-EL-DG-00020
SHEET 35
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

NO MARK UP AS COMMISSIONED: MARIA GIROTTI 27/3/25

Nome/Item	Fg/Sh	Tipo/Type	Q.tà	Descrizione/Description	Costruttore/Manufacturer	Ubicazione (descrizione)	Quadro (descrizione)
QD1	11	S550253	1	S202M C 4 INTERRUTTORE AUTOMATICO 10KA 2P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
QD2	11	S550253	1	S202M C 4 AUTOMATIC CIRCUIT-BREAKER 10KA 2P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		a563819	1	S2-CS/H6R AUXILIARY STATE CONTACT	ABB	A2	TRANSFORMER FEEDER TR-200ED1
QD4	11	A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
QV1	10	S550680	1	S204M C 2 AUTOMATIC CIRCUIT-BREAKER 10KA 4P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	A2	TRANSFORMER FEEDER TR-200ED1
QV2	10	S550680	1	S204M C 2 AUTOMATIC CIRCUIT-BREAKER 10KA 4P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	A2	TRANSFORMER FEEDER TR-200ED1
QV3	10	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	A2	TRANSFORMER FEEDER TR-200ED1
QV4	14	S550680	1	S204M C 2 AUTOMATIC CIRCUIT-BREAKER 10KA 4P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	A2	TRANSFORMER FEEDER TR-200ED1
QV5	15	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	A2	TRANSFORMER FEEDER TR-200ED1
S1C	26	BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	A2	TRANSFORMER FEEDER TR-200ED1
S20	26	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
SA1	24	BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		BO 571 3	1	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	A2	TRANSFORMER FEEDER TR-200ED1
SA2	22	BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		BO 571 3	1	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	A2	TRANSFORMER FEEDER TR-200ED1
		KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	A2	TRANSFORMER FEEDER TR-200ED1
TI-L1	8	ATB-10-BS__013	1	CURRENT TRANSFORMER 7,2kV 50Hz 50/1A cl.0,5-5P15 (2,5VA)- 25kA	BSITAS	A2	TRANSFORMER FEEDER TR-200ED1
TI-L2	8	ATB-10-BS__013	1	CURRENT TRANSFORMER 7,2kV 50Hz 50/1A cl.0,5-5P15 (2,5VA)- 25kA	BSITAS	A2	TRANSFORMER FEEDER TR-200ED1
TI-L3	8	ATB-10-BS__013	1	CURRENT TRANSFORMER 7,2kV 50Hz 50/1A cl.0,5-5P15 (2,5VA)- 25kA	BSITAS	A2	TRANSFORMER FEEDER TR-200ED1
TO	9	KAP-150/250-55	1	CURRENT TRANSFORMER 0,72/3/-kV 100/1 50Hz	BSITAS	A2	TRANSFORMER FEEDER TR-200ED1
TR1	19	800208	1	MODBUS DATACARD 8 CHANNELS	Bxertherm	A2	TRANSFORMER FEEDER TR-200ED1
TU-L1	10	TJP4.3__002	1	VT ON RESIN 7,2KV 50-60Hz 6600:r3/110:r3-110:r3-110:3 Cl.0,5-3P Pr.20VA, Cl.0,5-3P Pr.30VA, Cl.3P Pr.30VA	ABB	A2	TRANSFORMER FEEDER TR-200ED1
TU-L2	10	TJP4.3__002	1	VT ON RESIN 7,2KV 50-60Hz 6600:r3/110:r3-110:r3-110:3 Cl.0,5-3P Pr.20VA, Cl.0,5-3P Pr.30VA, Cl.3P Pr.30VA	ABB	A2	TRANSFORMER FEEDER TR-200ED1
TU-L3	10	TJP4.3__002	1	VT ON RESIN 7,2KV 50-60Hz 6600:r3/110:r3-110:r3-110:3 Cl.0,5-3P Pr.20VA, Cl.0,5-3P Pr.30VA, Cl.3P Pr.30VA	ABB	A2	TRANSFORMER FEEDER TR-200ED1
XC		HM320GR	12	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
		HM250GR	22	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
		HM251GR	3	HMT.4/PT/GR End section - Grey	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
		HM321GR	3	HMT.6/PT/GR End section - Grey	Cabur	A2	TRANSFORMER FEEDER TR-200ED1

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ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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DWG n°: 231151/SD/20
Item n°: PF1113279

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SG-100D1 – FUNCTIONAL TRANSF FEEDER TR-200ED1
Bill of Materials

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

A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 3.6 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

Nome/Item	Fg/Sh	Tipo/Type	Q.tà	Descrizione/Description	Costruttore/Manufacturer	Ubicazione (descrizione)	Quadro (descrizione)
XI		HB220GR	8	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
		HL201GR	2	HLD.2/PT/GR End section - Grey	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
XM		HM250GR	82	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
		HM251GR	2	HMT.4/PT/GR End section - Grey	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
XS1	13	8 9447 7	1	SOCKET	ABB	A2	TRANSFORMER FEEDER TR-200ED1
XV		HB210GR	16	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type	Cabur	A2	TRANSFORMER FEEDER TR-200ED1
		HB201GR	5	HSCB.6/PT/GR End section - Grey	Cabur	A2	TRANSFORMER FEEDER TR-200ED1

NO MARK UP
AS COMMISSIONED: MATTIA GIROTTI
27/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00020
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

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DWG n° : 231151/SD/20
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SG-100D1 - FUNCTIONAL TRANSF FEEDER TR-200ED1
Bill of Materials

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A3 | DRAWING NO. 1723002197-EL-DG-00020 | SHEET 3.7 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00020 Rev.03

BASE LOAD POWER HUB (BLPH)

TR-200ED1 Termination and Wiring Diagram

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
27/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
FRONT PAGE

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

SCALE : NTS

A3

DRAWING NO. 1723001697-EL-DG-00012

SHEET 001

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
02	001	FRONT PAGE	
02	002	SUMMARY and GENERAL NOTES	
02	003	LAYOUT - AUXILIARY CONTROL PANEL	
02	004	INTERNAL POWER CIRCUIT DIAGRAM	
02	005	PROTECTION DEVICES ON TRANSFORMER	
02	006	THERMAL CONTROL UNIT	
02	007	TERMINAL STRIP	
02	008	EQUIPMENT LIST	

AS COMMISSIONED
GIROTTI MATTIA
NO MARK UP
27/03/2025

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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
SUMMARY and GENERAL NOTES

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

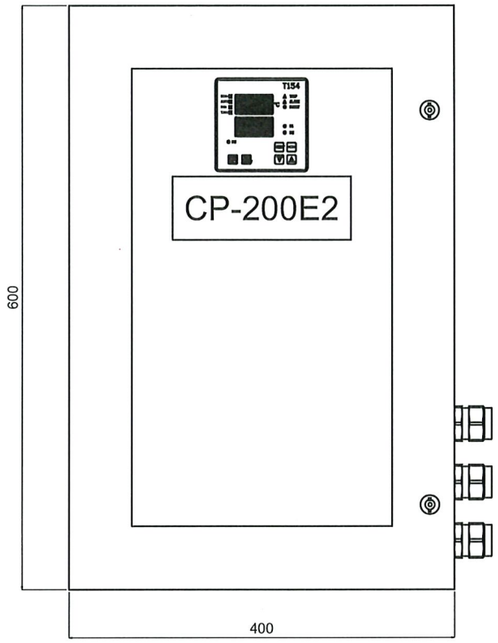
A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 002 | REV. 02

F.to UNI A3: 420mmx297mm

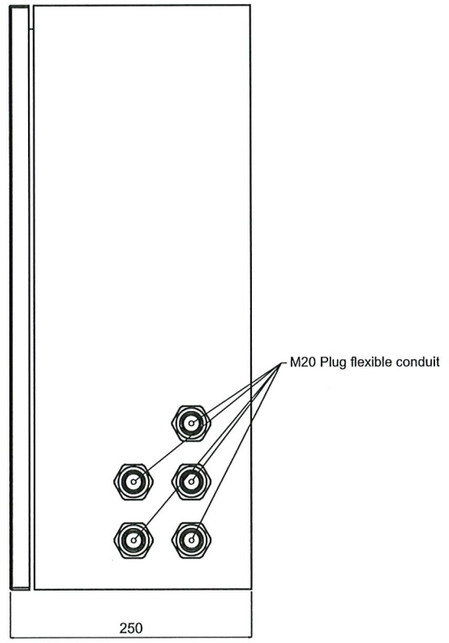
File Name : 1723001697-EL-DG-00012 Rev. 02

LAYOUT - AUXILIARY CONTROL PANEL

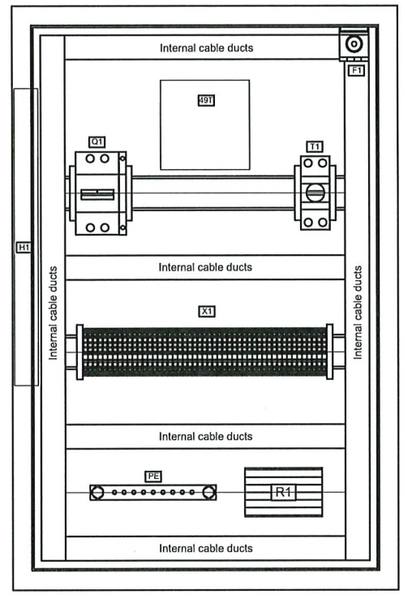
Frontal view



Left side view

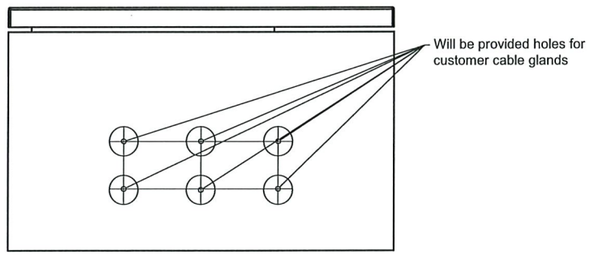


Internal view



PE BAR IS GROUNDED ON INTERNAL PLATE
OF THE PANEL BOX

Bottom view



AUXILIARY CONTROL PANEL	
PROTECTION DEGREE :	IP65
VENTILATION :	NATURAL
BOX MATERIAL :	STAINLESS STEEL 15/10
INTERNAL REMOVABLE PLATE :	STELL 15/10

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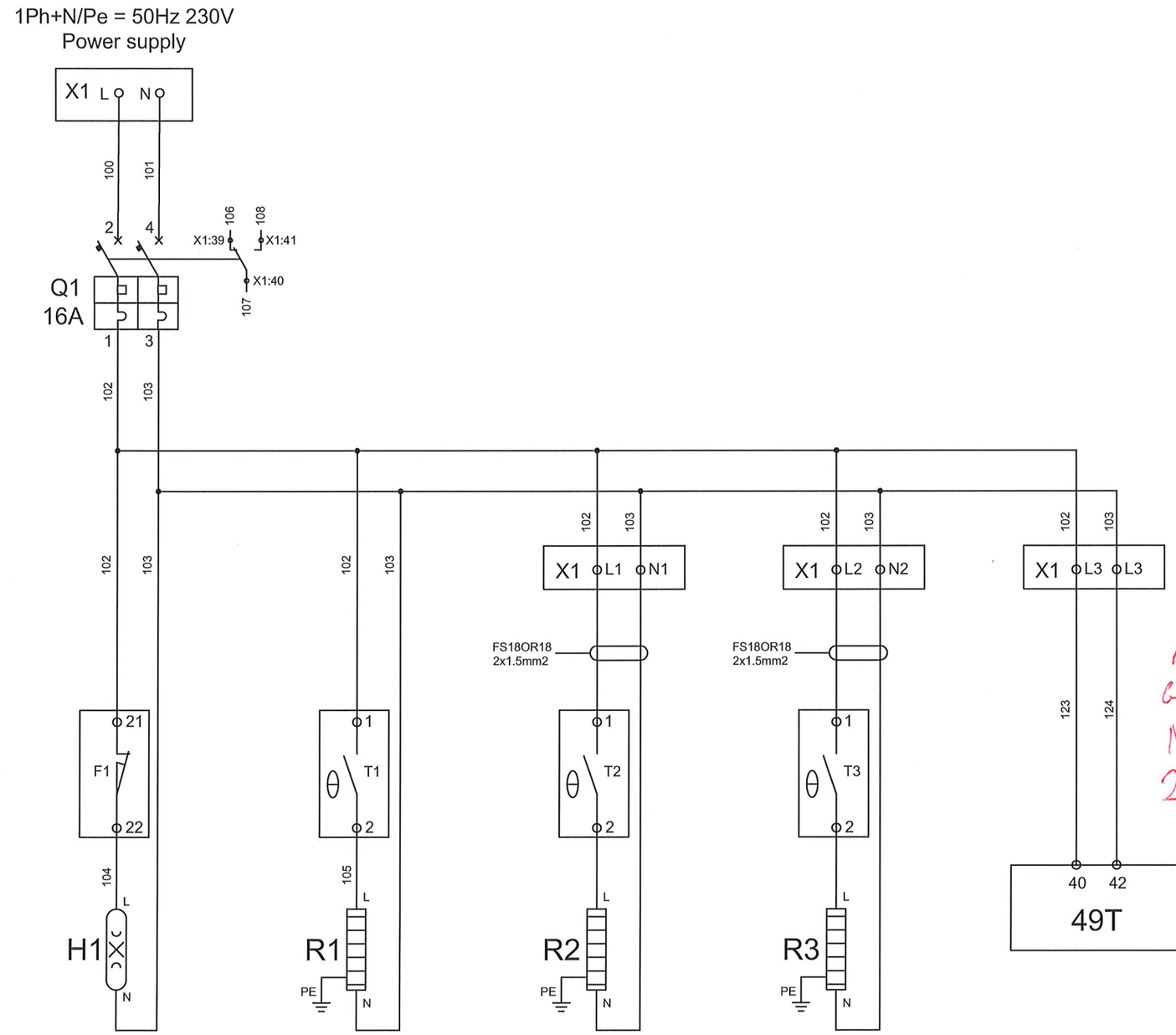
TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
LAYOUT – AUXILIARY CONTROL PANEL

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

A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 003 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02



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ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
INTERNAL POWER CIRCUIT DIAGRAM

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

SCALE : NTS

A3

DRAWING NO. 1723001697-EL-DG-00012

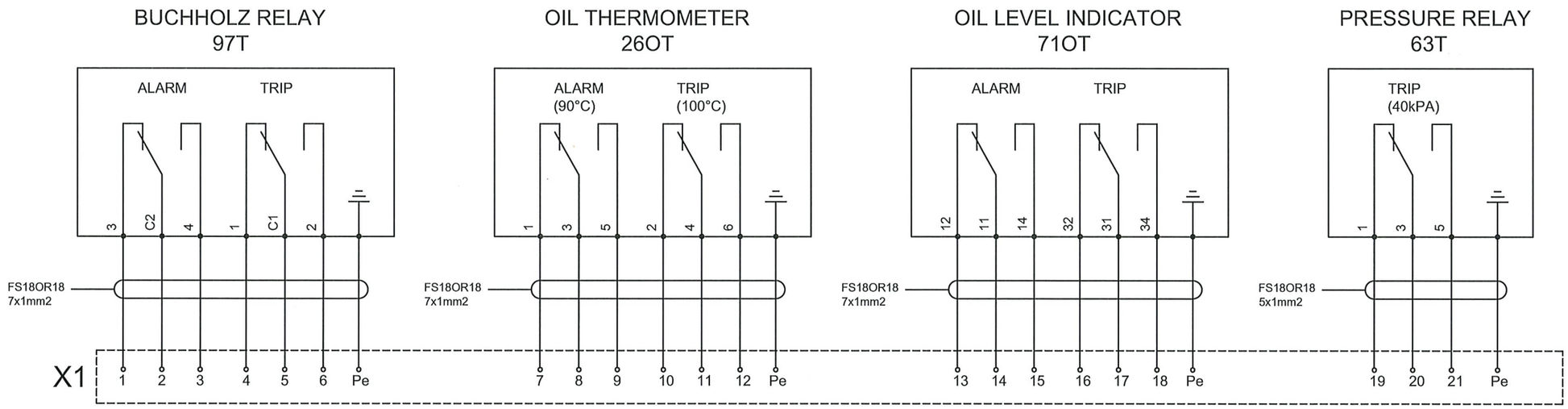
SHEET 004

REV. 02

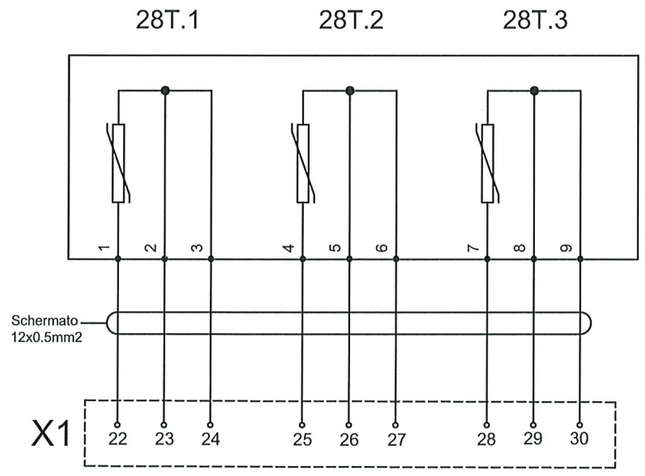
F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

PROTECTION DEVICES ON TRANSFORMER



PT100 - WINDING SENSORS



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ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
PROTECTION DEVICES ON TRANSFORMER

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

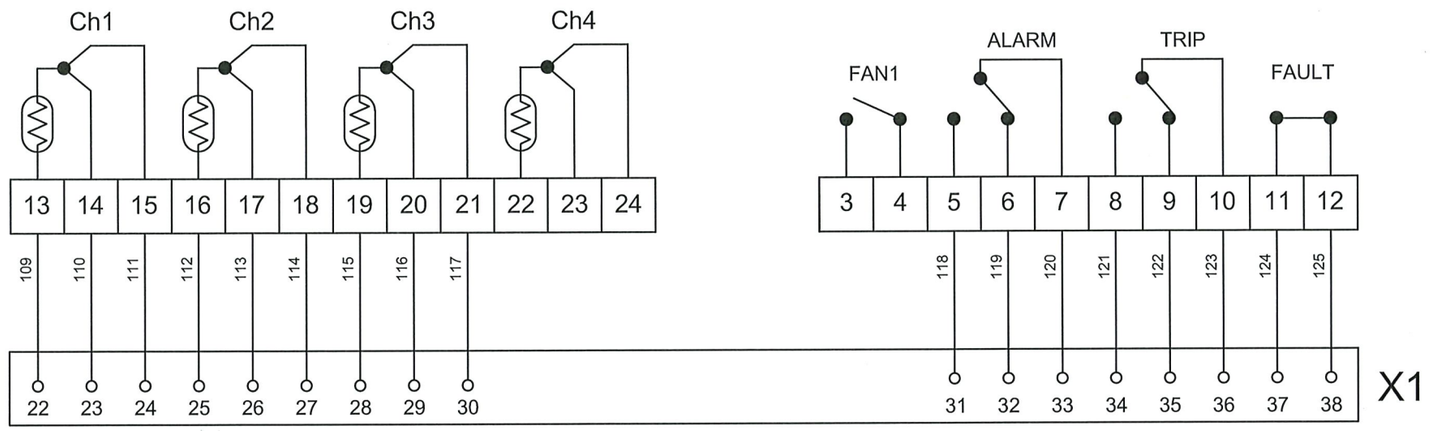
A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 005 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

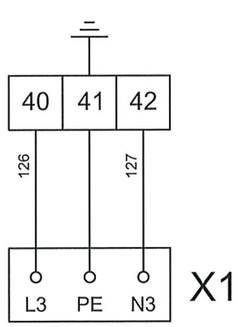
WINDING TEMPERATURE INDICATOR - 49T

T154 - TECSYSTEM



POWER SUPPLY

24÷240 Vac-dc 50 / 60Hz



SETTING:

- OIL WINDING: 95°C
- TRIP WINDING: 105°C

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ROSETTI MARINO

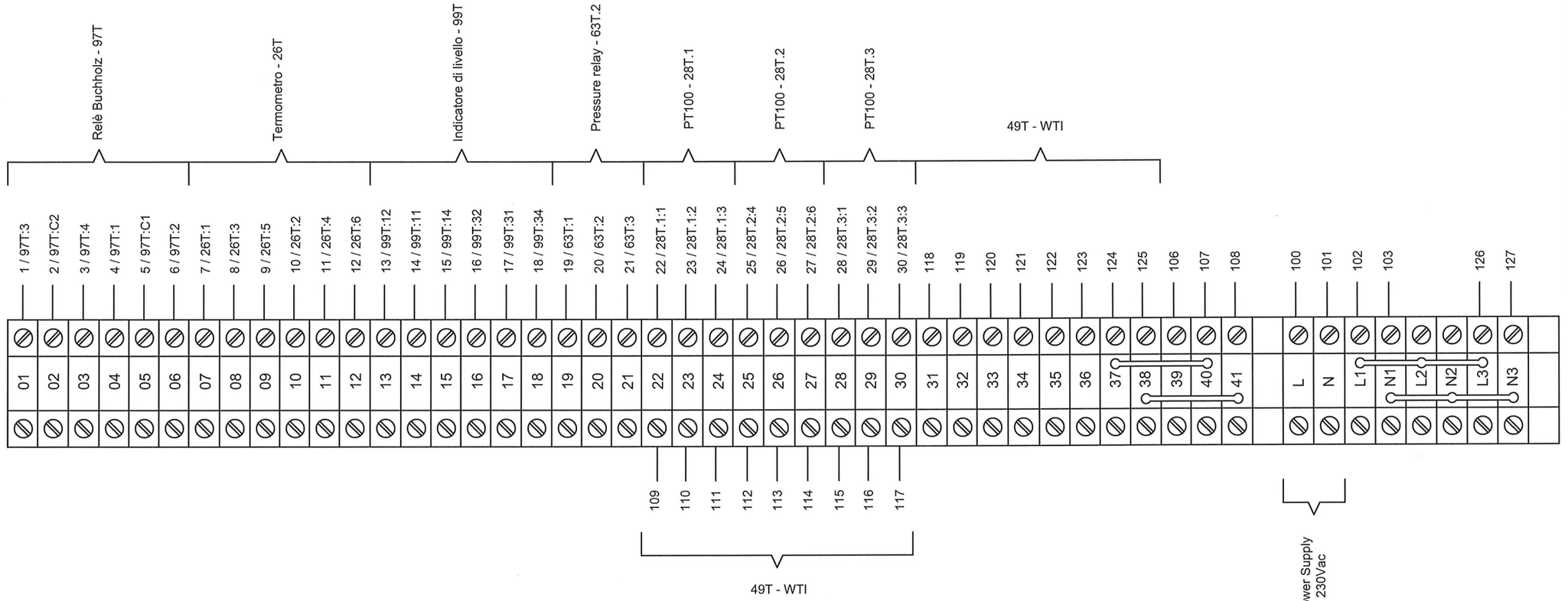
TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
THERMAL CONTROL UNIT

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

A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 006 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02



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00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

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ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
TERMINAL STRIP

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

A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 007 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

Label	Description	Supplier	Model No.	Quantity	
Q1	MCB	ABB	S202 - C16 + S2C - H6R	1	
H1	CONTROL PANEL LAMP	ARTELETA	230V - 8W	1	
F1	MICROSWITCH	PIZZATO	FM 1815-S1	1	
R1	CONTROL PANEL HEATER - 15W	FANDIS	HWM015	1	
T1	CONTROL PANEL THERMOSTAT	FANDIS	TRT-10A230V-NCF	1	
R2	H.V. 6.6kV - CABLE BOX HEATER - 100W	FANDIS	HWM0100	1	
T2	H.V. 6.6kV - CABLE BOX HEATER THERMOSTAT	FANDIS	TRT-10A230V-NCF	1	
R3	L.V. 420V - CABLE BOX HEATER - 100W	FANDIS	HWM0100	1	
T3	L.V. 420V - CABLE BOX HEATER THERMOSTAT	FANDIS	TRT-10A230V-NCF	1	
49T	THERMAL CONTROL UNIT	TECSYSTEM	T154	1	
X1	TERMINAL STRIP	PHOENIX	ST2.5	46	

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TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
EQUIPMENT LIST

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

A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 008 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

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Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE