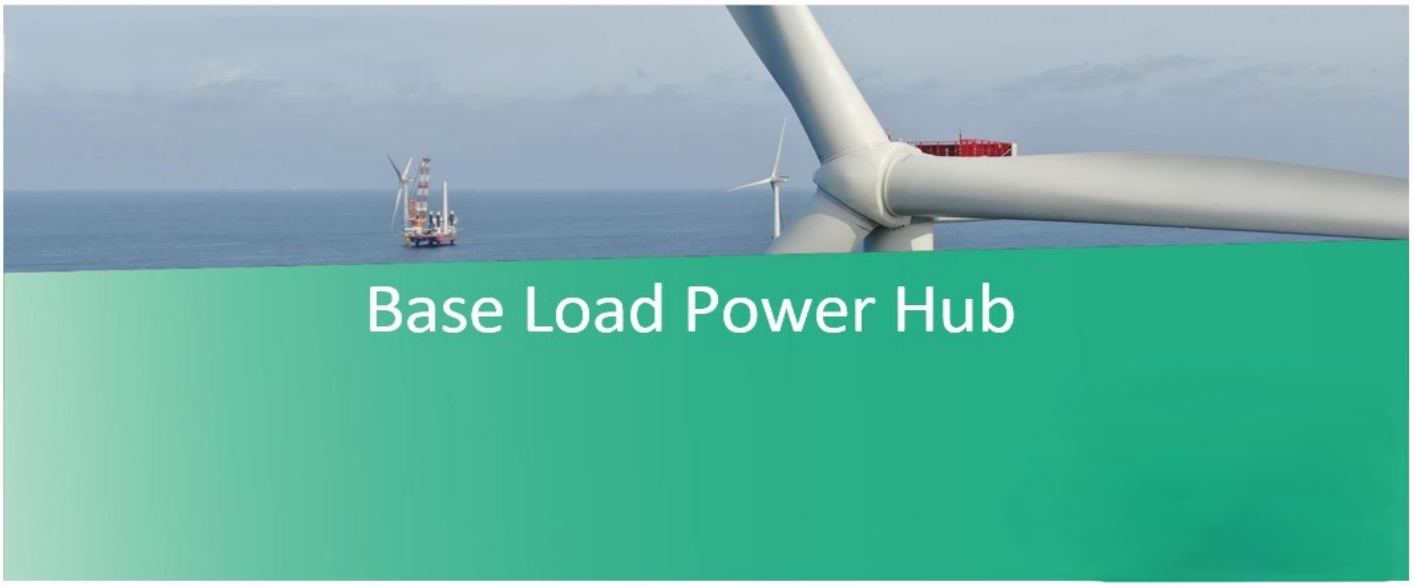
CROSSWIND

ROSETTI MARINO

PROVERLIS

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



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM	82 Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-40 Power Transformer 1.6 MVA (TR-200DE1)

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

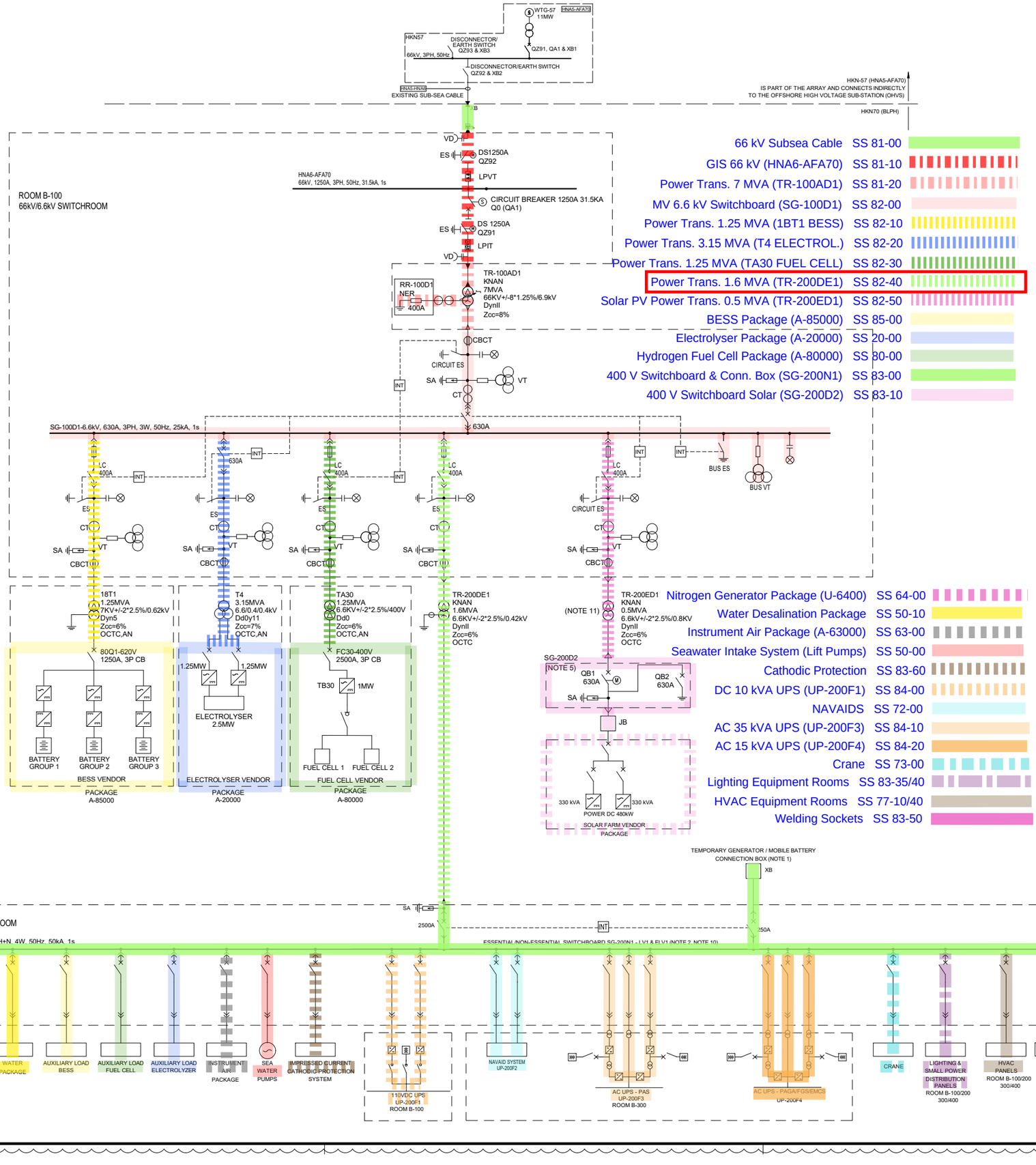
Sub System N°:	82-40	Tick as appropriate	ONSHORE	OK
Description:	Power Transformer 1.6 MVA (TR-200DE1)		OFFSHORE	

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	2025-04-28	2025-04-28
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-28T11:13:06.012Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-28T12:50:18.586Z

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

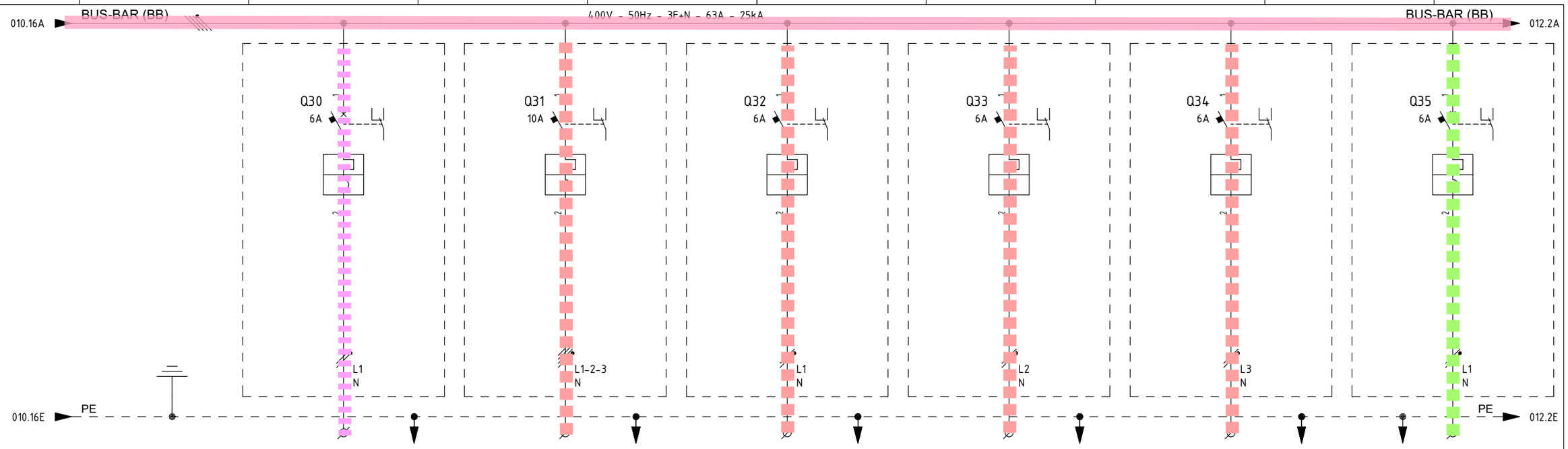
TITLE :

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-640F1	CP-100E2	CP-100E3	CP-100E4	RR-100D1	CP-200E1
UTILITY				2	UCP - N2 PACKAGE - AUXILIARY	AUXILIARY TRAFO OLTC	AUXILIARY TRAFO AVR	AUXILIARY TRAFO 7MVA	AUXILIARY NER	AUXILIARY TRAFO 1.6MVA
CUBICLE				3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT				4/5	0.5 KW | 2.72 A	1 KW | 1.81 A	0.3 KW | 1.63 A	0.5 KW | 2.72 A	0.3 KW | 1.63 A	0.5 KW | 2.72 A
TYPICAL FUNCTIONAL				6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE			7	S302P-C6	S304P-C10	S302P-C6	S302P-C6	S302P-C6	S302P-C6
	VERSION			8	2P / MINIATURE	4P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS			9	In=6A - Curve C	In=10A - Curve C	In=6A - Curve C	In=6A - 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 / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR			mm²	31	3G2.5	5G4	3G2.5	3G2.5	3G2.5	3G2.5

SUBSYSTEM 64-00 | SUBSYSTEM 81-20 | SUBSYSTEM 81-20 | SUBSYSTEM 81-20 | SUBSYSTEM 81-20 | SUBSYSTEM 82-40

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

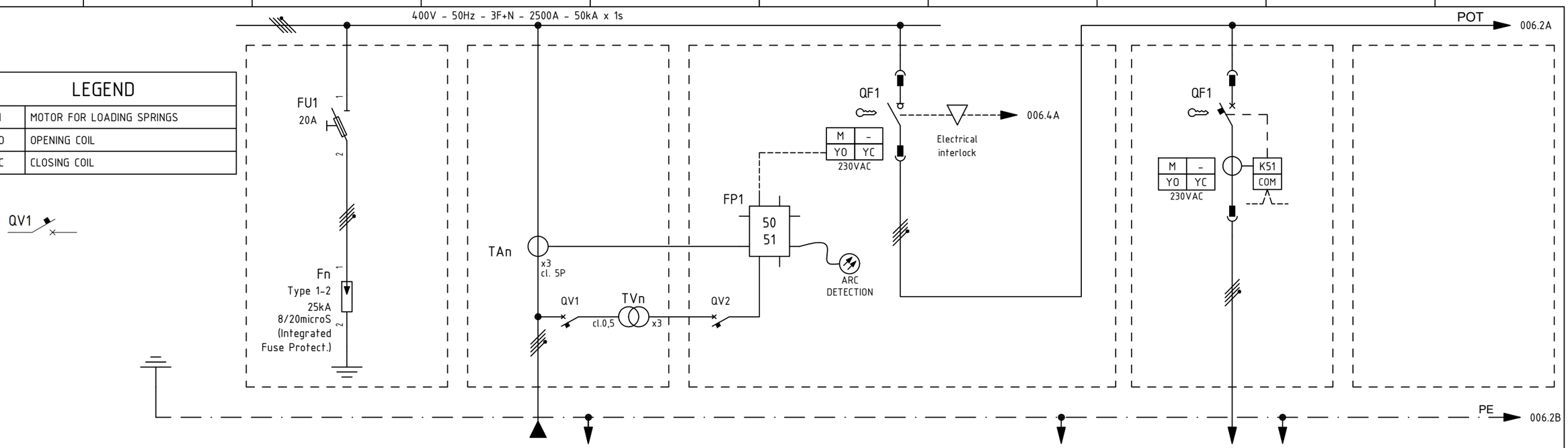
SHEET 011

REV. 03

F.to UNI A3: 420mmx297mm

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

LEGEND	
M	MOTOR FOR LOADING SPRINGS
YO	OPENING COIL
YC	CLOSING COIL



ITEM			1	-	-	-	A-20000	
UTILITY			2	SURGE ARRESTER	-	INCOMING TRASFORMER	ELECTROLYSER AUXILIARY LOAD	
COLUMN/CUBICLE			3	-	A1 / +02	A1 / +05	A1 / +08	
RATED POWER | RATED CURRENT			4/5	- | -	- | -	- | -	293 kW | 497 A	
TYPICAL FUNCTIONAL			6	-	-	-	L3-630	
CIRCUIT BREAKER (ABB)	TYPE		7	-	-	E4.2N/MS-3200 4P	E1.2C-1250 4P	
	VERSION		8	-	-	WITHDRAWABLE	WITHDRAWABLE	
	TRIP UNITS		9	-	-	-	EKIP HI TOUCH LSIG = 630	
	Icu	KA	10	-	-	66 kA (1s)	50 kA	
OVERLOAD	L	Range A	11	-	-	-	(0.4 ÷ 1) x In	
		Range t	12	-	-	-	t=k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	-	-	-	(0.6 ÷ 10) x In [EXCLUDABLE]	
		Range t	14	-	-	-	t=k / t=k/I²	
INST. SHORT-CIRCUIT	I	Range A	15	-	-	-	(1.5 ÷ 15) x In	
		Range t	16	-	-	-	instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	-	-	-	(0.1 ÷ 1) x In (EXCLUDABLE)	
		Range t	18	-	-	-	t=k / t=k/I^2	
CONTACTOR (ABB)			19	-	-	-	-	
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	
SURGE ARRESTER (DEHN)			21	DVCI 1 255 FM (961205)	-	-	-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	
FUSE HOLDER (ITALWEBER)			23	Fuses 20A gG	FROM SUBSISTEM 82.40	-	SUBSISTEM 20.00	
INDIRECT PROTECTION (ABB)			24	-		REF615K-(version F) HBFFAEAGNDCABNA11G		
VOLTMETER			25	-		-	-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	TAR1052K5N01V_18 - 2500/1A	-	-	
	PERFORMANCE/CLASS		27	SUBSISTEM 82.40	5VA / 5P20	SUBSISTEM 82.40	-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28		TTV020400VC1 - 400r3/110r3V		-	
	PERFORMANCE/CLASS		29		20VA / 0.5		-	
LOCK-OUT RELAY (-)			30	-	-	-	-	
POWER CONDUCTOR		mmq	31	-	-	-	1 x 150 + [4 x (1 x 300)]	

QV1

QV1

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

DWG n° : 231298/SD/11

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 005

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00011 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:	2025-03-28	

System:	82	/	Main Power Distribution Medium Voltage 6.6 kV
SubSystem:	82-40	/	Power Transformer 1.6 MVA (TR-200DE1)

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	2025-03-28	2025-04-28
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-03-28T16:17:50.559Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-28T07:55:54.503Z

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 82-40 & process: COMM

Electrical	82-40 Power Transformer 1.6 MVA (TR-200DE1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
DP-200N1-Q35	AUX TRAFO 1,6 MVA - DP-200N1-Q35	ONSHORE	C10002927	FTR-2	100	2024-10-28	RFO 2
SG-100D1-A4-K1	FEEDER TR-200ED1	ONSHORE	C10004780	FTR-2	100	2024-12-18	RFO 2
		ONSHORE	C10004781	FTR-6	100	2025-02-04	RFO 2
TR-200DE1	6,6 / 0,42 kV 1,6 MVA Transformer	ONSHORE	C10004552	FP02	100	2025-01-13	RFO 2

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	82	Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-40	Power Transformer 1.6 MVA (TR-200DE1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000649	A	82002-CEM-1-L1 C10000476	Cable to be connected by SG-100D1 side. Point valid also for 82002-CEM-1-L2 and 82002-CEM-1-L3	.		Pschintu 2024-11-20	2024-11-26	Ecarotenuto 2024-11-26	2024-11-26
C30000650	B	82002-CEM-1-L1 C10000476	Trefoil formation is not as per drawing 123A90-DDL-EL-DD-20092 sh.009	.		Pschintu 2024-11-20	2025-01-24	Pschintu 2025-01-24	2025-01-24
C30000651	B	82002-CEM-1-L1 C10000476	Missing cable tags on external routing. Point valid also for 82002-CEM-1-L2 and 82002-CEM-1-L3	.		Pschintu 2024-11-20	2025-02-07	Pschintu 2025-02-07	2025-02-07
C30000652	B	82002-CEM-1-L1 C10000476	Missing cable cleats stainless steel with TPE cable protection. Point valid also for 82002-CEM-1-L2 and 82002-CEM-1-L3	.		Pschintu 2024-11-20	2025-01-03	Ecarotenuto 2025-01-03	2025-01-03
C30000752	B	83116-CEL C10000635	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000754	B	83001-CEC C10002134	Missing SS cable tags on external routing	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000755	B	83001-CEC C10002134	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000756	B	83002-CEC C10002135	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000757	B	83002-CEC C10002135	Missing cable tags inside and outside B-200	.		Pschintu 2024-11-22	2025-02-03	APolo 2025-02-03	2025-02-03

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	82	Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-40	Power Transformer 1.6 MVA (TR-200DE1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000758	B	83003-CEC C10003047	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000759	B	83003-CEC C10003047	Missing cable tags on all internal and external routing	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000760	B	83004-CEC C10004375	Missing cable tags on internal and external routing	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000761	B	83004-CEC C10004375	Core identification tags are missing inside CP-200E1	.		Pschintu 2024-11-22	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000766	B	82015-CEC C10002340	Missing core identification tags inside CP-200E1	.		Pschintu 2024-11-22	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000818	B	83001-CEL-1-L1 C10000491	Missing SS cable tag of all the cables outside TR-200DE1	.		Pschintu 2024-11-23	2025-02-07	Pschintu 2025-02-07	2025-02-07

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
"TRANSFORMER"

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)
Fk	Fuse for Contactor	ABB	CMF 250A
BGE	Earthing Switch	ABB	ST-E (12KV - 25kA)
FP1	Protection Relay	ABB	REX640
TI-L..	Current Transformers	ESITAS	ATB 10-BS 7,2kV - 200/1 - 25kA 1°winding : Cl.0,5+5P20 - Pr. 5VA
TO	Omopolar Ring Current Transformer (Internal Diameter 150mm)	ESITAS	KAP-150/250-95 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-200DE1	TRANSFORMER 1.6MVA	1.6 MVA	200 / 1A	3(1x70) mm²	A4

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
3	26/06/2024	Santinelli	Giulietti	Sigismondi	Accepted for Construction (AFC)
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)

DWG n° : 231151/SD/10
Item n° : PF1113279/4

CROSSWIND

ROSETTI MARINO

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Column A4 : Auxiliary Transformer TR-200DE1

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

SCALE : NTS

A3

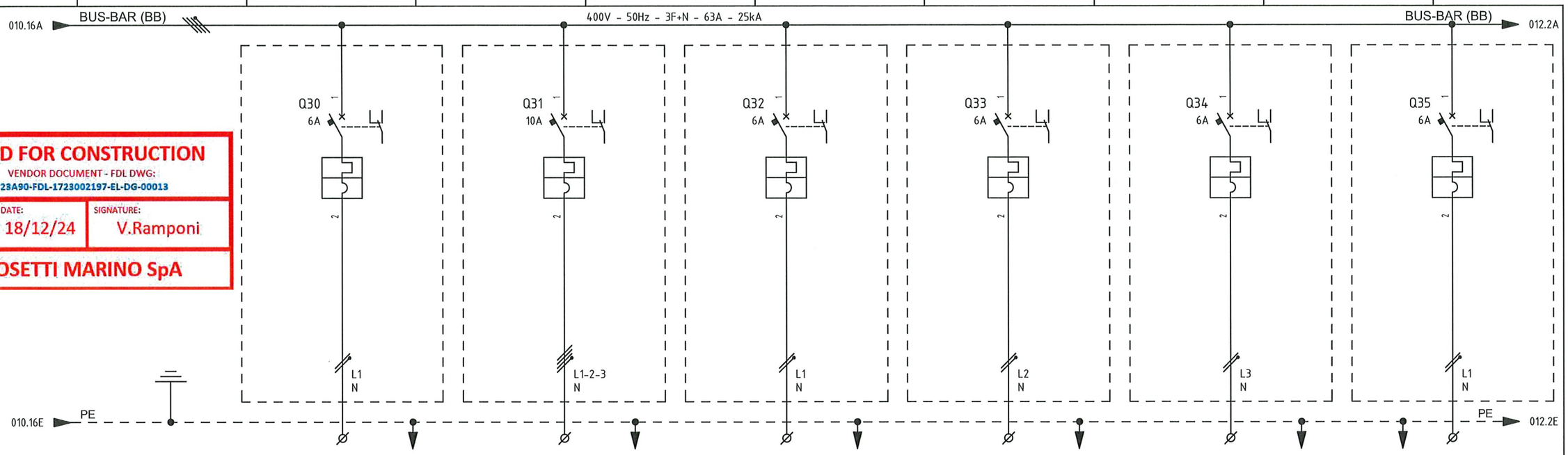
DRAWING NO. 1723002197-EL-DG-00010

SHEET 007

REV. 04

F.to UNI A3: 420mmx297mm

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



VALID FOR CONSTRUCTION

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

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

ROSETTI MARINO SpA

ITEM			1	CP-640F1		CP-100E2		CP-100E3		CP-100E4		RR-100D1		CP-200E1	
UTILITY			2	UCP - N2 PACKAGE - AUXILIARY		AUXILIARY TRAFO OLTC		AUXILIARY TRAFO AVR		AUXILIARY TRAFO 7MVA		AUXILIARY NER		AUXILIARY TRAFO 1.6MVA	
CUBICLE			3	+03		+03		+03		+03		+03		+03	
RATED POWER	RATED CURRENT		4/5	0.5 KW	2.72 A	1 KW	1.81 A	0.3 KW	1.63 A	0.5 KW	2.72 A	0.3 KW	1.63 A	0.5 KW	2.72 A
TYPICAL FUNCTIONAL			6	-		-		-		-		-		-	
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6		S304P-C10		S302P-C6		S302P-C6		S302P-C6		S302P-C6	
	VERSION		8	2P / MINIATURE		4P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE	
	TRIP UNITS		9	In=6A - Curve C		In=10A - Curve C		In=6A - Curve C		In=6A - 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 / 4		SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 4	
POWER CONDUCTOR		mm²	31	3G2.5		5G4		3G2.5		3G2.5		3G2.5		3G2.5	

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+

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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)

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 011

REV. 04

F.to UNI A3: 420mmx297mm

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

AS COMMISSIONED DAVIDE BUCCIARELLI NO MARKUP 21/03/2025

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	82	Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-40	Power Transformer 1.6 MVA (TR-200DE1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000649	A	82002-CEM-1-L1 C10000476	Cable to be connected by SG-100D1 side. Point valid also for 82002-CEM-1-L2 and 82002-CEM-1-L3	.		Pschintu 2024-11-20	2024-11-26	Ecarotenuto 2024-11-26	2024-11-26
C30000650	B	82002-CEM-1-L1 C10000476	Trefoil formation is not as per drawing 123A90-DDL-EL-DD-20092 sh.009	.		Pschintu 2024-11-20	2025-01-24	Pschintu 2025-01-24	2025-01-24
C30000651	B	82002-CEM-1-L1 C10000476	Missing cable tags on external routing. Point valid also for 82002-CEM-1-L2 and 82002-CEM-1-L3	.		Pschintu 2024-11-20	2025-02-07	Pschintu 2025-02-07	2025-02-07
C30000652	B	82002-CEM-1-L1 C10000476	Missing cable cleats stainless steel with TPE cable protection. Point valid also for 82002-CEM-1-L2 and 82002-CEM-1-L3	.		Pschintu 2024-11-20	2025-01-03	Ecarotenuto 2025-01-03	2025-01-03
C30000752	B	83116-CEL C10000635	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000754	B	83001-CEC C10002134	Missing SS cable tags on external routing	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000755	B	83001-CEC C10002134	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000756	B	83002-CEC C10002135	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000757	B	83002-CEC C10002135	Missing cable tags inside and outside B-200	.		Pschintu 2024-11-22	2025-02-03	APolo 2025-02-03	2025-02-03

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	82	Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-40	Power Transformer 1.6 MVA (TR-200DE1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000758	B	83003-CEC C10003047	Missing core identification tags on both terminations	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000759	B	83003-CEC C10003047	Missing cable tags on all internal and external routing	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000760	B	83004-CEC C10004375	Missing cable tags on internal and external routing	.		Pschintu 2024-11-22	2025-02-04	Pschintu 2025-02-04	2025-02-04
C30000761	B	83004-CEC C10004375	Core identification tags are missing inside CP-200E1	.		Pschintu 2024-11-22	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000766	B	82015-CEC C10002340	Missing core identification tags inside CP-200E1	.		Pschintu 2024-11-22	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000818	B	83001-CEL-1-L1 C10000491	Missing SS cable tag of all the cables outside TR-200DE1	.		Pschintu 2024-11-23	2025-02-07	Pschintu 2025-02-07	2025-02-07

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000650

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000476	1.4 Discipline	Electrical
1.2 Item	82002-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.4 KV, 1.6MVA Transformer
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Trefoil formation is not as per drawing 123A90-DDL-EL-DD-20092 sh.009

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: Paolo Schintu

Date: 2025-01-24

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000651

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000476	1.4 Discipline	Electrical
1.2 Item	82002-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.4 KV, 1.6MVA Transformer
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing cable tags on external routing. Point valid also for 82002-CEM-1-L2 and 82002-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:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000652

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000476	1.4 Discipline	Electrical
1.2 Item	82002-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.4 KV, 1.6MVA Transformer
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing cable cleats stainless steel with TPE cable protection.
Point valid also for 82002-CEM-1-L2 and 82002-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

C30000752

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000635	1.4 Discipline	Electrical
1.2 Item	83116-CEL		Lighting & Small Power DB BoP / Auxiliary Trafo 1,6MVA
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing core identification tags on both terminations

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000754

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002134	1.4 Discipline	Electrical
1.2 Item	83001-CEC		6.6/0.415 kV Transformer / 6.6KV HV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing SS cable tags on external routing

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000755

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002134	1.4 Discipline	Electrical
1.2 Item	83001-CEC		6.6/0.415 kV Transformer / 6.6KV HV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing core identification tags on both terminations

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000756

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002135	1.4 Discipline	Electrical
1.2 Item	83002-CEC		6.6/0.415 kV Transformer / 6.6KV HV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing core identification tags on both terminations

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
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

C30000757

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002135	1.4 Discipline	Electrical
1.2 Item	83002-CEC		6.6/0.415 kV Transformer / 6.6KV HV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing cable tags inside and outside B-200

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000758

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003047	1.4 Discipline	Electrical
1.2 Item	83003-CEC		Auxiliary Trafo 1,6 MVA / MV 6,6kV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing core identification tags on both terminations

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000759

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003047	1.4 Discipline	Electrical
1.2 Item	83003-CEC		Auxiliary Trafo 1,6 MVA / MV 6,6kV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing cable tags on all internal and external routing

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000760

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004375	1.4 Discipline	Electrical
1.2 Item	83004-CEC		6.6/0.415 kV Transformer / 6.6KV HV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing cable tags on internal and external routing

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000761

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004375	1.4 Discipline	Electrical
1.2 Item	83004-CEC		6.6/0.415 kV Transformer / 6.6KV HV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Core identification tags are missing inside CP-200E1

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
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

C30000766

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002340	1.4 Discipline	Electrical
1.2 Item	82015-CEC		MV 6,6kV Switchgear / 6,6 / 0,42 kV 1,6 MVA Transformer Control Panel
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing core identification tags inside CP-200E1

Name: Paolo Schintu

Date: 2024-11-22

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	2024-11-22
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

C30000818

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000491	1.4 Discipline	Electrical
1.2 Item	83001-CEL-1-L1		6.6/0.415 kV Transformer / LV Switchgear
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Missing SS cable tag of all the cables outside TR-200DE1

Name: Paolo Schintu

Date: 2024-11-23

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	2024-11-23
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:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000649

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000476	1.4 Discipline	Electrical
1.2 Item	82002-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.4 KV, 1.6MVA Transformer
1.3 Subsystem	82-40		Power Transformer 1.6 MVA (TR-200DE1)

2 - OBSERVATION

Cable to be connected by SG-100D1 side. Point valid also for 82002-CEM-1-L2 and 82002-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

According to Commissioning request, the cables will be re-connected during Commissioning Activities

Name: Eleonora Carotenuto

Date: 2024-11-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

Section 4 FUNCTIONAL TESTS SHEETS

Section 4.1 Electrical functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 82-40 & process: COMM & discipline : E

Electrical	82-40 Power Transformer 1.6 MVA (TR-200DE1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
DP-200N1-Q35	AUX TRAFO 1,6 MVA - DP-200N1-Q35	ONSHORE	C10002927	FTR-2	100	2024-10-28	RFO 2
SG-100D1-A4-K1	FEEDER TR-200ED1	ONSHORE	C10004780	FTR-2	100	2024-12-18	RFO 2
		ONSHORE	C10004781	FTR-6	100	2025-02-04	RFO 2
TR-200DE1	6,6 / 0,42 kV 1,6 MVA Transformer	ONSHORE	C10004552	FP02	100	2025-01-13	RFO 2

ITEM	Tag	DP-200N1-Q35	: AUX TRAFO 1,6 MVA - DP-200N1-Q35	Dwg	1723002197-EL-DG-00013		
	S/Sys	82-40	: Power Transformer 1.6 MVA (TR-200DE1)	Module			
TASK	code	C10002927	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)

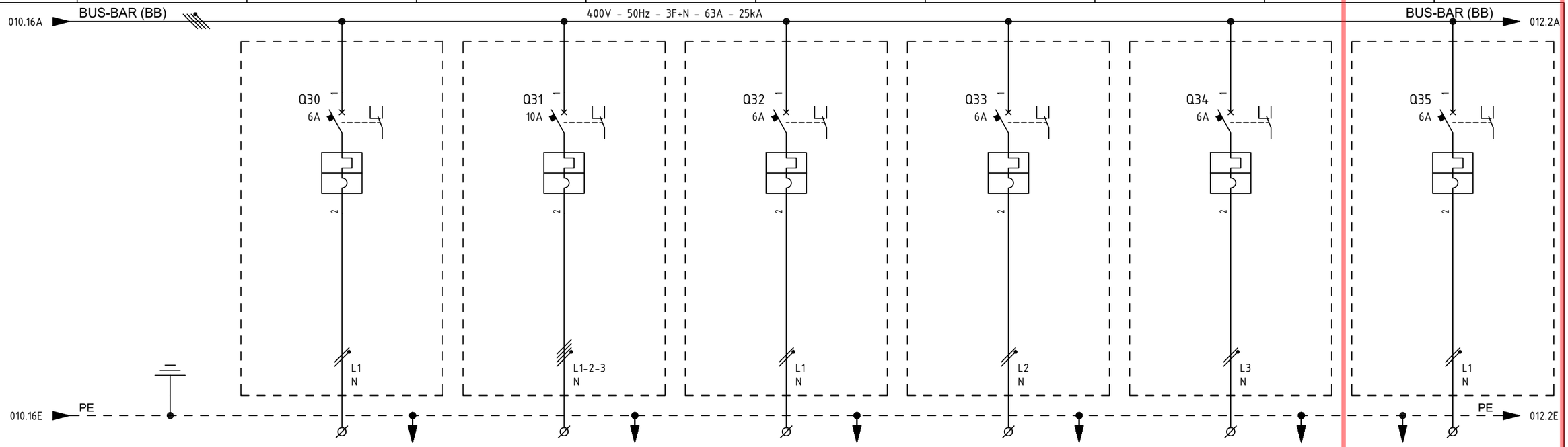
ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
I	6A	NA	NA	FIXED	NA

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	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-25T08:36:41.672Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-28T13:08:32.484Z	PROVERLIS Digitaly signed by Witness waived 2024-10-28T13:45:42.692Z



ITEM			1	CP-640F1	CP-100E2	CP-100E3	CP-100E4	RR-100D1	CP-200E1
UTILITY			2	UCP - N2 PACKAGE - AUXILIARY	AUXILIARY TRAFO OLTC	AUXILIARY TRAFO AVR	AUXILIARY TRAFO 7MVA	AUXILIARY NER	AUXILIARY TRAFO 1.6MVA
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.5 KW | 2.72 A	1 KW | 1.81 A	0.3 KW | 1.63 A	0.5 KW | 2.72 A	0.3 KW | 1.63 A	0.5 KW | 2.72 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S304P-C10	S302P-C6	S302P-C6	S302P-C6	S302P-C6
	VERSION		8	2P / MINIATURE	4P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS		9	In=6A - Curve C	In=10A - Curve C	In=6A - Curve C	In=6A - 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 / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR		mm²	31	3G2.5	5G4	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)

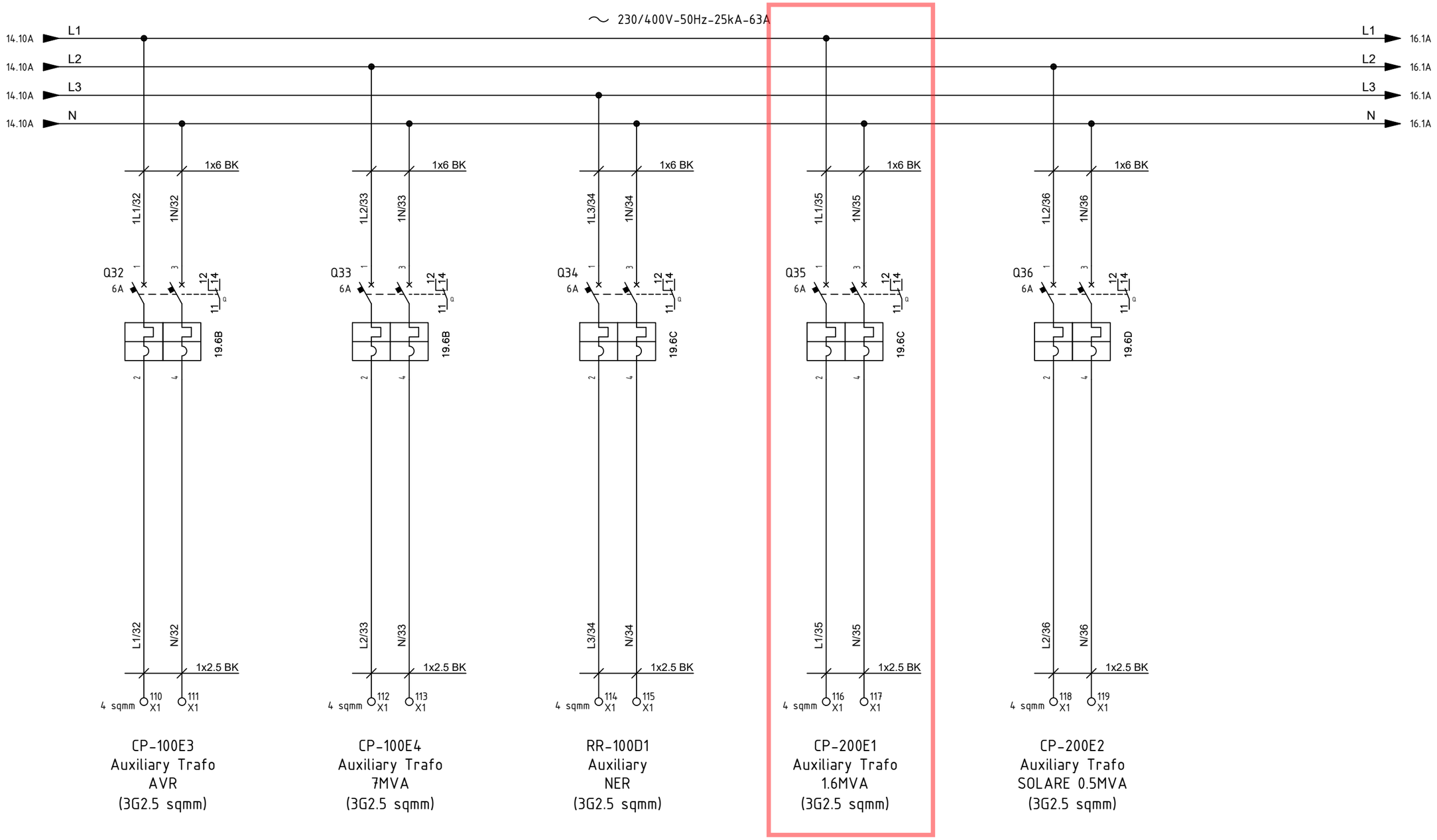
TITLE : "DP-200N1"
SINGLE LINE DIAGRAM
Single Line Drawing

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

A3 | DRAWING NO. 1723002197-EL-DG-00013 | SHEET 011 | REV. 04

F.to UNI A3: 420mmx297mm

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



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

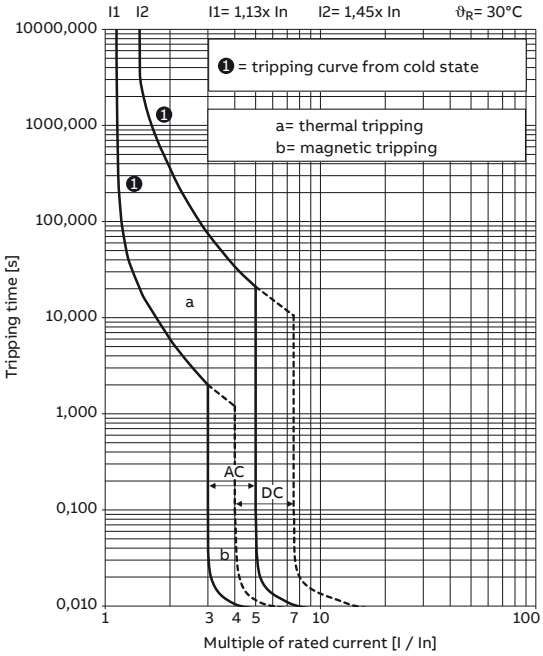
File Name : 1723002197-EL-DG-00033 Rev. 02

Miniature Circuit breakers S300P

Tripping characteristics

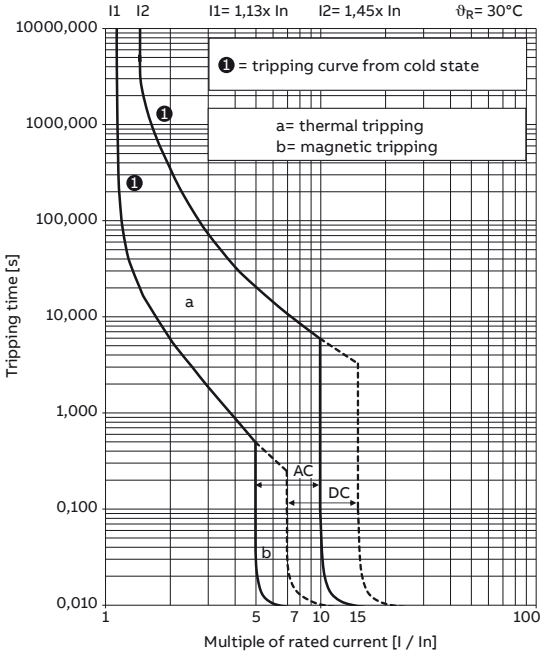
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



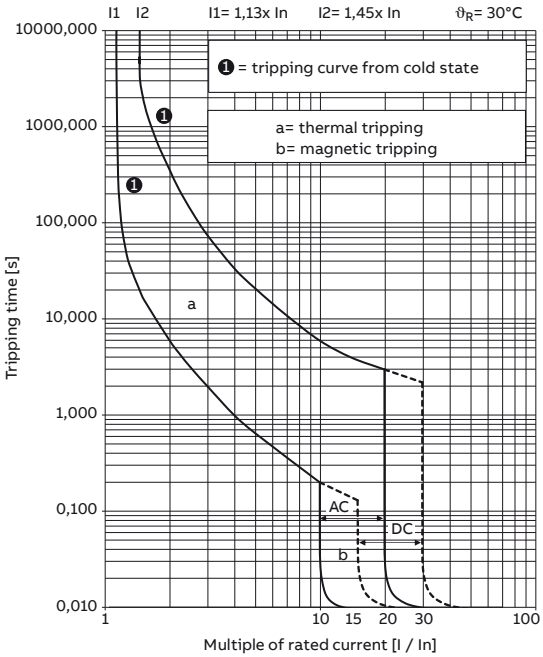
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



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

Tripping Characteristic IEC/EN 60898-1



ROSETTI MARINO | CROSSWIND

ITEM	Tag	TR-200DE1	: 6,6 / 0,42 kV 1,6 MVA Transformer	Dwg	123A90-DDL-EL-DL-20101		
	S/Sys	82-40	: Power Transformer 1.6 MVA (TR-200DE1)	Module	LD		
TASK	code	C10004552	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FP02	Power Transformer

DATA

Manufacturer	MF Trasformatori srl	Primary V	6.600	Secondary V	420
Serial N°	181023/2	Primary A	140	Secondary A	2199
Frequency	50Hz	Fault Level	26.67 MVA	Tap Range	+-2x2.5%
Vector Group	Dyn11	Rating kVA	1600	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	0,1631 Ohm	- L3	0,1648 Ohm	- L1	0,1628 Ohm

7	Remove N - E link and perform winding insulation test (1 min)		OK
	MV - LV, E	4.370 Mohm	Use 5 kV Megger (Min value 150 Mohm)
	LV - HV, E	3820 Mohm	Use 1 kV Megger (Min value 10 Mohm)
8	Short LV windings to earth and pressure test primary connection for 1 min		OK

Test Voltage	311V kV DC	Leakage Current	110,91A 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	Digitaly signed by Davide Zucconelli 2025-01-13T10:04:33.665Z	Digitaly signed by Kristian Castellani 2025-01-13T13:07:27.108Z	Digitaly signed by Witness waived 2025-01-13T14:33:00.634Z

Customer:__ROSETTI MARINO

Transformer Nr.:__181023/2 (200DE1)

Rated power:_1600

Voltage ratio:_6600 V / 420 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	28.540	28.539	28.541	POSITIVE
2	27.872	28.872	27.873	POSITIVE
3	27.203	27.203	27.205	POSITIVE
4	26.540	26.539	26.541	POSITIVE
5	25.870	25.871	25.872	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 4.37 GΩ POSITIVE

LV - MV+ground: 1KV 1min Result 3.82 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 FH1R83N

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

MF Trasformatori srl

Sede Amm. e Stabilimento: Tel. 030/9636020-028-596
Loc. S.Anna, 22 / 24 FAX 030/9980218
25011 Calcinato (BS) - Italy Partita Iva 03550350171
info@mftrasformatori.it Codice Fiscale 01547220176

Member of CISQ Federation
RINA
CERTIFIED MANAGEMENT SYSTEM
ISO 9001 - ISO 14001
THE GLOBAL COMPACT
WE SUPPORT

ROSETTI MARINO SPA

TEST REPORT No. 181023/2

Customer : ROSETTI MARINO SPA **Serial No.:** 181023/2

MF Job No. 523/23 **Project No. :** 1600ToECO6,6/0.42 - TR-200DE1

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) :	1600			Type :	OIL
Primary Voltage (kV) :	6,6 ±2×2,5%			Connection Group :	Dyn11
Primary Current (A):	140,0			Short-circuit Voltage (%) :	6
Primary Insul. Class (kV) :	AC 20	BIL	60	Thermal Insulation Class :	A / A
Secondary Voltage (V) :	420			Temperature Rise (K) :	60/65
Secondary Current (A) :	2199			Transformer Weight (Kg)	5050
Secondary Insul. Class : (kV) :	AC 3	BIL	0	Oil Weight (Kg) :	750
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	420	28,549	28,550	28,549	28,58
+	2	6765	420	27,882	27,882	27,881	27,90
0	3	6600	420	27,215	27,215	27,216	27,22
-	4	6435	420	26,546	26,547	26,546	26,54
- -	5	6270	420	25,877	25,878	25,877	25,86

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

WINDING RESISTANCE MEASUREMENT

MV	R-1U1V	0,1628	Ohm
	R-1V1W	0,1631	Ohm
	R-1W1U	0,1648	Ohm

Measured at ambient temperature : 32,8 ° C

LV	R-2U2V	0,5712	mOhm
	R-2V2W	0,5664	mOhm
	R-2W2U	0,5805	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	----------

MF Trasformatori srl
Località S. Anna N. 22/24
25011 CALCINATO BRESCIA
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Codice Fiscale 01547220176
Partita IVA IT 03550350171

L. PIGNATELLI ON BEHALF OF CROSSWIND

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

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

MF Trasformatori srl
Sede Amm. e Stabilimento: Loc. S.Anna, 22 / 24 — 25011 Calcinato (BS) - Italy — info@mftrasformatori.it
Tel. 030/9636020-028-596 — FAX 030/9980218 — Partita Iva 03550350171 — Codice Fiscale 01547220176
Member of CISQ Federation — RINA — CERTIFIED MANAGEMENT SYSTEM ISO 9001 - ISO 14001 — THE GLOBAL COMPACT WE SUPPORT

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

DATE: 10/11 REVISION: 1

TEST REPORT No. 181023/2

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	840	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 %
242,58	420	3,472	2,546	3,314	3,11	1061	50 Hz	0,14

Fed Winding
LV

Test Temperature	
32,8	°C

Measured No-Load Losses (W) : 1061 — Contract No-Load Losses (W) : 1080 — Tolerance : + 0%

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

AmbT : 32,ε °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	
179,48	311	111,73	110,04	110,95	110,91	6355	50 Hz	MV	LV	1600	kVA

Detected Load-Losses at 75 °C (W) : 11376 — Contract Load-Losses (W) : 12000 — Tolerance : + 0%

Detected Short-circuit Voltage at 75 °C (%) : 5,95 — Contract Short-circuit Voltage (%) : 6 — Tolerance : ± 10 %

Measured Total Losses (W) : 12437 — Contract Total Losses (W) : 13080 — 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 CROSSWIND

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

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

DATE: 10/11 REVISION: 1

TEST REPORT No. 181023/2

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

5 kV - 1 minute : 2,03 GΩ

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

1 kV - 1 minute : 2,64 GΩ

TIGHTNESS TEST

Result of check : POSITIVE

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

C : 7,754 nF @ 12 kV Dissipation Factor : 0,298% @ 12 kV

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

C : 11,92 nF @ 1 kV Dissipation Factor : 0,342% @ 1 kV

MEASUREMENT OF ZERO-SEQUENCE IMPEDANCE

V :1,4192 I1 : 160,58 I2 : 161,02 Im : 160,8 Z (V/Im) . 0,0088 Z (ZX3) : 0,02648 Ω/PHASE
26,47761 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	----------

MF Trasformatori srl
Località S. Anna N. 22/24
25011 CALCINATO BRESCIA
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Partita IVA IT 03550350171

L. PIGNATELLI ON BEHALF OF CROSWIND

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

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

Directive 2009/125/EU

DECLARATION OF CONFORMITY

No. 374/23

WE

MF Trasformatori srl

DECLARE THAT

the transformer 1600ToECO6,6/0.42 - TR-200DE1 no. 181023/2

Type

OIL

L. PIGNATELLI ON BEHALF OF CROSSWIND

☐ 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

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

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

Directive 2014/30/EU

DECLARATION OF CONFORMITY

No. 291/24

WE

MF Trasformatori srl

DECLARE THAT

the transformer 1600ToECO6,6/0.42 - TR-200DE1 no. 181023/2

Type

OIL

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

L. PIGNATELLI ON BEHALF OF
CROSS WORKS

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

Name and signature of authorized person
Ing. Festa M.

Date

25/07/24

MF Trasformatori srl
Località S. Anna N. 22/24
25011 CALCINATO BRESCIA
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Codice Fiscale 01547220176
Partita IVA IT 03550350171

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

MF Trasformatori srl

Sede Amm. e Stabilimento:
Loc. S.Anna 22 / 24
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Partita Iva 03550350171
Codice Fiscale 01547220176

Oil Certificate

Calcinato, 25/07/24

WE

MF Trasformatori s.r.l.

DECLARE THAT

the oil contained inside the MF transformer no. 181023/2

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

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

MF Trasformatori srl

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Partita Iva 03550350171
Codice Fiscale 01547220176

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.: *181023/2*

L. PIGNATELLI ON BEHALF OF CROSSWIND

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

Signature and stamp
Ing. Festa M.

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

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

ROSETTI MARINO — CROSSWIND

ITEM	Tag	SG-100D1-A4-K1	: FEEDER TR-200ED1		Dwg	1723002197-EL-DG-00021	
	S/Sys	82-40	: Power Transformer 1.6 MVA (TR-200DE1)		Module		
TASK	code	C10004780	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°:	1VHR81041856	Relay type:	REX640
Auxiliary supply:	110Vdc	Location:	B100	Cubicle:	A4
Switchboard:	SG-100D1				

Current transformers

Tag	Number of	Ratio	Location
TI-L1		200/1A	SG-200D1-A4
TI-L2		200/1A	SG-200D1-A4
TI-L3		200/1A	SG-200D1-A4

Voltage transformers

Tag	Number of	Ratio	Location
			SG-200D1-A4
			SG-200D1-A4
			SG-200D1-A4

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
51G - EFHPTOC1	500A	612.51A		6196ms	6114ms
51N - EFLPTOC1	10A	11,18A		100ms	121ms
50-1 - PHHPTOC1	530A	541A		500ms	522ms
50 - PHHPTOC2	420A	431A		50ms	72ms
51 - PHLPTOC1	200A	222A		19719ms	20224ms

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 2024-12-10T13:26:31.915Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-12-17T13:06:20.251Z	PROVERLIS Digitaly signed by Witness waived 2024-12-18T14:24:11.542Z

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : -TR-200DE1

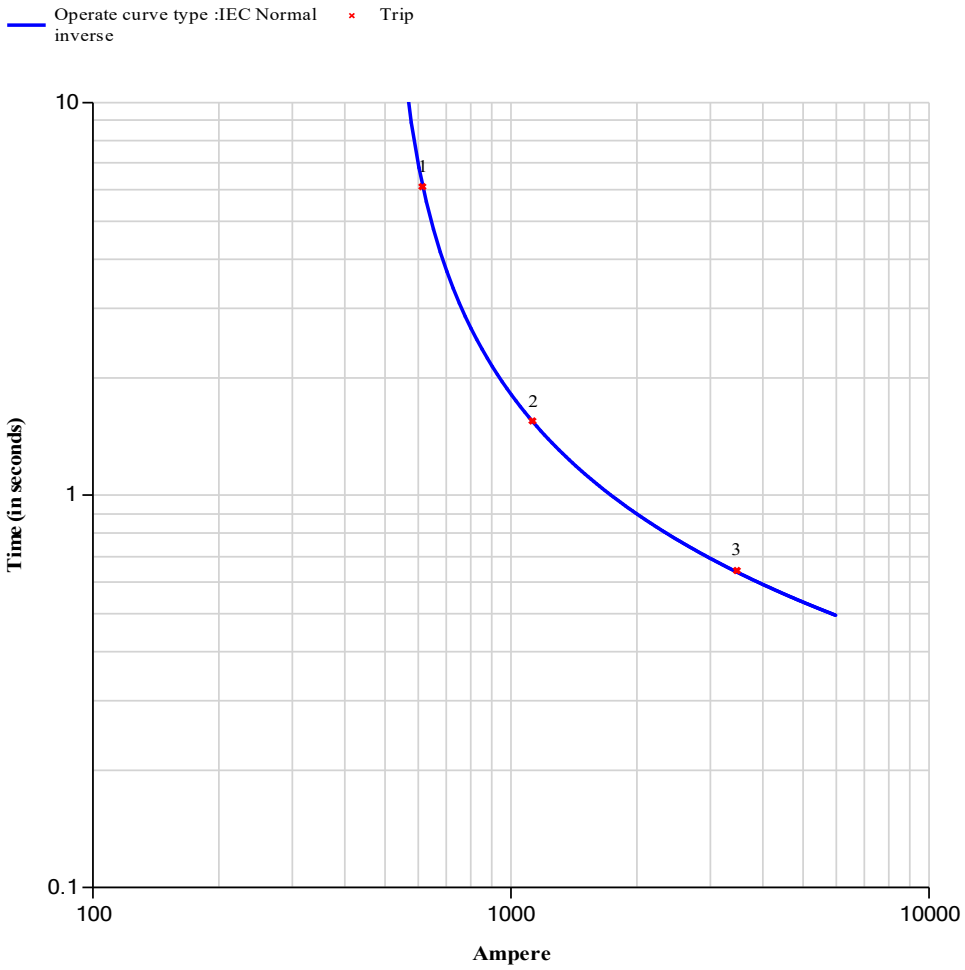
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

IEC61850 : EFHPTOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 140 A
Minimum operate time : 100 ms
Measured mode : DFT
Io signal Sel : Measured Io
Start value : 0.200 xIn
Time multiplier : 0.18
Operate curve type : IEC Normal inverse
Type of reset : Immediate



N.	I0	I0"(A)	I0(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	612.51	0.245	0	6196	6114	1.32
2	1123.54	0.449	0	1544	1548	0.26
3	3466.56	1.387	0	638	644	0.94

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-200DE1

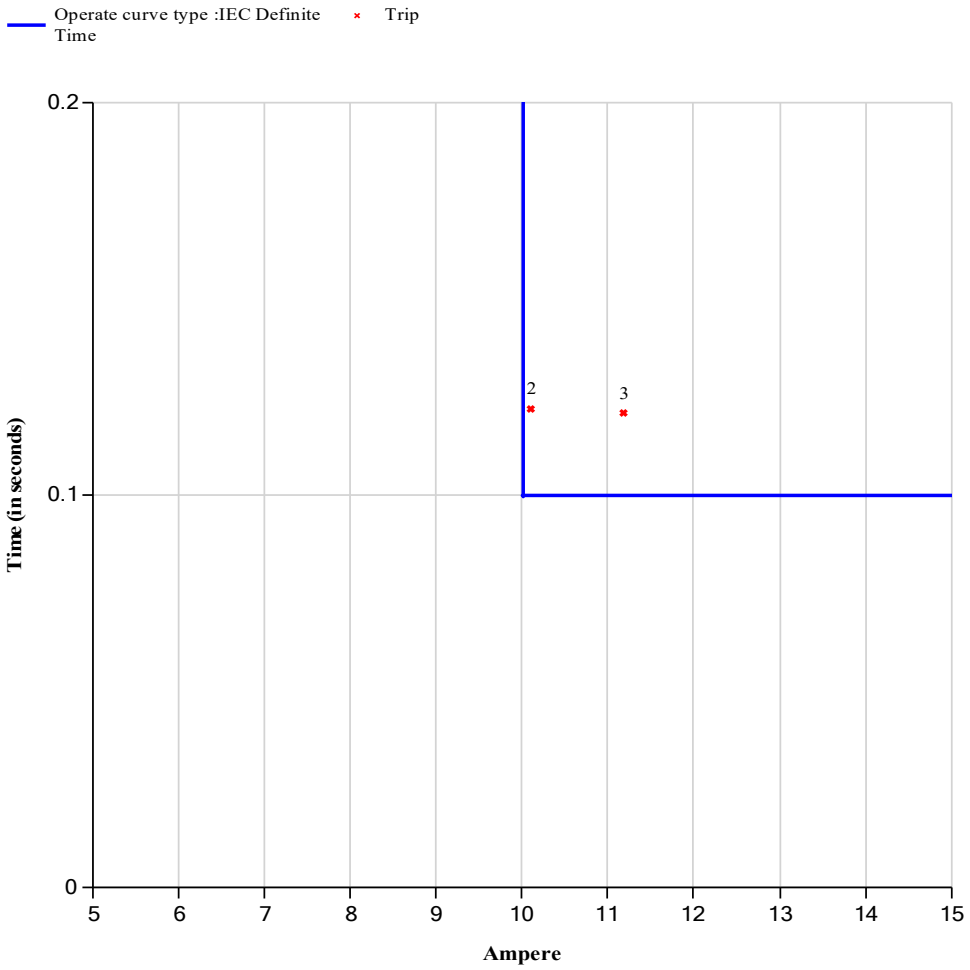
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

IEC61850 : EFLPTOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 100 / 1 A
Nominal current : 140 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	9.75	0.098	0	0	0	0
2	10.1	0.101	0	100	122	22
3	11.18	0.112	0	100	121	21

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-200DE1

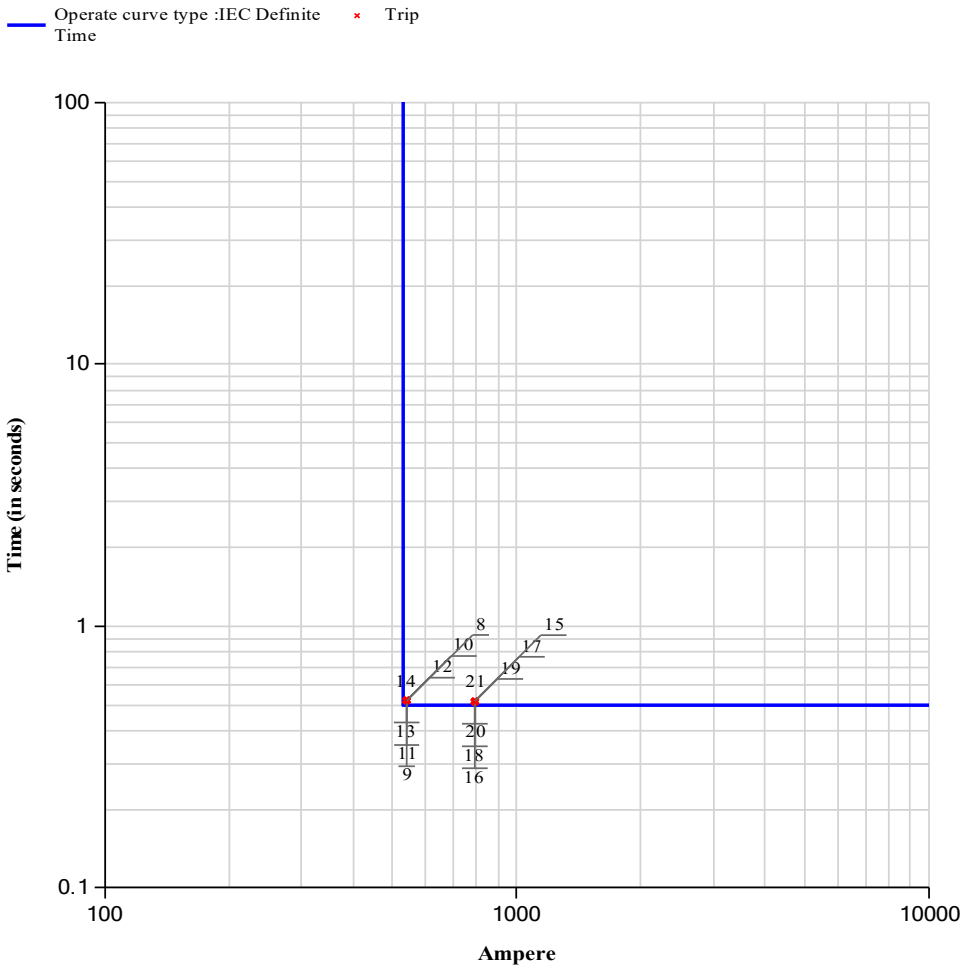
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

IEC61850 : PHHPTOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 200 / 1 A
Nominal current : 140 A
Num. start phases : 1 out of 3
Minimum operate time : 500 msec
Reset delay time : 20 msec
Measurement mode : DFT
Start value : 2.65 xIn
Start value mult. : 1.0
Operate delay time : 500 msec
Operate curve type : IEC Definite Time
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	515	2.574	0	0	0	0	0	0	0	0	0	0
2	0	0	0	515	2.574	240	0	0	0	0	0	0
3	0	0	0	0	0	0	515	2.574	120	0	0	0
4	515	2.574	0	515	2.574	240	0	0	120	0	0	0
5	0	0	0	515	2.574	240	515	2.574	120	0	0	0
6	515	2.574	0	0	0	240	515	2.574	120	0	0	0
7	515	2.574	0	515	2.574	240	515	2.574	120	0	0	0
8	541	2.703	0	0	0	0	0	0	0	500	519	3.8
9	0	0	0	541	2.703	240	0	0	0	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-200DE1

RELAY TYPE : ABB REX640

ITEM : UNIT A4

Sn. : 1VHR81041856

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

IEC61850 : PHHPTOC1

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	541	2.703	120	500	522	4.4
11	541	2.703	0	541	2.703	240	0	0	120	500	520	4
12	0	0	0	541	2.703	240	541	2.703	120	500	522	4.4
13	541	2.703	0	0	0	240	541	2.703	120	500	524	4.8
14	541	2.703	0	541	2.703	240	541	2.703	120	500	520	4
15	791	3.955	0	0	0	0	0	0	0	500	518	3.6
16	0	0	0	791	3.955	240	0	0	0	500	513	2.6
17	0	0	0	0	0	0	791	3.955	120	500	518	3.6
18	791	3.955	0	791	3.955	240	0	0	120	500	514	2.8
19	0	0	0	791	3.955	240	791	3.955	120	500	516	3.2
20	791	3.955	0	0	0	240	791	3.955	120	500	518	3.6
21	791	3.955	0	791	3.955	240	791	3.955	120	500	517	3.4

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-200DE1

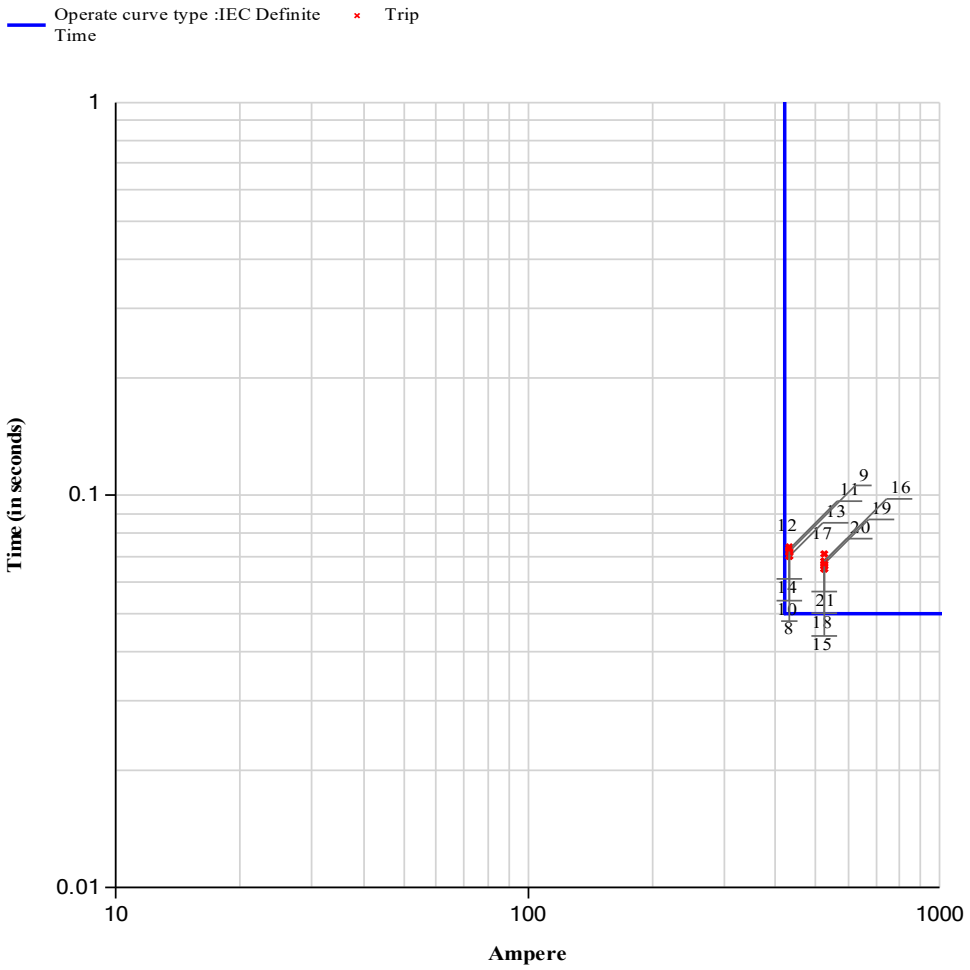
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

IEC61850 : PHHPTOC2
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 200 / 1 A
Nominal current : 140 A
Num. start phases : 1 out of 3
Minimum operate time : 50 msec
Reset delay time : 20 msec
Measurement mode : DFT
Start value : 2.10 xIn
Start value mult. : 1.00
Operate delay time : 50 msec
Operate curve type : IEC Definite Time
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	410	2.052	0	0	0	0	0	0	0	0	0	0
2	0	0	0	410	2.052	240	0	0	0	0	0	0
3	0	0	0	0	0	0	410	2.052	120	0	0	0
4	410	2.052	0	410	2.052	240	0	0	120	0	0	0
5	0	0	0	410	2.052	240	410	2.052	120	0	0	0
6	410	2.052	0	0	0	240	410	2.052	120	0	0	0
7	410	2.052	0	410	2.052	240	410	2.052	120	0	0	0
8	431	2.154	0	0	0	0	0	0	0	50	72	44
9	0	0	0	431	2.154	240	0	0	0	50	72	44

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-200DE1

RELAY TYPE : ABB REX640

ITEM : UNIT A4

Sn. : 1VHR81041856

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

IEC61850 : PHHPTOC2

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	431	2.154	120	50	73	46
11	431	2.154	0	431	2.154	240	0	0	120	50	73	46
12	0	0	0	431	2.154	240	431	2.154	120	50	74	48
13	431	2.154	0	0	0	240	431	2.154	120	50	70	40
14	431	2.154	0	431	2.154	240	431	2.154	120	50	70	40
15	524	2.619	0	0	0	0	0	0	0	50	66	32
16	0	0	0	524	2.619	240	0	0	0	50	68	36
17	0	0	0	0	0	0	524	2.619	120	50	71	42
18	524	2.619	0	524	2.619	240	0	0	120	50	65	30
19	0	0	0	524	2.619	240	524	2.619	120	50	67	34
20	524	2.619	0	0	0	240	524	2.619	120	50	68	36
21	524	2.619	0	524	2.619	240	524	2.619	120	50	65	30

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-200DE1

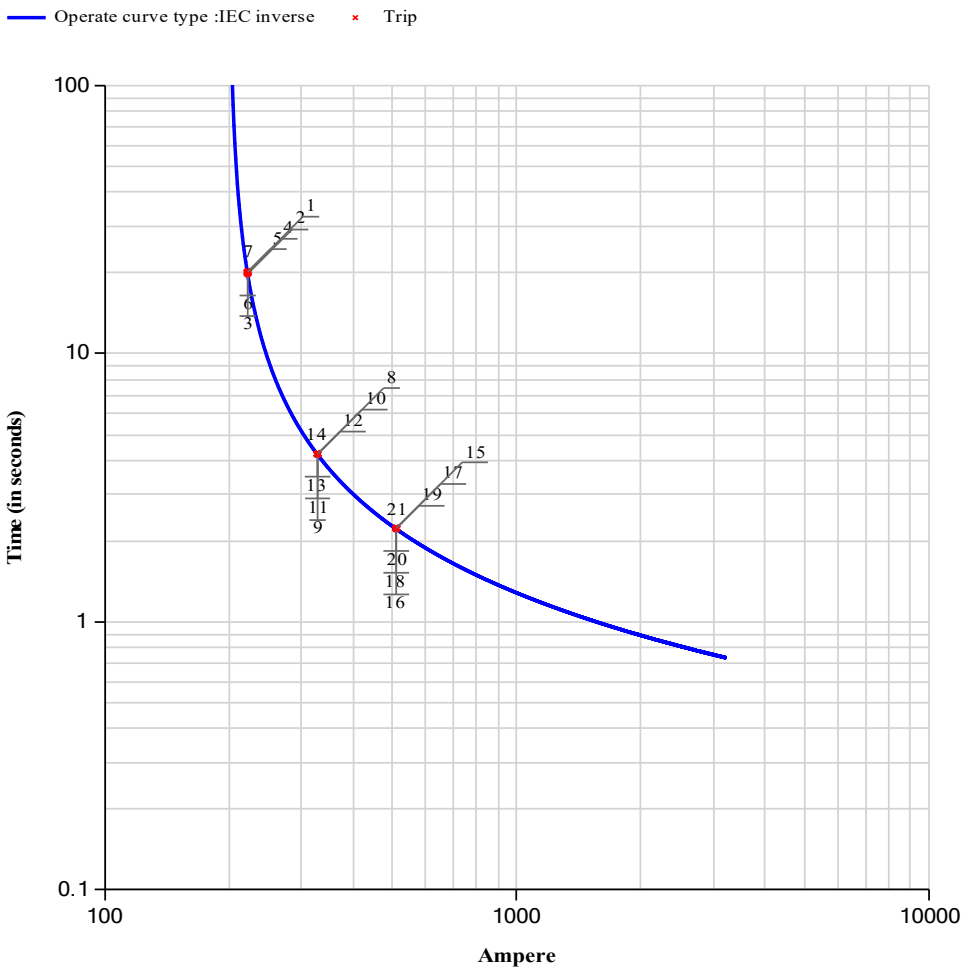
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

IEC61850 : PHLPTOC1
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 200 / 1 A
Nominal current : 140 A
Num. start phases : 1 out of 3
Minimum operate time : 500 msec
Reset delay time : 20 msec
Measurement mode : DFT
Start value : 1.00 xIn
Start value mult. : 1.00
Time multiplier : 0.30
Operate curve type : IEC 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	222	1.112	0	0	0	0	0	0	0	19719	20224	2.56
2	0	0	0	222	1.112	240	0	0	0	19719	19886	0.85
3	0	0	0	0	0	0	222	1.112	120	19719	20238	2.63
4	222	1.112	0	222	1.112	240	0	0	120	19719	20140	2.13
5	0	0	0	222	1.112	240	222	1.112	120	19719	20241	2.65
6	222	1.112	0	0	0	240	222	1.112	120	19719	20035	1.6
7	222	1.112	0	222	1.112	240	222	1.112	120	19719	20181	2.34
8	329	1.643	0	0	0	0	0	0	0	4207	4229	0.52
9	0	0	0	329	1.643	240	0	0	0	4207	4230	0.55

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-200DE1

RELAY TYPE : ABB REX640

ITEM : UNIT A4

Sn. : 1VHR81041856

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	329	1.643	120	4207	4234	0.64
11	329	1.643	0	329	1.643	240	0	0	120	4207	4228	0.5
12	0	0	0	329	1.643	240	329	1.643	120	4207	4228	0.5
13	329	1.643	0	0	0	240	329	1.643	120	4207	4231	0.57
14	329	1.643	0	329	1.643	240	329	1.643	120	4207	4226	0.45
15	510	2.549	0	0	0	0	0	0	0	2223	2235	0.54
16	0	0	0	510	2.549	240	0	0	0	2223	2233	0.45
17	0	0	0	0	0	0	510	2.549	120	2223	2236	0.58
18	510	2.549	0	510	2.549	240	0	0	120	2223	2233	0.45
19	0	0	0	510	2.549	240	510	2.549	120	2223	2234	0.49
20	510	2.549	0	0	0	240	510	2.549	120	2223	2235	0.54
21	510	2.549	0	510	2.549	240	510	2.549	120	2223	2230	0.31

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-200DE1

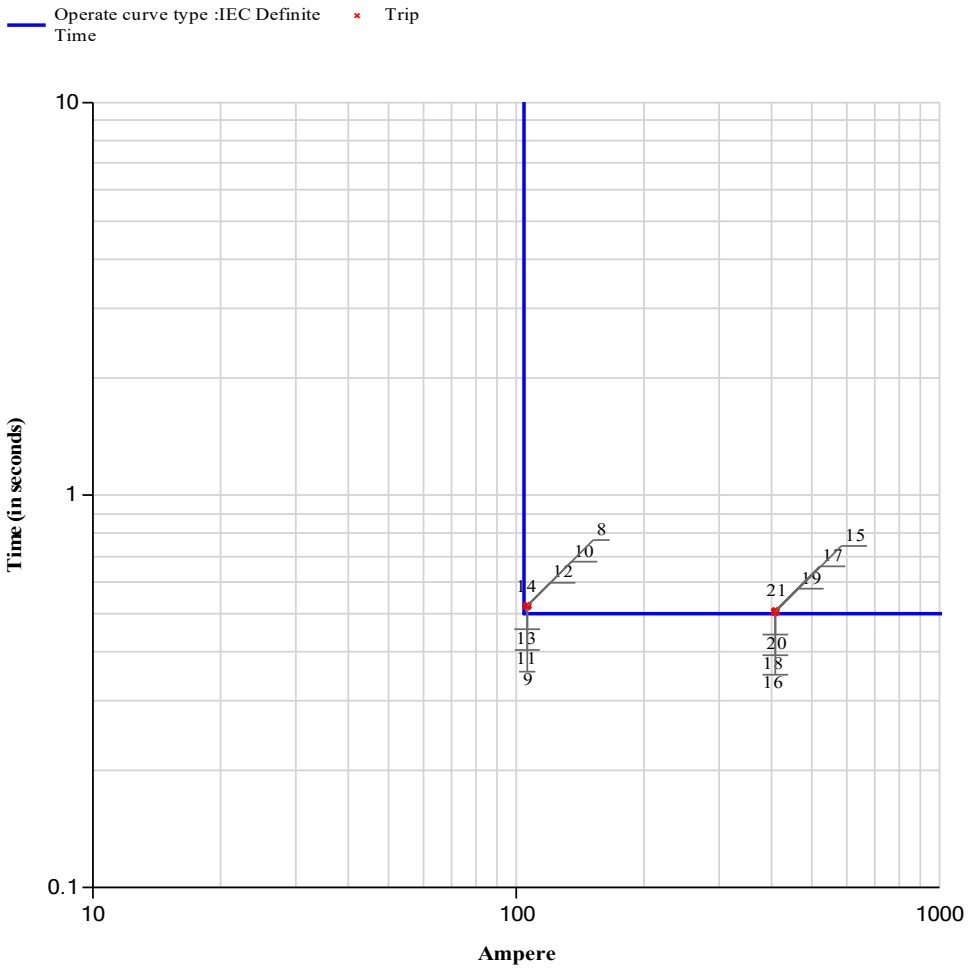
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

IEC61850 : PHLPTOC2
Nominal Voltage : 6600 V
Frequency Nominal : 50 Hz
CT RATIO : 200 / 1 A
Nominal current : 140 A
Num. start phases : 1 out of 3
Minimum operate time : 500 msec
Reset delay time : 20 msec
Measurement mode : DFT
Start value : 0.52 xIn
Start value mult. : 1.00
Operate delay time : 500 msec
Operate curve type : IEC Definite Time
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	102	0.509	0	0	0	0	0	0	0	0	0	0
2	0	0	0	102	0.509	240	0	0	0	0	0	0
3	0	0	0	0	0	0	102	0.509	120	0	0	0
4	102	0.509	0	102	0.509	240	0	0	120	0	0	0
5	0	0	0	102	0.509	240	102	0.509	120	0	0	0
6	102	0.509	0	0	0	240	102	0.509	120	0	0	0
7	102	0.509	0	102	0.509	240	102	0.509	120	0	0	0
8	106	0.529	0	0	0	0	0	0	0	500	523	4.6
9	0	0	0	106	0.529	240	0	0	0	500	524	4.8

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-200DE1

RELAY TYPE : ABB REX640

ITEM : UNIT A4

Sn. : 1VHR81041856

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

IEC61850 : PHLPTOC2

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	106	0.529	120	500	523	4.6
11	106	0.529	0	106	0.529	240	0	0	120	500	524	4.8
12	0	0	0	106	0.529	240	106	0.529	120	500	525	5
13	106	0.529	0	0	0	240	106	0.529	120	500	521	4.2
14	106	0.529	0	106	0.529	240	106	0.529	120	500	522	4.4
15	408	2.041	0	0	0	0	0	0	0	500	505	1
16	0	0	0	408	2.041	240	0	0	0	500	504	0.8
17	0	0	0	0	0	0	408	2.041	120	500	509	1.8
18	408	2.041	0	408	2.041	240	0	0	120	500	508	1.6
19	0	0	0	408	2.041	240	408	2.041	120	500	507	1.4
20	408	2.041	0	0	0	240	408	2.041	120	500	505	1
21	408	2.041	0	408	2.041	240	408	2.041	120	500	506	1.2

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-200DE1

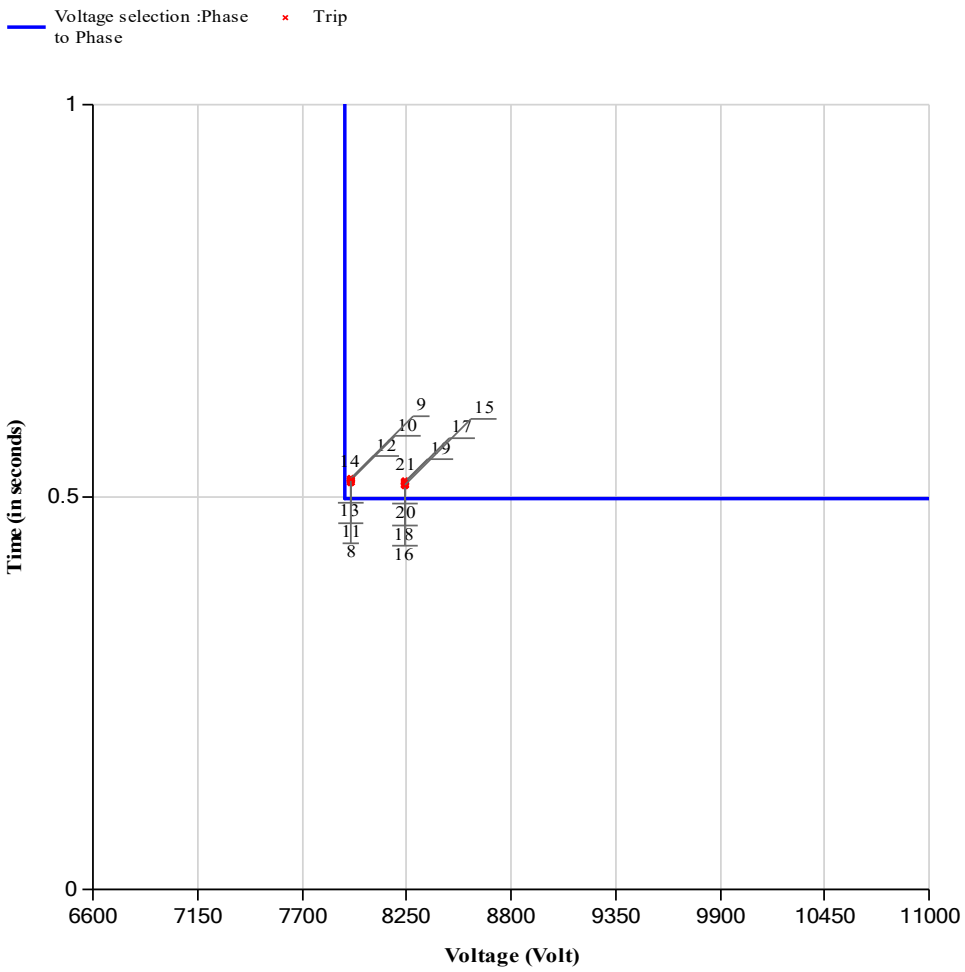
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

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	5261	87.686	0	3811	63.509	240	3811	63.509	120	0	0	0
2	3811	63.509	0	5261	87.68	240	3811	63.509	120	0	0	0
3	3811	63.509	0	3811	63.509	240	5262	87.697	120	0	0	0
4	4555	75.918	0	4555	75.918	240	3811	63.509	120	0	0	0
5	3811	63.509	0	4556	75.926	240	4556	75.926	120	0	0	0
6	4555	75.922	0	3811	63.509	240	4555	75.922	120	0	0	0
7	4555	75.922	0	4555	75.922	240	4555	75.922	120	0	0	0
8	5332	88.873	0	3811	63.509	240	3811	63.509	120	500	521	4.2
9	3811	63.509	0	5333	88.885	240	3811	63.509	120	500	524	4.8

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-200DE1

RELAY TYPE : ABB REX640

ITEM : UNIT A4

Sn. : 1VHR81041856

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	5333	88.878	120	500	522	4.4
11	4593	76.543	0	4593	76.543	240	3811	63.509	120	500	519	3.8
12	3811	63.509	0	4592	76.539	240	4592	76.539	120	500	524	4.8
13	4593	76.544	0	3811	63.509	240	4593	76.544	120	500	522	4.4
14	4592	76.542	0	4592	76.542	240	4592	76.542	120	500	519	3.8
15	5645	94.078	0	3811	63.509	240	3811	63.509	120	500	516	3.2
16	3811	63.509	0	5645	94.088	240	3811	63.509	120	500	518	3.6
17	3811	63.509	0	3811	63.509	240	5644	94.074	120	500	519	3.8
18	4757	79.283	0	4757	79.283	240	3811	63.509	120	500	516	3.2
19	3811	63.509	0	4757	79.288	240	4757	79.288	120	500	520	4
20	4758	79.292	0	3811	63.509	240	4758	79.292	120	500	521	4.2
21	4757	79.286	0	4757	79.286	240	4757	79.286	120	500	515	3

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-200DE1

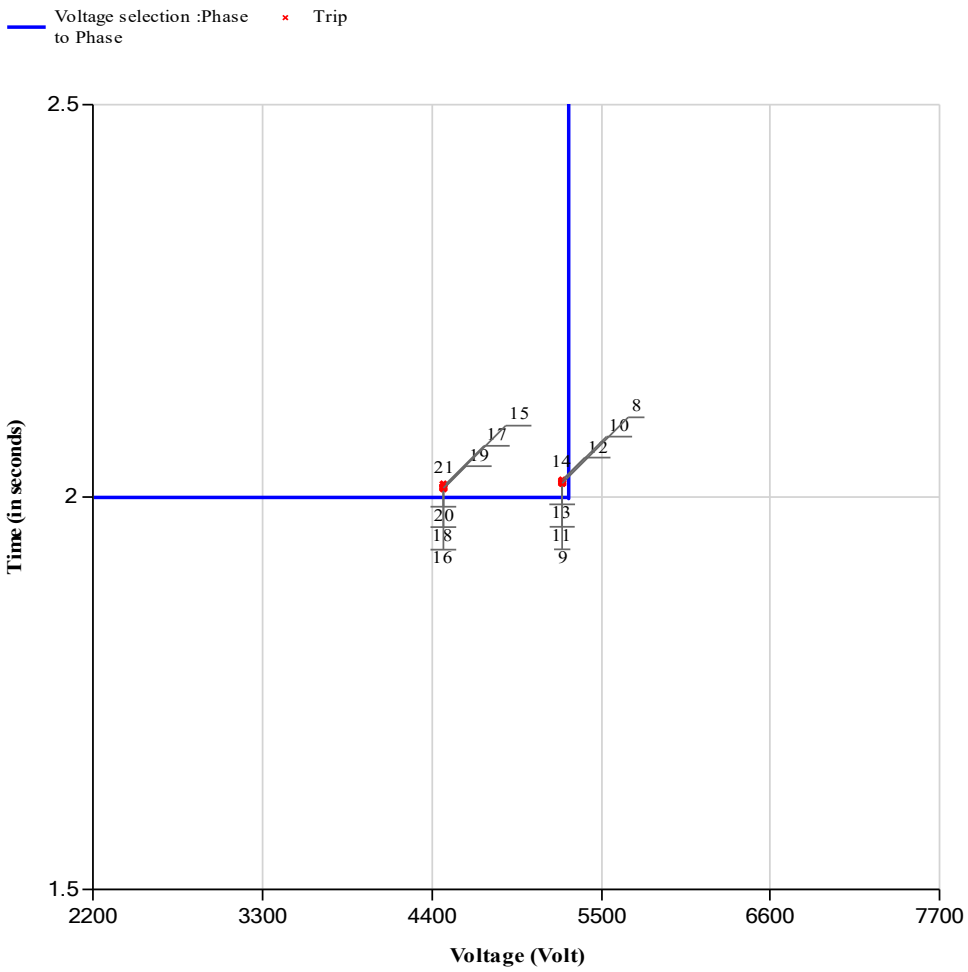
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

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 : 0.10 xUn
Enable block value : False
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	2273	37.876	0	3811	63.509	240	3811	63.509	120	0	0	0
2	3811	63.509	0	2273	37.889	240	3811	63.509	120	0	0	0
3	3811	63.509	0	3811	63.509	240	2273	37.886	120	0	0	0
4	3074	51.229	0	3074	51.229	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	51.23	0	3811	63.509	240	3074	51.23	120	0	0	0
7	3074	51.232	0	3074	51.232	240	3074	51.232	120	0	0	0
8	2171	36.178	0	3811	63.509	240	3811	63.509	120	2000	2018	0.9
9	3811	63.509	0	2172	36.197	240	3811	63.509	120	2000	2018	0.9

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-200DE1

RELAY TYPE : ABB REX640

ITEM : UNIT A4

Sn. : 1VHR81041856

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	2171	36.191	120	2000	2021	1.05
11	3028	50.465	0	3028	50.465	240	3811	63.509	120	2000	2019	0.95
12	3811	63.509	0	3028	50.465	240	3028	50.465	120	2000	2022	1.1
13	3028	50.468	0	3811	63.509	240	3028	50.468	120	2000	2020	1
14	3028	50.467	0	3028	50.467	240	3028	50.467	120	2000	2020	1
15	1114	18.566	0	3811	63.509	240	3811	63.509	120	2000	2012	0.6
16	3811	63.509	0	1114	18.559	240	3811	63.509	120	2000	2013	0.65
17	3811	63.509	0	3811	63.509	240	1114	18.574	120	2000	2014	0.7
18	2582	43.036	0	2582	43.036	240	3811	63.509	120	2000	2014	0.7
19	3811	63.509	0	2583	43.043	240	2583	43.043	120	2000	2011	0.55
20	2582	43.037	0	3811	63.509	240	2582	43.037	120	2000	2017	0.85
21	2582	43.039	0	2582	43.039	240	2582	43.039	120	2000	2012	0.6

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

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

CLIENT : ROSETTI MARINO Group of Companies

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-100D1

EQUIPMENT DESCRIPTION : -TR-200DE1

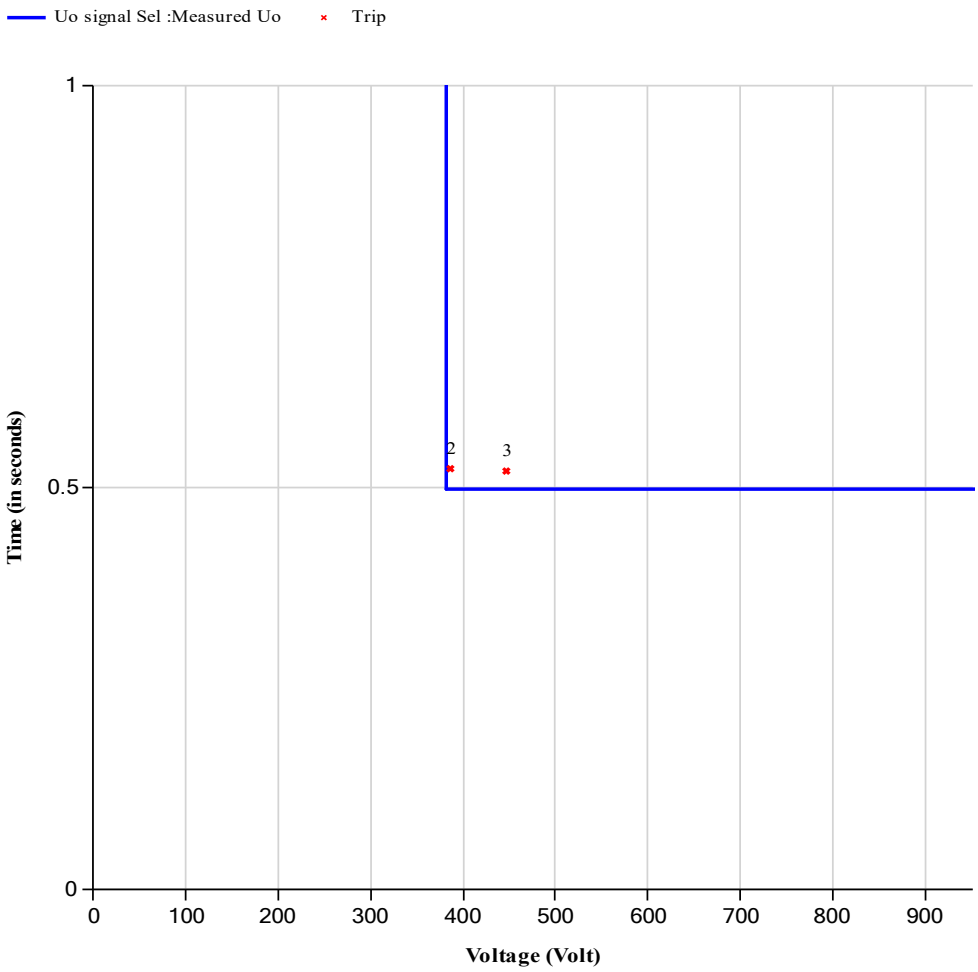
RELAY TYPE : ABB REX640

ITEM : UNIT A4

Sn. : 1VHR81041856

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

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	373	10.768	0	0	0
2	386	11.151	500	524	4.8
3	447	12.898	500	521	4.2

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-200DE1

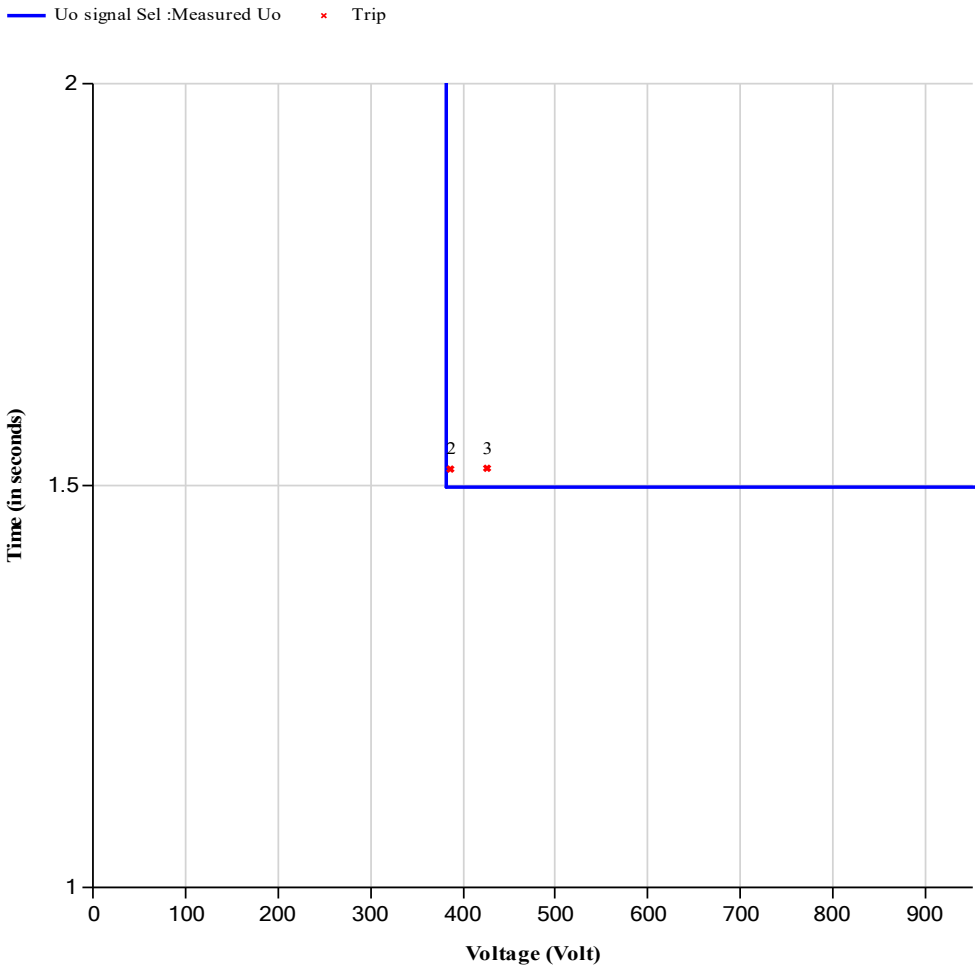
ITEM : UNIT A4

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

RELAY TYPE : ABB REX640

Sn. : 1VHR81041856

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 : 1500 msec



N.	V0(V)	V0(V)	Exp.(ms)	Trip(ms)	Dev.(%)
1	373	10.768	0	0	0
2	386	11.151	1500	1521	1.4
3	426	12.297	1500	1522	1.47

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

ITEM	Tag	SG-100D1-A4-K1	: FEEDER TR-200ED1		Dwg	1723002197-EL-DG-00021	
	S/Sys	82-40	: Power Transformer 1.6 MVA (TR-200DE1)		Module		
TASK	code	C10004781	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-A4-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

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	**NOTE1													
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 3.

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	2025-02-04	2025-02-04	2025-02-04
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2025-02-04T09:43:33.026Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-02-04T12:21:11.021Z	PROVERLIS Digitaly signed by Witness waived 2025-02-04T13:41:13.117Z

5.4.3.4 SIS Safety Instrumented System

Not applicable

5.4.3.5 EMCS EC61850 - 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 A4 Unit TRANSFORMER FEEDER TR-200DE1.

5.4.3.6 EMCS IEC61850 - A4 Unit I/O List

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

SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	IEC61850 ITEM TAG
TRANSFORMER FEEDER TR-200DE1 "A4		
PROTECTION TRIPPED "50"	DIGITAL	LD0.PHHPTOC2.ST.Op.general
PROTECTION TRIPPED "50-1"	DIGITAL	LD0.PHHPTOC1.ST.Op.general
PROTECTION TRIPPED "50-2"	DIGITAL	LD0.PHIPTOC1.ST.Op.general
PROTECTION TRIPPED "51"	DIGITAL	LD0.PHLPTOC2.ST.Op.general
PROTECTION TRIPPED "51-1"	DIGITAL	LD0.PHLPTOC1.ST.Op.general
PROTECTION TRIPPED "51N"	DIGITAL	LD0.EFLPTOC1.ST.Op.general
PROTECTION TRIPPED "51G"	DIGITAL	LD0.EFHPTOC1.ST.Op.general
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 "59-1"	DIGITAL	LD0.PHPTOV1.ST.Op.general
SELECTOR SWITCH IN LOCAL POSITION	DIGITAL	LD0.MVGAPC1.ST.SPCSO6.stVal
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

SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	IEC61850 ITEM TAG
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
PROTECTION TRIPPED ALARM "OIL LEVEL"	DIGITAL	LD0.SCBIGGIO1.ST.Ind10.stVal
TRANSFORMER PROTECTION TRIPPED "OIL PRESSURE"	DIGITAL	LD0.SCBIGGIO1.ST.Ind12.stVal
TRANSF. PROTECTION TRIPPED "WINDING TEMPERATURE"	DIGITAL	LD0.SCBIGGIO1.ST.Ind14.stVal
TRANSF. PROTECTION ALARM "WINDING TEMPERATURE	DIGITAL	LD0.SCBIGGIO1.ST.Ind13.stVal
TRANSF. OIL LEVEL VERY LOW ALARM	DIGITAL	LD0.SCBIGGIO1.ST.Ind11.stVal
TRANSFORMER GENERAL ALARM	DIGITAL	LD0.SDBIGGIO1.ST.Ind7.stVal

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Once printed shall be considered as "NOT CONTROLLED" copy.
File: 123A90-PML-COM-PRO-03046

SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	IEC61850 ITEM TAG
WATCHDOG PROTECTION RELAY	DIGITAL	LD0.LPHD1.PhyHealth.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 3 HEALTHY	DIGITAL	LD0.SDBIGGIO1.ST.Ind8.stVal
SELECTOR SWITCH OF OVERRIDE (SIL ENABLED)	DIGITAL	LD0.SDBIGGIO1.ST.Ind9.stVal

Step	Description	Result	Verified by	Date
104	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: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

TAG COLUMN: A4

L1	Arm.	BK	82002-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82002-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82002-CEM-1-L3 1C X 70 mm²	BK

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

Arm. 1U, 1V, 1W — HV TERMINAL BOX OF TR-200DE1

TAG COLUMN: A7

L1	Arm.	BK	82003-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82003-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82003-CEM-1-L3 1C X 70 mm²	BK

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

Arm. 1U, 1V, 1W — HV TERMINAL BOX OF TA30

TAG COLUMN: A1

L1	Arm.	BK	82004-CEM-1-L1 1C X 150 mm²	BK
L2		BK	82004-CEM-1-L2 1C X 150 mm²	BK
L3		BK	82004-CEM-1-L3 1C X 150 mm²	BK

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

Arm. 1U, 1V, 1W — HV TERMINAL BOX OF T4

TAG COLUMN: A3

L1	Arm.	BK	82005-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82005-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82005-CEM-1-L3 1C X 70 mm²	BK

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

Arm. 1U, 1V, 1W — HV TERMINAL BOX OF 18T1

TAG COLUMN: A2

L1	Arm.	BK	82006-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82006-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82006-CEM-1-L3 1C X 70 mm²	BK

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

Arm. 1U, 1V, 1W — HV TERMINAL BOX OF TR-200ED1

AS COMMISSIONED: MARCO GIBTZ 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. 123A90-DDL-EL-DG-20149 | SHEET 016 | REV. 02

F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: LV SWITCHGEAR
TAG NUMBER: SG-200N1

COLUMN/CUBIC: A2/+02

-X2

400 V INCOMING TRIP FROM 6.6 kV FEEDER

7 → 1
8 → 2
3
4
5
6
7

BK

83006-CEC
7C X 1.5 mm²

BK

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

COLUMN
A4

-XM

1 → XM / 69
2 → XM / 70
3
4
5
6
7

MARCO MORETTO
10/1/25

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

COLUMN/CUBIC.:A4

-XI

10 → 1
11 → 2
3
4

BK

82015-CEC
4C X 4 mm²

NO MARK UP
MARCO MORETTO
7/03/25

BK

DESCRIPTION: 6.6/0.415 kV, 1.6MVA Transformer
TAG NUMBER: CP-200E1

COLUMN/CUBIC.:-

-X1

1 → 31
2 → 32
3
4

AS COMMISSIONED: MATTIA GIUSTI
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
LV SWITCHGEAR & 6.6KV HV SWITCHGEAR INTERLOCKS

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	081	02

F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: LV SWITCHGEAR
TAG NUMBER: SG-200N1

COLUMN/CUBIC: A2/+02

-X2

400 V INCOMING TRIP FROM 6.6 kV FEEDER

7 → 1
8 → 2
3
4
5
6
7

BK

83006-CEC
7C X 1.5 mm²

BK

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

COLUMN
A4

-XM

1 → XM / 69
2 → XM / 70
3
4
5
6
7

MARCO MORETTO
10/1/25

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

COLUMN/CUBIC.:A4

-XI

10 → 1
11 → 2
3
4

BK

82015-CEC
4C X 4 mm²

NO MARK UP
MARCO MORETTO
7/03/25

BK

DESCRIPTION: 6.6/0.415 kV, 1.6MVA Transformer
TAG NUMBER: CP-200E1

COLUMN/CUBIC.:-

-X1

1 → 31
2 → 32
3
4

AS COMMISSIONED: MATTIA GIUSTI
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
LV SWITCHGEAR & 6.6KV HV SWITCHGEAR INTERLOCKS

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	081	02

F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: 6.6/0.415 KV TRANSFORMER
TAG NUMBER: CP-200E1

TRIP 63T, 49T TO RELAY

-X1

WIND. TEMPERATURE TRIP	X1 / 36	1
	X1 / 38	2
	X1 / 20	3
PRESSURE RELAY TRIP	X1 / 21	4
		5
		6
		7

BK

83004-CEC
7C X 1.5 mm²

BK

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

A4

-XM

1	XM / 23	WIND. TEMPERATURE TRIP
2	XM / 24	
3	XM / 21	PRESSURE RELAY TRIP
4	XM / 22	
5		
6		
7		

MARCO MORETTO
10/1/25

DESCRIPTION: LV SWITCHGEAR
TAG NUMBER: SG-200N1

COLUMN/CUBIC. A2/08 ~~A~~ A2/02

PERMISSIVES FROM LV TO 6.6KV FEEDER CB AND EARTHING SWITCH

-X2

X2 / 21	1	
X2 / 22	2	
X2 / 23	3	
X2 / 24	4	
X2 / 25	5	
X2 / 26	6	
	7	

MARCO MORETTO
20/3/25

BK

83005-CEC
7C X 1.5 mm²

BK

-XM

1	XM / 27	CB OPENED FROM LV SWBD
2	XM / 28	
3	XM / 39	CB IN TEST POSITION FROM LV SWBD
4	XM / 40	
5	XM / 41	FROM LV SWBD TRIPPED
6	XM / 42	
7		

AS COMMISSIONED: MATTIA GINOTTI
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
LV SWITCHGEAR & 6.6KV HV SWITCHGEAR INTERLOCKS

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	080	02

F.to UNI A3: 420mmx297mm

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

FROM	TO

DESCRIPTION: 6.6/0.415 KV TRANSFORMER
TAG NUMBER: CP-200E1

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

AG

ALARMS, 49T
TO PROTECTION

-X1

WIND. TEMPERATURE ALARM	X1 / 33	1	
	X1 / 35	2	
OIL LEVEL VERY LOW ALARM	X1 / 17	3	
	X1 / 18	4	BK
	X1 / 42	5	
TRANSFORMER GENERAL ALARM	X1 / 43	6	
		7	

83002-CEC
7C X 1.5 mm²

BK

-XM

1	XM / 37	ALARM 49T
2	XM / 38	
3	XM / 35	ALARM 71OT_1
4	XM / 36	
5	XM / 45	REMOTE OPENING COMMAND
6	XM / 46	TRANSFORMER GENERAL ALARM
7		

MARCO MORETTO
10/1/25

TRIP 97T, 26OT,
TO RELAY

-X1

BUCHHOLZ RELAY TRIP	X1 / 05	1
	X1 / 06	2
OIL THERMOMETER TRIP	X1 / 11	3
	X1 / 12	4
		5
		6
		7

83003-CEC
7C X 1.5 mm²

BK

NO MARK UP
MARCO MORETTO
7/03/25

-XM

1	XM / 17	TRIP 97T
2	XM / 18	
3	XM / 19	TRIP 26OT
4	XM / 20	
5		
6		
7		

AS COMMISSIONING: MATTIA GIROTTI
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
CP-200DE1A 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 079

REV. 02

F.to UNI A3: 420mmx297mm

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

FROM	TO
DESCRIPTION: 6.6/0.42 KV TRANSFORMER TAG NUMBER: TR-200DE1	DESCRIPTION: LV SWITCHGEAR TAG NUMBER: SG-200N1



AS COMMISSIONED: NATALIA GIROLI 21/3/25

NO MARK UP
MARCO MORETTO
7/03/25

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
6.6/0.415 KV TRANSFORMER

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 017 | REV. 02

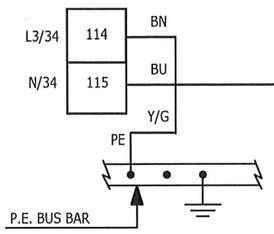
F.to UNI A3: 420mmx297mm

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

FROM	TO

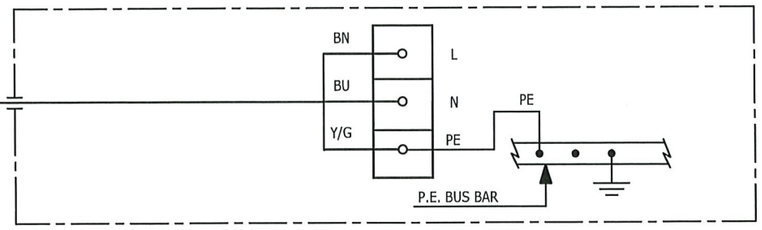
DESCRIPTION: LIGHTING & SMALL POWER DB BOP
TAG NUMBER: DP-200N1

CUBICLE/CB: +03/Q34

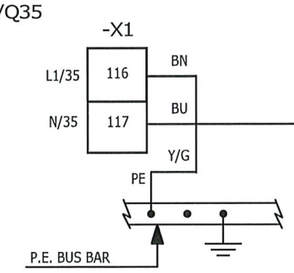


83115-CEL
3G2.5 mm²

DESCRIPTION: AUXILIARY NER
TAG NUMBER: RR-100D1



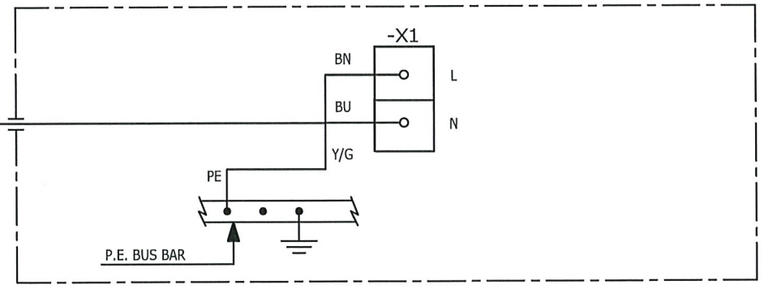
CUBICLE/CB: +03/Q35



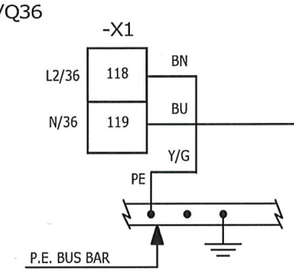
83116-CEL
3G2.5 mm²

NO MARK UP
MARCO MORETTO
7/03/25

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



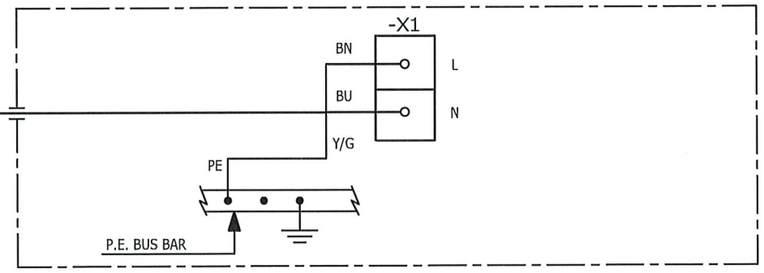
CUBICLE/CB: +03/Q36



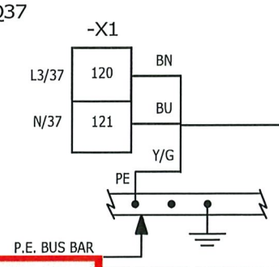
83117-CEL
3G2.5 mm²

NO MARK UP
MARCO MORETTO
7/03/25

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



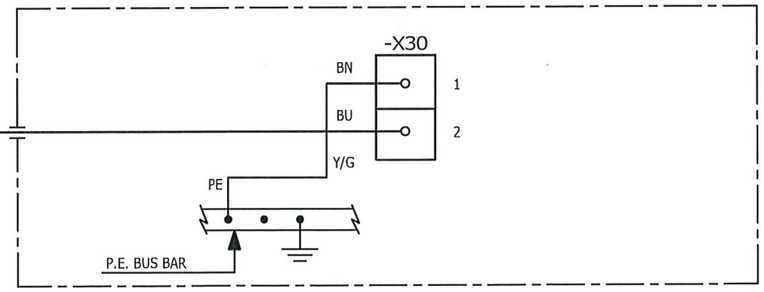
CUBICLE/CB: +03/Q37



83118-CEL
3G6 mm²

AS COMMISSIONED : MATTIA GIROTTI

DESCRIPTION: AUXILIARY GIS
TAG NUMBER: CP-100E1



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.	SHEET	REV.
	123A90-DDL-EL-DG-20149	055	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

INTERTRIP AND 86 TRIP TO LV INCOMING

COLUMN: A4

-XM

XM / 49	1	
XM / 50	2	
XM / 51	3	
XM / 52	4	BK
XM / 53	5	
XM / 54	6	
	7	

82013-CEC
7C X 1.5 mm²

NO MARK UP
MARCO MORETO
18/3/25

DESCRIPTION: LV SWITCHGEAR
TAG NUMBER: SG-200N1

COLUMN/CUBIC.: ~~A1/02~~ A2/02

-X2

	1	X2 / 15
	2	X2 / 16
	3	X2 / 17
BK	4	X2 / 18
	5	X2 / 19
	6	X2 / 20
	7	

DESCRIPTION: 6.6/0.415 KV TRANSFORMER
TAG NUMBER: CP-200DE1A

COLUMN/CUBIC.: -

ALARMS 97T, 26OT, 71OT TO PROTECTION

-X1

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

83001-CEC
7C X 1.5 mm²

NO MARK UP

MARCO MORETO
7/03/25

AS COMMISSIONED: MATTIA GIROTI
21/3/25

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

COLUMN/CUBIC.: A4

-XM

	1	XM / 29	
	2	XM / 30	ALARM 97T
	3	XM / 31	
BK	4	XM / 32	ALARM 26OT
	5	XM / 33	
	6	XM / 34	ALARM 71OT
	7		

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-200DE1A TRANSFORMER ALARMS 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 078 | 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

=						
+						
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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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
Table of reference documents

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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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

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

=							
+							
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

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

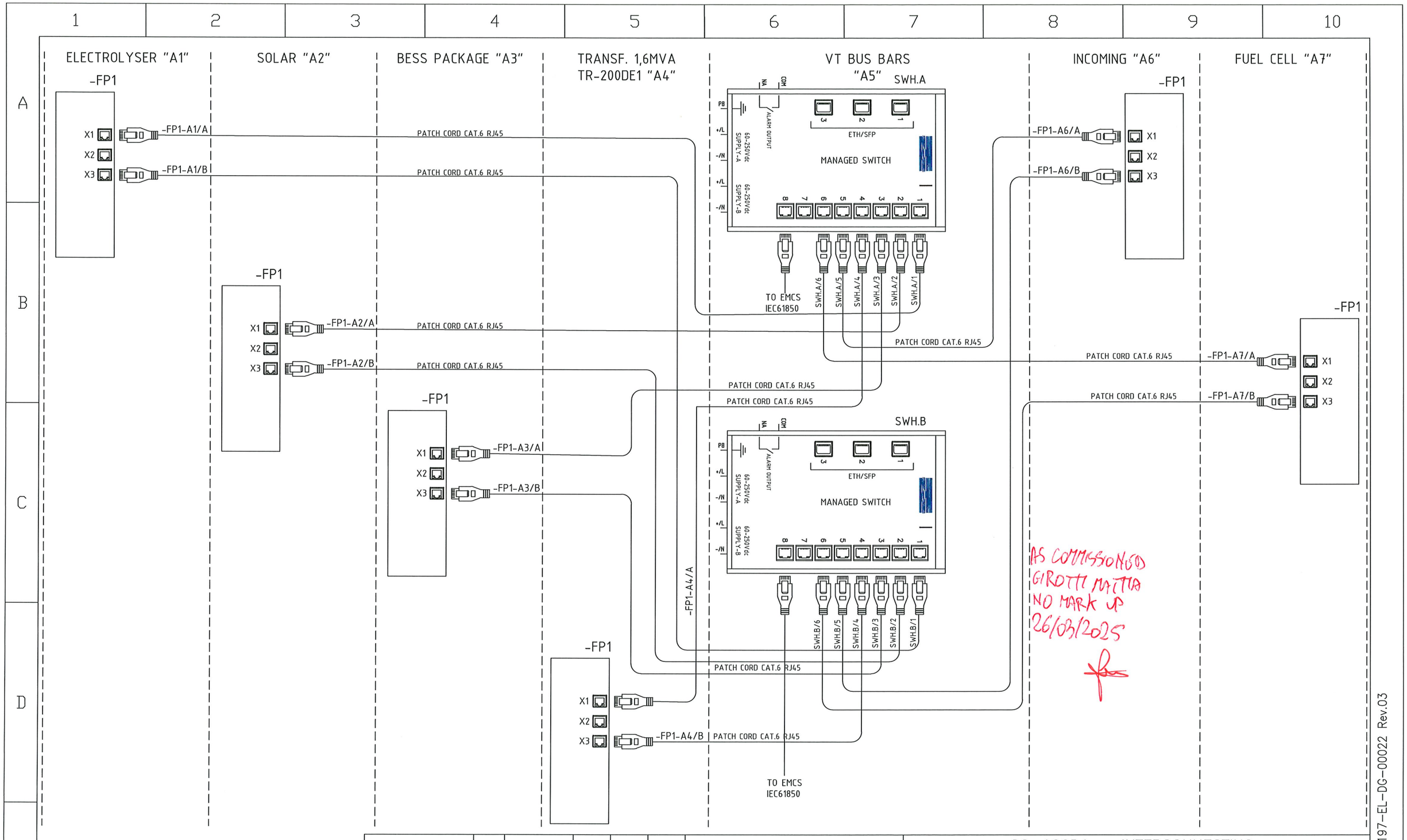
DRAWING NO. 1723002197-EL-DG-00022

SHEET 6

REV. 03

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

F.to UNI A3: 420mmx297mm



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
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

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

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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

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

NOT APPLICABLE

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.:__181023/2 (200DE1)

Rated power:_1600

Voltage ratio:_6600 V / 420 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	28.540	28.539	28.541	POSITIVE
2	27.872	28.872	27.873	POSITIVE
3	27.203	27.203	27.205	POSITIVE
4	26.540	26.539	26.541	POSITIVE
5	25.870	25.871	25.872	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 4.37 GΩ POSITIVE

LV - MV+ground: 1KV 1min Result 3.82 GΩ POSITIVE

NOTES:__

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

FRANCESCO BUCCHERI

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Codice Fiscale 01547220176
Partita IVA IT 03550350171
Cod. Univoco FH1R83N

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.	1810231	1810232	1810233	
5	No. of units	1	1	1	
6	Quantity of parts FITTED / INSTALLED per unit/component				

Supplier: MF TRASFORMATORI SRL

Address: LOC. S. ANNA 22-24
CALCINATO - BRESCIA
ITALY

PO Number: 1723001697

PO description: MANUAL GLOBE AND PISTON CHECK VALVES

Supplier telephone no: +39 0309636020

E-mail: claudio.toniolo@mftrasformatori.it

Contact name: Mr. Claudio Toniolo

Contact mobile no:

WEBSITE http://www.mftrasformatori.it

General Information:

						MATERIALS DATA																	Commissioning spares	2 Years spares	
		Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certificate Type (if applicable)	Certificate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturer name	Quantity ordered	Quantity ordered	Remarks
					Project Datasheet no.	Project Detail dwg. no.	Item ref.																		
		7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
3		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	
4		2	1	6,9kV H.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00006	2	Porcellaine											UNEL12kV/630A		EMC	0	1	
	3	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	
	5	5	1	420V L.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00007	2	Porcellaine											DIN1kV/3150A		EMC	0	1	
	4	6	1	800V L.V. Terminals	1723001697-EL-TDS-00005	1723001697-EL-DA-00007	2	Porcellaine											DIN1kV/630A		EMC	0	1	
1		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	
		11		Paint	1723001697-EL-TDS-00005	1723001697-EL-DA-00006		Epoxy paint											RAL7031		MF	0	20	
		12																							
		13																							
		14																							
		15																							
		16																							
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Section 7.4 Vendor Data / Operations / Maintenance Manuals References

BASE LOAD POWER HUB (BLPH)

TR-200DE1 Termination and Wiring Diagram

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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)

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CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200DE1 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-00011

SHEET 001

REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00011 Rev. 04

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
04	001	FRONT PAGE	
04	002	SUMMARY and GENERAL NOTES	
04	003	LAYOUT - AUXILIARY CONTROL PANEL	
04	004	INTERNAL POWER CIRCUIT DIAGRAM	
04	005	PROTECTION DEVICES ON TRANSFORMER	
04	006	THERMAL CONTROL UNIT	
04	007	TERMINAL STRIP	
04	008	EQUIPMENT LIST	

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04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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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–200DE1 Termination and Wiring Diagram
SUMMARY and GENERAL NOTES

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

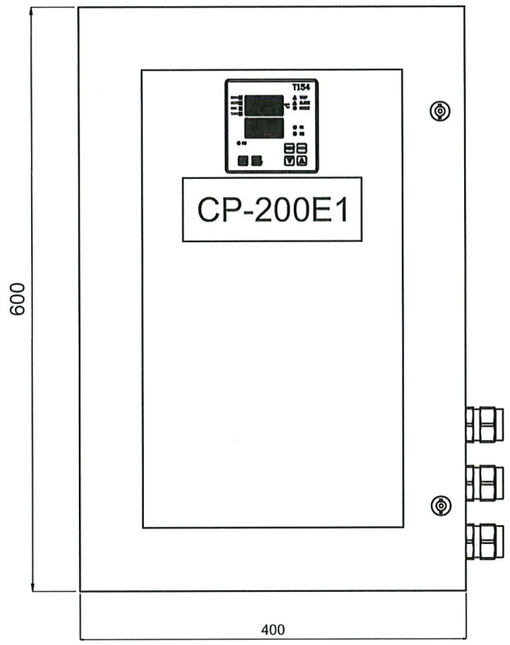
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F.to UNI A3: 420mmx297mm

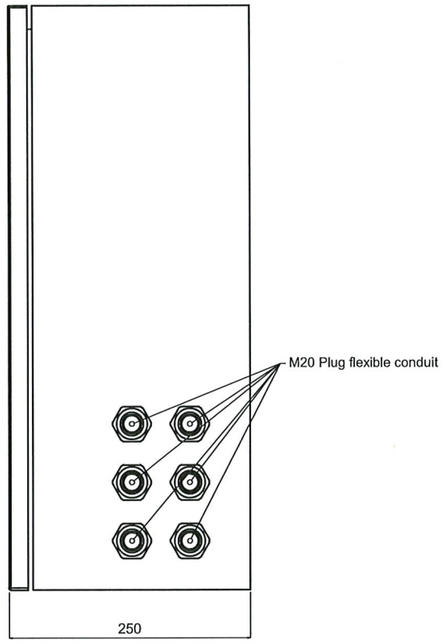
File Name : 1723001697–EL–DG–00011 Rev. 04

LAYOUT - AUXILIARY CONTROL PANEL

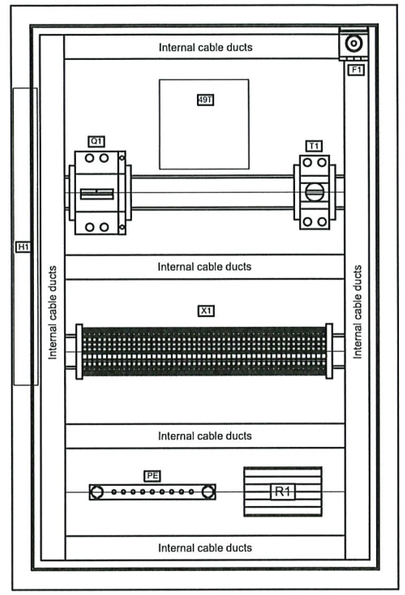
Frontal view



Left side view

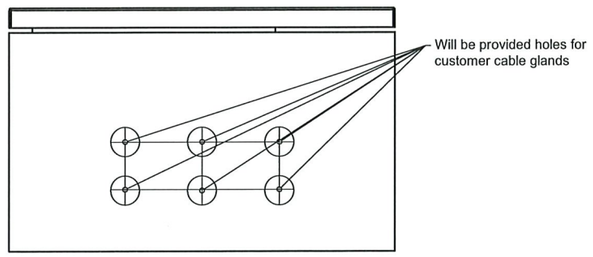


Internal view



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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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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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-200DE1 Termination and Wiring Diagram
LAYOUT - AUXILIARY CONTROL PANEL

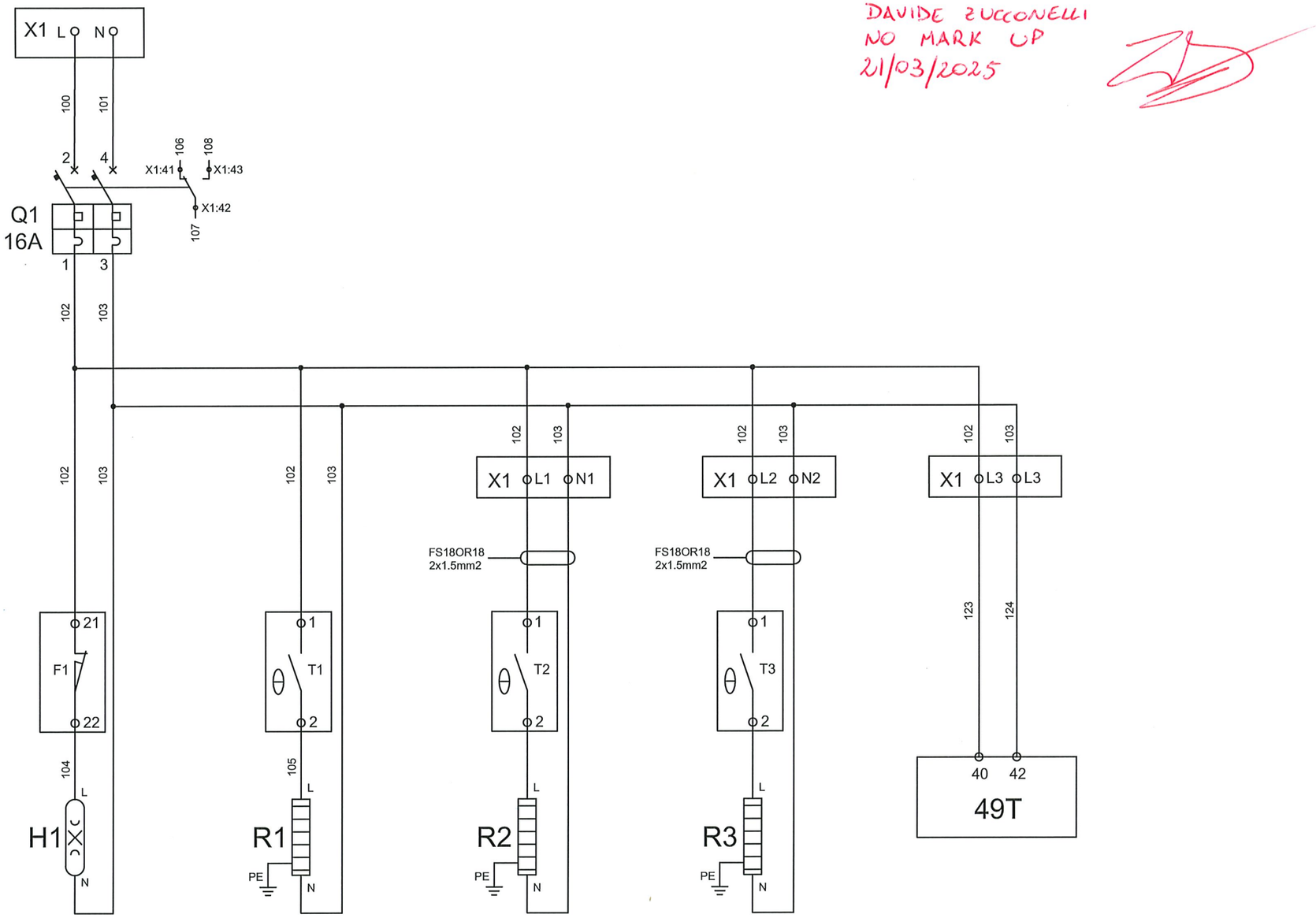
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723001697-EL-DG-00011 | SHEET 001 | REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00011 Rev. 04

1Ph+N/Pe = 50Hz 230V
Power supply



AS-COMMISSIONED
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21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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-200DE1 Termination and Wiring Diagram
INTERNAL POWER CIRCUIT DIAGRAM

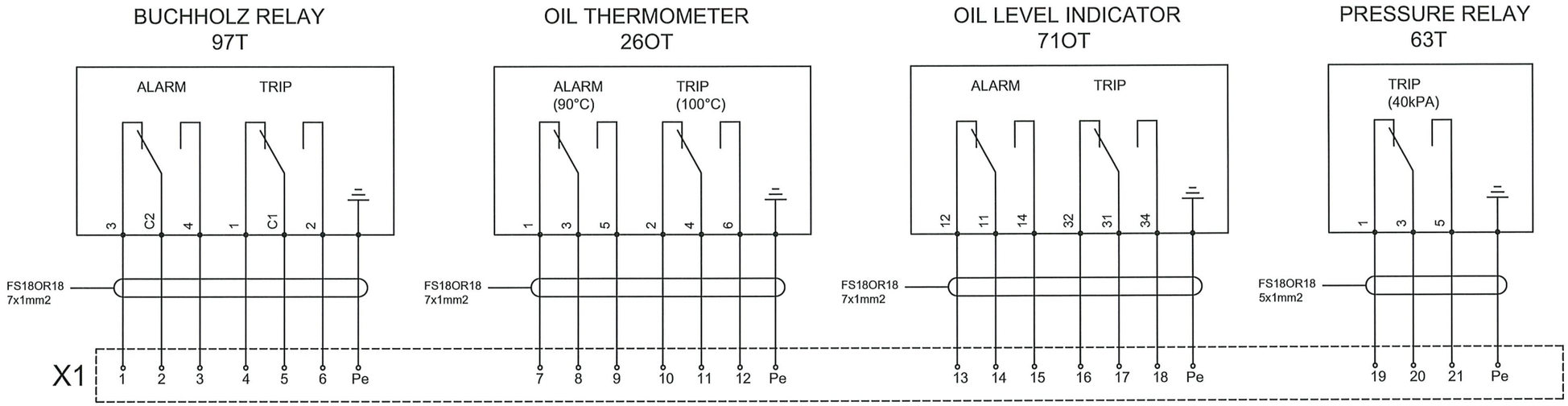
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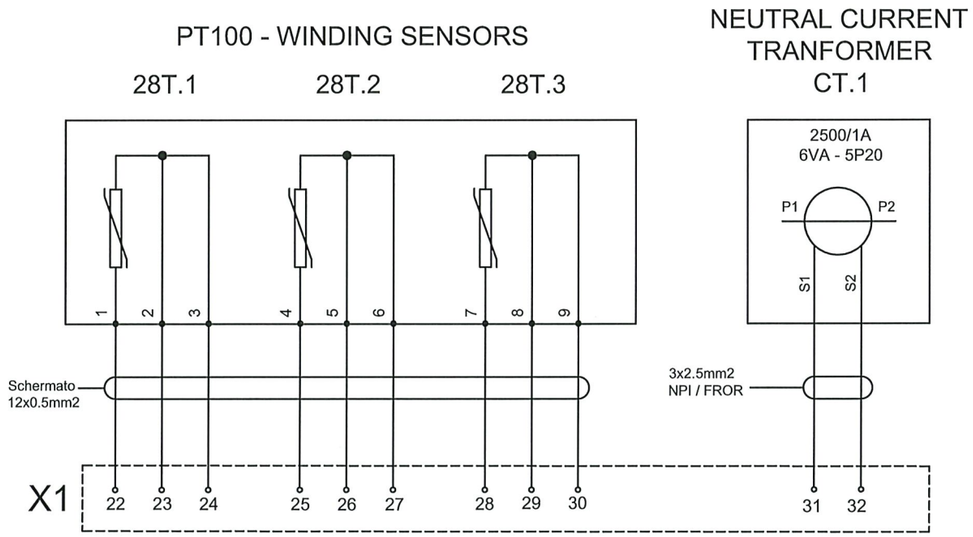
A3 | DRAWING NO. 1723001697-EL-DG-00011 | SHEET 001 | REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00011 Rev. 04

PROTECTION DEVICES ON TRANSFORMER





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NO MARK UP
21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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-200DE1 Termination and Wiring Diagram
PROTECTION DEVICES ON TRANSFORMER

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

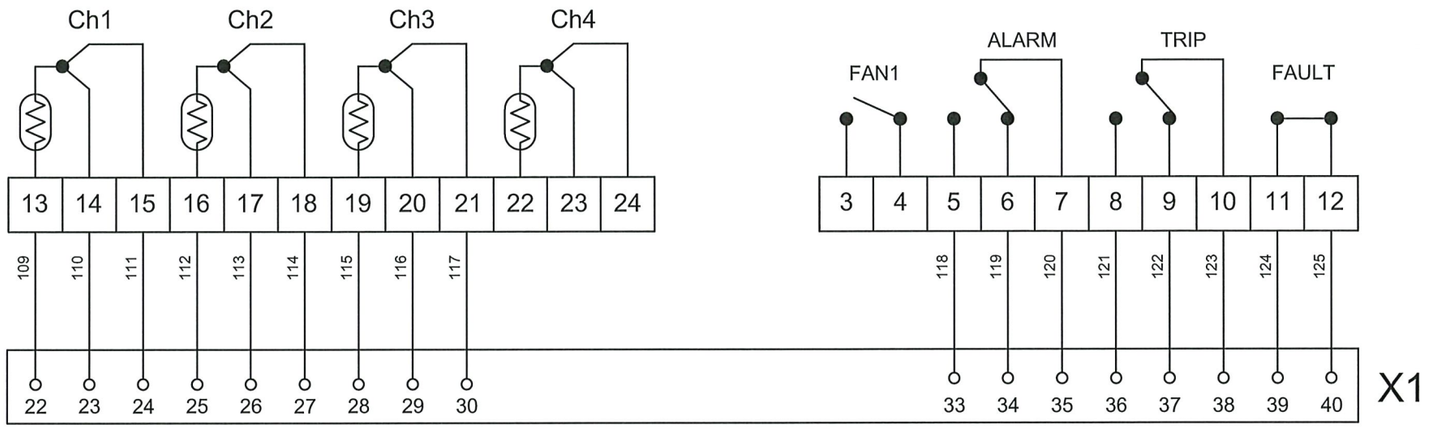
A3 | DRAWING NO. 1723001697-EL-DG-00011 | SHEET 001 | REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00011 Rev. 04

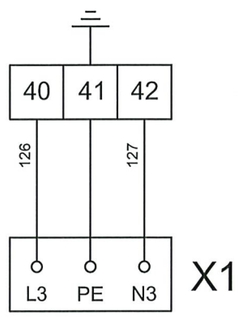
WINDING TEMPERATURE INDICATOR - 49T

T154 - TECSYSTEM



POWER SUPPLY

24÷240 Vac-dc 50 / 60Hz



SETTING:

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

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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

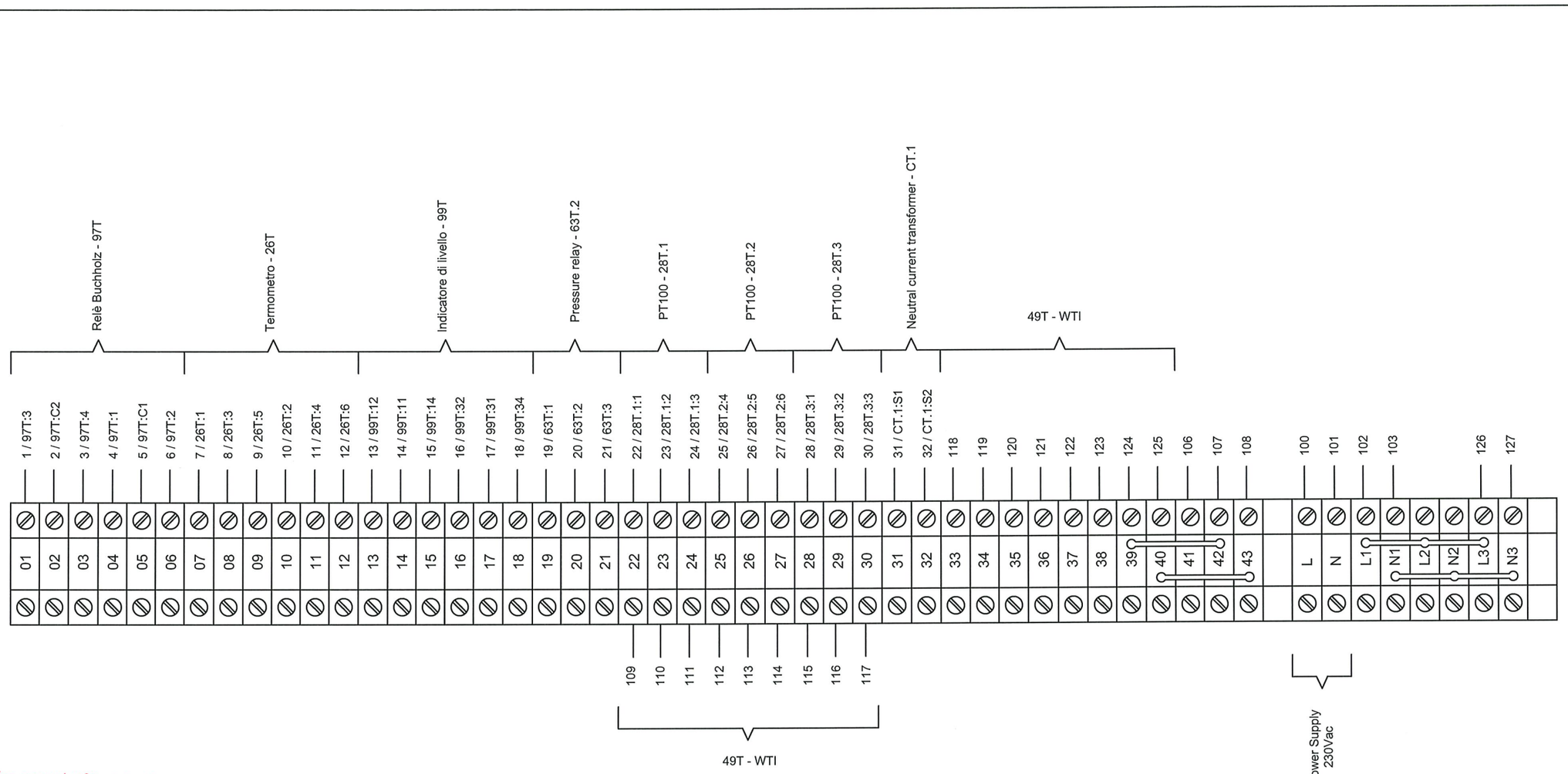
TITLE : BASE LOAD POWER HUB (BLPH)
TR-200DE1 Termination and Wiring Diagram
THERMAL CONTROL UNIT

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

A3 | DRAWING NO. 1723001697-EL-DG-00011 | SHEET 001 | REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00011 Rev. 04



AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

ALL PE CONDUCTORS WILL BE CONNECTED AT PE BAR

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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-200DE1 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-00011

SHEET 001

REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00011 Rev. 04

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	51	

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
03	15/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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-200DE1 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-00011 | SHEET 001 | REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00011 Rev. 04

"SG-100D1" HV SWBD 6,6kV (UNIT A4)

FUNCTIONAL DIAGRAM

TRANSFORMER FEEDER TR200DE1

=
+A4

DWG n° : 231151/SD/21
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	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)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Cover

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 1

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

INDEX

Sheet	Description	Revision 0	1	2	3	4	5	6	7	8
1	Cover	X	X	X	X					
2	Sheets Index	X	X	X	X					
3	Legend	X	X	X	X					
4	Door Layout	X	X	X	X					
5	Protection Display RØX640	X	X	X	X					
6	Selector Switch Diagram	X	X	X	X					
7	Power Diagram	X	X	X	X					
8	Power Diagram	X	X	X	X					
9	Power Diagram	X	X	X	X					
10	110Vdc / 24Vdc Distribution Voltage	X	X	X	X					
11	Composition Relay RØX640	X	X	X	X					
12	230Vac Distribution Voltage	X	X	X	X					
13	110V Protection/Measure Distribution Voltage	X	X	X	X					
14	110V Protection/Measure Distribution Voltage	X	X	X	X					
15	"RØX640"' Protection Wiring	X	X	X	X					
16	"RØX640"' Protection Wiring	X	X	X	X					
17	"RØX640"' Protection Wiring	X	X	X	X					
18	Øxtherm Device	X	X	X	X					
19	Command Circuit	X	X	X	X					
20	Command Circuit	X	X	X	X					
21	Command Circuit	X	X	X	X					
22	Command Circuit	X	X	X	X					
23	"RØX640" Protection Wiring - Digital Input	X	X	X	X					
24	"RØX640" Protection Wiring - Digital Input	X	X	X	X					
25	"RØX640" Protection Wiring - Digital Input	X	X	X	X					
26	Availables Signals	X	X	X	X					

Sheet	Description	Revision 0	1	2	3	4	5	6	7	8
27	Terminal stripes	X	X	X	X					
28	Terminal stripes	X	X	X	X					
29	Terminal stripes	X	X	X	X					
30	Terminal stripes	X	X	X	X					
31	Bill of Materials	X	X	X	X					
32	Bill of Materials	X	X	X	X					
33	Bill of Materials	X	X	X	X					

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+A4

DWG n° : 231151/SD/21

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1

Sheets Index

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 2

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 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
PTT	V.T. TRUCK
QM	MV CIRCUIT-BREAKER

ITEM	DESCRIPTION
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

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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+A4
DWG n° : 231151/SD/21
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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IMESA ELECTRICAL ENGINEERING
CROSSWIND
ROSETTI MARINO

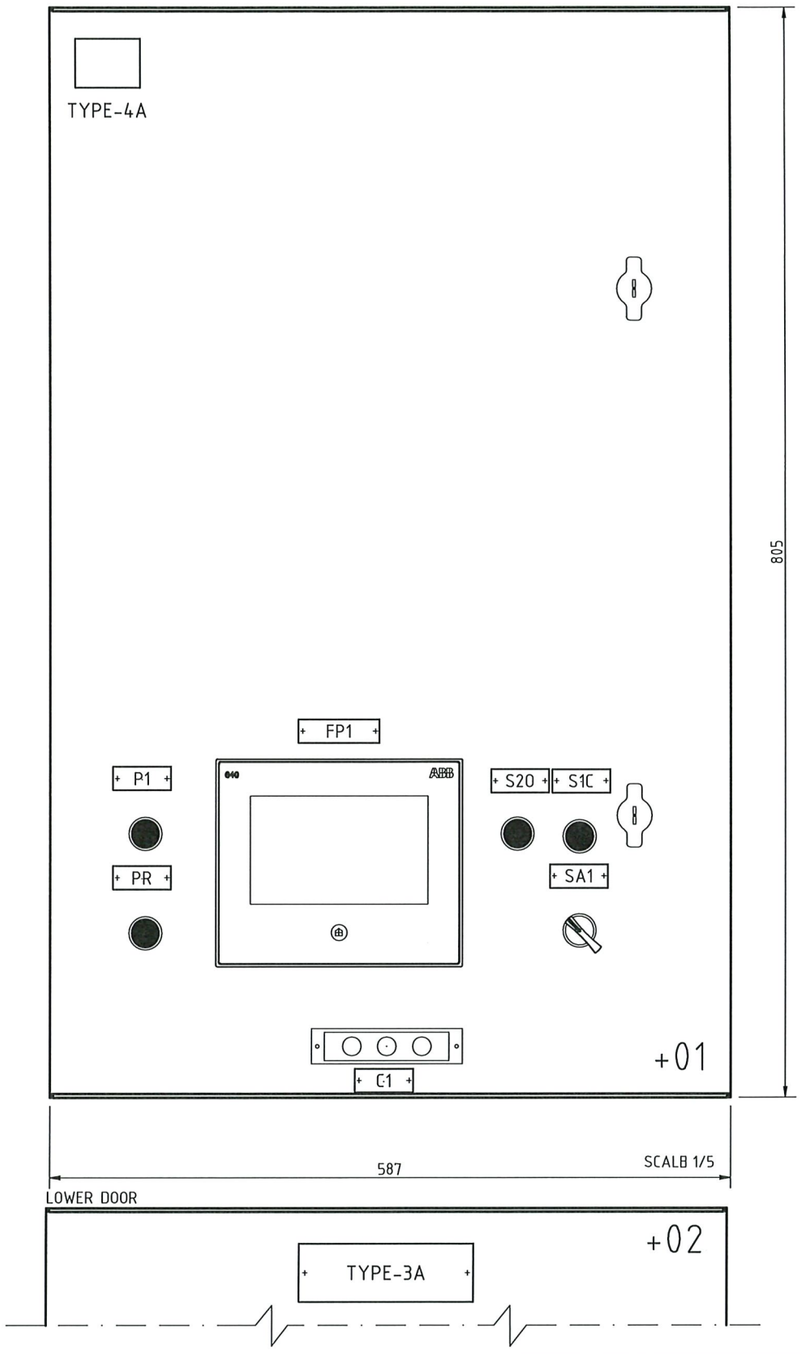
TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Legend

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK
SCALE : NTS
A3
DRAWING NO. 1723002197-EL-DG-00021
SHEET 3
REV. 03

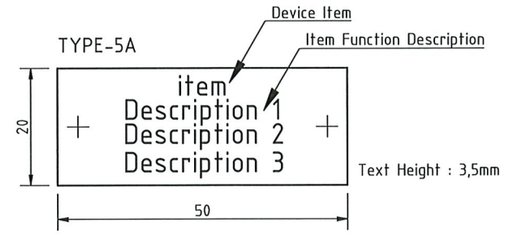
F.to UNI A3: 420mmx297mm

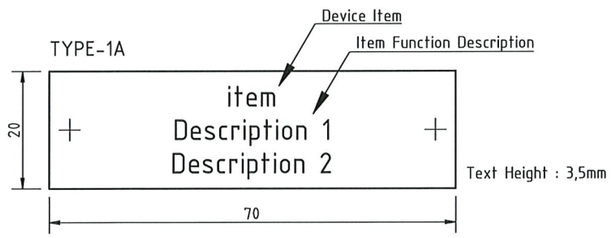
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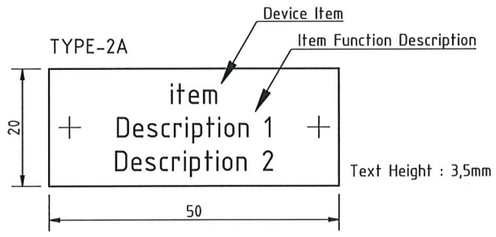
DOOR LAY-OUT

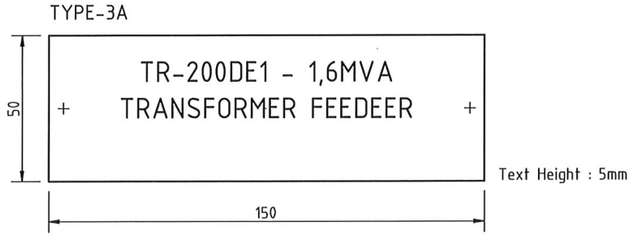


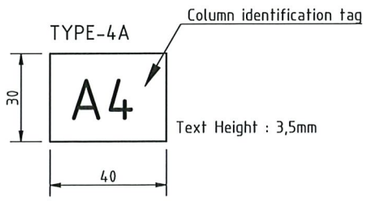
DEVICES name plate					
ITEM	COMPONENT	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	NOTE
FP1	PROTECTION RELAY	PROTECTION RELAY			TYPE-1A
S2.O	PUSH BUTTON	OPEN	COMMAND	CONTACTOR	TYPE-5A
S1.C	PUSH BUTTON	CLOSE	COMMAND	CONTACTOR	TYPE-5A
SA1	SELECTOR SWITCH	LOCAL / REMOTE			TYPE-2A
PR	LIGHT PUSH BUTTON	RESET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











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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

= +A4

DWG n° : 231151/SD/21

Item n° : PF1113279

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Door Layout

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

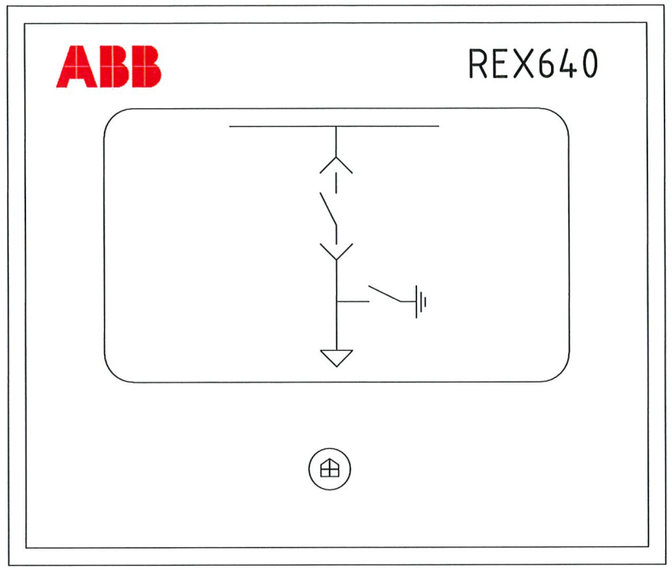
SHEET 4

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

PROTECTION DISPLAY



LHMI - TOUCH DISPLAY

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

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				

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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+A4

DWG n°: 231151/SD/21
Item n°: PF1113279

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Protection Display REX640

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

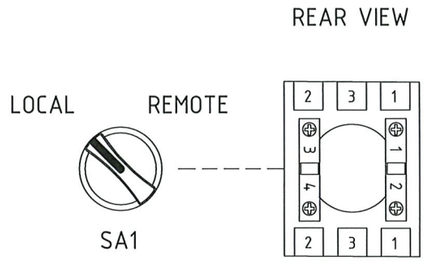
SHEET 5

REV. 03

File Name : 1723002197-EL-DG-00021 Rev.03

F.to UNI A3: 420mmx297mm

SELECTORS SWITCH DIAGRAM



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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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+A4
OWG n° : 231151/SD/21
Item n° : PF1113279

CROSSWIND
IMESA ELECTRICAL ENGINEERING
ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Selector Switch Diagram

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

A3
DRAWING NO. 1723002197-EL-DG-00021
SHEET 6
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

AS-COMMISSIONED
DAVIDE ZUCCONELLI
21/03/2025
NO MARK UP

ARC PROTECTION MAIN BUS BAR COMPARTEMENT
15.4C BB
BB +

MAIN BUSBARS
6,6kV -3F - 630A - 50Hz - 25kA x 1s
L1
L2
L3

ARC PROTECTION CONTACTOR COMPARTEMENT
15.4C CB
CB +
(2)

K1
250A

BGT5
ISOLATED
BGT5-11 BGT5-12 26.9D
BGT5-13 BGT5-14
BGT5-21 BGT5-22
BGT5-23 BGT5-24 23.3A
BGT5-31 BGT5-32
BGT5-33 BGT5-34 21.9A
BGT5-41 BGT5-42
BGT5-43 BGT5-44 26.4B
BGT5-51 BGT5-52
BGT5-53 BGT5-54 19.3B

BGB1 / BGB2
BGF2
XDB-11 XDB-21 23.1A
XDB-5 XDB-22 XDB-15 XDB-33 26.3B
XDB-6 XDB-16 XDB-28 26.2D
XDB-7 XDB-17 XDB-39
XDB-8 XDB-18 XDB-29 26.7B
XDB-9
XDB-12 XDB-48 XDB-47 23.6B
XDB-45 XDB-46 RLB2 19.6C
1 RLB4 2 19.3C
XDB-25 XDB-35 MAC-R2 xxx 20.1C
TO SEB CARD WIRING SHEET FOR OTHERS CONNECTION
DCO=DOUBLE COM. SCO=SINGLE COM.
D01
XDB-43 XDB-44 23.6A
XDB-37 XDB-38 DI3 YU 21.9C

9.3B

BGT4
CONNECTED
BGT4-11 BGT4-12 26.8B
BGT4-13 BGT4-14
BGT4-21 BGT4-22
BGT4-23 BGT4-24
BGT4-31 BGT4-32 26.1D
BGT4-33 BGT4-34
BGT4-41 BGT4-42
BGT4-43 BGT4-44
BGT4-51 BGT4-52 23.3A
BGT4-53 BGT4-54

L1.1 L2.1 L3.1
8.2A 8.2A 8.2A

(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

= +A4							
DWG n°: 231151/SD/21	3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)	
Item n°: PF1113279	2	26/06/2024	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)	
	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

IMESA ELECTRICAL ENGINEERING
CROSSWIND
ROSETTI MARINO

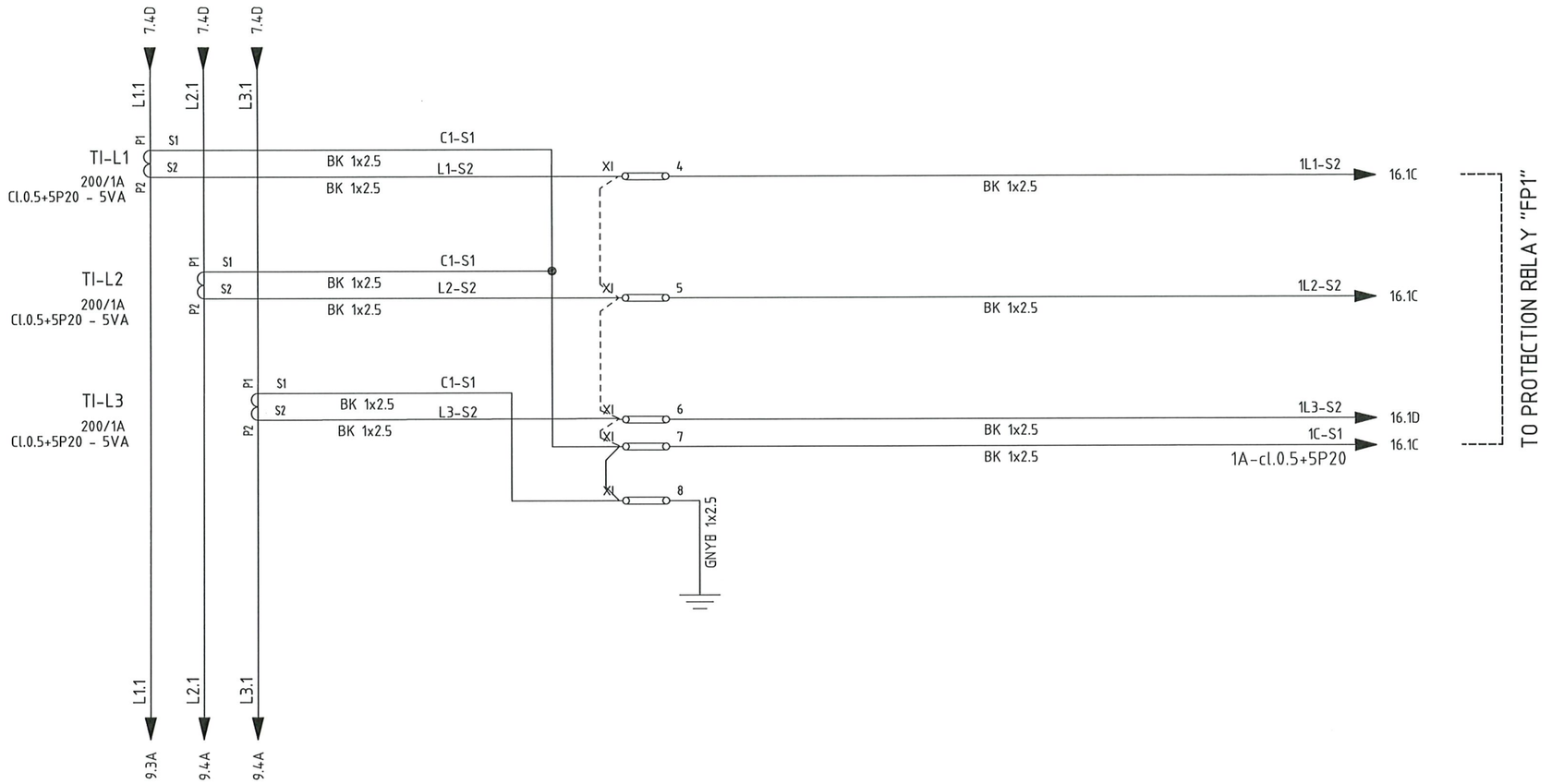
TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Power Diagram

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

A3 | DRAWING NO. 1723002197-EL-DG-00021 | SHEET 7 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03



AS-COMMISSIONED
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NO MARK UP
21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

=
+A4

DWG n°: 231151/SD/21
Item n°: PF1113279

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Power Diagram

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

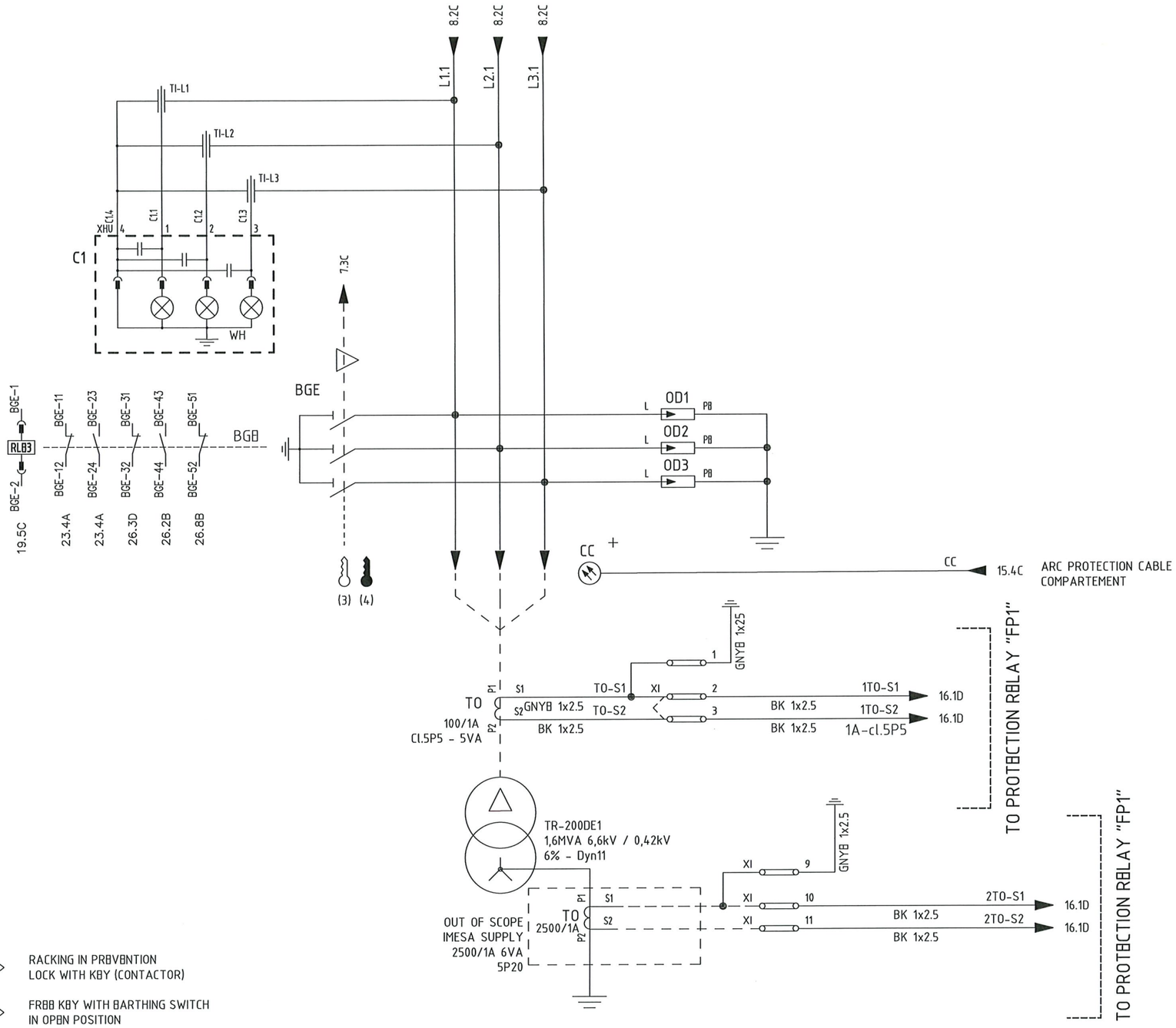
SHEET 8

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025



(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

=							
+A4							
DWG n°: 231151/SD/21	3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)	
Item n°: PF1113279	2	26/06/2024	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)	
	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1
Power Diagram

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

A3 | DRAWING NO. 1723002197-EL-DG-00021 | SHEET 9 | REV. 03

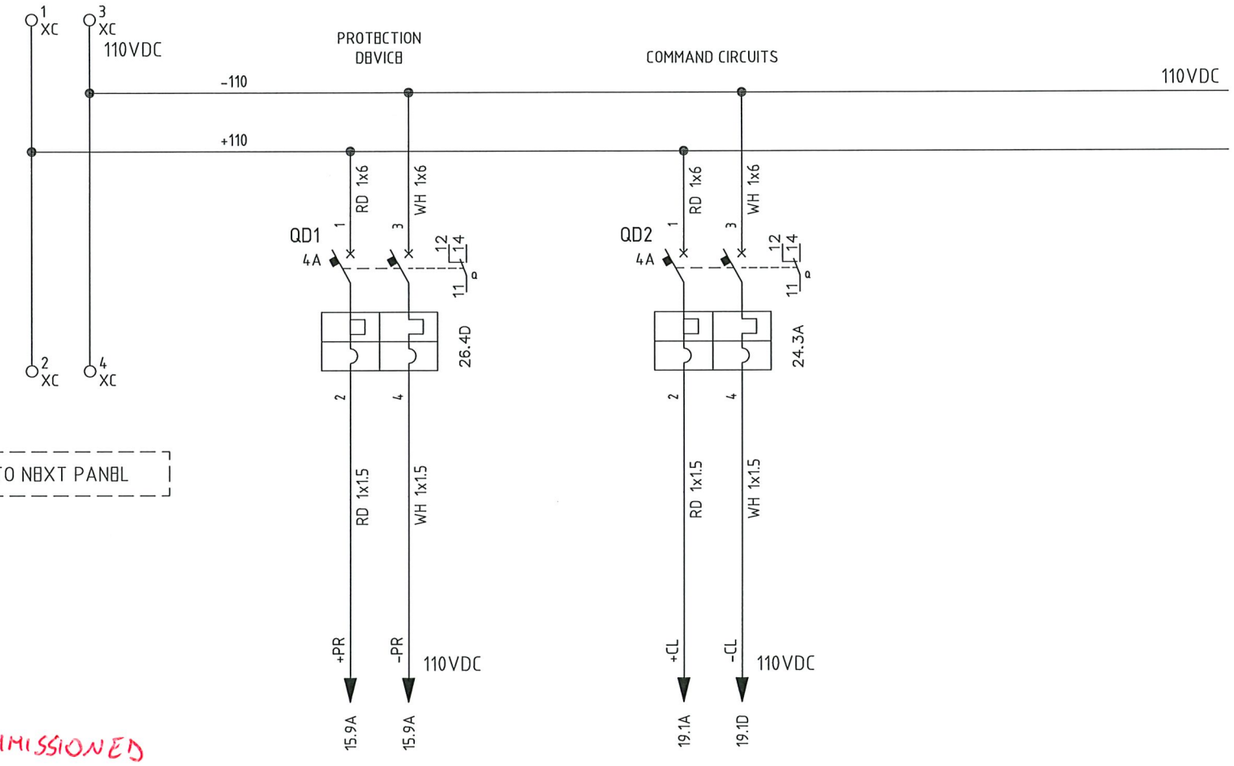
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

110VDC DISTRIBUTION VOLTAGE

110Vdc Auxiliary Voltage from Measuring Bus Bar Unit

FROM PREVIOUS PANEL



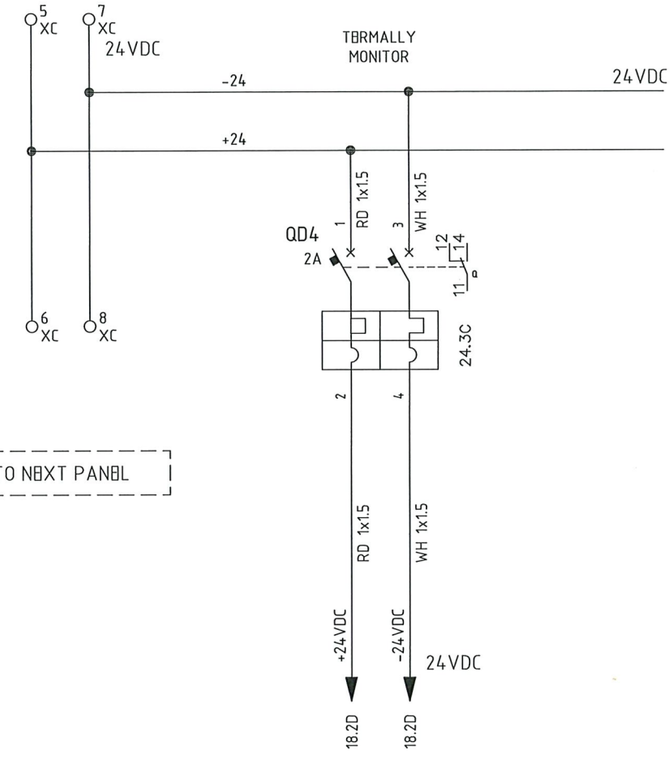
TO NEXT PANEL

AS-COMMISSIONED
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NO MARK UP
21/03/2025

24VDC DISTRIBUTION VOLTAGE

24Vdc Auxiliary Voltage from Measuring Bus Bar Unit

FROM PREVIOUS PANEL



TO NEXT PANEL

= +A4								
DWG n°: 231151/SD/21	3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)	TITLE : SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1	
Item n°: PF1113279	2	26/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)	110Vdc / 24Vdc Distribution Voltage	
	1	14/05/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)	CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK	SCALE : NTS
	0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)	A3 DRAWING NO. 1723002197-EL-DG-00021	SHEET 10 / REV. 03
	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

CROSSWIND

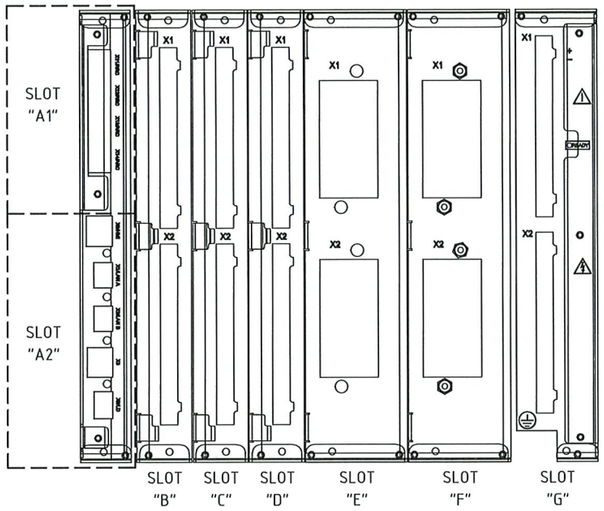
ROSETTI MARINO

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

COMPOSITION RELAY REX640

RACK VIEW



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

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	

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NO MARK UP
21/03/2025

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+A4

DWG n° : 231151/SD/21
Item n° : PF1113279

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

ROSETTI MARINO

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1
Composition Relay REX640

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 1.1

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

230VAC DISTRIBUTION VOLTAGE

230Vac Auxiliary Voltage
from Measuring Bus Bar

FROM PREVIOUS PANEL

9 XC
11 XC
230V-60Hz

MCB INTERNAL
LIGHTING HEATERS
AND SOCKET

INTERNAL
SPACE HEATER

230VAC
SOCKET
AUXILIARY COMPARTMENT

230/1
230/2
230V-60Hz

BK 1x6
BK 1x6

QA2
10A
1
3
12
14
11

26.5D
300mA

10 XC
12 XC

TO NEXT PANEL

2
10
4
11

BK 1x2.5
BK 1x2.5
BK 1x1.5
BK 1x1.5
BK 1x1.5

LS
NC
NA
COM
12
BK 1x1.5

HGR
1
2
13
RANGE 0-60°C
t<

XS1
230V+PE 10/16A

E1
L
N
4W

EH1
L
N
150W

KGR
A1
A2

25.4B
11
12
14
21
22
24

AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

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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+A4
DWG n° : 231151/SD/21
Item n° : PF1113279

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
230Vac Distribution Voltage

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 12

REV. 03

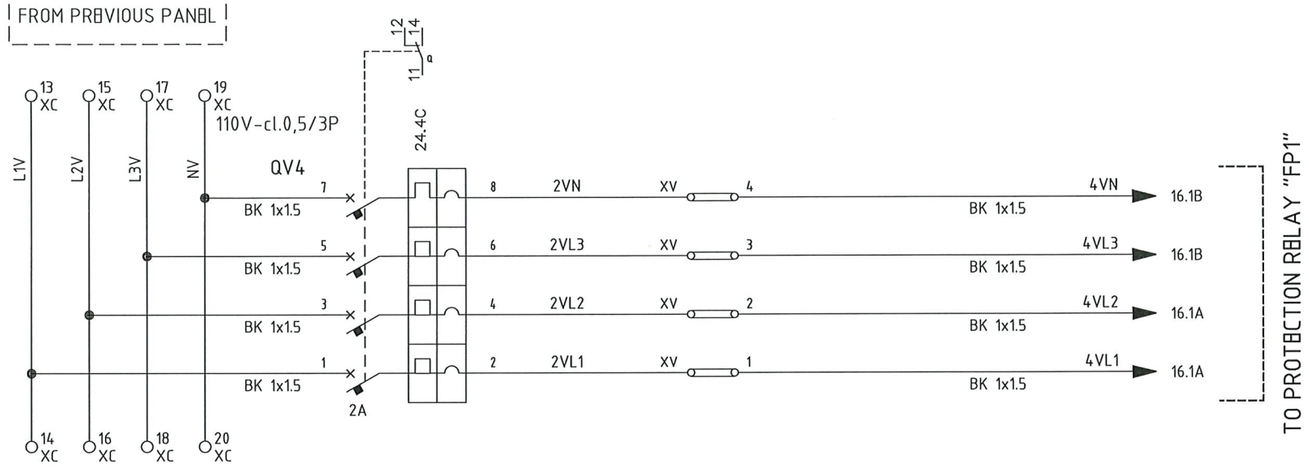
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 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 NEXT PANEL

AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

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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+A4

DWG n°: 231151/SD/21
Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
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-00021

SHEET 1,3

REV. 03

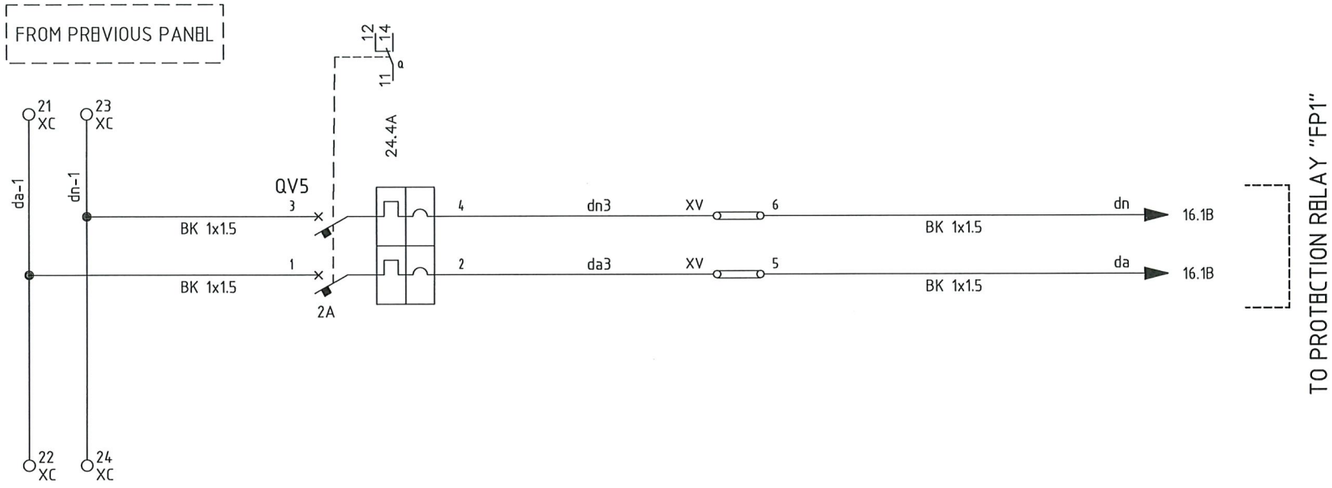
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 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

AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

= +A4							
DWG n°: 231151/SD/21	3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
Item n°: PF1113279	2	26/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
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	0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)
	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
110V Protection/Measure Distribution Voltage

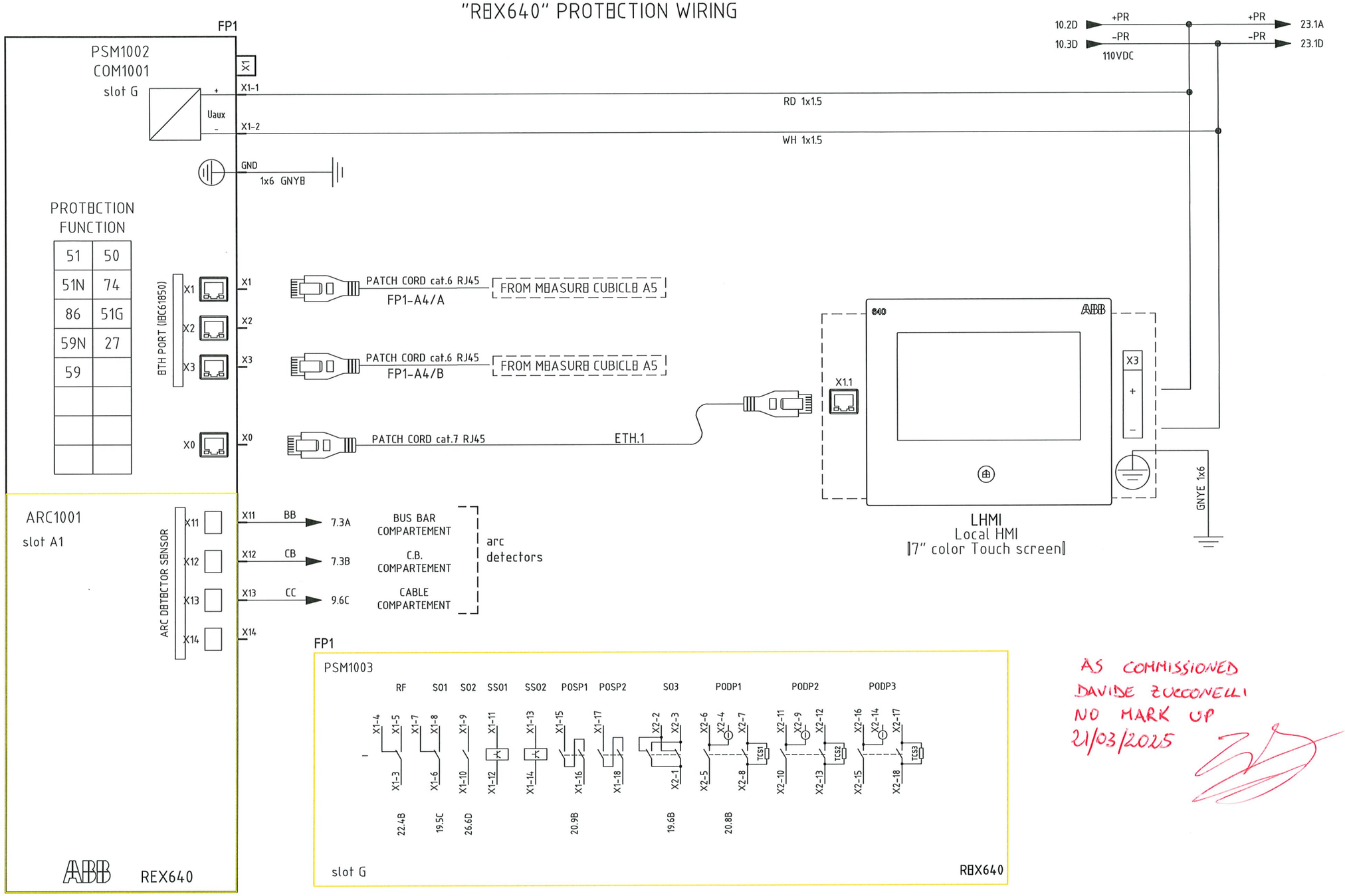
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00021 | SHEET 14 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

"REX640" PROTECTION WIRING



AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

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+A4							
DWG n° : 231151/SD/21	3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)	
Item n° : PF1113279	2	26/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)	
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	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

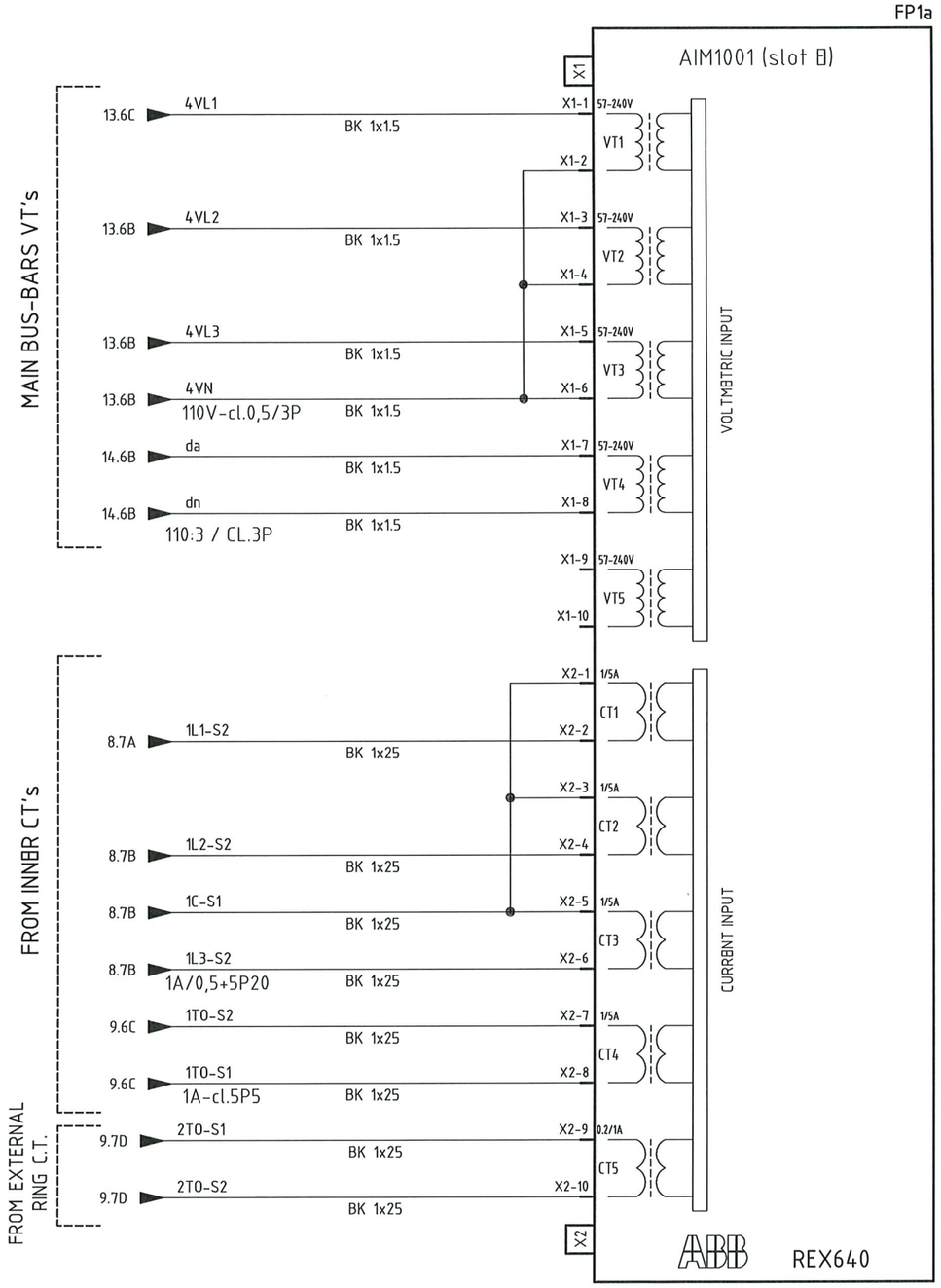
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SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1
"REX640"' Protection Wiring

CONTRACT NO./TITLE CW-1-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE : NTS	
A3	DRAWING NO. 1723002197-EL-DG-00021	SHEET 15	REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

"REX640" PROTECTION WIRING



AS COMMISSIONED
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NO MARK UP
21/03/2025

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

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+A4
DWG n°: 231151/SD/21
Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING
CROSSWIND
ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
"REX640"' Protection Wiring

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

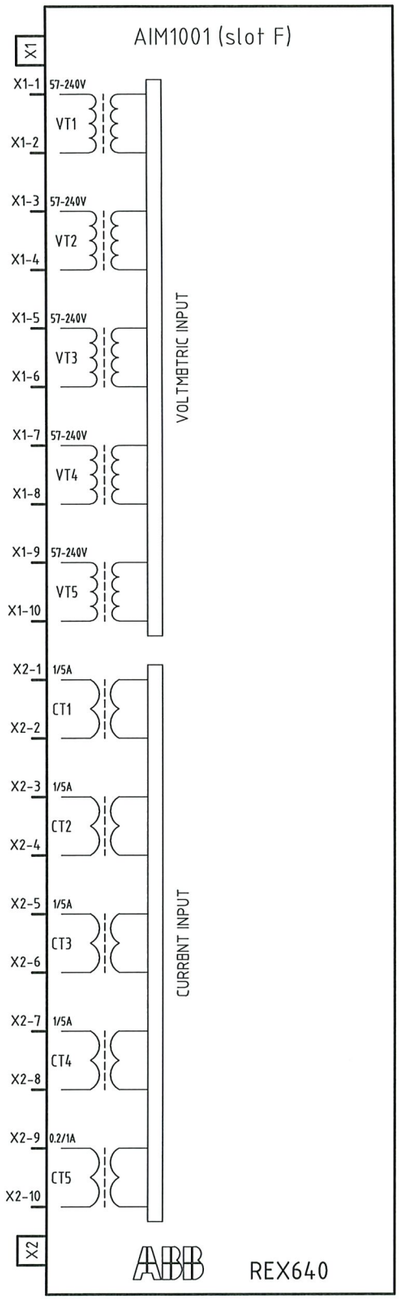
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DRAWING NO. 1723002197-EL-DG-00021
SHEET 16
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

"REX640" PROTECTION WIRING

FP1b



AS COMMISSIONED
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NO MARK UP
21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
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0	04/04/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

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+A4

DWG n° : 231151/SD/21

Item n° : PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1
"REX640"' Protection Wiring

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

SCALE : NTS

A3

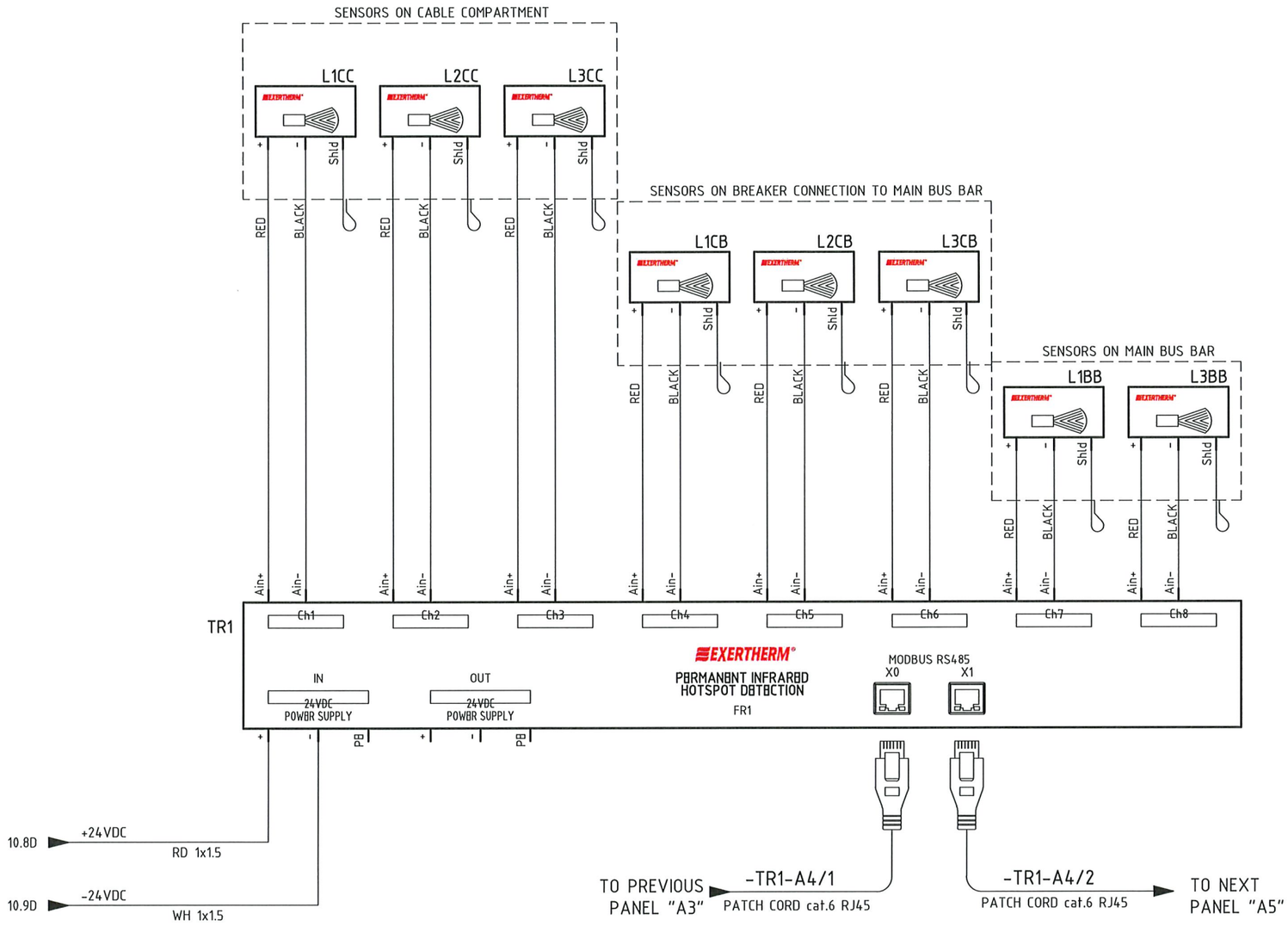
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SHEET 1.7

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03



AS COMMISSIONED
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NO MARK UP
21/03/2025

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

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+A4

DWG n° : 231151/SD/21

Item n° : PF1113279

IMESA ELECTRICAL ENGINEERING

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ROSETTI MARINO

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1
Extherm Device

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 18

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 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)

10.4D +CL 110VDC (CL) — RD 1x1.5 — +CL 20.1A

P1 BK E 13 14

KT1 16 18 30" 19.2D 15

21 RD 1x1.5

K1 ISOLATED BGT5-53 BGT5 7.4B BGT5-54

1 XM 2 XM

FP1 15.3A X2-2 X2-3 S03 RBX640 X2 Slot G X2-1

24 3 XM

FP1 15.3A X1-7 X1-8 23 S01 RBX640 X1 Slot G X1-6

26 4 XM

BGB-1 RD 1x1.5

XDB-45 25 RD 1x1.5

RD 1x1.5 20 RD 1x1.5 22 RD 1x1.5

K1 1 RLE4 7.4B 2

BGE RLE3 9.3B BGB-2

K1 RLE2 7.4B XDB-46

KT1 A1 B1 30" A2

10.4D -CL — WH 1x1.5 — -CL 20.1B

19.3A 15 16 18

23.9A 25 26 28

AS-COMMISSIONED
DAVIDE ZUCCONELLI
21/03/2025

DAVIDE ZUCCONELLI
07/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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DWG n°: 231151/SD/21

Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1

Command Circuit

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

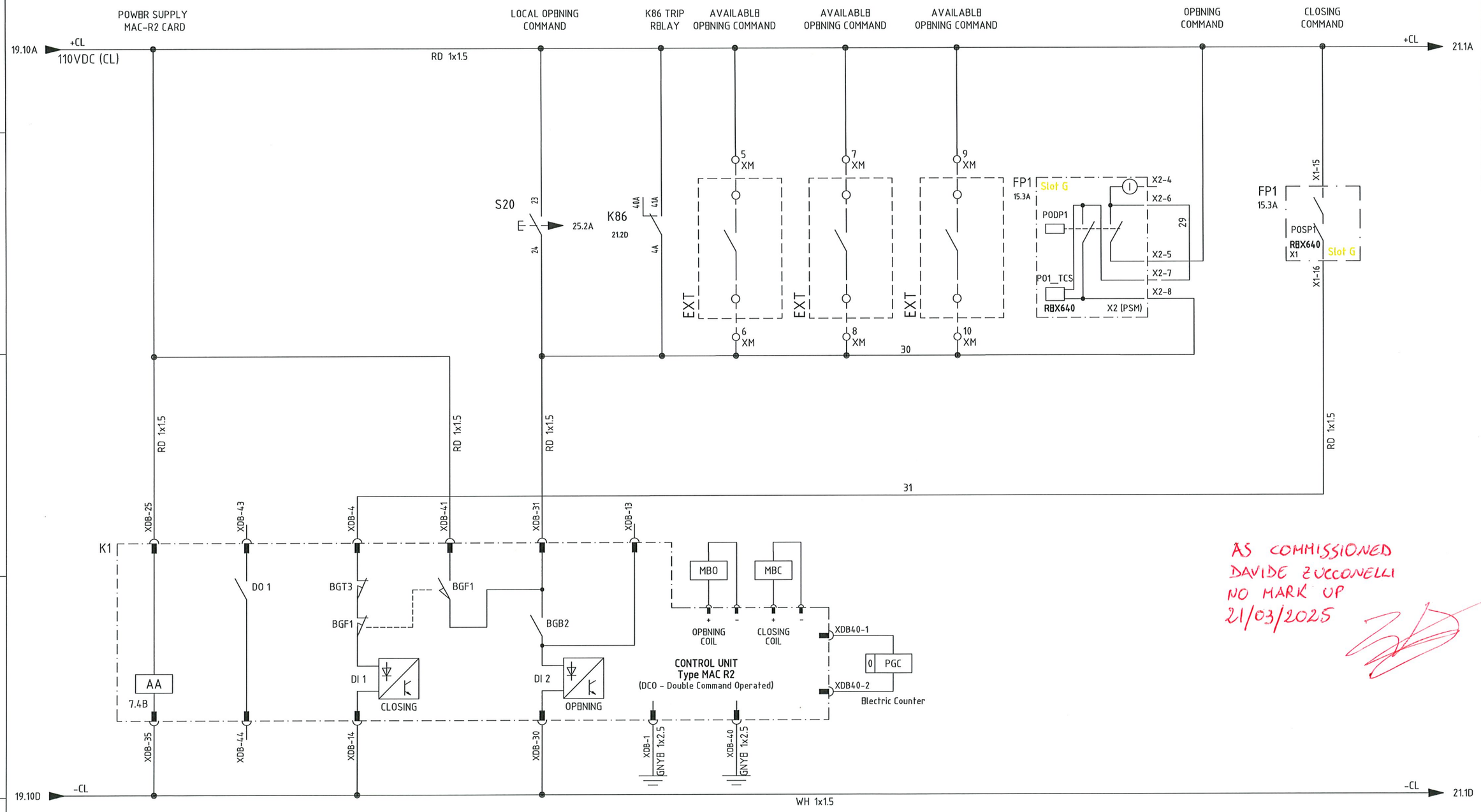
SHEET 19

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

CLOSING/OPENING COMMAND CIRCUITS



AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
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+A4
DWG n° : 231151/SD/21
Item n° : PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Command Circuit

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 2.0

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 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
UNDERVOLTAGE
CONTACTOR ISOLATED

20.10A +CL 110VDC (OP) — 22.2A +CL

RD 1x1.5

FP1c 23.1C — S01 RBX640 X2 Slot B — X2-4 — X2-3
11 XM
13 XM
12 XM
14 XM
35
K94B 22.5D — K94OT 22.5D — K94P 22.6D — K94WT 22.7D — 12 14 11 — RD 1x1.5
PR — 13 14 — X1 X2 — 21.7D
FP1c 23.1C — S04 RBX640 X1 Slot B — X2-10 — X2-9
K86 21.2D — 40B 41B 48
36
37
15 XM
16 XM
K1 — ISOLATED — BGT5 7.4B — BGT5-33 — BGT5-34
KIRF 22.4D — 22 24 — 38 39 21
K86 21.2D — 30B 31B 38
XDB-37
K1 — DI 3 7.4B OPENING
XDB-38
40

K86 B1 C S B2 — C RESET — 1

PR 21.5A — X1 X2

20.10B -CL — WH 1x1.5 — -CL 22.1D

26.9B 2A 20A 21A 30A
3A 31A 40A
20.5B 4A 41A 10B
26.6B 1B 11B 20B
23.5A 2B 21B 30B
21.9B 3B 31B 40B
21.7B 4B 41B

AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

KM-50-1

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+A4							
DWG n°: 231151/SD/21	3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)	
Item n°: PF1113279	2	26/06/2024	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)	
	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

IMESA ELECTRICAL ENGINEERING

CROSSWIND — ROSETTI MARINO

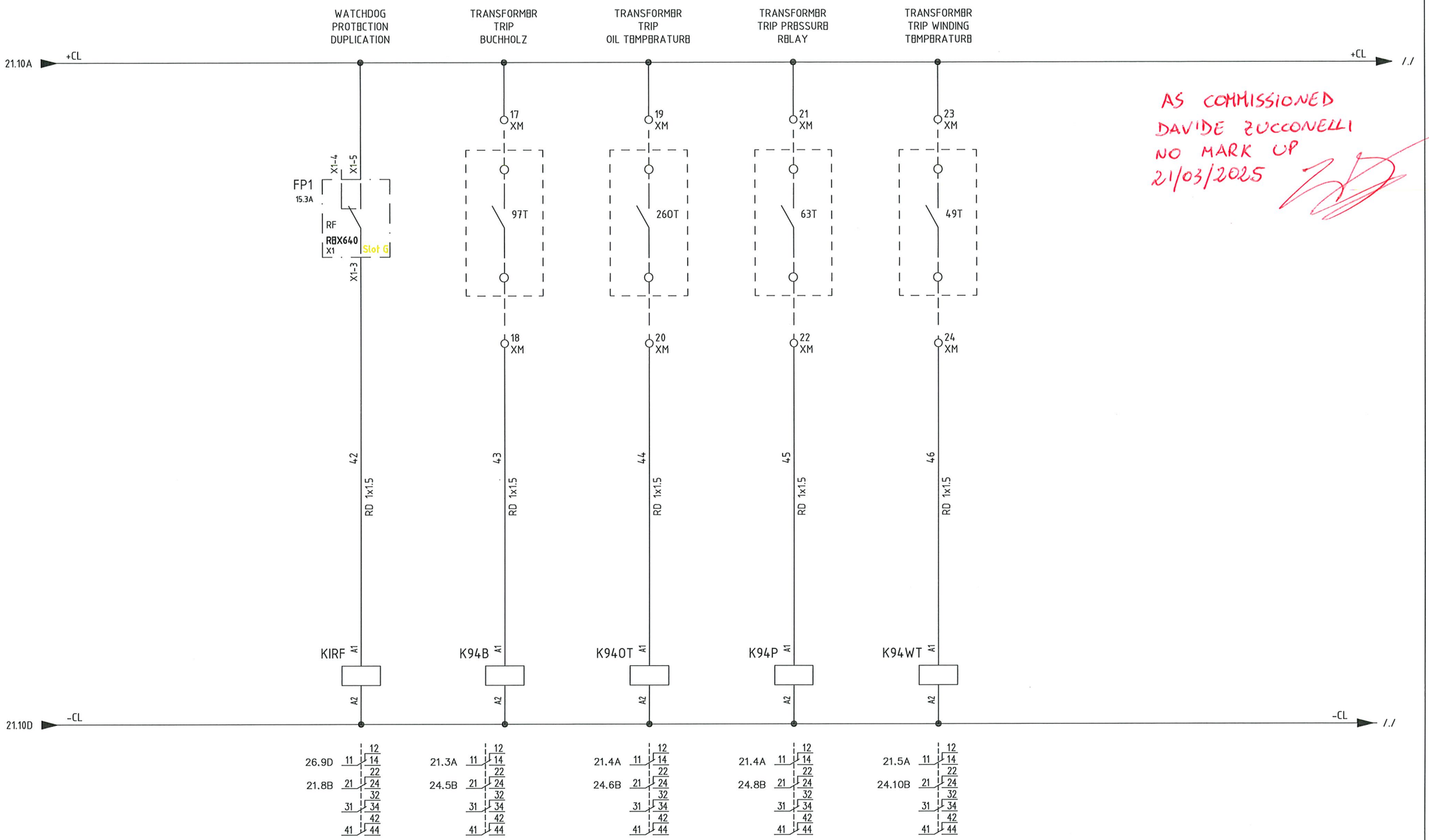
TITLE : SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1
Command Circuit

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

A3 | DRAWING NO. 1723002197-EL-DG-00021 | SHEET 21 | REV. 03

File Name : 1723002197-EL-DG-00021 Rev.03

F.to UNI A3: 420mmx297mm



AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	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)

=
+A4
DWG n°: 231151/SD/21
Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1
Command Circuit

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

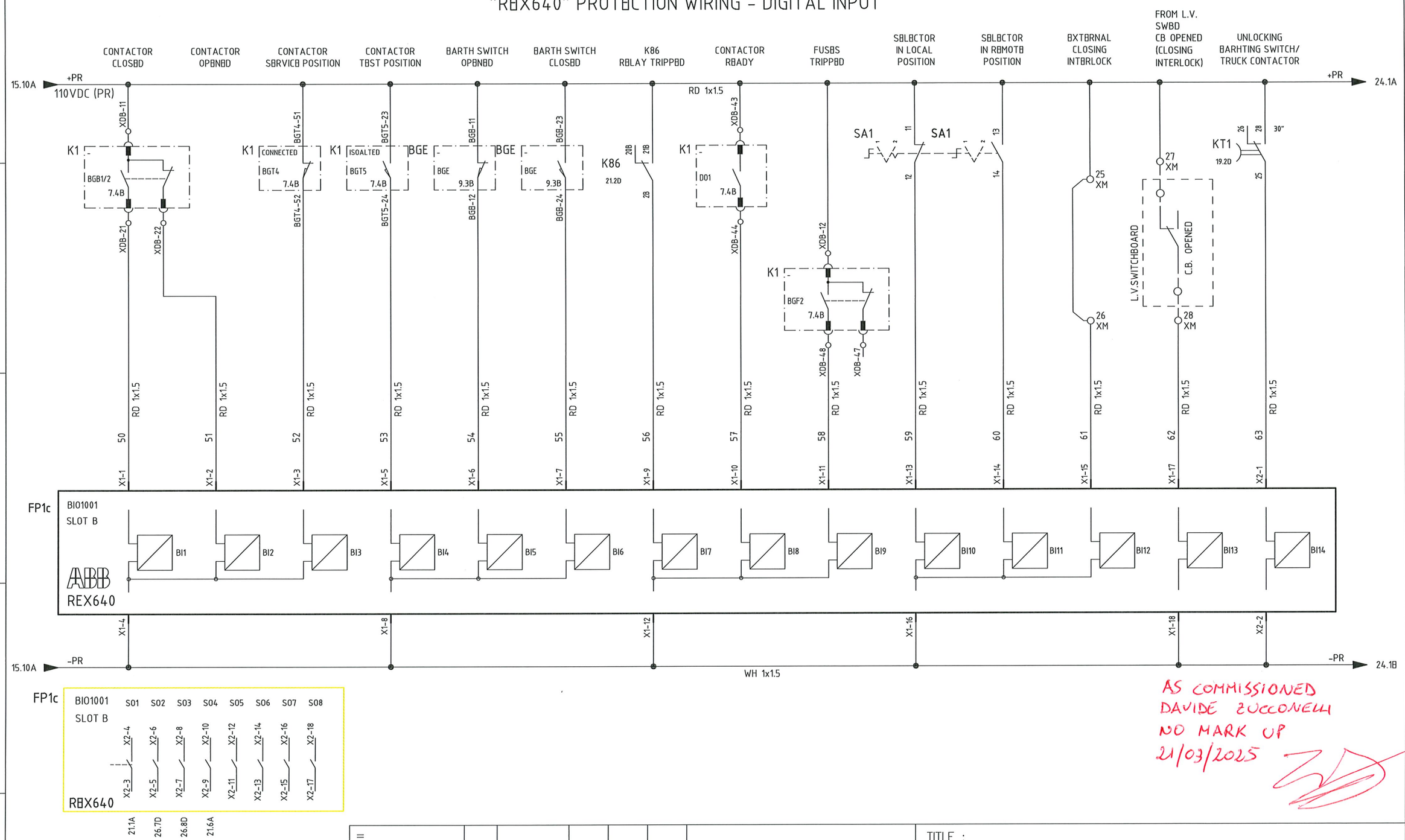
SHEET 22

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

"REX640" PROTECTION WIRING - DIGITAL INPUT



AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	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)
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

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+A4

DWG n°: 231151/SD/21

Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
"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-00021

SHEET 23

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

"REX640" PROTECTION WIRING - DIGITAL INPUT

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

23.10A +PR 110VDC (PR) — RD 1x1.5 — +PR 25.1A

QD2 10.4B — QV5 14.2B — QD4 10.8B — QV4 13.2C

25 XC — 33 XC — BGE — 34 XC — 26 XC

29 XM — 97T — 30 XM

K94B 22.5D — 31 XM — 260T — 32 XM

K94OT 22.5D — 33 XM — 710T — 34 XM

35 XM — 710T_1 — 36 XM

K94P 22.6D — 37 XM — 49T — 38 XM

K94WT 22.7D

68	69	71	73	74	75	76	77	78	79	80	81
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	RD 1x1.5	RD 1x1.5	RD 1x1.5
X1-3	X1-5	X1-6	X1-7	X1-9	X1-10	X1-11	X1-13	X1-14	X1-15	X1-17	X2-1

97801 — 97802 — 97803 — 97804

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

23.10D -PR — WH 1x1.5 — -PR 25.1D

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NO MARK UP
21/03/2025

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

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DWG n°: 231151/SD/21

Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
"REX640" Protection Wiring - Digital Input

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

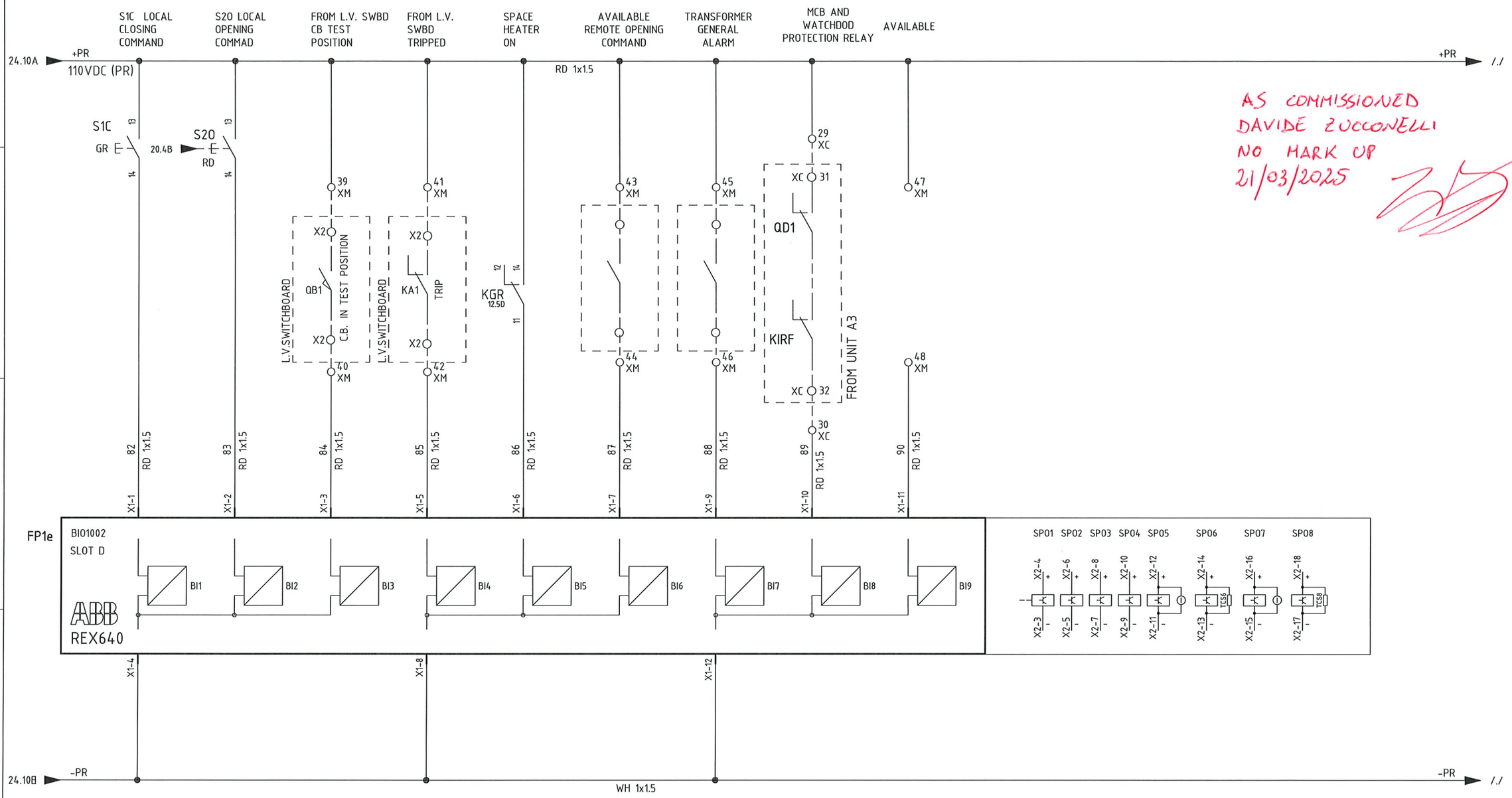
SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00021 | SHEET 24 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

"REX640" PROTECTION WIRING - DIGITAL INPUT



AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

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

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+A4
DWG n° : 231151/SD/21
Item n° : PF1113279

CROSSWIND
IMESA ELECTRICAL ENGINEERING
ROSETTI MARINO

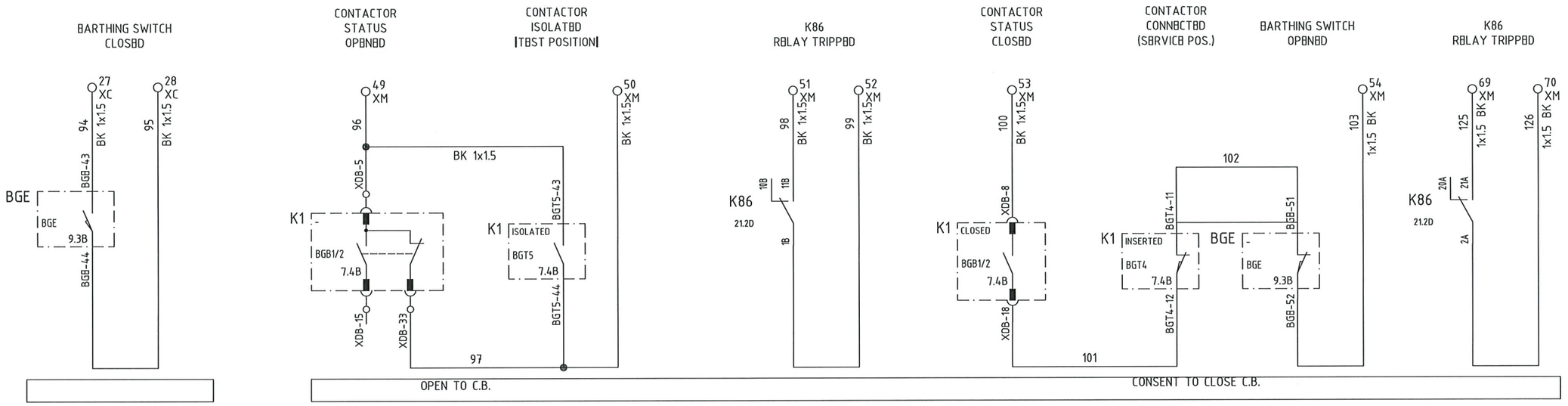
TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
"REX640" Protection Wiring - Digital Input

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK
SCALE : NTS
A3
DRAWING NO. 1723002197-EL-DG-00021
SHEET 25
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

AVAILABLE SIGNALS



3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	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)
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

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+A4

DWG n° : 231151/SD/21

Item n° : PF1113279

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 – FUNCTIONAL TRANSF FEEDER TR200DE1

Availables Signals

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 26

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

AS COMMISSIONED NO MARK UP DAVIDE ZUCCONELLI 21/03/2025

TYP - TR200D□1
XI
Ammeter Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	9.5C	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
2	9.5C	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
3	9.5C	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
			HB201GR	Cabur	HSCB.6/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
			HB201GR	Cabur	HSCB.6/PT/GR End section - Grey
9	9.5D	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
10	9.5D	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
11	9.5D	6	HB220GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type
			HB201GR	Cabur	HSCB.6/PT/GR End section - Grey

TYP - TR200D□1
XV
Voltmetric Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	13.4C	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
2	13.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
3	13.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
4	13.4B	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
5	14.4B	6	HB210GR	Cabur	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type
6	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

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+A4

DWG n° : 231151/SD/21
Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	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)

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Terminal stripes

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 27

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

TYP - TR200DB1

XC

Interconnection Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	10.1B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
2	10.1C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
3	10.1B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
4	10.1C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey
5	10.7B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
6	10.7C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
7	10.7B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
8	10.7C	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey
9	12.1A	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
10	12.1B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
11	12.2A	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
12	12.2B	6	HM320GR	Cabur	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey
13	13.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
14	13.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
15	13.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
16	13.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
17	13.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
18	13.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
19	13.2B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
20	13.2C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM321GR	Cabur	HMT.6/PT/GR End section - Grey
21	14.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
22	14.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
23	14.1B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
24	14.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM321GR	Cabur	HMT.6/PT/GR End section - Grey
25	24.3A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
26	24.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
27	26.2A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
28	26.2A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
29	25.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
30	25.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
31	26.4C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
32	26.4C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
33	26.5C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
34	26.5C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
			HM321GR	Cabur	HMT.6/PT/GR End section - Grey

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DWG n° : 231151/SD/21

Item n° : PF1113279

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

CROSSWIND

ROSETTI MARINO

TITLE :

SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1

Terminal stripes

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 28

REV. 03

File Name : 1723002197-EL-DG-00021 Rev.03

F.to UNI A3: 420mmx297mm

TYP - TR200DB1

XM

Interface Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
1	19.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
2	19.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
3	19.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
4	19.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
5	20.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
6	20.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
7	20.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
8	20.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
9	20.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
10	20.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
11	21.2A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
12	21.2B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
13	21.3A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
14	21.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
15	21.8A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
16	21.8B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
17	22.5A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
18	22.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
19	22.5A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
20	22.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
21	22.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
22	22.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
23	22.7A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
24	22.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
25	23.8A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
26	23.8B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
27	23.9A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
28	23.9B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
29	24.5A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
30	24.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
31	24.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
32	24.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
33	24.7A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
34	24.7B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
35	24.8A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
36	24.8B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
37	24.9A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
38	24.9B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
39	25.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
40	25.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
41	25.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type

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DWG n° : 231151/SD/21

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	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)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :

SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1

Terminal stripes

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 29

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

TYP - TR200DB1

XM

Interface Terminals

NumM	Fg.	Sez.	Tipo	Costruttore	Descrizione
42	25.3B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
43	25.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
44	25.4B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
45	25.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
46	25.5B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
47	25.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
48	25.6B	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
49	26.3A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
50	26.5A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
51	26.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
52	26.6A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
53	26.7A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
54	26.9A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
55	26.1C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
56	26.2C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
57	26.2C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
58	26.3C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
59	26.3C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
60	26.3C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
61	26.6C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
62	26.7C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
63	26.7C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
64	26.8C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
65	26.8C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
66	26.8C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
67	26.9C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
68	26.9C	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
69	26.9A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
70	26.10A	4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
71		4	HM250GR	Cabur	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type
72		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
			HM251GR	Cabur	HMT.4/PT/GR End section - Grey

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DWG n° : 231151/SD/21

Item n° : PF1113279

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CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1
Terminal stripes

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 30

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

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	A4	TRANSFORMER FEEDER TR-200DE1
BGE	9	1VCF599700R0131	1	EARTHING SWITCH ST-E 17.31 150	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599505R0001	1	5 AUX CONTACTS FOR EARTHING SWITCH	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599504R0063	1	KEY LOCKS ON EARTHING SWITCH	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599700R0290	1	EARTHING SWITCH OPERATING LEVER	ABB	A4	TRANSFORMER FEEDER TR-200DE1
C1	9	43931118	1	VPIS 3,3÷36KV - DEVICE SIGNALLING VOLTAGE PRESENT KIT	ELECTRONSYSTEM	A4	TRANSFORMER FEEDER TR-200DE1
CB	7	1VCF698000R0012	1	OPTICAL FIBER CABLE PRE-MANUFACT. LENS L=5M	ABB	A4	TRANSFORMER FEEDER TR-200DE1
CC	9	1VCF698000R0012	1	OPTICAL FIBER CABLE PRE-MANUFACT. LENS L=5M	ABB	A4	TRANSFORMER FEEDER TR-200DE1
E1	12	74041	1	LED LAMP 4W 4000K 313x30x22	Beghelli	A4	TRANSFORMER FEEDER TR-200DE1
EH1	12	R1R150230	1	SPACE HEATER SKR 150W ALIM. 220VCA	Torresan	A4	TRANSFORMER FEEDER TR-200DE1
FP1	15	1VCF698331R0001	1	REX640B10NN+AIM1+AIM1+ARC1+BIO1+BIO1+BI+O2+CMP2+COM1+LNG1+MCT1+PCL4+PSM3+SCT	ABB	A4	TRANSFORMER FEEDER TR-200DE1
HGR	12	TRT-10A230V-NC	1	Regolable Thermostat -10÷80°C 1NC IP20 DIN Mounting	Fandis	A4	TRANSFORMER FEEDER TR-200DE1
K1	7	1VCF305661R3200	1	VACUUM CONTACTOR VSC7/P 3P 7,2KV 400A DOUBLE COMMAND (DCO)	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309500R3881	1	VACUUM CONTACTOR FITTED FOR DIN E=442mm FUSES	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309500R0882	1	NAMEPLATE IN ENGLISH LANGUAGE	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309500R1881	1	VACUUM CONTACTOR FOR UNIGEAR/UNISEC	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309503R0881	1	MAC-R2 ELECTRONIC CONTROL MODULE TYPE STANDARD	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309503R1881	1	VACUUM CONTACTOR CONFORMS TO THE IRC 62271-106 STANDARDS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309588R0909	1	POWER SUPPLY VOLTAGE OF MAC-R2 ELECTRONIC CONTROL MODULE 110VDC	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309500R0100	1	OPERATIONS COUNTER FOR VSC/P VERSIONE FOR SHIPPINGS REGISTER	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF349700R0407	1	MECHANICAL INTERLOCK WITH DOOR	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF339700R0291	1	POSITION CONTACTS FOR VD4	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF339700R1909	1	LOCKING MAGNET ON THE TRUCK 110Vdc (RLE2)	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309503R0251	1	KIT FOR FUSES DIAMETER 87mm	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF309500R0192	1	LIFTING TOOL FOR SHIPPINGS REGISTERS VERSION	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF597111R0140	1	POWER CUBE PB1/E L600 12kV 400A 31.5KA 3S	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599700R0882	1	NAMEPLATE IN ENGLISH LANGUAGE FOR POWERCUBE	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599700R5886	1	PB FOR VSC	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599700R4882	1	PAINTED DOOR	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599504R0042	1	LOCK TO PREVENT RACKING-IN WITH EARTHING SWITCH	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599700R0162	1	58 POLES CONNECTOR + ATOXIC WIRING L=0.8mt	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599505R0111	1	FAIL-SAFE SHUTTER ELEMENTS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF579700R0909	1	ELECTROMECHANICAL ISOLATING INTERLOCK CIRCUIT-BREAKER/DOOR 110Vdc (RLE4)	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1VCF599700R0280	1	INTERLOCK FOR DOOR EARTHING SWITCH	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		1YMB760741M4811	1	FUSE LINK FOR MOTOR PROTECTION 7,2kV 250A 442x65mm - CMF	ABB	A4	TRANSFORMER FEEDER TR-200DE1
K86	21	RMBE13-C110T	1	BISTABLE RELAY 110VDC 7SC-5A TROP.	Amra	A4	TRANSFORMER FEEDER TR-200DE1
		PAVM321	1	SOCKET WITH SCREW TO RELAY TYPE PAVM321	Amra	A4	TRANSFORMER FEEDER TR-200DE1
K94B	22	ER 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LED	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		ER 728 6	1	CR-MH1 METAL RETAINING JUMPER	ABB	A4	TRANSFORMER FEEDER TR-200DE1
K94OT	22	ER 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LED	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		ER 728 6	1	CR-MH1 METAL RETAINING JUMPER	ABB	A4	TRANSFORMER FEEDER TR-200DE1
K94P	22	ER 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LED	ABB	A4	TRANSFORMER FEEDER TR-200DE1

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DWG n° : 231151/SD/21

Item n° : PF1113279

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IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1

Bill of Materials

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 31

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

Nome/Item	Fg/Sh	Tipo/Type	Q.tà	Descrizione/Description	Costruttore/Manufacturer	Ubicazione (descrizione)	Quadro (descrizione)
K94P	22	BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
K94WT	22	BR 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LBD	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
KGR	12	BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BR 552 0	1	CR-M230AC2L SUPPLY 230VAC 2C/O 250V/6A LBD	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
KIRF	22	BR 589 2	1	CR-M110DC4L SUPPLY 110VDC 4C/O 250V/6A LBD	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BR 686 6	1	CR-M4SS SOCKBT STANDARD X 2/4 C/O(CR-M)	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BR 728 6	1	CR-MH1 MBTAL RBTAINING JUMPBR	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
KT1	19	H3DKM2ACDC24240	1	MULTIFUNCTION TIMBR RBLAY Vaux=24÷240Vac/dc - 2SC	Omron	A4	TRANSFORMBR FBEDBR TR-200DB1
L1C	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
L1I	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
L1MS	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
L2C	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
L2I	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
L3C	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
L3I	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
L3MS	18	801100	1	IR SBNSOR 10m CABLB	BXBRTHBRM	A4	TRANSFORMBR FBEDBR TR-200DB1
LS	12	Z15GW2-1-1453270	1	MICROSWITCH 1sc	Omron	A4	TRANSFORMBR FBEDBR TR-200DB1
		APB-PG	1	COVBR TO MICRO-SWITCH	Omron	A4	TRANSFORMBR FBEDBR TR-200DB1
OD1	9	990003	1	MBDIUM VOLTAGB DISCHARGB DMI-9-10-1-L Ur=9kV	DBHN	A4	TRANSFORMBR FBEDBR TR-200DB1
OD2	9	990003	1	MBDIUM VOLTAGB DISCHARGB DMI-9-10-1-L Ur=9kV	DBHN	A4	TRANSFORMBR FBEDBR TR-200DB1
OD3	9	990003	1	MBDIUM VOLTAGB DISCHARGB DMI-9-10-1-L Ur=9kV	DBHN	A4	TRANSFORMBR FBEDBR TR-200DB1
P1	19	KW 080 2	1	MP1-10B BLACK PUSH BUTTON UNSTABLB	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
PR	21	KW 101 6	1	YBLLOW LIGHT PUSH BUTTON	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		KV 022 5	1	MLBL-05W YBLLOW LBD BLOCK INTBGRATBD 110÷130VAC	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		BO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
QA2	12	B427917	1	DDA202 AC 25A 300MA BLOCCO DIFFBRBNZIALB 2P	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		A563819	1	S2-CS/H6R CONTATTO DI SBGNALAZIONB/AUX 1SC	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		S550284	1	S202M C10 INTBRRUTTORB AUTOMATICO 10KA 2P	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
QD1	10	A563819	1	S2-CS/H6R CONTATTO DI SBGNALAZIONB/AUX 1SC	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		S550253	1	S202M C 4 INTBRRUTTORB AUTOMATICO 10KA 2P	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
QD2	10	S550253	1	S202M C 4 AUTOMATIC CIRCUIT-BRBAKBR 10KA 2P	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		A563819	1	S2-CS/H6R AUXILIARY STATB CONTACT 1CO	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
QD4	10	A563819	1	S2-CS/H6R AUXILIARY STATB CONTACT 1CO	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		S550239	1	S202M C 2 AUTOMATIC CIRCUIT BRBAKBR 10KA 2P	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
QV4	13	S550680	1	S204M C 2 AUTOMATIC CIRCUIT-BRBAKBR 10KA 4P	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
		A563819	1	S2-CS/H6R AUXILIARY STATB CONTACT 1CO	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1
QV5	14	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BRBAKBR 10KA 2P	ABB	A4	TRANSFORMBR FBEDBR TR-200DB1

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DWG n° : 231151/SD/21

Item n° : PF1113279

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE :
SG-100D1 - FUNCTIONAL TRANSF FEEDER TR200DE1

Bill of Materials

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00021

SHEET 32

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

Nome/Item	Fg/Sh	Tipo/Type	Q.tà	Descrizione/Description	Costruttore/Manufacturer	Ubicazione (descrizione)	Quadro (descrizione)
QV5	14	A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	A4	TRANSFORMER FEEDER TR-200DE1
S1C	25	EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		EO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	A4	TRANSFORMER FEEDER TR-200DE1
S2O	25	EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		EO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	A4	TRANSFORMER FEEDER TR-200DE1
SA1	23	EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		EO 571 3	1	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		EO 570 5	1	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	A4	TRANSFORMER FEEDER TR-200DE1
		KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	A4	TRANSFORMER FEEDER TR-200DE1
TI-L1	8	ATB-10-BS_015	1	CURRENT TRANSFORMER 7,2kV 50Hz 200/1A cl.0,5-5P20 (5VA)- 25kA	ESITAS	A4	TRANSFORMER FEEDER TR-200DE1
TI-L2	8	ATB-10-BS_015	1	CURRENT TRANSFORMER 7,2kV 50Hz 200/1A cl.0,5-5P20 (5VA)- 25kA	ESITAS	A4	TRANSFORMER FEEDER TR-200DE1
TI-L3	8	ATB-10-BS_015	1	CURRENT TRANSFORMER 7,2kV 50Hz 200/1A cl.0,5-5P20 (5VA)- 25kA	ESITAS	A4	TRANSFORMER FEEDER TR-200DE1
TO	9	KAP-150/250-55	1	CURRENT TRANSFORMER 0,72/3/-kV 100/1 50Hz	ESITAS	A4	TRANSFORMER FEEDER TR-200DE1
TR1	18	800208	1	MODBUS DATACARD 8 CHANNELS	Exertherm	A4	TRANSFORMER FEEDER TR-200DE1
XC		HM320GR	12	HMM.6/GR Feed-through Terminal Block - Grey (6 mmq)	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
		HM250GR	22	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
		HM251GR	3	HMT.4/PT/GR End section - Grey	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
		HM321GR	3	HMT.6/PT/GR End section - Grey	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
XI		HB220GR	11	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - spring type	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
		HB201GR	3	HSCB.6/PT/GR End section - Grey	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
XM		HM250GR	76	HMM.4/GR Feed-through Terminal Block - Grey (4 mmq) - spring type	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
		HM251GR	1	HMT.4/PT/GR End section - Grey	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
XS1	12	E 9447 7	1	SOCKET	ABB	A4	TRANSFORMER FEEDER TR-200DE1
XV		HB210GR	6	HSCB.6/GR Disconnect by slide link Terminal Block - Grey (6 mmq) - Spring type	Cabur	A4	TRANSFORMER FEEDER TR-200DE1
		HB201GR	2	HSCB.6/PT/GR End section - Grey	Cabur	A4	TRANSFORMER FEEDER TR-200DE1

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+A4

DWG n°: 231151/SD/21

Item n°: PF1113279

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/08/2024	Giulietti	Flamminio	Sigismondi	As-Built (ASB)
2	26/06/2024	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)

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SCALE : NTS

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DRAWING NO. 1723002197-EL-DG-00021

SHEET 33

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00021 Rev.03

Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE