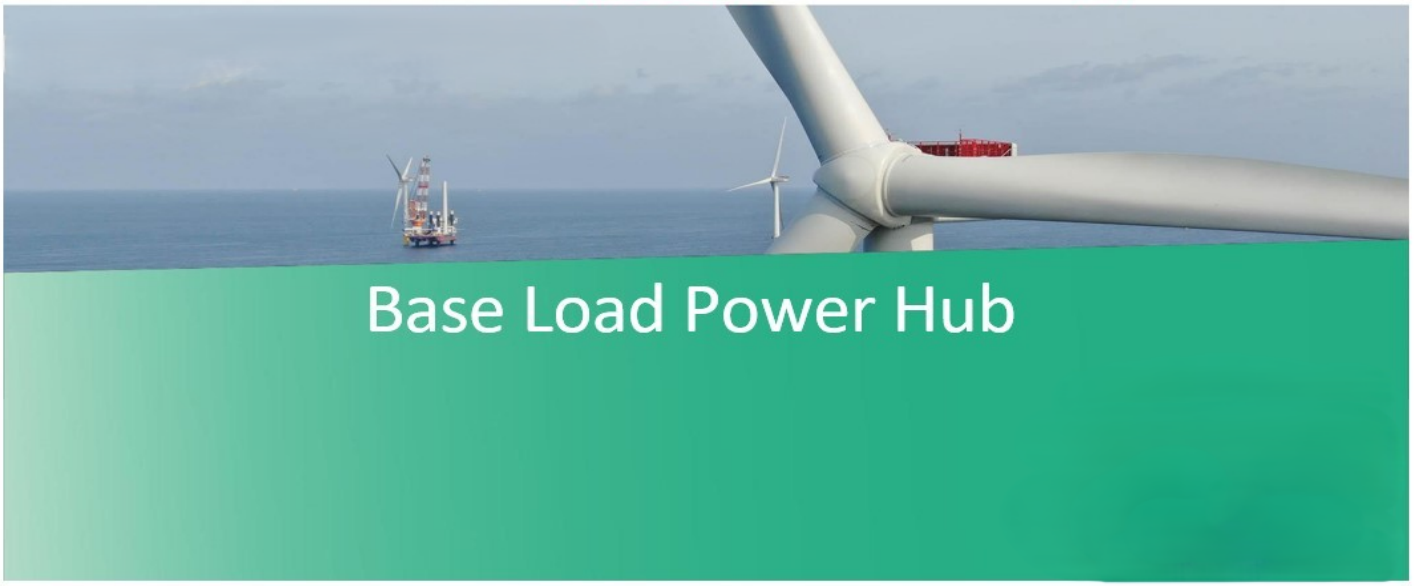
CROSSWIND

ROSETTI MARINO

PROVERLIS

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



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM

83

Main Power Distribution Low Voltage 440 V

SUBSYSTEM

83-00

400 V Switchboard & Connection Box (SG-200N1)

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

ROSETTI MARINO

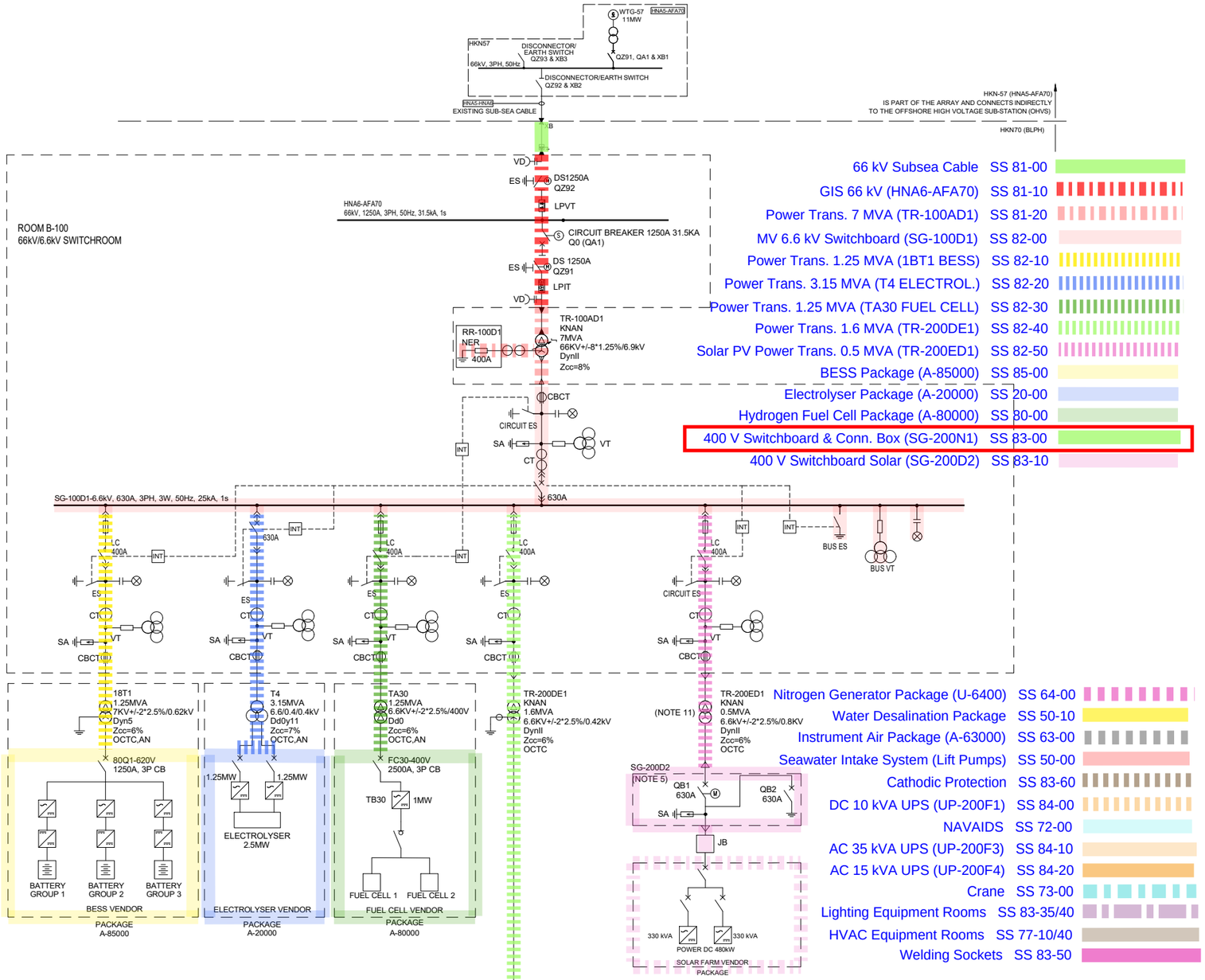
Sub System N°:	83-00	**Tick as appropriate**	ONSHORE	OK
Description:	400 V Switchboard & Connection Box (SG-200N1)		OFFSHORE	

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

	Contractor Commissioning Site Leader	Company Commissioning Site Leader
Name	Anthony Iveson	Martin Taylor
Date	2025-04-30	2025-05-02
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-30T13:34:25.855Z	PROVERLIS Digitaly signed by Martin Taylor 2025-05-02T14:27:36.168Z

Section 1 SUB-SYSTEM DEFINITION

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



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

SYMBOL LEGEND:

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

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

NOTES:

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

REFERENCES:

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

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

CROSSWIND

ROSETTI MARINO

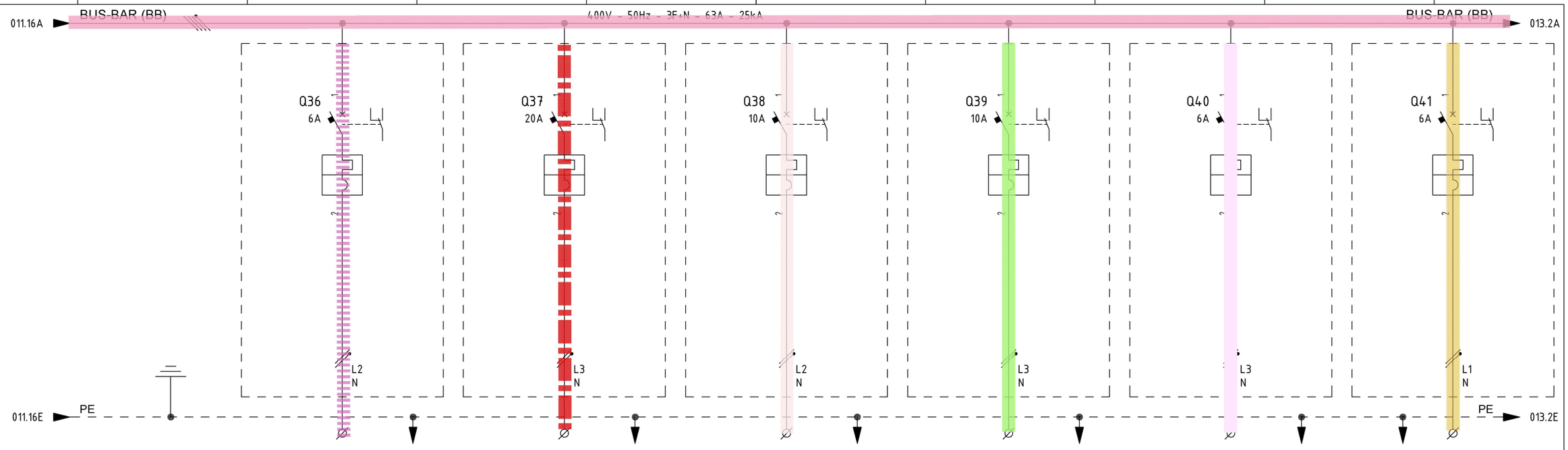
TITLE :

OVERALL/KEY SINGLE LINE DIAGRAM

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

01

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



ITEM			1	CP-200E2		CP-100E1		SG-100D1		SG-200N1		SG-200D2		UP-200F3	
UTILITY			2	AUXILIARY TRAFO SOLARE 0.5MVA		AUXILIARY GIS		AUXILIARY 6.6KV SWITCHBOARD		AUXILIARY LV SWITCHBOARD		AUXILIARY LV SWITCHBOARD 800/460V		AC UPS PAS AUXILIARY	
CUBICLE			3	+03		+03		+03		+03		+03		+03	
RATED POWER	RATED CURRENT		4/5	0.5 KW	2.72 A	3 KW	16.3 A	1 KW	5.43 A	1 KW	5.43 A	0.5 KW	2.72 A	0.2 KW	0.82 A
TYPICAL FUNCTIONAL			6	-		-		-		-		-		-	
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6		S302P-C20		S302P-C10		S302P-C10		S302P-C6		S302P-C6	
	VERSION		8	2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE	
	TRIP UNITS		9	In=6A - Curve C		In=20A - Curve C		In=10A - Curve C		In=10A - Curve C		In=6A - Curve C		In=6A - Curve C	
	Icu	KA	10	25kA		25kA		25kA		25kA		25kA		25kA	
OVERLOAD	L	Range A	11	-		-		-		-		-		-	
		Range t	12	-		-		-		-		-		-	
SEL. SHORT-CIRCUIT	S	Range A	13	-		-		-		-		-		-	
		Range t	14	-		-		-		-		-		-	
INST. SHORT-CIRCUIT	I	Range A	15	-		-		-		-		-		-	
		Range t	16	-		-		-		-		-		-	
EARTH FAULT PROTECTION	G	Range A	17	-		-		-		-		-		-	
		Range t	18	-		-		-		-		-		-	
CONTACTOR (ABB)			19	-		-		-		-		-		-	
THERMAL OVERLOAD RELAY (ABB)			20	-		-		-		-		-		-	
SURGE ARRESTERS (DHENN)			21	-		-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-		-	
FUSE HOLDER (ABB)			23	-		-		-		-		-		-	
TWILIGHT SWITCH (ABB)			24	-		-		-		-		-		-	
VOLTMETER (FRER)			25	-		-		-		-		-		-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-		-	
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4		SCREW / 6		SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 4	
POWER CONDUCTOR		mm²	31	3G2.5		3G6		3G2.5		3G2.5		3G2.5		3G2.5	

SUBSYSTEM 82-50

SUBSYSTEM 81-10

SUBSYSTEM 82-00

SUBSYSTEM 83-00

SUBSYSTEM 83-10

SUBSYSTEM 84-10

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231298/SD/13

Item n° : PF1002888/101

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

TITLE : "DP-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00013

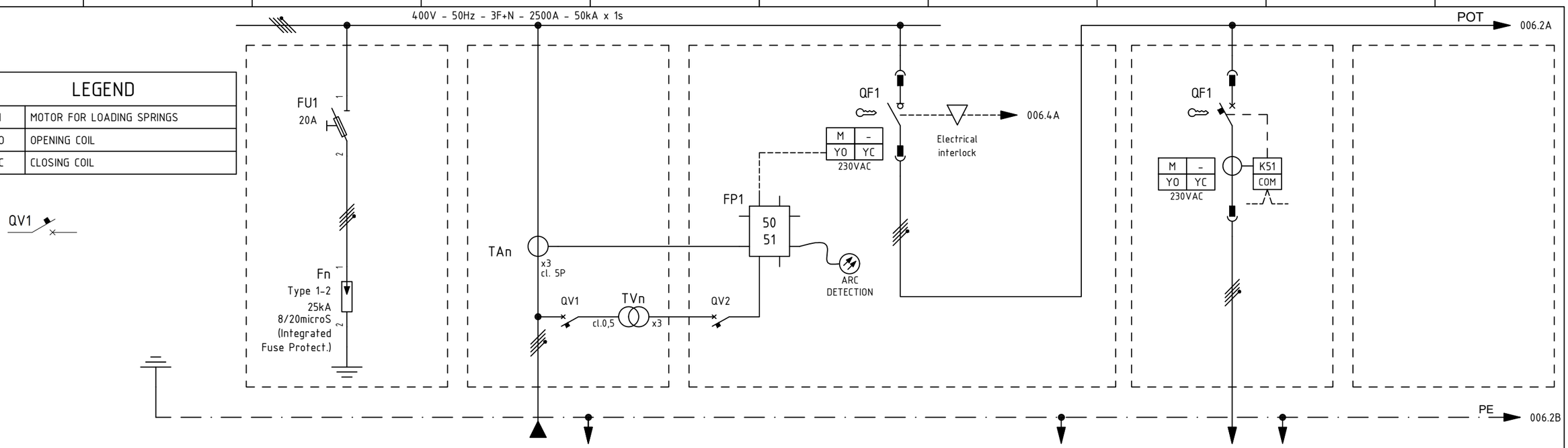
SHEET 012

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
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+					
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

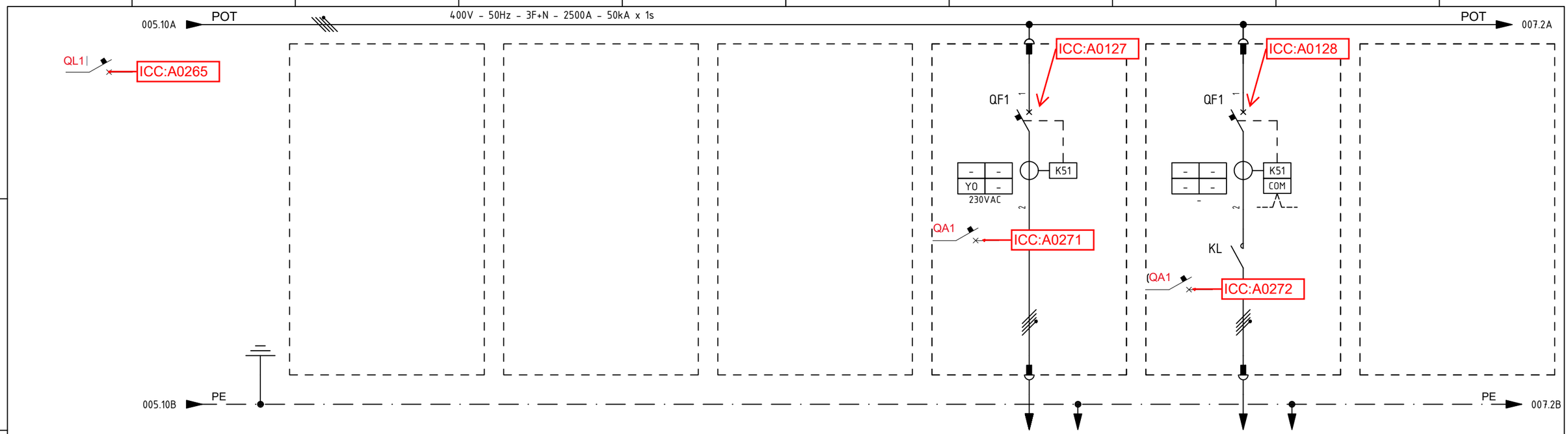
DRAWING NO. 1723002197-EL-DG-00011

SHEET 005

REV. 03

F.to UNI A3: 420mmx297mm

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



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

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DWG n° : 231298/SD/11

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

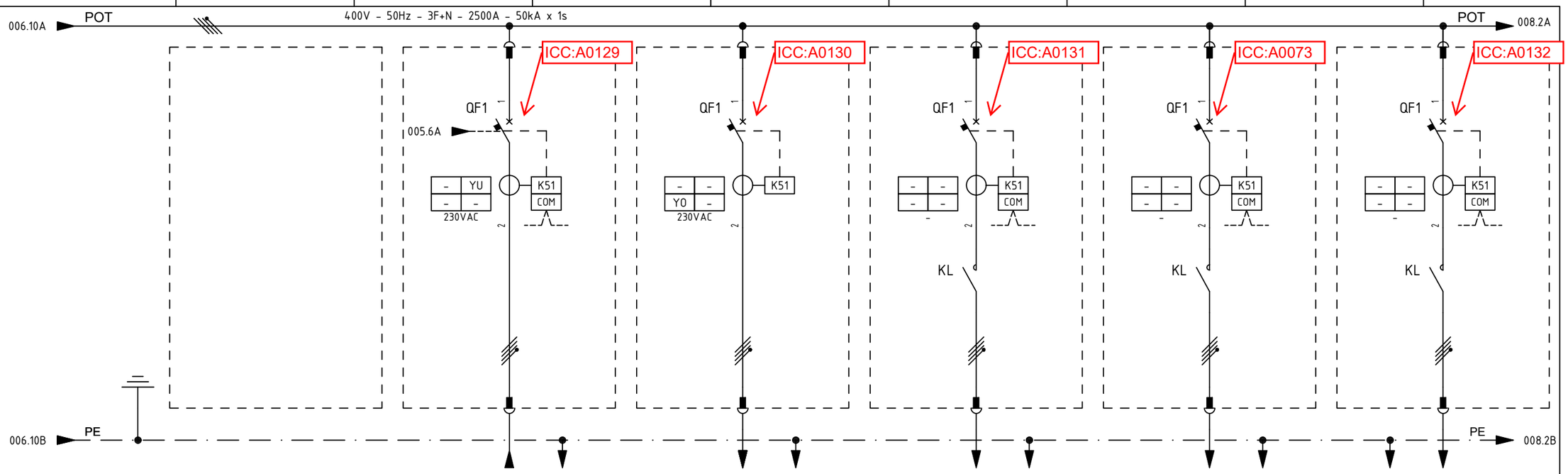
DRAWING NO. 1723002197-EL-DG-00011

SHEET 006

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM				JB-200E2	UP-200F3	SPARE	DP-200N1	JB-200E3
UTILITY			2	TEMPORARY GENERATOR / MOBILE BATTERY PACK	AC UPS PAS - 30 MIN UP-200F3 - LINE A	SPARE	DB - LIGHTING & SMALL POWER - BoP	CRANE
COLUMN/CUBICLE			3	A2 / +08	A3 / +01	A3 / +02	A3 / +03	A3 / +04
RATED POWER | RATED CURRENT			4/5	138 kW | 210 A	36.0 kW | 57.8 A	- kW | - A	15.35 kW | 23.7 A	25 kW | 37.8 A
TYPICAL FUNCTIONAL			6	LE2-320	L1-100	LK1-40	LK1-100	LK1-63
CIRCUIT BREAKER (ABB)	TYPE		7	XT5S - 400	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 320A)	EKIP DIP LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 63A)
	Icu	KA	10	50 kA	50 kA	50 kA	50 kA	50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In
		Range t	12	k/I^2	k/I^2	k/I^2	k/I^2	k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In	(1 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In
		Range t	14	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In	(1 - 10) x In	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In
		Range t	16	instantaneous	<= 0.02 sec	instantaneous	instantaneous	instantaneous
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In	(0.2 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In
		Range t	18	t=k / t=k/I^2	0.1 - 0.8 sec	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2
CONTACTOR (ABB)			19	-	-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF80-40-00-13 (70A-AC1); 100-250VAC/DC	AF52-40-00-13 (100A-AC1); 100-250VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	-
SURGE ARRESTER (DEHN)			21	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 83.00	SUBSISTEM 84.10	SUBSISTEM 83.00	SUBSISTEM 83.20	SUBSISTEM 99.00
INDIRECT PROTECTION (ABB)			24					
VOLTMETER			25					
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-
LOCK-OUT RELAY (-)			30	-	-	-	-	-
POWER CONDUCTOR		mmq	31	5 x (1 x 95)	4G35	-	5G50	5G16

/ SYSTEM

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)

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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

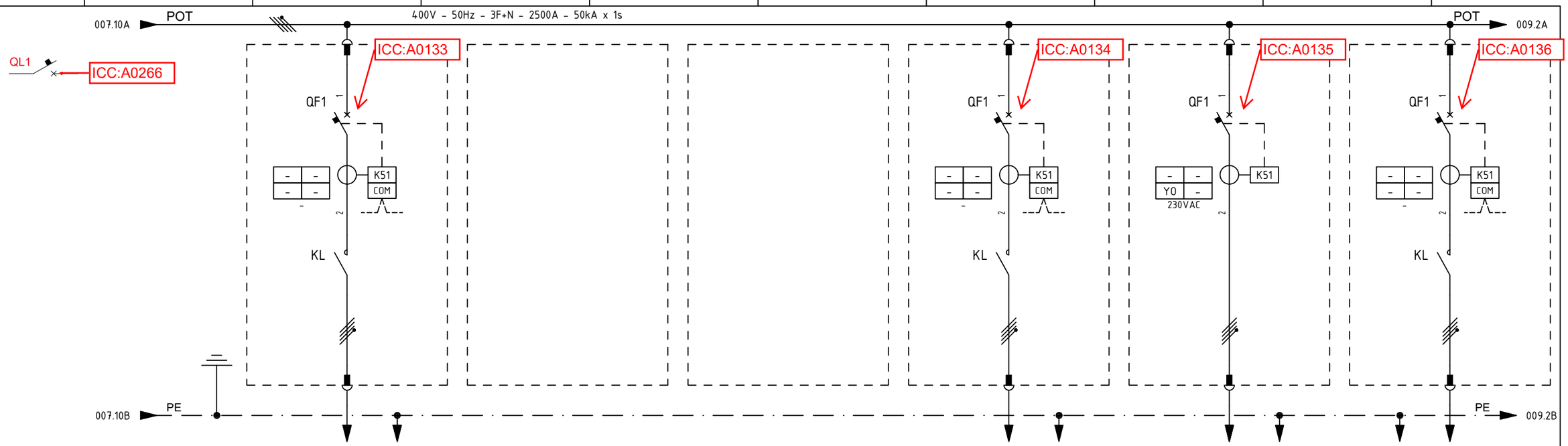
DRAWING NO. 1723002197-EL-DG-00011

SHEET 007

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM			1	SPARE		-			JB-500E8		UP-200F3		B100-HSB-001	
UTILITY			2	SPARE		FUTURE			WATER PACKAGE		AC UPS PAS - 30 MIN UP-200F3 - LINE B		HVAC PANELS HV ROOM	
COLUMN/CUBICLE			3	A3 / +05		A3 / +06			A3 / +08		A4 / +01		A4 / +02	
RATED POWER | RATED CURRENT			4/5	5.5 kW	9.93 A	-	-		67 kW	107.00 A	36.0 kW	57.8 A	18 kW	34.1 A
TYPICAL FUNCTIONAL			6	LK1-40					LK2-160		L1-100		LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160					XT4S - 250		XT2S - 160		XT2S - 160	
	VERSION		8	4P - FIXED					4P - FIXED		4P - FIXED		4P - FIXED	
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 40A)					EKIP HI TOUCH LSIG (In = 160A)		EKIP DIP LSIG (In = 100A)		EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10	50 kA					50 kA		50 kA		50 kA	
OVERLOAD	L	Range A	11	(0.4 - 1) x In					(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In	
		Range t	12	k/I^2					k/I^2		k/I^2		k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In					(0.6 - 10) x In		(1 - 10) x In		(0.6 - 10) x In	
		Range t	14	0.05 - 0,4 sec / k/I^2					0.05 - 0.4 sec / k/I^2		0.05 - 0.4 sec / k/I^2		0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In					(1.5 - 15) x In		(1 - 10) x In		(1.5 - 15) x In	
		Range t	16	instantaneous					instantaneous		<= 0.02 sec		instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In					(0.1 - 1) x In		(0.2 - 1) x In		(0.1 - 1) x In	
		Range t	18	t=k / t=k/I^2					t=k / t=k/I^2		0.1 - 0.8 sec		t=k / t=k/I^2	
CONTACTOR (ABB)			19	AF40-40-00-13 (70A-AC1); 100-250VAC/DC					AF190-40-11-13 (275A-AC1); 100-250 VAC/DC		-		AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	-					-		-		-	
SURGE ARRESTER (DEHN)			21	-					-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-					-		-		-	
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 83.00					SUBSISTEM 50.10		SUBSISTEM 84.10		SUBSISTEM 77.10	
INDIRECT PROTECTION (ABB)			24											
VOLTMETER			25											
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-					-		-		-	
	PERFORMANCE/CLASS		27	-					-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-					-		-		-	
	PERFORMANCE/CLASS		29	-					-		-		-	
LOCK-OUT RELAY (-)			30	-					-		-		-	
POWER CONDUCTOR		mmq	31	-					5G70		4G35		5G16	

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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

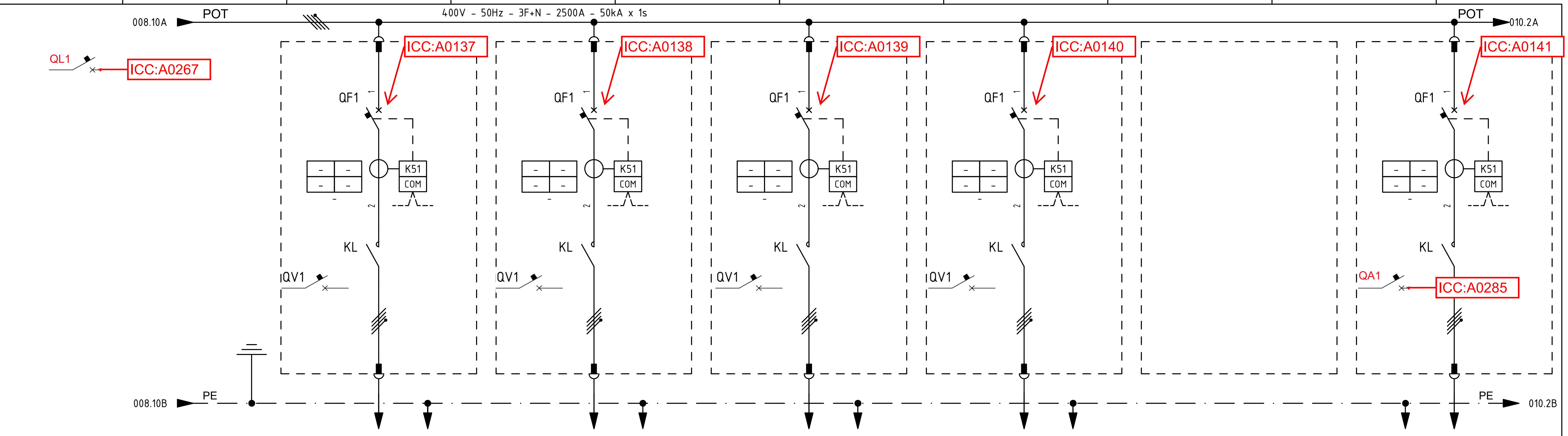
DRAWING NO. 1723002197-EL-DG-00011

SHEET 008

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM	1	A-80000	CP-850F03	SPARE	SPARE		K-63001-A
UTILITY	2	FUEL CELL AUXILIARY LOAD	BESS PCS CABINET	SPARE	SPARE		INSTRUMENTS AIR PACKAGE 01A
COLUMN/CUBICLE	3	A4 / +03	A4 / +04	A4 / +05	A4 / +06		A4 / +08
RATED POWER / RATED CURRENT	4/5	20 kW / 32.84 A	11,09 kW / 17.42 A	- kW / - A	20.0 kW / 32.1 A		68.75 kW / 111.24 A
TYPICAL FUNCTIONAL	6	LK1-63	LK1-40	LK1-40	LK1-40		LK2-160
CIRCUIT BREAKER (ABB) – TYPE	7	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160		XT4S - 250
CIRCUIT BREAKER (ABB) – VERSION	8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED		4P - FIXED
CIRCUIT BREAKER (ABB) – TRIP UNITS	9	EKIP HI TOUCH LSIG (In = 63A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 160A)
CIRCUIT BREAKER (ABB) – Icu KA	10	50 kA	50 kA	50 kA	50 kA		50 kA
OVERLOAD L – Range A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In		(0.4 - 1) x In
OVERLOAD L – Range t	12	k/I²	k/I²	k/I²	k/I²		k/I²
SEL. SHORT-CIRCUIT S – Range A	13	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In		(0.6 - 10) x In
SEL. SHORT-CIRCUIT S – Range t	14	0.05 - 0,4 sec / k/I²	0.05 - 0,4 sec / k/I²	0.05 - 0,4 sec / k/I²	0.05 - 0,4 sec / k/I²		0.05 - 0.4 sec / k/I²
INST. SHORT-CIRCUIT I – Range A	15	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In		(1.5 - 15) x In
INST. SHORT-CIRCUIT I – Range t	16	instantaneous	instantaneous	instantaneous	instantaneous		instantaneous
EARTH FAULT PROTECTION G – Range A	17	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In		(0.1 - 1) x In
EARTH FAULT PROTECTION G – Range t	18	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2		t=k / t=k/I^2
CONTACTOR (ABB)	19	AF52-40-00-13 (100A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF190-40-11-13 (275A-AC1); 100-250 VAC/DC
THERMAL OVERLOAD RELAY (ABB)	20	-	-	-	-		-
SURGE ARRESTER (DEHN)	21	-	-	-	-		-
TOROIDAL CURRENT TRANSFORMER (FRER)	22	-	-	-	-		-
FUSE HOLDER (ITALWEBER)	23	SUBSISTEM 80.00	SUBSISTEM 85.00	SUBSISTEM 83.00	SUBSISTEM 83.00		SUBSISTEM 63.00
INDIRECT PROTECTION (ABB)	24						
VOLTMETER	25						
CURRENT TRANSFORMER FOR MEASURE (FRER) – TYPE	26	-	-	-	-		-
CURRENT TRANSFORMER FOR MEASURE (FRER) – PERFORMANCE/CLASS	27	-	-	-	-		-
VOLTAGE TRANSFORMER FOR MEASURE (FRER) – TYPE	28	-	-	-	-		-
VOLTAGE TRANSFORMER FOR MEASURE (FRER) – PERFORMANCE/CLASS	29	-	-	-	-		-
LOCK-OUT RELAY (-)	30	-	-	-	-		-
POWER CONDUCTOR mmq	31	83012-CEL 5G16	83011-CEL 4 x 10	-	-		5G70

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)

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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

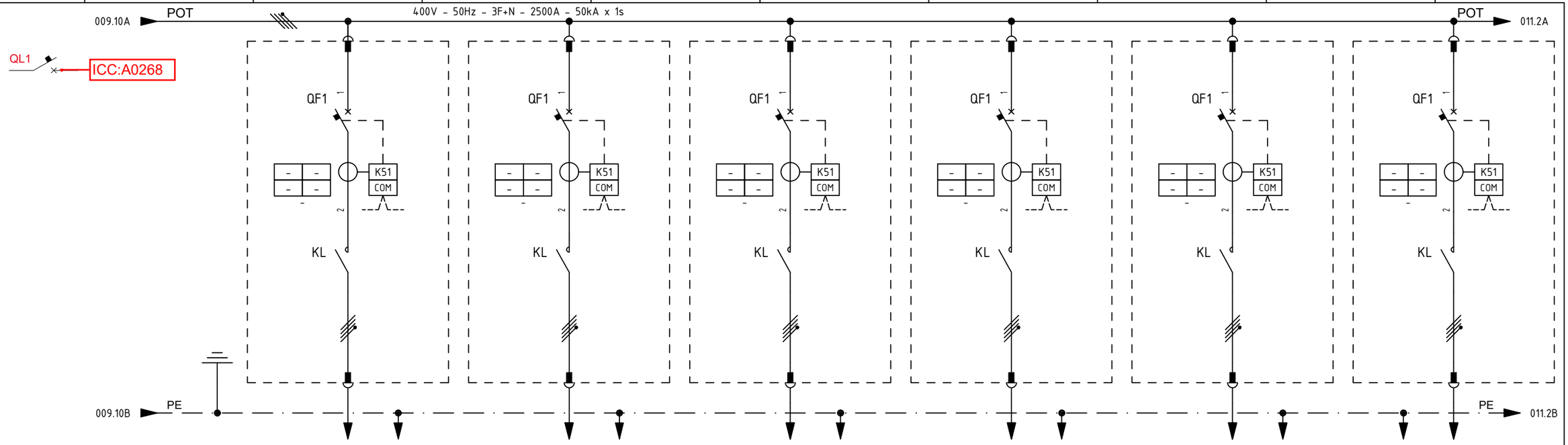
DRAWING NO. 1723002197-EL-DG-00011

SHEET 009

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM			1	SPARE		B200-HSB-001		B300-HSB-001		B400-HSB-001		CN-200N1		SPARE	
UTILITY			2	SPARE		HVAC PANELS - LV ROOM		HVAC PANELS - UPS ROOM		HVAC PANELS - ITER		IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM		SPARE	
COLUMN/CUBICLE			3	A5 / +01		A5 / +02		A5 / +03		A5 / +04		A5 / +05		A5 / +06	
RATED POWER | RATED CURRENT			4/5	15 kW	24.0 A	18 kW	34.1 A	35,75 kW	61 A	35,75 kW	61 A	14 kVA	23.8 A	- kW	- A
TYPICAL FUNCTIONAL			6	LK1-40		LK1-40		LK1-63		LK1-63		LK1-40		LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160	
	VERSION		8	4P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED	
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 63A)		EKIP HI TOUCH LSIG (In = 63A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10	50 kA		50 kA		50 kA		50 kA		50 kA		50 kA	
OVERLOAD	L	Range A	11	(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In	
		Range t	12	k/I^2		k/I^2		k/I^2		k/I^2		k/I^2		k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In	
		Range t	14	0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In	
		Range t	16	instantaneous		instantaneous		instantaneous		instantaneous		instantaneous		instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In	
		Range t	18	t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2	
CONTACTOR (ABB)			19	AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF52-40-00-13 (100A-AC1); 100-250VAC/DC		AF52-40-00-13 (100A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	-		-		-		-		-		-	
SURGE ARRESTER (DEHN)			21	-		-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-		-	
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 83.00		SUBSISTEM 77.20		SUBSISTEM 77.30		SUBSISTEM 77.40		SUBSISTEM 83.60		SUBSISTEM 83.00	
INDIRECT PROTECTION (ABB)			24												
VOLTMETER			25												
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-		-	
LOCK-OUT RELAY (-)			30	-		-		-		-		-		-	
POWER CONDUCTOR		mmq	31	-		5G16		5G16		5G16		5G16		-	

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

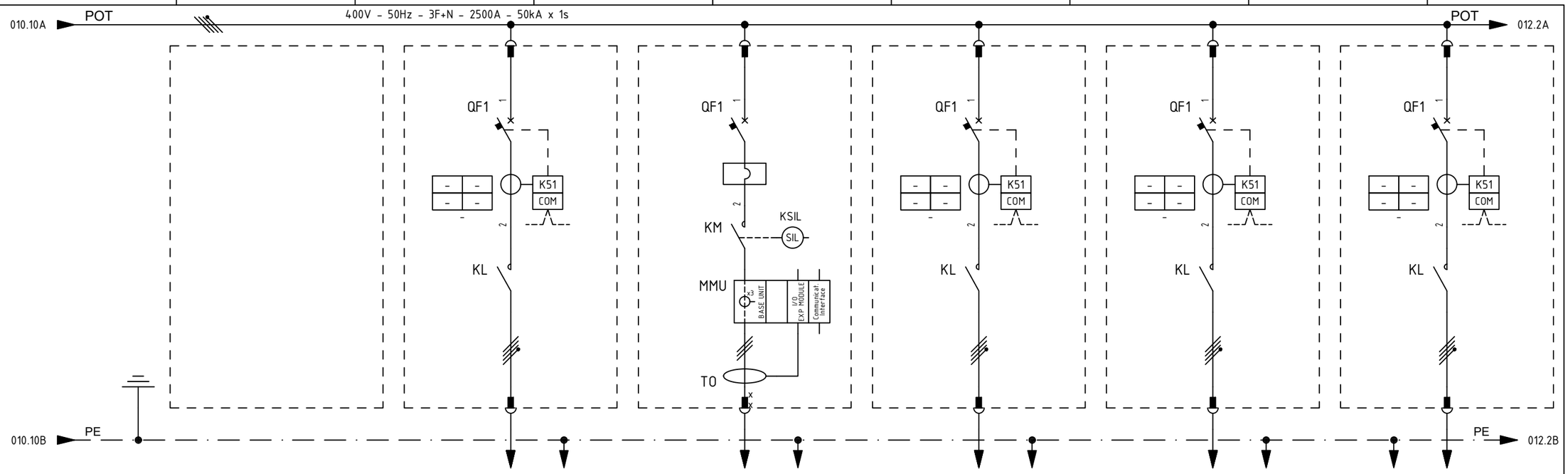
TITLE : "SG-200N1"
SINGLE LINE DIAGRAM
Single Line Drawing

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

A3 | DRAWING NO. 1723002197-EL-DG-00011 | SHEET 010 | REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM				K-63001-B		PM-50001 B		CP-850E1		CP-850E2		-	
UTILITY			2	INSTRUMENTS AIR PACKAGE 01B		SEA WATER PUMP B		BESS LV1 CABINET (+DISTR 1)		BESS LV2 CABINET (+DISTR 2)		SPARE	
COLUMN/CUBICLE			3	A5 / +08		A6 / +01		A6 / +02		A6 / +03		A6 / +04	
RATED POWER | RATED CURRENT			4/5	68.75 kW	111.24 A	6.1 kW	11.0 A	11.28 kW	18.09 A	11.28 kW	18.09 A	- kW	- A
TYPICAL FUNCTIONAL			6	LK2-160		M1-6		LK1-40		LK1-40		LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	XT4S - 250		XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160	
	VERSION		8	4P - FIXED		3P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED	
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 160A)		MA (In = 20A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10	50 kA		-		50 kA		50 kA		50 kA	
OVERLOAD	L	Range A	11	(0.4 - 1) x In		-		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In	
		Range t	12	k/I^2		-		k/I^2		k/I^2		k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In		-		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In	
		Range t	14	0.05 - 0.4 sec / k/I^2		-		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In		(6 - 14) x I		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In	
		Range t	16	instantaneous		<= 0.02 sec		instantaneous		instantaneous		instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In		-		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In	
		Range t	18	t=k / t=k/I^2		-		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2	
CONTACTOR (ABB)			19	AF190-40-11-13 (275A-AC1); 100-250 VAC/DC		AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	-		UMC100.3 UC (0.24 - 63A)		-		-		-	
SURGE ARRESTER (DEHN)			21	-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-	
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 63.00		SUBSISTEM 50.00		SUBSISTEM 85.00		SUBSISTEM 85.00		SUBSISTEM 83.00	
INDIRECT PROTECTION (ABB)			24										
VOLTMETER			25										
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-	
LOCK-OUT RELAY (-)			30	-		-		-		-		-	
POWER CONDUCTOR		mmq	31	5G70		4G4		4 x (1 x 10)		4 x (1 x 10)		-	

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

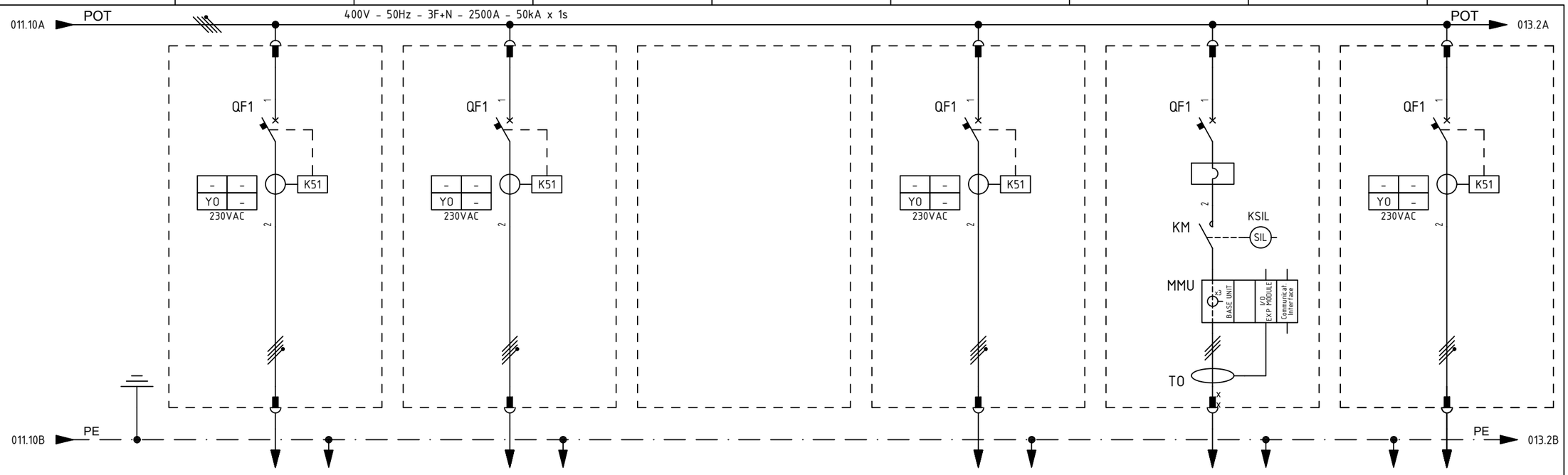
DRAWING NO. 1723002197-EL-DG-00011

SHEET 011

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM			1	UP-200F4	UP-200F4		ESW-200N1	PM-50001 A	UP-200F3
UTILITY			2	AC UPS F&G - 8 H UP-200F4 - LINE A	AC UPS F&G - 8h UP-200F4 - LINE B		WELDING SOCKETS (TOP DECK)	SEA WATER PUMP A	AC UPS PAS - 30 min. UP-200F3 - BYPASS
COLUMN/CUBICLE			3	A6 / +05	A6 / +06		A6 / +08	A7 / +01	A7 / +02
RATED POWER | RATED CURRENT			4/5	18 kW | 28.9 A	18 kW | 28.9 A		69.84 kW | 126.15 A	6.1 kW | 11.0 A	36 kW | 57.8 A
TYPICAL FUNCTIONAL			6	L1-63	L1-63		L2-160	M1-6	L1-100
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160		XT4S - 250	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED		4P - FIXED	3P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP DIP LSIG (In = 63A)	EKIP DIP LSIG (In = 63A)		EKIP DIP LSIG (In = 160A)	MA (In = 20A)	EKIP DIP LSIG (In = 100A)
	Icu	KA	10	50 kA	50kA		50kA	-	50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	(0.4 - 1) x In		(0.4 - 1) x In	-	(0.4 - 1) x In
		Range t	12	k/I^2	k/I^2		k/I^2	-	k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In	-	(1 - 10) x In
		Range t	14	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2		0.05 - 0.4 sec / k/I^2	-	0.05 - 0.4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1 - 10) x In	(1 - 10) x In		(1 - 10) x In	(6 - 14) x I	(1 - 10) x In
		Range t	16	<= 0.02 sec	<= 0.02 sec		<= 0.02 sec	<= 0.02 sec	<= 0.02 sec
EARTH FAULT PROTECTION	G	Range A	17	(0.2 - 1) x In	(0.2 - 1) x In		(0.2 - 1) x In	-	(0.2 - 1) x In
		Range t	18	0.1 - 0.8 sec	0.1 - 0.8 sec		0.1 - 0.8 sec	-	0.1 - 0.8 sec
CONTACTOR (ABB)			19	-	-		-	AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-		-	UMC100.3 UC (0.24 - 63A)	-
SURGE ARRESTER (DEHN)			21	-	-		-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-		-	-	-
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 84.20	SUBSISTEM 84.20		SUBSISTEM 83.50	SUBSISTEM 50.00	SUBSISTEM 84.10
INDIRECT PROTECTION (ABB)			24						
VOLTMETER			25						
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-		-	-	-
	PERFORMANCE/CLASS		27	-	-		-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-		-	-	-
	PERFORMANCE/CLASS		29	-	-		-	-	-
LOCK-OUT RELAY (-)			30	-	-		-	-	-
POWER CONDUCTOR		mmq	31	4G35	4G35		5G50	4G4	4G35

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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

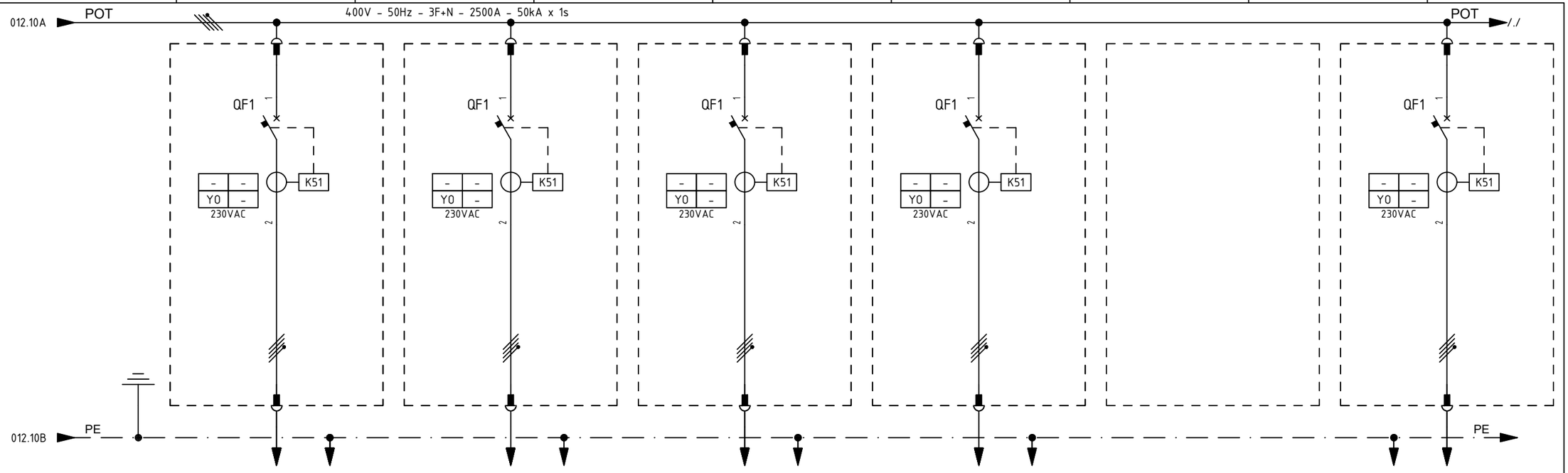
DRAWING NO. 1723002197-EL-DG-00011

SHEET 012

REV. 03

F.to UNI A3: 420mmx297mm

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



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

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DWG n° : 231298/SD/11

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

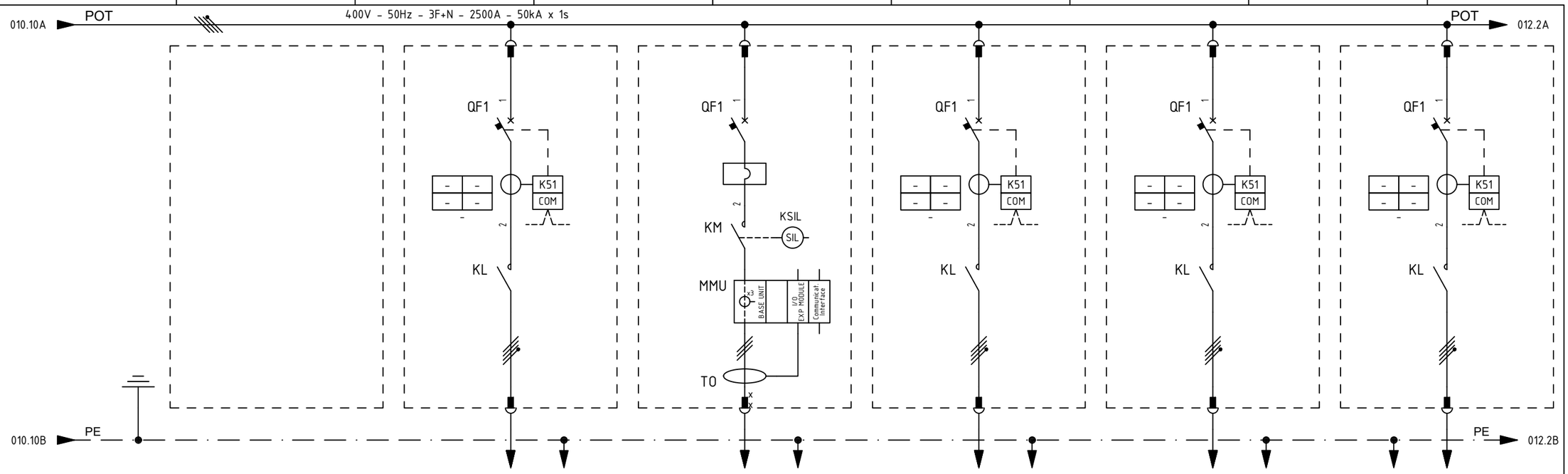
DRAWING NO. 1723002197-EL-DG-00011

SHEET 013

REV. 03

F.to UNI A3: 420mmx297mm

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



ITEM				K-63001-B		PM-50001 B		CP-850E1		CP-850E2		-	
UTILITY			2	INSTRUMENTS AIR PACKAGE 01B		SEA WATER PUMP B		BESS LV1 CABINET (+DISTR 1)		BESS LV2 CABINET (+DISTR 2)		SPARE	
COLUMN/CUBICLE			3	A5 / +08		A6 / +01		A6 / +02		A6 / +03		A6 / +04	
RATED POWER | RATED CURRENT			4/5	68.75 kW	111.24 A	6.1 kW	11.0 A	11.28 kW	18.09 A	11.28 kW	18.09 A	- kW	- A
TYPICAL FUNCTIONAL			6	LK2-160		M1-6		LK1-40		LK1-40		LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	XT4S - 250		XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160	
	VERSION		8	4P - FIXED		3P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED	
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 160A)		MA (In = 20A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10	50 kA		-		50 kA		50 kA		50 kA	
OVERLOAD	L	Range A	11	(0.4 - 1) x In		-		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In	
		Range t	12	k/I^2		-		k/I^2		k/I^2		k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In		-		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In	
		Range t	14	0.05 - 0.4 sec / k/I^2		-		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In		(6 - 14) x I		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In	
		Range t	16	instantaneous		<= 0.02 sec		instantaneous		instantaneous		instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In		-		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In	
		Range t	18	t=k / t=k/I^2		-		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2	
CONTACTOR (ABB)			19	AF190-40-11-13 (275A-AC1); 100-250 VAC/DC		AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	-		UMC100.3 UC (0.24 - 63A)		-		-		-	
SURGE ARRESTER (DEHN)			21	-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-	
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 63.00		SUBSISTEM 50.00		SUBSISTEM 85.00		SUBSISTEM 85.00		SUBSISTEM 83.00	
INDIRECT PROTECTION (ABB)			24										
VOLTMETER			25										
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-	
LOCK-OUT RELAY (-)			30	-		-		-		-		-	
POWER CONDUCTOR		mmq	31	5G70		4G4		4 x (1 x 10)		4 x (1 x 10)		-	

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 011

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:	1		Issued on:	2025-04-28	
System:	83	/	Main Power Distribution Low Voltage 440 V		
SubSystem:	83-00	/	400 V Switchboard & Connection Box (SG-200N1)		

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: 2

REMARKS: PARTIAL RFO: nr.10 outstanding ITR-B (see attached status Index for detail)

	CONTRACTOR Commissioning Manager	**COMPANY** Commissioning Lead
Name	Anthony Iveson	Martin Taylor
Date	2025-04-28	2025-04-28
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-28T11:13:39.998Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-28T12:56:14.013Z

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM

Electrical	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A1/+05-QF1	INCOMER SW - A1/+05-QF1	ONSHORE	C10002751	FP00	100	2025-01-13	-
		ONSHORE	C10002752	FTR-2	100	2024-12-12	-
		ONSHORE	C10002753	FTR-6	0	-	-
A2/+05-QF1	DRAWER SPARE - A2/+05-QF1	ONSHORE	C10002756	FP00	100	2024-10-15	-
		ONSHORE	C10002757	FTR-2	100	2024-09-20	-
		ONSHORE	C10002758	FTR-6	100	2024-10-02	-
		ONSHORE	C10002995	FTR-5	0	-	-
A2/+08-QF1	DRAWER TEMPORARY GENERATOR - A2/+08-QF1	ONSHORE	C10002759	FP00	100	2024-09-26	-
		ONSHORE	C10002760	FTR-2	100	2024-09-26	-
		ONSHORE	C10002996	FTR-5	0	-	-
A3/+02-QF1	DRAWER SPARE - A3/+02-QF1	ONSHORE	C10002761	FP00	100	2024-10-15	-
		ONSHORE	C10002762	FTR-2	100	2024-09-20	-
		ONSHORE	C10002763	FTR-6	100	2024-10-03	-
		ONSHORE	C10002997	FTR-5	0	-	-
A3/+05-QF1	DRAWER SPARE - A3/+05-QF1	ONSHORE	C10002764	FP00	100	2024-10-22	-
		ONSHORE	C10002765	FTR-2	100	2024-10-02	-
		ONSHORE	C10002766	FTR-6	100	2024-10-03	-
		ONSHORE	C10002998	FTR-5	0	-	-
A4/+05-QF1	DRAWER SPARE - A4/+05-QF1	ONSHORE	C10002767	FP00	100	2024-10-15	-
		ONSHORE	C10002768	FTR-2	100	2024-09-20	-
		ONSHORE	C10002769	FTR-6	100	2024-10-03	-
		ONSHORE	C10002999	FTR-5	0	-	-
A4/+06-QF1	DRAWER SPARE - A4/+06-QF1	ONSHORE	C10002770	FP00	100	2024-10-15	-
		ONSHORE	C10002771	FTR-2	100	2024-09-20	-
		ONSHORE	C10002772	FTR-6	100	2024-10-03	-
		ONSHORE	C10003000	FTR-5	0	-	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM

Electrical	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A5/+01-QF1	DRAWER SPARE - A5/+01-QF1	ONSHORE	C10002773	FP00	100	2024-10-15	-
		ONSHORE	C10002774	FTR-2	100	2024-09-18	-
		ONSHORE	C10002775	FTR-6	100	2024-10-03	-
		ONSHORE	C10003001	FTR-5	0	-	-
A5/+06-QF1	DRAWER SPARE - A5/+06-QF1	ONSHORE	C10002776	FP00	100	2024-10-15	-
		ONSHORE	C10002777	FTR-2	100	2024-09-20	-
		ONSHORE	C10002778	FTR-6	100	2024-10-03	-
		ONSHORE	C10003002	FTR-5	0	-	-
A6/+04-QF1	DRAWER SPARE - A6/+04-QF1	ONSHORE	C10002779	FP00	100	2024-10-15	-
		ONSHORE	C10002780	FTR-2	100	2024-09-20	-
		ONSHORE	C10002781	FTR-6	100	2024-10-03	-
		ONSHORE	C10003003	FTR-5	0	-	-
DP-200N1-Q39	AUX SW FROM DP - DP-200N1-Q39	ONSHORE	C10002755	FTR-2	100	2024-10-28	RFO 1
SG-200N1	LV 0,4 kV MCC Switchgear	ONSHORE	C10002991	FP05	100	2024-09-28	RFO 1
UP-200F3-QF49	SG-200-N1 AUX	ONSHORE	C10004585	FTR-2	100	2024-11-08	RFO 1

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM

Instrumental	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
83-XS-001A	SHUTDOWN SEAWATER LIFT PUMP P-50001A	ONSHORE	C10003825	FJ01D	100	2025-04-04	RFO 1
83-XS-001B	SHUTDOWN SEAWATER LIFT PUMP P-50001B	ONSHORE	C10003824	FJ01D	100	2025-04-04	RFO 1

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM

Miscellaneous	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03047	OTP - LV Switch Boards and LV Distribution Board Systems	ONSHORE	C10004624	5300	100	2025-04-28	-
		OFFSHORE	C10004946	5300	0	-	-

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000100	B	SG-200N1	Missing n.15 drawers (highlighted in the GA) and all accessories. The missing drawers wil be tested during FAT, mid-september		tested on 17/09 at Imesa with positive results - only communication test will	SLinari 2024-08-02	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000101	B	SG-200N1	Missing PLC wago cubicle A2/02 - signals in the I/O list from row 2 to 16 cannot be tested		PLC wago installed.	SLinari 2024-08-02	Vendor 2024-10-02	SLinari 2024-10-02	2024-10-02
C30000102	B	SG-200N1	Missing relè K86 incoming		Installed.	SLinari 2024-08-02	Vendor 2024-10-02	SLinari 2024-10-02	2024-10-02
C30000103	B	SG-200N1	All documentation shall be re-issued and approval in final revision after mark-up during FAT		ALL DOCUMENTS MARKED UP DURING FAT HAS BEEN RE ISSUED - REV. AS	SLinari 2024-08-02	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000115	B	A2/+08-QF1 C10002760	The Protection Study must be update with the correctly one.	Update the Protection Study on the DRAWER.	The definitive setting has been updated.	MGirotti 2024-09-26	MGirotti 2024-11-21	MGirotti 2024-11-21	2024-11-21
C30000116	B	SG-200N1 C10002991	Partial test is ok. To be completed when incoming from power transformer will be available.	Complete this steps on the Switchboard: 1) Phase out switchboard across bus section; 2) Carry out all manual changeover sequences.		MGirotti 2024-09-26	2025-02-17	MGirotti 2025-02-17	2025-02-17
C30000237	B	A3/+05-QF1 C10002764	The EKIP HI-TOUCH LSIG doesn't work.		The EKIP has been fixed and reinstalled.	MGirotti 2024-10-21	MGirotti 2025-03-19	MGirotti 2025-03-19	2025-03-19
C30000853	B	83120-CEL C10000639	Missing core identification tag inside SG-200N1	.		Pschintu 2024-11-23	2025-02-19	AAndreani 2025-02-19	2025-02-19
C30000921	B	84318-CEL C10002114	The philosophy of cross-ferruling are wrong cabinet side DP-200F3 / SG-200N1. (see document 123A90-DDL-EL-DD-20092 sh.7-8)	.		APolo 2024-11-26	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000922	B	84318-CEL C10002114	cable tag is wrong, cabinet input SG-200N1. to be replace	.		APolo 2024-11-26	2025-02-26	APolo 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000829	B	SG-200N1/B400 -NET-001.01 C10004365	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31
C30000830	B	SG-200N1/B400 -NET-001.03 C10004367	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31
C30000832	B	SG-200N1/B400 -NET-001.02 C10004366	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 83 Main Power Distribution Low Voltage 440 V

SUBSYSTEM 83-00 400 V Switchboard & Connection Box (SG-200N1)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001121	B	C-SG-200N1-002/B400-SIS-001 C10000195	Missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02			
C30001122	B	C-SG-200N1-001/B400-SIS-001 C10000194	missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02			
C30001123	B	C-SG-200N1-002/B400-SIS-001 C10000195	Missing Identification tag wires on both side the (C-SG-200N1-002/B400-SIS-001) connection.See attached photo. "	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001124	B	C-SG-200N1-001/B400-SIS-001 C10000194	Missing Identification tag wires on both side connection (C-SG-200N1-001/B400-SIS-001). See attached photo.	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001125	B	C-SG-200N1-002/B400-SIS-001 C10000195	"Missing cable tags inside and outside both panels (C-SG-200N1-002/B400-SIS-001) "	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001126	B	C-SG-200N1-001/B400-SIS-001 C10000194	"Missing cable tags inside and outside both panels (C-SG-200N1-001/B400-SIS-001).	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21

Section 2.2 Exception Punch Lists (per discipline)

CROSSWIND

ROSETTI MARINO

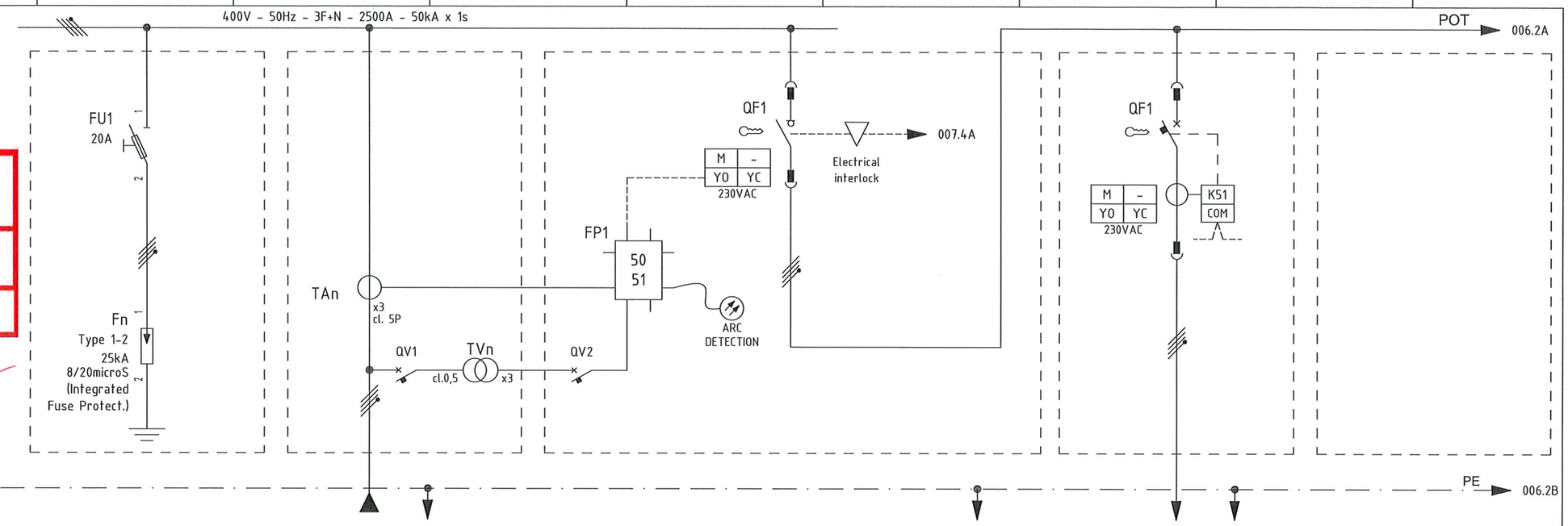
Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Instrumental									
CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001121	B	C-SG-200N1-002/B400-SIS-001 C10000195	Missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02			
C30001122	B	C-SG-200N1-001/B400-SIS-001 C10000194	missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02			

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



VALID FOR CONSTRUCTION

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

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

ROSETTI MARINO SpA

AS - COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARK UP

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
	L Range t	12	-	-	-	t=k/I^2
SEL. SHORT-CIRCUIT	S Range A	13	-	-	-	(0.6 ÷ 10) x In [EXCLUDABLE]
	S Range t	14	-	-	-	t=k / t=k/I²
INST. SHORT-CIRCUIT	I Range A	15	-	-	-	(1.5 ÷ 15) x In
	I Range t	16	-	-	-	instantaneous
EARTH FAULT PROTECTION	G Range A	17	-	-	-	(0.1 ÷ 1) x In (EXCLUDABLE)
	G 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	-	-	-
INDIRECT PROTECTION (ABB)		24	-	-	REF615-(version F) HBFFAEFCNDCABBA11G	-
VOLTMETER		25	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE	26	-	TAR1052K5N01V_18 - 2500/1A	-	-
	PERFORMANCE/CLASS	27	-	5VA / 5P20	-	-
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)]

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

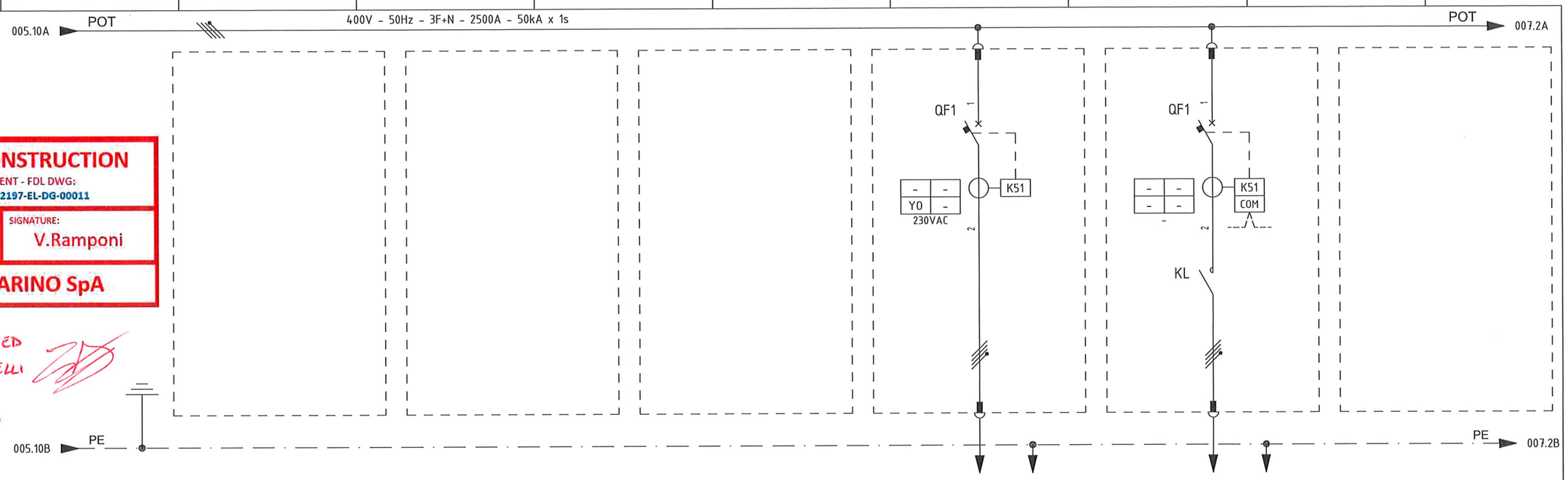
DRAWING NO. 1723002197-EL-DG-00011

SHEET 005

REV. 04

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

F.to UNI A3: 420mmx297mm



VALID FOR CONSTRUCTION

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

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

ROSETTI MARINO SpA

AS - COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARK UP

ITEM			1	-	UP-200F4	SPARE
UTILITY			2	FUTURE	AC UPS F&G - 8 H UP-200F4 - BYPASS	SPARE
COLUMN/CUBICLE			3	A2 / +03	A2 / +04	A2 / +05
RATED POWER | RATED CURRENT			4/5	- | -	18 kW | 28.9 A	- kW | - A
TYPICAL FUNCTIONAL			6		L1-63	LK1-40
CIRCUIT BREAKER (ABB)	TYPE		7		XT2S - 160	XT2S - 160
	VERSION		8		4P - FIXED	4P - FIXED
	TRIP UNITS		9		EKIP DIP LSIG (In = 63A)	EKIP HI TOUCH LSIG (In = 40A)
	Icu	KA	10		50 kA	50 kA
OVERLOAD	L	Range A	11		(0.4 - 1) x In	(0.4 - 1) x In
		Range t	12		k/I²	k/I²
SEL. SHORT-CIRCUIT	S	Range A	13		(1 - 10) x In	(0.6 - 10) x In
		Range t	14		0.05 - 0.4 sec / k/I²	0.05 - 0,4 sec / k/I²
INST. SHORT-CIRCUIT	I	Range A	15		(1 - 10) x In	(1.5 - 10) x In
		Range t	16		<= 0.02 sec	instantaneous
EARTH FAULT PROTECTION	G	Range A	17		(0.2 - 1) x In	(0.1 - 1) x In
		Range t	18		0.1 - 0.8 sec	t=k / t=k/I^2
CONTACTOR (ABB)			19		-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20		-	-
SURGE ARRESTER (DEHN)			21		-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22		-	-
FUSE HOLDER (ITALWEBER)			23		-	-
INDIRECT PROTECTION (ABB)			24		-	-
VOLTMETER			25		-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26		-	-
	PERFORMANCE/CLASS		27		-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28		-	-
	PERFORMANCE/CLASS		29		-	-
LOCK-OUT RELAY (-)			30		-	-
POWER CONDUCTOR		mmq	31		4G35	5G4

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

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

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

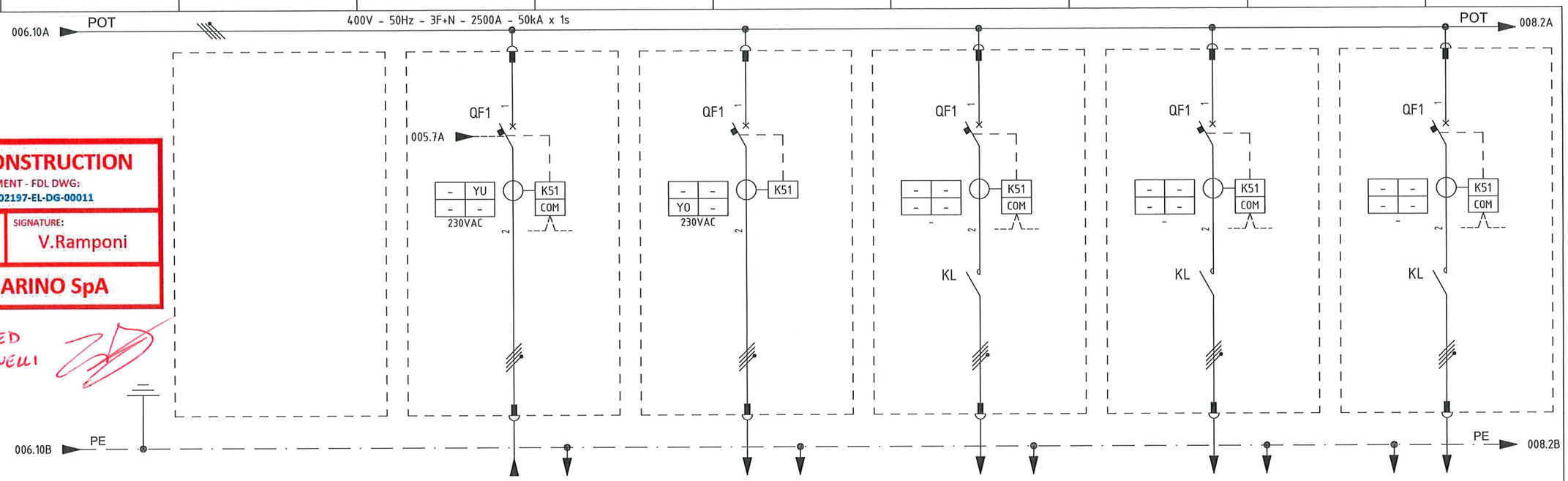
DRAWING NO. 1723002197-EL-DG-00011

SHEET 006

REV. 04

F.to UNI A3: 420mmx297mm

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



VALID FOR CONSTRUCTION

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

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

ROSETTI MARINO SpA

AS-COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARKUP

ITEM				JB-200E2	UP-200F3	SPARE	DP-200N1	JB-200E3
UTILITY			2	TEMPORARY GENERATOR / MOBILE BATTERY PACK	AC UPS PAS - 30 MIN UP-200F3 - LINE A	SPARE	DB - LIGHTING & SMALL POWER - BoP	CRANE
COLUMN/CUBICLE			3	A2 / +08	A3 / +01	A3 / +02	A3 / +03	A3 / +04
RATED POWER | RATED CURRENT			4/5	138 kW | 210 A	36.0 kW | 57.8 A	- kW | - A	15.35 kW | 23.7 A	25 kW | 37.8 A
TYPICAL FUNCTIONAL			6	LE2-320	L1-100	LK1-40	LK1-100	LK1-63
CIRCUIT BREAKER (ABB)	TYPE		7	XT5S - 400	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 320A)	EKIP DIP LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 63A)
	Icu	KA	10	50 kA	50 kA	50 kA	50 kA	50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In
		Range t	12	k/I^2	k/I^2	k/I^2	k/I^2	k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In	(1 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In
		Range t	14	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In	(1 - 10) x In	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In
		Range t	16	instantaneous	<= 0.02 sec	instantaneous	instantaneous	instantaneous
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In	(0.2 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In
		Range t	18	t=k / t=k/I^2	0.1 - 0.8 sec	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2
CONTACTOR (ABB)			19	-	-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF80-40-00-13 (70A-AC1); 100-250VAC/DC	AF52-40-00-13 (100A-AC1); 100-250VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	-
SURGE ARRESTER (DEHN)			21	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-
FUSE HOLDER (ITALWEBER)			23	-	-	-	-	-
INDIRECT PROTECTION (ABB)			24	-	-	-	-	-
VOLTMETER			25	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-
LOCK-OUT RELAY (-)			30	-	-	-	-	-
POWER CONDUCTOR		mmq	31	5 x (1 x 95)	4G35	-	5G50	5G16

IMESA ELECTRICAL ENGINEERING

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

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

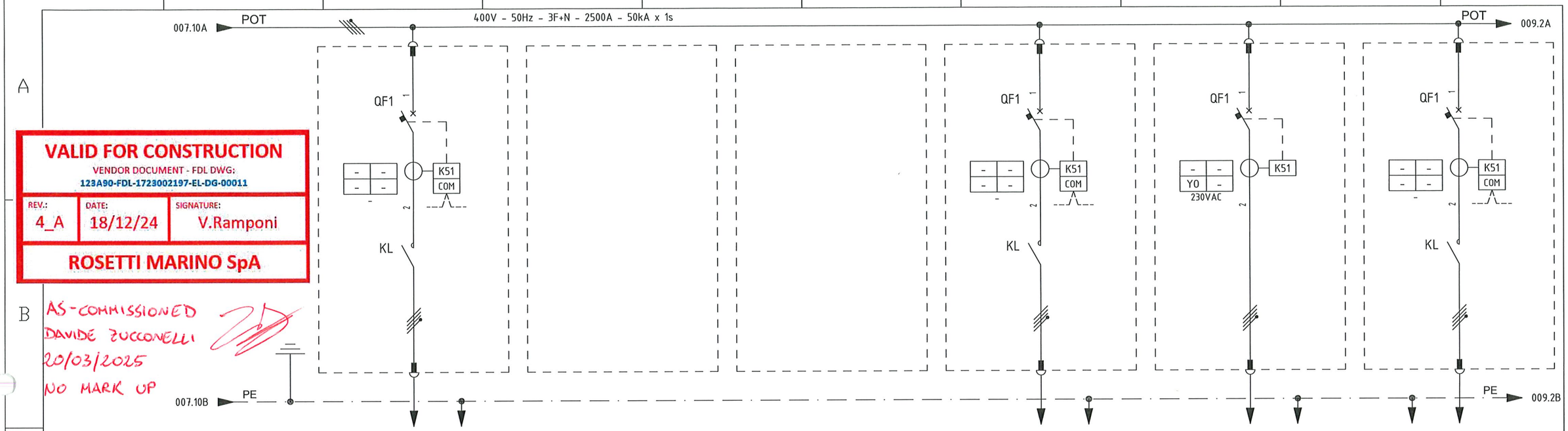
DRAWING NO. 1723002197-EL-DG-00011

SHEET 007

REV. 04

F.to UNI A3: 420mmx297mm

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



VALID FOR CONSTRUCTION

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

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

ROSETTI MARINO SpA

AS-COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARK UP

ITEM						JB-500E8	UP-200F3	B100-HSB-001
UTILITY			2	SPARE	FUTURE	WATER PACKAGE	AC UPS PAS - 30 MIN UP-200F3 - LINE B	HVAC PANELS HV ROOM
COLUMN/CUBICLE			3	A3 / +05	A3 / +06	A3 / +08	A4 / +01	A4 / +02
RATED POWER | RATED CURRENT			4/5	- kW | - A	- | -	67 kW | 107.00 A	36.0 kW | 57.8 A	18 kW | 34.1 A
TYPICAL FUNCTIONAL			6	LK1-40		LK2-160	L1-100	LK1-40
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160		XT4S - 250	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED		4P - FIXED	4P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 160A)	EKIP DIP LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 40A)
	Icu	KA	10	50 kA		50 kA	50 kA	50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In		(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In
		Range t	12	k/I^2		k/I^2	k/I^2	k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In		(0.6 - 10) x In	(1 - 10) x In	(0.6 - 10) x In
		Range t	14	0.05 - 0,4 sec / k/I^2		0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0,4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In		(1.5 - 15) x In	(1 - 10) x In	(1.5 - 15) x In
		Range t	16	instantaneous		instantaneous	<= 0.02 sec	instantaneous
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In		(0.1 - 1) x In	(0.2 - 1) x In	(0.1 - 1) x In
		Range t	18	t=k / t=k/I^2		t=k / t=k/I^2	0.1 - 0.8 sec	t=k / t=k/I^2
CONTACTOR (ABB)			19	AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF190-40-11-13 (275A-AC1); 100-250 VAC/DC	-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20	-		-	-	-
SURGE ARRESTER (DEHN)			21	-		-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-	-	-
FUSE HOLDER (ITALWEBER)			23	-		-	-	-
INDIRECT PROTECTION (ABB)			24	-		-	-	-
VOLTMETER			25	-		-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-	-	-
	PERFORMANCE/CLASS		27	-		-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-	-	-
	PERFORMANCE/CLASS		29	-		-	-	-
LOCK-OUT RELAY (-)			30	-		-	-	-
POWER CONDUCTOR		mmq	31	-		5G70	4G35	5G16

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

IMESA ELECTRICAL ENGINEERING

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

CROSSWIND

ROSETTI MARINO

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

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

SCALE : NTS

A3

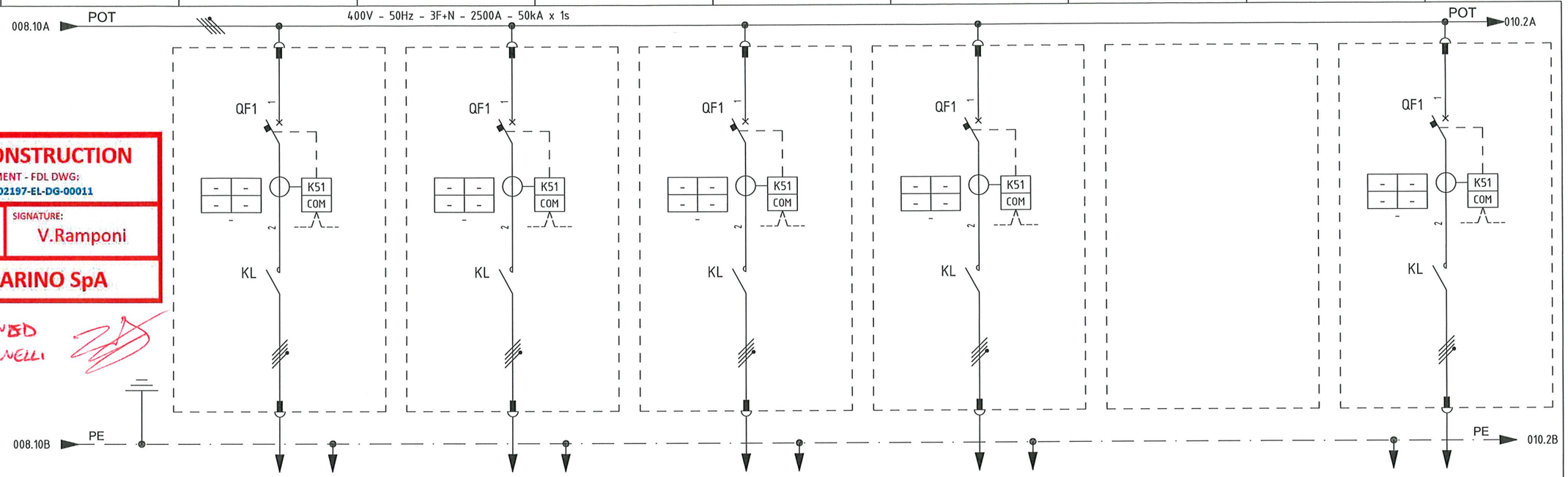
DRAWING NO. 1723002197-EL-DG-00011

SHEET 008

REV. 04

F.to UNI A3: 420mmx297mm

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



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

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

ROSETTI MARINO SpA

AS-COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARK UP

ITEM			1	A-80000	CP-850F03	SPARE	SPARE		K-63001-A
UTILITY			2	FUEL CELL AUXILIARY LOAD	BESS PCS CABINET	SPARE	SPARE		INSTRUMENTS AIR PACKAGE 01A
COLUMN/CUBICLE			3	A4 / +03	A4 / +04	A4 / +05	A4 / +06		A4 / +08
RATED POWER | RATED CURRENT			4/5	20 kW | 32.84 A	11,09 kW | 17.42 A	- kW | - A	- kW | - A		68.75 kW | 111.24 A
TYPICAL FUNCTIONAL			6	LK1-63	LK1-40	LK1-40	LK1-40		LK2-160
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160		XT4S - 250
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED		4P - FIXED
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 63A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 160A)
	Icu	KA	10	50 kA	50 kA	50 kA	50 kA		50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In		(0.4 - 1) x In
		Range t	12	k/I^2	k/I^2	k/I^2	k/I^2		k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In		(0.6 - 10) x In
		Range t	14	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2		0.05 - 0.4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In		(1.5 - 15) x In
		Range t	16	instantaneous	instantaneous	instantaneous	instantaneous		instantaneous
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In		(0.1 - 1) x In
		Range t	18	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2		t=k / t=k/I^2
CONTACTOR (ABB)			19	AF52-40-00-13 (100A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF190-40-11-13 (275A-AC1); 100-250 VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-		-
SURGE ARRESTER (DEHN)			21	-	-	-	-		-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-		-
FUSE HOLDER (ITALWEBER)			23	-	-	-	-		-
INDIRECT PROTECTION (ABB)			24	-	-	-	-		-
VOLTMETER			25	-	-	-	-		-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-		-
	PERFORMANCE/CLASS		27	-	-	-	-		-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-		-
	PERFORMANCE/CLASS		29	-	-	-	-		-
LOCK-OUT RELAY (-)			30	-	-	-	-		-
POWER CONDUCTOR		mmq	31	5G16	4 x 10	-	-		5G70

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

IMESA ELECTRICAL ENGINEERING
DWG n° : 231298/SD/11
Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

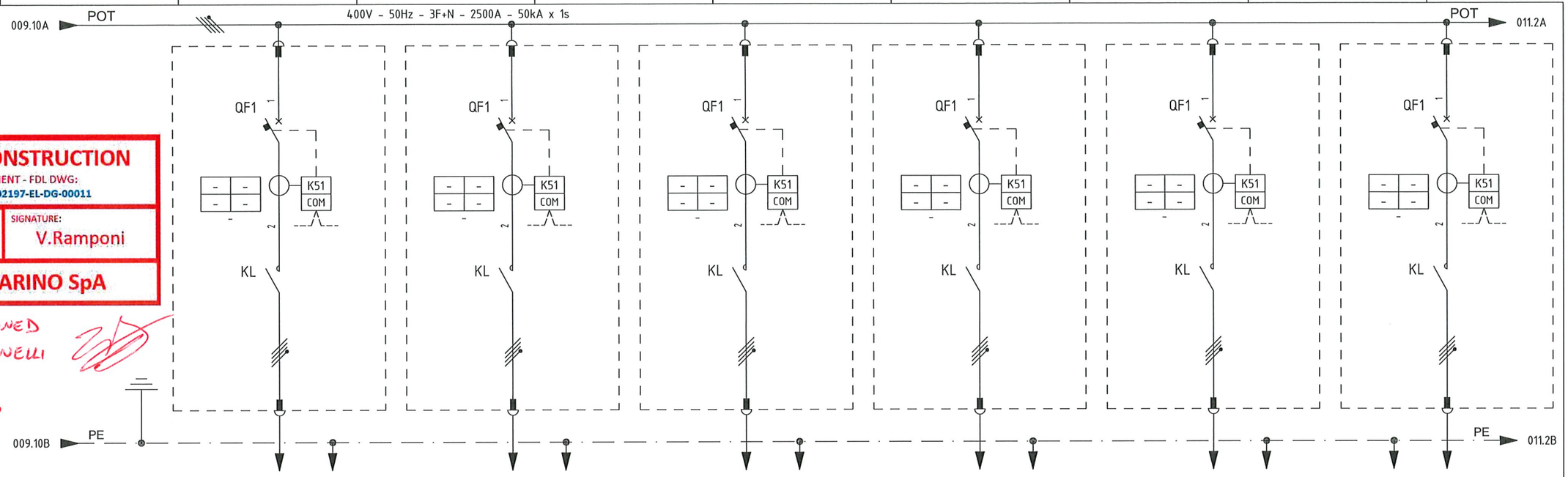
TITLE : "SG-200N1"
SINGLE LINE DIAGRAM
Single Line Drawing

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

A3 | DRAWING NO. 1723002197-EL-DG-00011 | SHEET 009 | REV. 04

F.to UNI A3: 420mmx297mm

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



VALID FOR CONSTRUCTION

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

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

ROSETTI MARINO SpA

AS-COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARK UP

ITEM			1	SPARE		B200-HSB-001		B300-HSB-001		B400-HSB-001		CN-200N1		SPARE	
UTILITY			2	SPARE		HVAC PANELS - LV ROOM		HVAC PANELS - UPS ROOM		HVAC PANELS - ITER		IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM		SPARE	
COLUMN/CUBICLE			3	A5 / +01		A5 / +02		A5 / +03		A5 / +04		A5 / +05		A5 / +06	
RATED POWER	RATED CURRENT		4/5	15 kW	24.0 A	18 kW	34.1 A	35,75 kW	61 A	35,75 kW	61 A	14 kVA	23.8 A	- kW	- A
TYPICAL FUNCTIONAL			6	LK1-40		LK1-40		LK1-63		LK1-63		LK1-40		LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160		XT2S - 160	
	VERSION		8	4P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED		4P - FIXED	
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 63A)		EKIP HI TOUCH LSIG (In = 63A)		EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 40A)	
	Icu KA		10	50 kA		50 kA		50 kA		50 kA		50 kA		50 kA	
OVERLOAD	L	Range A	11	(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In	
		Range t	12	k/I^2		k/I^2		k/I^2		k/I^2		k/I^2		k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In		(0.6 - 10) x In	
		Range t	14	0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2		0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In		(1.5 - 15) x In	
		Range t	16	instantaneous		instantaneous		instantaneous		instantaneous		instantaneous		instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In		(0.1 - 1) x In	
		Range t	18	t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2		t=k / t=k/I^2	
CONTACTOR (ABB)			19	AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF52-40-00-13 (100A-AC1); 100-250VAC/DC		AF52-40-00-13 (100A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	-		-		-		-		-		-	
SURGE ARRESTER (DEHN)			21	-		-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-		-	
FUSE HOLDER (ITALWEBER)			23	-		-		-		-		-		-	
INDIRECT PROTECTION (ABB)			24	-		-		-		-		-		-	
VOLTMETER			25	-		-		-		-		-		-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-		-	
LOCK-OUT RELAY (-)			30	-		-		-		-		-		-	
POWER CONDUCTOR		mmq	31	-		5G16		5G16		5G16		5G16		-	

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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 010

REV. 04

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

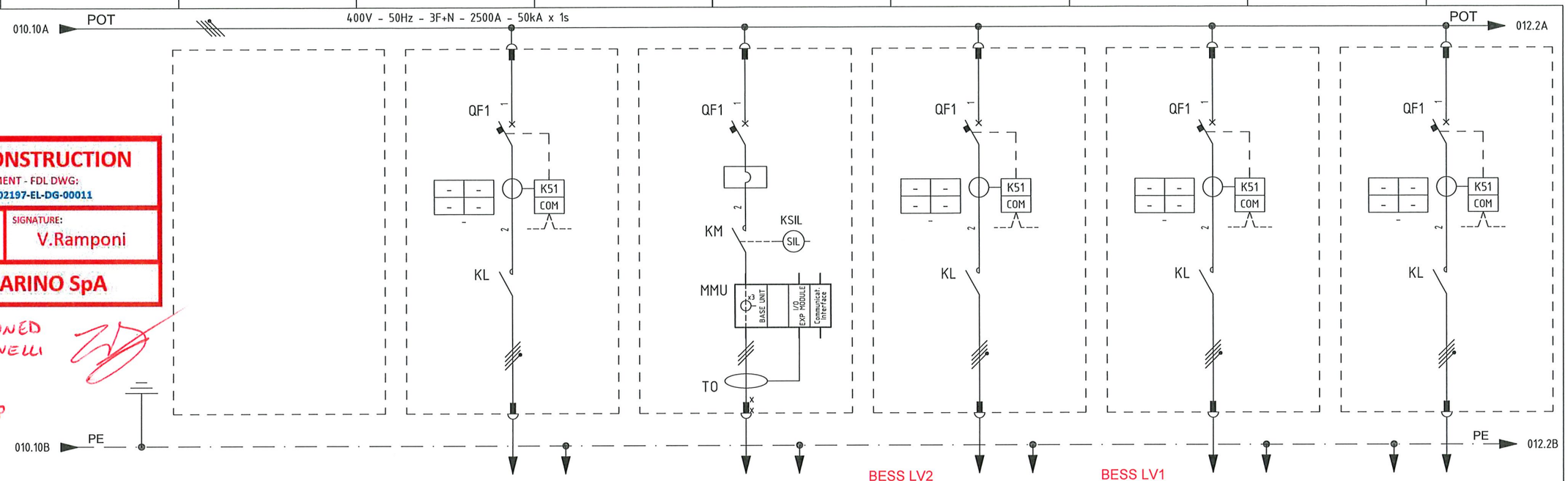
F.to UNI A3: 420mmx297mm

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

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

ROSETTI MARINO SpA

AS-COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARK UP



ITEM				K-63001-B	PM-50001 B	BESS LV2 CABINET (+DISTR 2) ~~CP-850E1~~ CP-850E2 ~~BESS LV1 CABINET (+DISTR 1)~~	BESS LV1 CABINET (+DISTR 1) ~~CP-850E2~~ CP-850E1 ~~BESS LV2 CABINET (+DISTR 2)~~	-
UTILITY			2	INSTRUMENTS AIR PACKAGE 01B	SEA WATER PUMP B			SPARE
COLUMN/CUBICLE			3	A5 / +08	A6 / +01	A6 / +02	A6 / +03	A6 / +04
RATED POWER | RATED CURRENT			4/5	68.75 kW | 111.24 A	6.1 kW | 11.0 A	11.28 kW | 18.09 A	11.28 kW | 18.09 A	- kW | - A
TYPICAL FUNCTIONAL			6	LK2-160	M1-6	LK1-40	LK1-40	LK1-40
CIRCUIT BREAKER (ABB)	TYPE		7	XT4S - 250	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	3P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 160A)	MA (In = 20A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 40A)
	Icu KA		10	50 kA	-	50 kA	50 kA	50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	-	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In
		Range t	12	k/I^2	-	k/I^2	k/I^2	k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In	-	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In
		Range t	14	0.05 - 0.4 sec / k/I^2	-	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In	(6 - 14) x I	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In
		Range t	16	instantaneous	<= 0.02 sec	instantaneous	instantaneous	instantaneous
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In	-	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In
		Range t	18	t=k / t=k/I^2	-	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2
CONTACTOR (ABB)			19	AF190-40-11-13 (275A-AC1); 100-250 VAC/DC	AF38-30-00-13 (18.5 kW - AC3) - 100-250Vac/dc	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF40-40-00-13 (70A-AC1); 100-250VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20	-	UMC100.3 UC (0.24 - 63A)	-	-	-
SURGE ARRESTER (DEHN)			21	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-
FUSE HOLDER (ITALWEBER)			23	-	-	-	-	-
INDIRECT PROTECTION (ABB)			24	-	-	-	-	-
VOLTMETER			25	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-
LOCK-OUT RELAY (-)			30	-	-	-	-	-
POWER CONDUCTOR mmq			31	5G70	4G4	4 x (1 x 10)	4 x (1 x 10)	-

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

IMESA ELECTRICAL ENGINEERING
DWG n° : 231298/SD/11
Item n° : PF1002983/26

CROSSWIND
ROSETTI MARINO

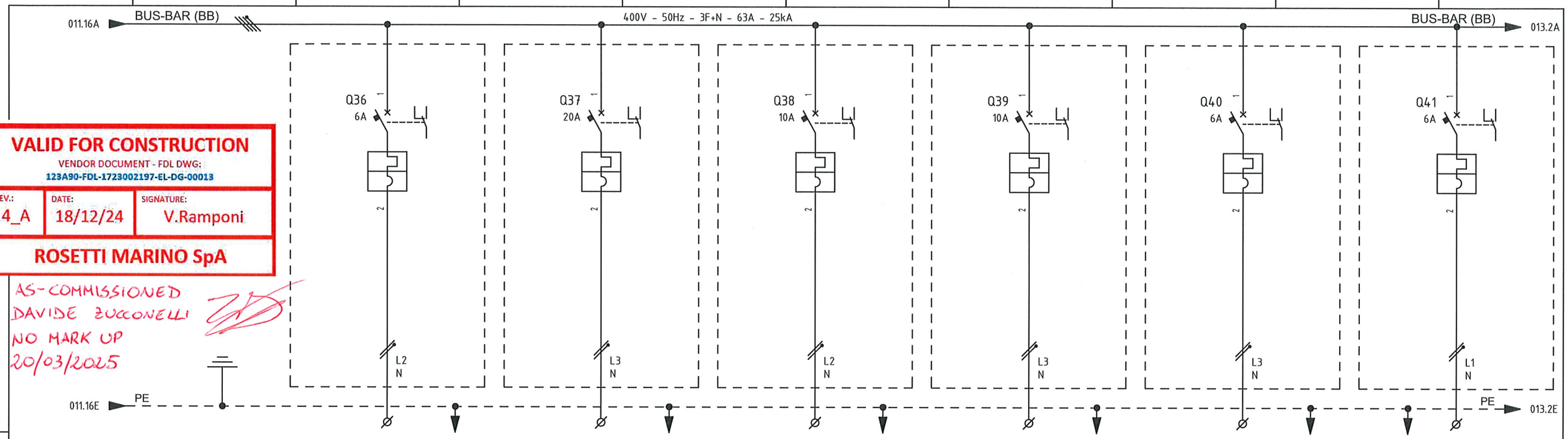
TITLE : "SG-200N1"
SINGLE LINE DIAGRAM
Single Line Drawing

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

A3 | DRAWING NO. 1723002197-EL-DG-00011 | SHEET 011 | REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00011 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

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
20/03/2025

ITEM			1	CP-200E2	CP-100E1	SG-100D1	SG-200N1	SG-200D2	UP-200F3
UTILITY			2	AUXILIARY TRAFO SOLARE 0.5MVA	AUXILIARY GIS	AUXILIARY 6.6KV SWITCHBOARD	AUXILIARY LV SWITCHBOARD	AUXILIARY LV SWITCHBOARD 800/460V	AC UPS PAS AUXILIARY
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.5 KW | 2.72 A	3 KW | 16.3 A	1 KW | 5.43 A	1 KW | 5.43 A	0.5 KW | 2.72 A	0.2 KW | 0.82 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S302P-C20	S302P-C10	S302P-C10	S302P-C6	S302P-C6
	VERSION		8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS		9	In=6A - Curve C	In=20A - Curve C	In=10A - Curve C	In=10A - Curve C	In=6A - Curve C	In=6A - Curve C
	Icu	KA	10	25kA	25kA	25kA	25kA	25kA	25kA
OVERLOAD	L	Range A	11	-	-	-	-	-	-
		Range t	12	-	-	-	-	-	-
SEL. SHORT-CIRCUIT	S	Range A	13	-	-	-	-	-	-
		Range t	14	-	-	-	-	-	-
INST. SHORT-CIRCUIT	I	Range A	15	-	-	-	-	-	-
		Range t	16	-	-	-	-	-	-
EARTH FAULT PROTECTION	G	Range A	17	-	-	-	-	-	-
		Range t	18	-	-	-	-	-	-
CONTACTOR (ABB)			19	-	-	-	-	-	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	-	-
SURGE ARRESTERS (DHENN)			21	-	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-	-
FUSE HOLDER (ABB)			23	-	-	-	-	-	-
TWILIGHT SWITCH (ABB)			24	-	-	-	-	-	-
VOLTMETER (FRER)			25	-	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-	-
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4	SCREW / 6	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR		mm²	31	3G2.5	3G6	3G2.5	3G2.5	3G2.5	3G2.5

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)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

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

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00013

SHEET 012

REV. 04

F.to UNI A3: 420mmx297mm

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

CAE EPLAN Electric P8

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AUXILIARY
From Lighting & Small Power DB BOP DP 200N1
(Cubicle 33 Q41)
100-240V/N/PE~50/60Hz
back-up fuse gG10A 3G2.5mm2

LINE A
From LV Switchgear SG-200N1
(Cubicle A3/Q1)
Mains 400V;3/PE~50Hz
gG63A 4G35mm2

From LV Switchgear SG 200N1
(Cubicle A7/Q2)
Bypass mains 400V;3/PE~50Hz
gG63A 4G35mm2

LINE B
From LV Switchgear SG 200N1
(Cubicle A4/Q1)
Mains 400V;3/PE~50Hz
gG63A 4G35mm2

Not included in the AEG shipment

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

+MBC1
BY-200F3
Bypass transformer cabinet 40 kVA
1000007883.020
10039757

-Q10 L=63/65A I=0,8kA Icu=50kA
-T8 400V/400V 40kVA
-X1 1U,1V,1W,PE
-X10 U,V,W,PE
-X13 U,N,PE
-X14 U,N
-A85
-H1

-Q28.1 NC
-Q28.2 NC

+UPS1
BC-200F3A
Protect 8.33 40-400-210-400
1000007883.010
10039756

+UPS2
BC-200F3B
Protect 8.33 40-400-210-400
1000007883.310
10039755

-Q1 L=100/85A I=1,0kA Icu=50kA
-T40
-A1 REC
-A2 INV
-T1
-F1,-F2,-F3
-A3 SBS
-A4
-A18 Display
-A20 Parallel Adapter
-X3 INV CAN
-X5 INV Sync
-L11,-L12,-L13 Parallel preventive choke coil
-A12,-A13 Remote signaling
-A24.1 BLU PRO
-F91

-X1 2U,2V,2W,PE
-X4 1U,1V,1W,1N,PE
-X4 2U,2V,2W,2N,PE
-X1 4U,4V,4W,PE
-X1 3U,3V,3W,PE
-E1-X1 U,V,W,PE
-E4-X4 U,V,W,N,PE
-E2-X2 L-,L+,PE
-E3-X3 U,V,W,N,PE
-X15 2,3
-X130 1,2
-X5 1U,1V,1W,1N,PE
-X5 2U,2V,2W,2N,PE
-X2 3L+,3L-,PE
-X15 5,7
-X91 3M

-Q71 NC
-Q72 NC
-Q29 INV operation / Manual bypass
-F25

DP-200F3
-QF31 B32A 300mA
-QF32 B32A 300mA
-QF33 B32A 300mA
-QF34 B16A 300mA (5pc)
-QF38 B16A 300mA
-QF39 B10A 300mA (4pc)
-QF42 B13A 300mA (8pc)
-QF43 B13A
-QF50 B10A
-QF51 B6A
-QF52 B6A
-X2 2L+,2L-,PE
-X15 4,5
-X91 2M
-X130 1,2,1PE
-X31 U,N,PE
-X32 U,N,PE
-X33 U,N,PE
-X34 U,N,PE
-X38 V,N,PE
-X39 V,N,PE
-X42 W,N,PE
-X43 W,N,PE
-X50 U,N,PE
-X51 V,N,PE
-X52 V,N,PE
-X2 4L+,4L-,PE
-X15 8,9
-X91 4M
-X130 3,4,2PE

Not included in the AEG shipment
max. gG16A
max. gG16A
Load
400/230V;3/N/PE~50Hz

+BFB1
CB-200F3A
Battery fuse box 200 A
-Q2 L=200A
DC 24V max. 300W
2(1x70 mm2)

+BFB2
CB-200F3B
Battery fuse box 200 A
-Q2 L=200A
DC 24V max. 300W
2(1x70 mm2)

+BAT1
BA-200F3A
Batteries installed on rack
18 x FLG 12-150
Battery voltage 216V
Battery capacity 150Ah
string 1
-RBTMN

+BAT2
BA-200F3B
Batteries installed on rack
18 x FLG 12-150
Battery voltage 216V
Battery capacity 150Ah
string 1
-RBTMN

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

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

ROSETTI MARINO SpA

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

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

*2 Connection cables are not included.

1000007888_010

ROSETTI MARINO
Mohammed Bin Rashid Al Maktoum Port Farm
AEG
System 40 kVA
Single-line diagram
1000007888_310 en
A0

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 83 Main Power Distribution Low Voltage 440 V

SUBSYSTEM 83-00 400 V Switchboard & Connection Box (SG-200N1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000100	B	SG-200N1	Missing n.15 drawers (highlighted in the GA) and all accessories. The missing drawers wil be tested during FAT, mid-september		tested on 17/09 at Imesa with positive results - only communication test will	SLinari 2024-08-02	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000101	B	SG-200N1	Missing PLC wago cubicle A2/02 - signals in the I/O list from row 2 to 16 cannot be tested		PLC wago installed.	SLinari 2024-08-02	Vendor 2024-10-02	SLinari 2024-10-02	2024-10-02
C30000102	B	SG-200N1	Missing relè K86 incoming		Installed.	SLinari 2024-08-02	Vendor 2024-10-02	SLinari 2024-10-02	2024-10-02
C30000103	B	SG-200N1	All documentation shall be re-issued and approval in final revision after mark-up during FAT		ALL DOCUMENTS MARKED UP DURING FAT HAS BEEN RE ISSUED - REV. AS	SLinari 2024-08-02	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000115	B	A2/+08-QF1 C10002760	The Protection Study must be update with the correctly one.	Update the Protection Study on the DRAWER.	The definitive setting has been updated.	MGirotti 2024-09-26	MGirotti 2024-11-21	MGirotti 2024-11-21	2024-11-21
C30000116	B	SG-200N1 C10002991	Partial test is ok. To be completed when incoming from power transformer will be available.	Complete this steps on the Switchboard: 1) Phase out switchboard across bus section; 2) Carry out all manual changeover sequences.		MGirotti 2024-09-26	2025-02-17	MGirotti 2025-02-17	2025-02-17
C30000237	B	A3/+05-QF1 C10002764	The EKIP HI-TOUCH LSIG doesn't work.		The EKIP has been fixed and reinstalled.	MGirotti 2024-10-21	MGirotti 2025-03-19	MGirotti 2025-03-19	2025-03-19
C30000853	B	83120-CEL C10000639	Missing core identification tag inside SG-200N1	.		Pschintu 2024-11-23	2025-02-19	AAndreani 2025-02-19	2025-02-19
C30000921	B	84318-CEL C10002114	The philosophy of cross-ferruling are wrong cabinet side DP-200F3 / SG-200N1. (see document 123A90-DDL-EL-DD-20092 sh.7-8)	.		APolo 2024-11-26	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000922	B	84318-CEL C10002114	cable tag is wrong, cabinet input SG-200N1. to be replace	.		APolo 2024-11-26	2025-02-26	APolo 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000829	B	SG-200N1/B400 -NET-001.01 C10004365	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31
C30000830	B	SG-200N1/B400 -NET-001.03 C10004367	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31
C30000832	B	SG-200N1/B400 -NET-001.02 C10004366	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 83 Main Power Distribution Low Voltage 440 V

SUBSYSTEM 83-00 400 V Switchboard & Connection Box (SG-200N1)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001121	B	C-SG-200N1-002/B400-SIS-001 C10000195	Missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02	2025-05-22	Gtangianu 2025-05-22	2025-05-22
C30001122	B	C-SG-200N1-001/B400-SIS-001 C10000194	missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02	2025-05-22	Gtangianu 2025-05-22	2025-05-22
C30001123	B	C-SG-200N1-002/B400-SIS-001 C10000195	Missing Identification tag wires on both side the (C-SG-200N1-002/B400-SIS-001) connection.See attached photo. "	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001124	B	C-SG-200N1-001/B400-SIS-001 C10000194	Missing Identification tag wires on both side connection (C-SG-200N1-001/B400-SIS-001). See attached photo.	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001125	B	C-SG-200N1-002/B400-SIS-001 C10000195	"Missing cable tags inside and outside both panels (C-SG-200N1-002/B400-SIS-001) "	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001126	B	C-SG-200N1-001/B400-SIS-001 C10000194	"Missing cable tags inside and outside both panels (C-SG-200N1-001/B400-SIS-001).	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000102

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	SG-200N1		LV 0,4 kV MCC Switchgear
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing relè K86 incoming

Name: Stefano Linari
Date: 2024-10-10
Signature:

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	MC Mechanical Completion	Date	2024-08-02
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Installed.

Name: Vendor Crosswind
Date: 2024-10-02
Signature:

5 - CLEARANCE CHECK

installed

Name: Stefano Linari
Date: 2024-10-10
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000102

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task

1.4 Discipline Electrical

1.2 Item SG-200N1

LV 0,4 kV MCC Switchgear

1.3 Subsystem 83-00

400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing relè K86 incoming

Name

Date

Signature

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal

3.2 Material required

3.3 Priority B PL B

Name Stefano Linari

3.4 Activity code MC Mechanical Completion

Date 2024-08-02

3.5 Action by

Signature

— Proverlis —
Duplicata issued from database information
Signature is on original form

4 - PERFORMED ACTION

Name SIMONE VERDOLINI

Date 29/08/24

Signature

5 - CLEARANCE CHECK

Installed (see pictures)

Name ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

Date 29/08/24

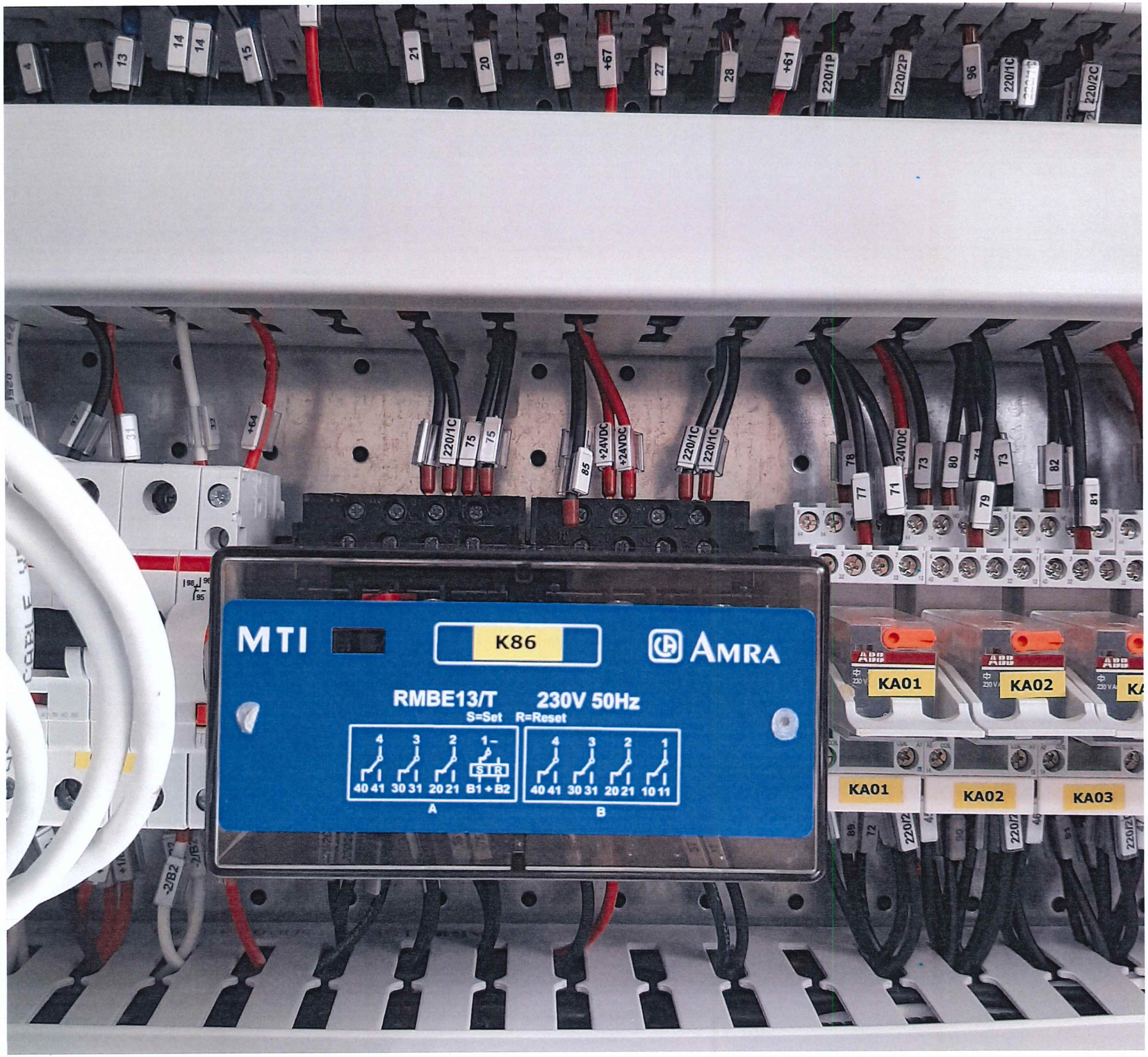
Signature

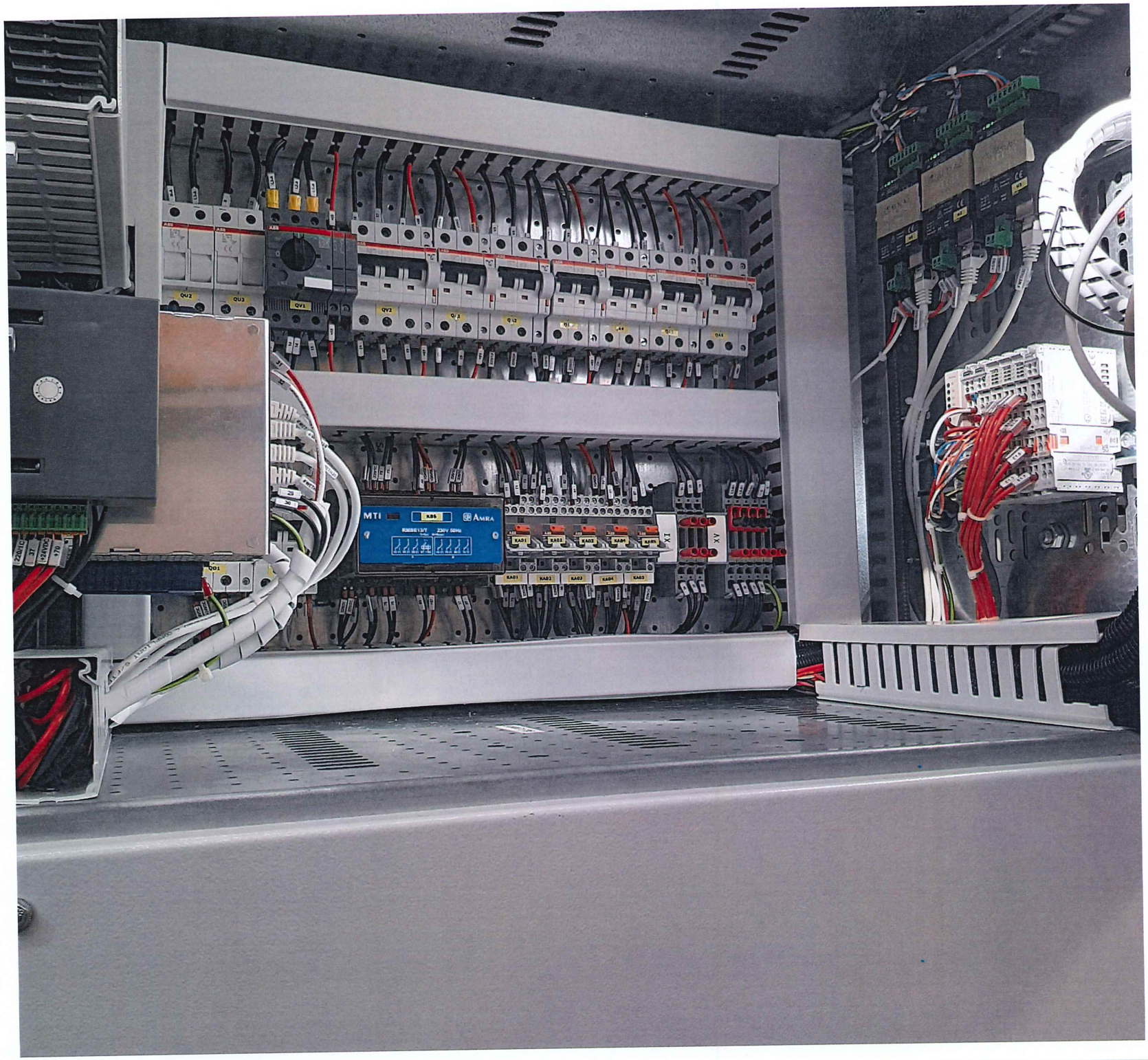
6- CLEARANCE APPROVAL

Name

Date

Signature


MTI
K86
AMRA
RMBE13/T
230V 50Hz
S=Set
R=Reset
4 3 2 1
S R
40 41 30 31 20 21 B1 + B2
A
4 3 2 1
40 41 30 31 20 21 10 11
B
KA01
KA02
KA03
220/1C
220/2C
+24VDC
+67
+61
+64


MTI
AMRA
KA5
RMBE13/T 230V 50Hz

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000103

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	SG-200N1		LV 0,4 kV MCC Switchgear
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

All documentation shall be re-issued and approval in final revision after mark-up during FAT

Name

Date

Signature

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	MC Mechanical Completion	Date	2024-08-02
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

ALL DOCUMENTS MARKED UP DURING FAT HAS BEEN RE ISSUED - REV. AS BUILT

Name VENDOR IMESA

Date 2024-12-05

Signature

5 - CLEARANCE CHECK

ALL DOCUMENTS MARKED UP DURING FAT HAS BEEN RE ISSUED - REV. AS BUILT

Name Stefano Linari

Date 2024-12-05

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000115

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002760	1.4 Discipline	Electrical
1.2 Item	A2/+08-QF1		DRAWER TEMPORARY GENERATOR - A2/+08-QF1
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

The Protection Study must be update with the correctly one.

Name: Mattia Girotti
Date: 2024-09-26
Signature:

3 - DEFECT ASSESSMENT

Update the Protection Study on the DRAWER.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Mattia Girotti
3.4 Activity code	COMM Commissioning	Date	2024-09-26
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

The definitive setting has been updated.

Name: Mattia Girotti
Date: 2024-11-21
Signature:

5 - CLEARANCE CHECK

Done.

Name: Mattia Girotti
Date: 2024-11-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000116

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002991	1.4 Discipline	Electrical
1.2 Item	SG-200N1	LV 0,4 kV MCC Switchgear	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

Partial test is ok. To be completed when incoming from power transformer will be available.

Name: Mattia Girotti

Date: 2024-09-26

Signature:

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal	Complete this steps on the Switchboard: 1) Phase out switchboard across bus section; 2) Carry out all manual changeover sequences.		
3.2 Material required			
3.3 Priority	B PL B	Name	Mattia Girotti
3.4 Activity code	COMM Commissioning	Date	2024-09-26
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:

Date:

Signature:

5 - CLEARANCE CHECK

The remaining Steps is already tested

Name: Mattia Girotti

Date: 2025-02-17

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000237

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002764	1.4 Discipline	Electrical
1.2 Item	A3/+05-QF1	DRAWER SPARE - A3/+05-QF1	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

The EKIP HI-TOUCH LSIG doesn't work.

Name: Mattia Girotti
Date: 2024-10-21
Signature:

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Mattia Girotti
3.4 Activity code	COMM Commissioning	Date	2024-10-21
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

The EKIP has been fixed and reinstalled.

Name: Mattia Girotti
Date: 2025-03-19
Signature:

5 - CLEARANCE CHECK

installed (see below)

Name: Mattia Girotti
Date: 2025-03-19
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000829

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004365	1.4 Discipline	Telecom
1.2 Item	SG-200N1/B400-NET-001.01		LV 0,4 kV MCC Switchgear / Network Cabinet / EMCS System
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels.

Name: Giovanni Tangianu

Date: 2024-11-23

Signature:

3 - DEFECT ASSESSMENT

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3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-23
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000830

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004367	1.4 Discipline	Telecom
1.2 Item	SG-200N1/B400-NET-001.03		LV 0,4 kV MCC Switchgear / Network Cabinet / EMCS System
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels.

Name: Giovanni Tangianu

Date: 2024-11-23

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-23
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000832

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004366	1.4 Discipline	Telecom
1.2 Item	SG-200N1/B400-NET-001.02	LV 0,4 kV MCC Switchgear / Network Cabinet / EMCS System	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels.

Name: Giovanni Tangianu

Date: 2024-11-23

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-23
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000853

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000639	1.4 Discipline	Electrical
1.2 Item	83120-CEL		Lighting & Small Power DB BoP / Auxiliary LV
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing core identification tag inside SG-200N1

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

PLC wago installed.

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-19

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000921

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002114	1.4 Discipline	Electrical
1.2 Item	84318-CEL	AC UPS - PAS DB / LV Switchboard Auxiliary	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

The philosophy of cross-ferruling are wrong cabinet side DP-200F3 / SG-200N1. (see document 123A90-DDL-EL-DD-20092 sh.7-8)

Name: Alessio Polo
Date: 2024-11-26
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:
Date:
Signature:

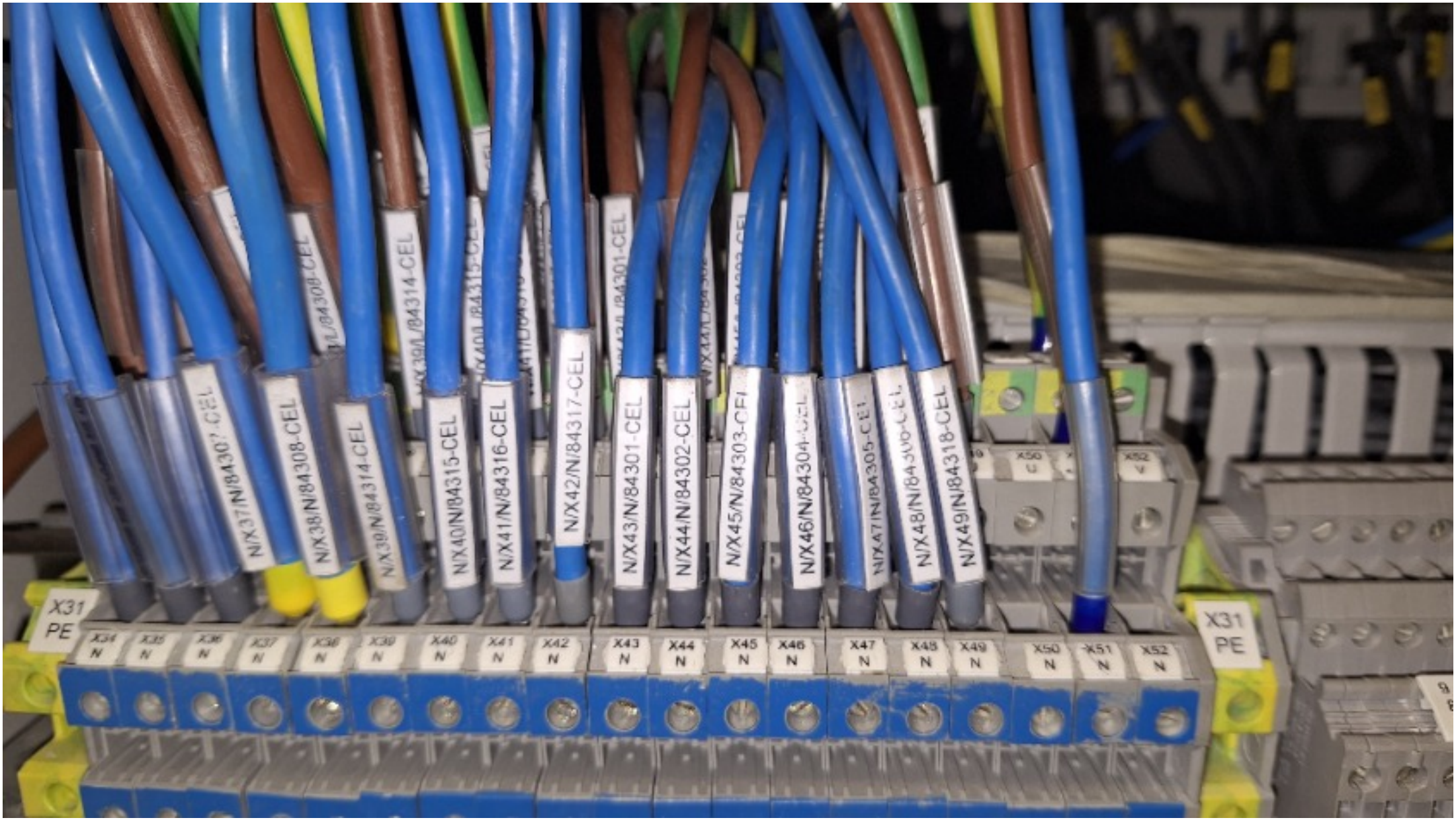
5 - CLEARANCE CHECK

DONE

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

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


X31
PE
X34 N
X35 N
X36 N
X37 N
X38 N
X39 N
X40 N
X41 N
X42 N
X43 N
X44 N
X45 N
X46 N
X47 N
X48 N
X49 N
X50 N
X51 N
X52 N
N/X37/N/84307-CEL
N/X38/N/84308-CEL
N/X39/N/84314-CEL
N/X40/N/84315-CEL
N/X41/N/84316-CEL
N/X42/N/84317-CEL
N/X43/N/84301-CEL
N/X44/N/84302-CEL
N/X45/N/84303-CEL
N/X46/N/84304-CEL
N/X47/N/84305-CEL
N/X48/N/84306-CEL
N/X49/N/84318-CEL
X31
PE


57/X2/N/8431B-CEC
56/X2/L/8431B-CEC

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000922

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002114	1.4 Discipline	Electrical
1.2 Item	84318-CEL		AC UPS - PAS DB / LV Switchboard Auxiliary
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

cable tag is wrong, cabinet input SG-200N1. to be replace

Name: Alessio Polo

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-26

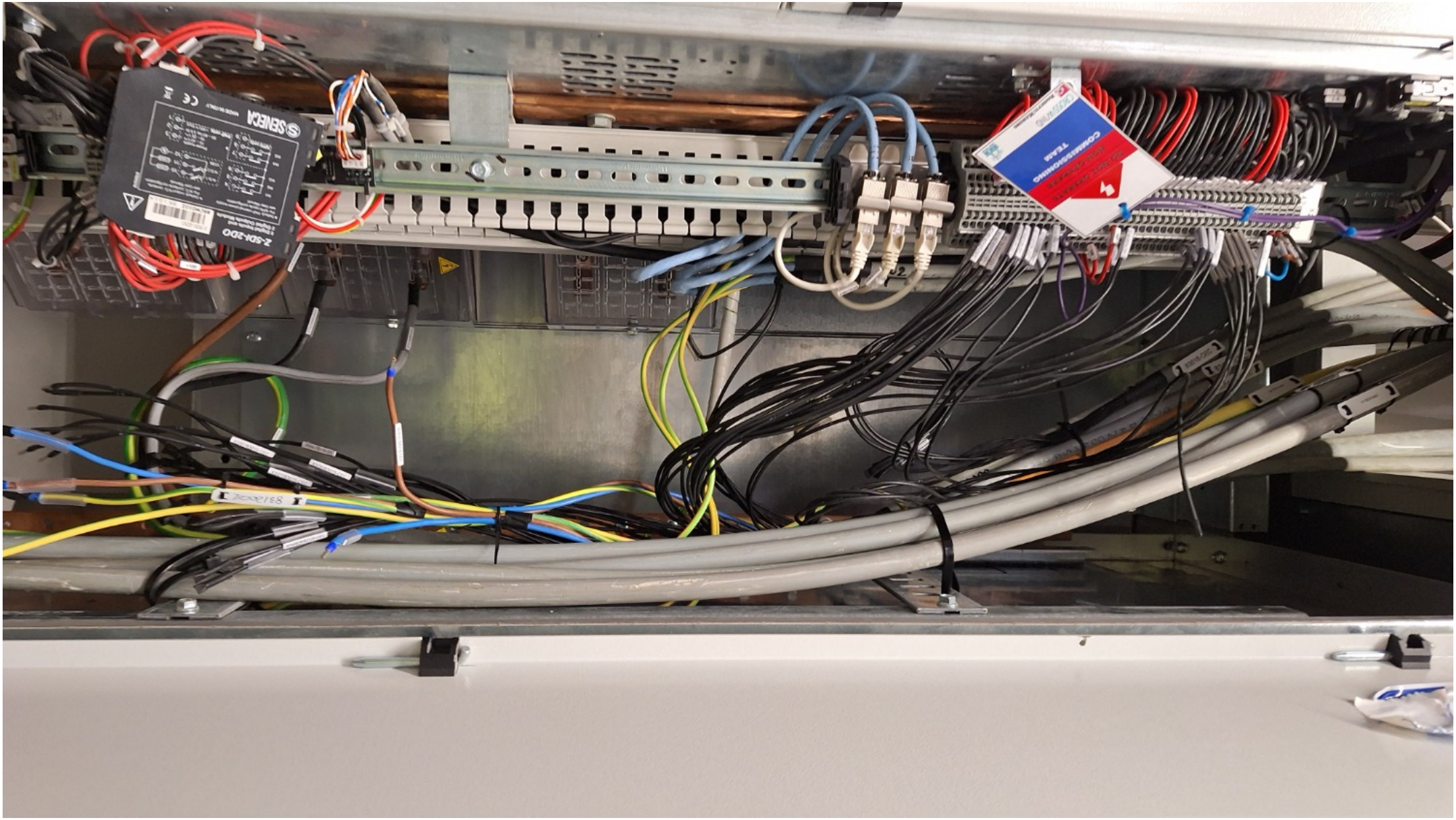
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


SENECA
Z-SDI-2DO

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001121

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000195	1.4 Discipline	Instrumental
1.2 Item	C-SG-200N1-002/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

Missing terminal identification (TB-X1). See attached photo.

Name: Giovanni Tangianu

Date: 2024-12-02

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-05-22

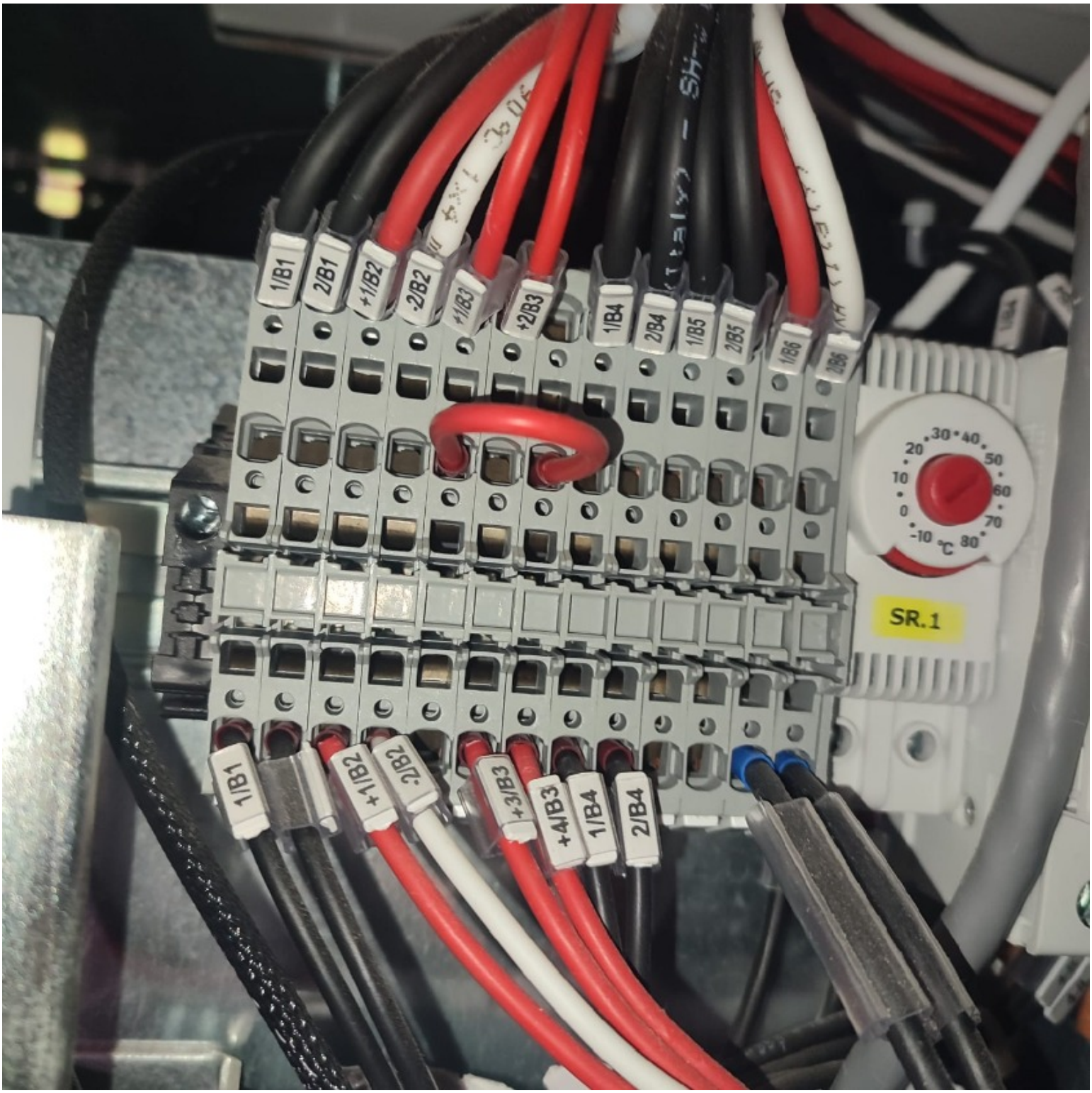
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


1/B1
2/B1
+1/B2
-2/B2
+1/B3
+2/B3
1/B4
2/B4
1/B5
2/B5
1/B6
2/B6
30
40
20
50
10
60
0
70
-10
°C
80
SR.1
1/B1
+1/B2
-2/B2
+3/B3
+4/B3
1/B4
2/B4

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001122

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000194	1.4 Discipline	Instrumental
1.2 Item	C-SG-200N1-001/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

missing terminal identification (TB-X1). See attached photo.

Name: Giovanni Tangianu
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:
Date:
Signature:

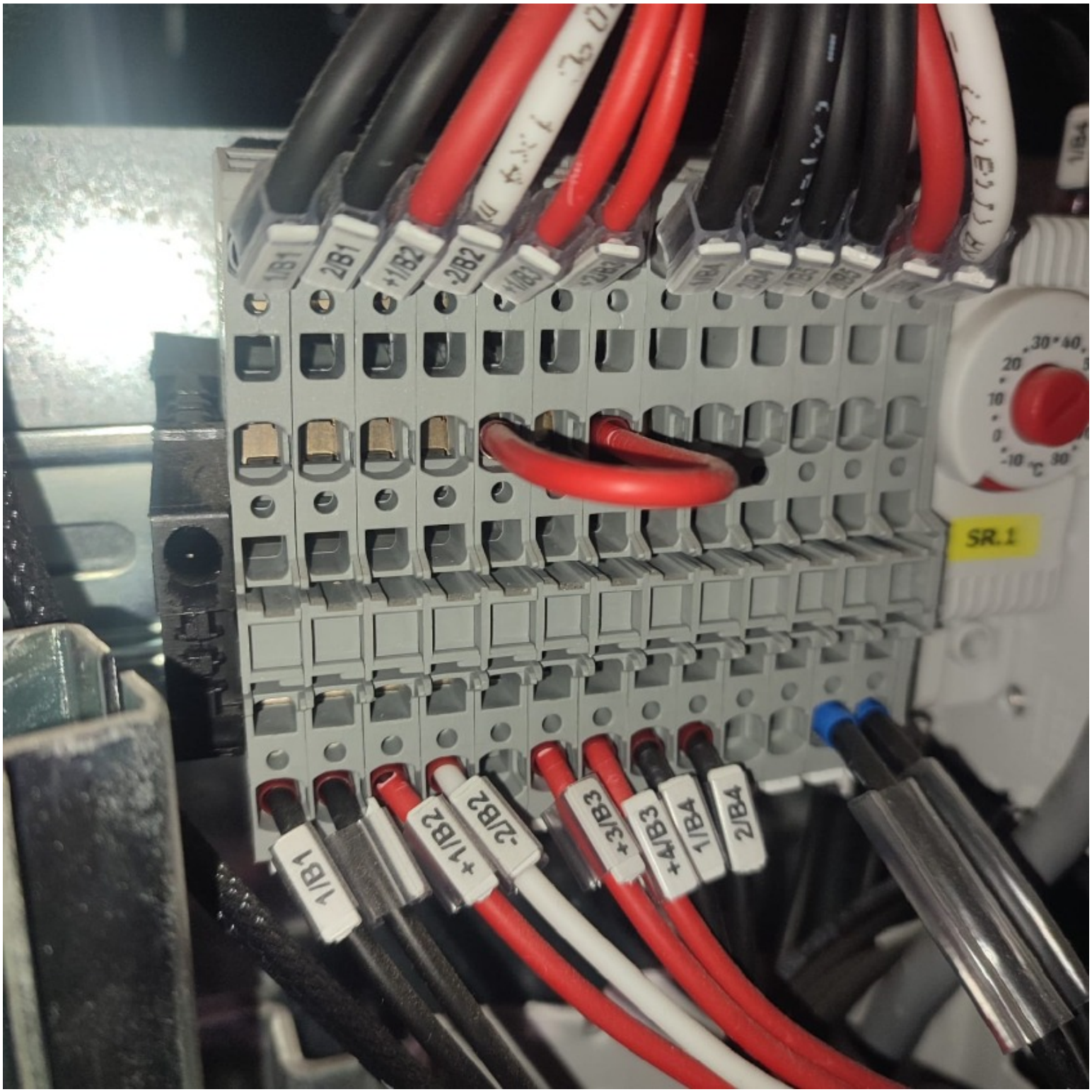
5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-05-22
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


1B1
2B1
+1B2
-2B2
+1B3
-2B3
1B4
2B4
SR.1
1/B1
+1/B2
-2/B2
+3/B3
+4/B3
1/B4
2/B4

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001123

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000195	1.4 Discipline	Instrumental
1.2 Item	C-SG-200N1-002/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

Missing Identification tag wires on both side the (C-SG-200N1-002/B400-SIS-001) connection.See attached photo.
"

Name: Giovanni Tangianu
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:
Date:
Signature:

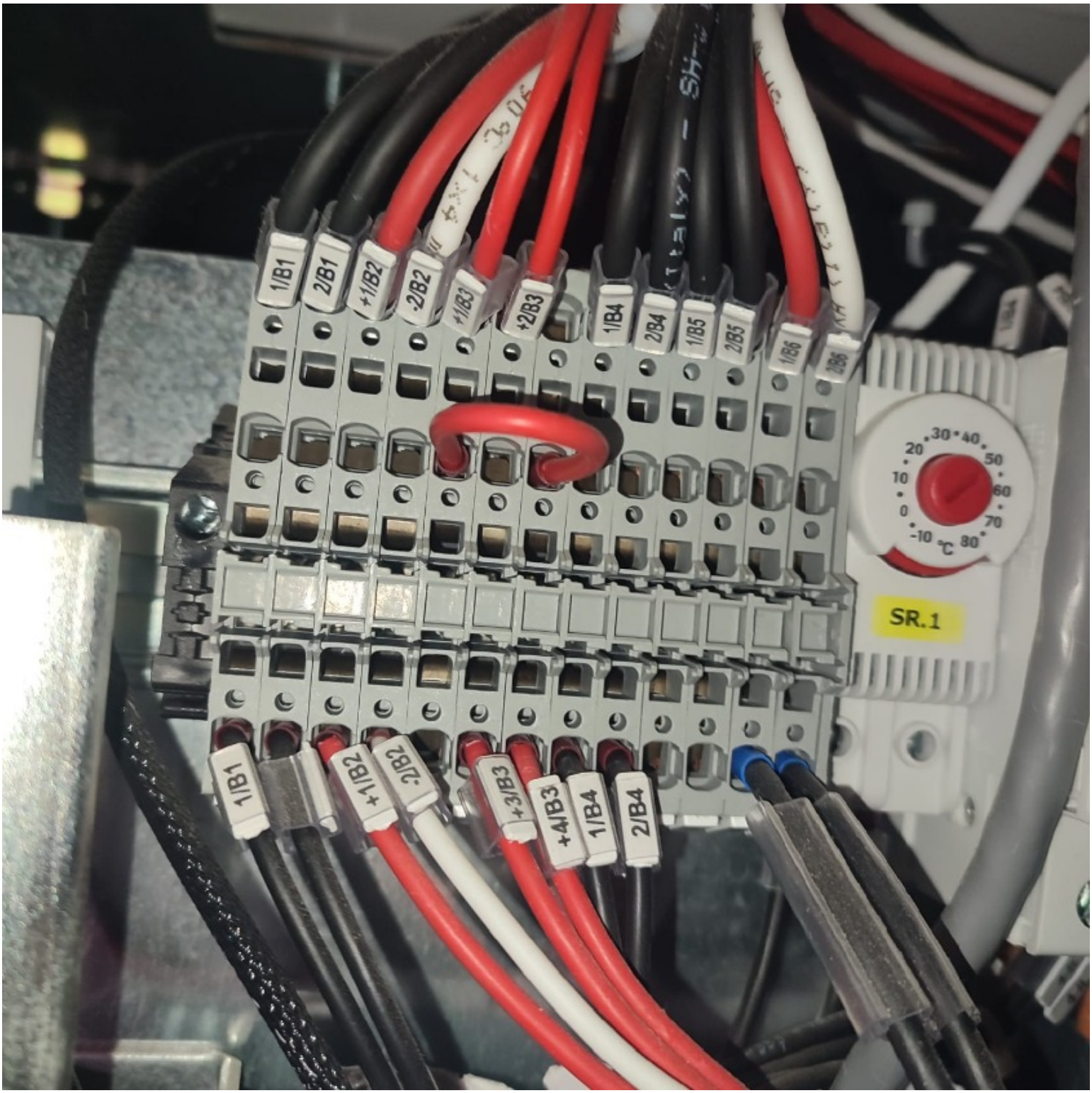
5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-02-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


1/B1
2/B1
+1/B2
-2/B2
+1/B3
+2/B3
1/B4
2/B4
1/B5
2/B5
1/B6
2/B6
30
40
20
50
10
60
0
70
-10
°C
80
SR.1
1/B1
+1/B2
-2/B2
+3/B3
+4/B3
1/B4
2/B4

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001124

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000194	1.4 Discipline	Instrumental
1.2 Item	C-SG-200N1-001/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

Missing Identification tag wires on both side connection (C-SG-200N1-001/B400-SIS-001). See attached photo.

Name: Giovanni Tangianu
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:
Date:
Signature:

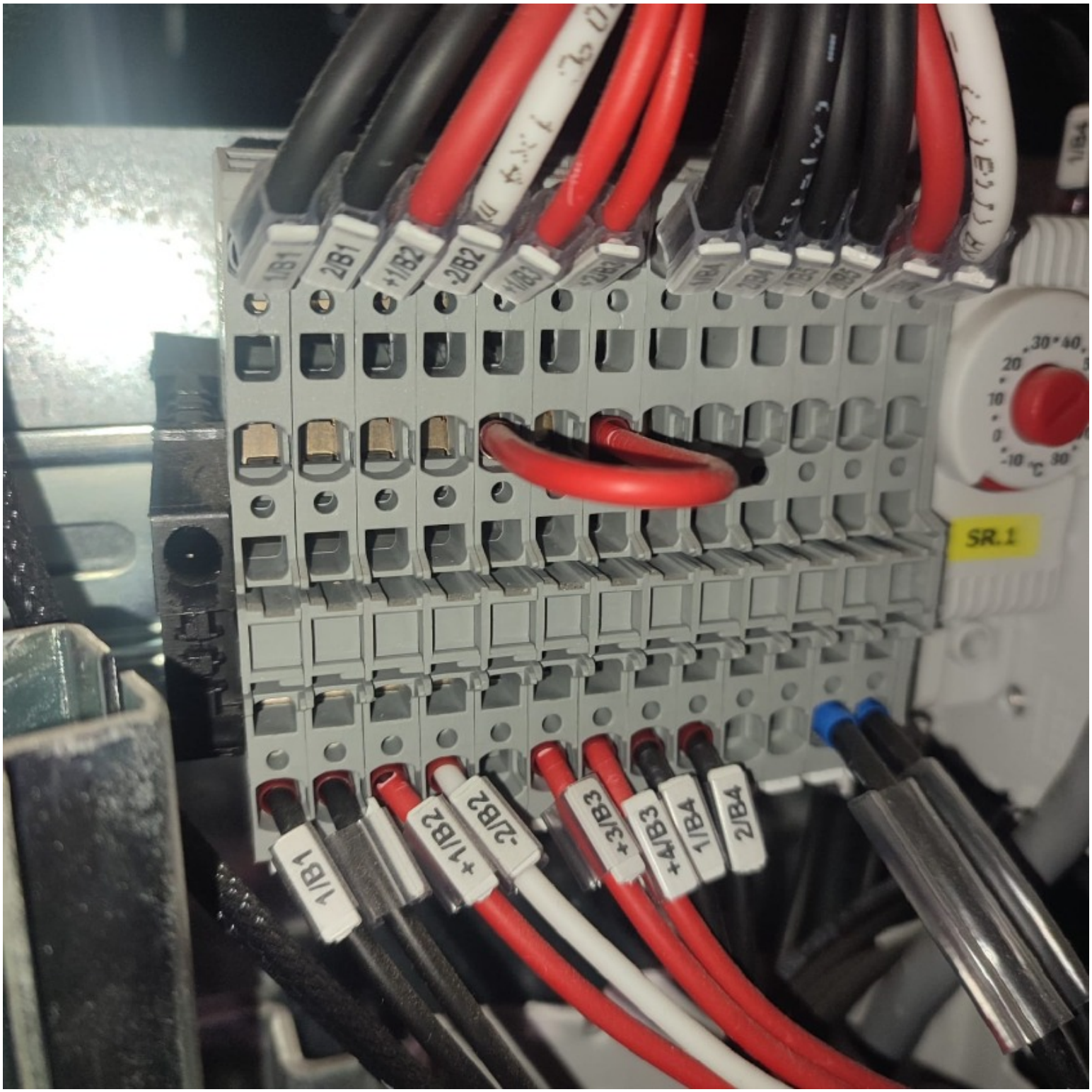
5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-02-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


1B1
2B1
+1B2
-2B2
+1B3
-2B3
1B4
2B4
SR.1
1/B1
+1/B2
-2/B2
+3/B3
+4/B3
1/B4
2/B4

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001125

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000195	1.4 Discipline	Instrumental
1.2 Item	C-SG-200N1-002/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

"Missing cable tags inside and outside both panels (C-SG-200N1-002/B400-SIS-001)
"

Name: Giovanni Tangianu
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-02-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001126

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000194	1.4 Discipline	Instrumental
1.2 Item	C-SG-200N1-001/B400-SIS-001	TRIP SIGNAL / MARSHALLING PCS	
1.3 Subsystem	83-00	400 V Switchboard & Connection Box (SG-200N1)	

2 - OBSERVATION

"Missing cable tags inside and outside both panels (C-SG-200N1-001/B400-SIS-001).

Name: Giovanni Tangianu
Date: 2024-12-02
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-12-02
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

PLC wago installed.

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-02-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000100

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	SG-200N1		LV 0,4 kV MCC Switchgear
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing n.15 drawers (highlighted in the GA) and all accessories.
The missing drawers wil be tested during FAT, mid-september

Name

Date

Signature

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	MC Mechanical Completion	Date	2024-08-02
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

tested on 17/09 at Imesa with positive results - only communication test will performed during commissioning activities

Name Stefano Linari

Date 2024-12-05

Signature

5 - CLEARANCE CHECK

tested on 17/09 at Imesa with positive results - only communication test will performed during commissioning activities

Name Stefano Linari

Date 2024-12-05

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000101

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	SG-200N1		LV 0,4 kV MCC Switchgear
1.3 Subsystem	83-00		400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing PLC wago cubicle A2/02 - signals in the I/O list from row 2 to 16 cannot be tested

Name: Stefano Linari
Date: 2024-10-10
Signature:

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	MC Mechanical Completion	Date	2024-08-02
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

PLC wago installed.

Name: Vendor Crosswind
Date: 2024-10-02
Signature:

5 - CLEARANCE CHECK

installed (see below)

Name: Stefano Linari
Date: 2024-10-10
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000101

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task

1.4 Discipline Electrical

1.2 Item SG-200N1 — LV 0,4 kV MCC Switchgear

1.3 Subsystem 83-00 — 400 V Switchboard & Connection Box (SG-200N1)

2 - OBSERVATION

Missing PLC wago cubicle A2/02 - signals in the I/O list from row 2 to 16 cannot be tested

Name

Date

Signature

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal

3.2 Material required

3.3 Priority B PL B

3.4 Activity code MC Mechanical Completion

3.5 Action by

Name Stefano Linari

Date 2024-08-02

Signature

— Proverlis —
Duplicata issued from database information
Signature is on original form

4 - PERFORMED ACTION

Name SIMONE VERDOLINI

Date 29/08/2024

IMESA S.p.A.
Via [illegible], 14 - 60035 JESI
[illegible] - Fax 0731/21105
Cod. Fisc. e P.IVA 00155630420

Signature

5 - CLEARANCE CHECK

PLC wago installed in cubicle A2/02 (see pictures)

Name ROSETTI MARINO SpA
Stefano Linari
Quality Control Dept.

Date 29/08/2024

Signature

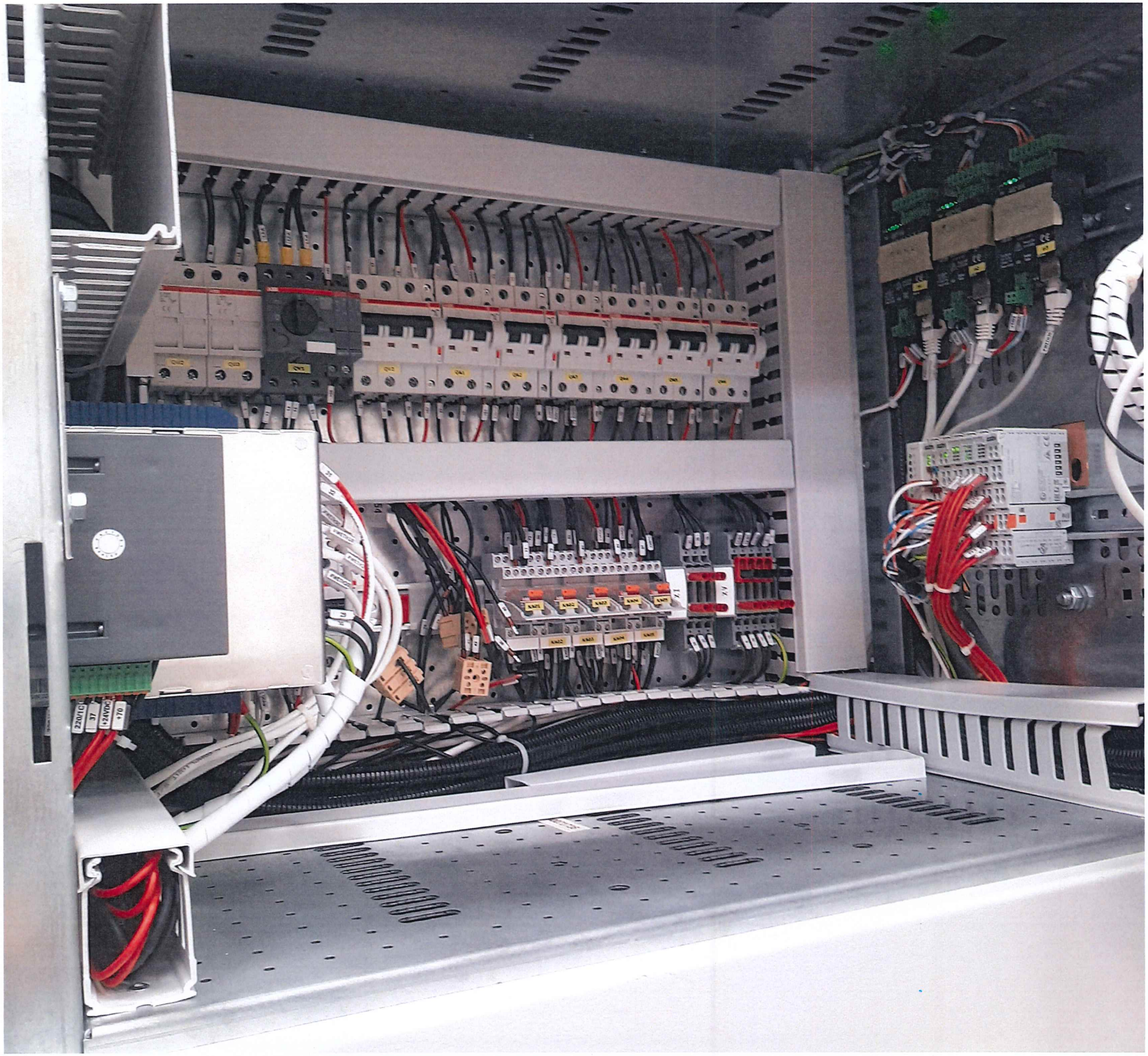
6- CLEARANCE APPROVAL

Name

Date

Signature

Anlage 1



Sztuka

E0.4
E0.0
0V
24V
+24VDC
ON
TxD
RxD
CRC
I/O
WAGO
750-315/300-000
1004808612
1424
020201

Section 4 FUNCTIONAL TESTS SHEETS

Section 4.1 Electrical functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM & discipline : E

Electrical	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A1/+05-QF1	INCOMER SW - A1/+05-QF1	ONSHORE	C10002751	FP00	100	2025-01-13	-
		ONSHORE	C10002752	FTR-2	100	2024-12-12	-
		ONSHORE	C10002753	FTR-6	100	2025-04-29	-
A2/+05-QF1	DRAWER SPARE - A2/+05-QF1	ONSHORE	C10002756	FP00	100	2024-10-15	-
		ONSHORE	C10002757	FTR-2	100	2024-09-20	-
		ONSHORE	C10002758	FTR-6	100	2024-10-02	-
		ONSHORE	C10002995	FTR-5	0	-	-
A2/+08-QF1	DRAWER TEMPORARY GENERATOR - A2/+08-QF1	ONSHORE	C10002759	FP00	100	2024-09-26	-
		ONSHORE	C10002760	FTR-2	100	2024-09-26	-
		ONSHORE	C10002996	FTR-5	0	-	-
A3/+02-QF1	DRAWER SPARE - A3/+02-QF1	ONSHORE	C10002761	FP00	100	2024-10-15	-
		ONSHORE	C10002762	FTR-2	100	2024-09-20	-
		ONSHORE	C10002763	FTR-6	100	2024-10-03	-
		ONSHORE	C10002997	FTR-5	0	-	-
A3/+05-QF1	DRAWER SPARE - A3/+05-QF1	ONSHORE	C10002764	FP00	100	2024-10-22	-
		ONSHORE	C10002765	FTR-2	100	2024-10-02	-
		ONSHORE	C10002766	FTR-6	100	2024-10-03	-
		ONSHORE	C10002998	FTR-5	0	-	-
A4/+05-QF1	DRAWER SPARE - A4/+05-QF1	ONSHORE	C10002767	FP00	100	2024-10-15	-
		ONSHORE	C10002768	FTR-2	100	2024-09-20	-
		ONSHORE	C10002769	FTR-6	100	2024-10-03	-
		ONSHORE	C10002999	FTR-5	0	-	-
A4/+06-QF1	DRAWER SPARE - A4/+06-QF1	ONSHORE	C10002770	FP00	100	2024-10-15	-
		ONSHORE	C10002771	FTR-2	100	2024-09-20	-
		ONSHORE	C10002772	FTR-6	100	2024-10-03	-
		ONSHORE	C10003000	FTR-5	0	-	-

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM & discipline : E

Electrical	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A5/+01-QF1	DRAWER SPARE - A5/+01-QF1	ONSHORE	C10002773	FP00	100	2024-10-15	-
		ONSHORE	C10002774	FTR-2	100	2024-09-18	-
		ONSHORE	C10002775	FTR-6	100	2024-10-03	-
		ONSHORE	C10003001	FTR-5	0	-	-
A5/+06-QF1	DRAWER SPARE - A5/+06-QF1	ONSHORE	C10002776	FP00	100	2024-10-15	-
		ONSHORE	C10002777	FTR-2	100	2024-09-20	-
		ONSHORE	C10002778	FTR-6	100	2024-10-03	-
		ONSHORE	C10003002	FTR-5	0	-	-
A6/+04-QF1	DRAWER SPARE - A6/+04-QF1	ONSHORE	C10002779	FP00	100	2024-10-15	-
		ONSHORE	C10002780	FTR-2	100	2024-09-20	-
		ONSHORE	C10002781	FTR-6	100	2024-10-03	-
		ONSHORE	C10003003	FTR-5	0	-	-
DP-200N1-Q39	AUX SW FROM DP - DP-200N1-Q39	ONSHORE	C10002755	FTR-2	100	2024-10-28	RFO 1
SG-200N1	LV 0,4 kV MCC Switchgear	ONSHORE	C10002991	FP05	100	2024-09-28	RFO 1
UP-200F3-QF49	SG-200-N1 AUX	ONSHORE	C10004585	FTR-2	100	2024-11-08	RFO 1

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A1/+05-QF1	: INCOMER SW - A1/+05-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002751		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A1/+05-QF1
Breaker rating (A)	3200A	Nominal current (A)	2500A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	403	V	0.2 A	OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 175	17140769	7715/24	10/07/2025
FLUKE 376	A1711003	7727/24	10/07/2025

Comments:

Page 1/1

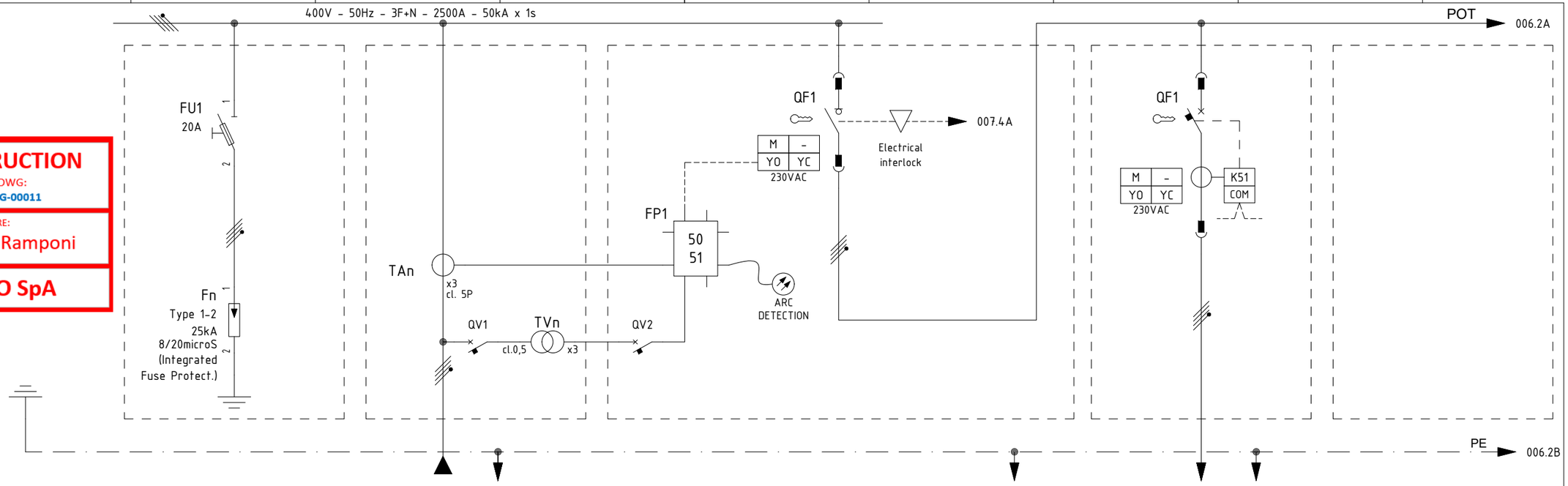
	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2025-01-09	2025-01-13	2025-01-13
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2025-01-09T10:17:04.673Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-01-13T09:54:03.615Z	PROVERLIS Digitaly signed by Witness waived 2025-01-13T10:41:38.017Z

VALID FOR CONSTRUCTION

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

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

ROSETTI MARINO SpA



ITEM			1	-	-	-	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	-	-	-	
INDIRECT PROTECTION (ABB)			24	-	-	REF615-(version F) HBFFAEFCNDCABBA11G	-	
VOLTMETER			25	-	-	-	-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	TAR1052K5N01V_18 - 2500/1A	-	-	
	PERFORMANCE/CLASS		27	-	5VA / 5P20	-	-	
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)]	

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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 005

REV. 04

F.to UNI A3: 420mmx297mm

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

CIRCUIT BREAKER

~ 400V - 50Hz - 2500A - 50kA

L1-A 017.1D
L2-A 017.2D
L3-A 017.2D
N-A 017.2D

Emax E2÷6

					INSERTED	TEST	ISOLATED
S75I	101-102 / 101-104	111-112 / 111-114	151-152 / 151-154	161-162 / 161-164	X	X	X
S75T	121-122 / 121-124	171-172 / 171-174			X		X
S75E	131-132 / 131-134	141-142 / 141-144	181-182 / 181-184	191-192 / 191-194	X	X	X

S75I/1 S75I/2 S75T/1 S75E/1 S75E/2

104 102 114 112 122 124 132 134 142 144
101 111 121 131 141
023.9A 018.6D 023.8A 025.4A 023.9A

Q/1 Q/2 Q/3 Q/4 S33M RTC

12 14 22 24 32 34 42 44 U1 36 38 46 48 C1 C11
11 21 31 41 U2 35 45 C2 C12
022.9B 025.2A 023.7A 018.7D 019.2C 025.6A 022.2D 022.6D

QF1
3200A

2 4 6 8

LENS Optical Fiber for
Internal Arc Survey
(on Circuit-Breaker Compartement)

021.5C CB CB +

(1) KEY LOCK FOR OPEN POSITION (CIRCUIT-BREAKER)

(2) RACKING-IN/RACKING-OUT PREVENTION LOCK WITH KEY (CIRCUIT-BREAKER)

LENS Optical Fiber for
Internal Arc Survey
(on Main Busbars Compartement)

021.5C BB BB +

~ 400V - 50Hz - 2500A - 50kA

~ MAIN BUS BARS

TEMPORARY GENERATOR/
MOBILE BATTERY PACK

L1 L2 L3 N

L3 016.5D
N 016.5D
to AUXILIARY VOLTAGE SWITCH

A2 / +08

ONLY FOR REPRESENTATION
FOR DETTAILS TO SEE RELEVANT
DOCUMENT N°1723002197-EL-DG-00031

QA1 1 3 2 4 D1 YU QF1 018.7B D2 11 X1 12 X1

QF1 1 3 5 7 2 4 6 8 D1 YU 018.7B D2 Q/1 Q/2 12 14 22 24 11 21

#W1 4x1.5

5 X2 6 X2

25 1x1.5 BK

QF1 018.2B 112 114 S75I 111

QF1 018.2B 42 44 Q 41

26 1x1.5 BK

L1-AA 038.1A
L2-AA 038.1A
L3-AA 038.1A
N-AA 038.1A

=							
+							
1	08/07/2024	Giulietti	Flamminio	Sigismondi		Accepted for Construction (AFC)	
0	10/06/2024	Giulietti	Flamminio	Sigismondi		Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD		DESCRIPTION	

DWG n°: 231298/SD/30
Item n°: PF1002983/30

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : SG-200N1
FUNCTIONAL DIAGRAM
Power Diagram

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00030

SHEET 018

REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00030 Rev.01

ITEM	Tag	A1/+05-QF1	: INCOMER SW - A1/+05-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002752		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°:	1VHR91822644	Relay type:	REF615
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A2/+02
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location
TA1		2500/1A	SG-200N1-A1
TA2		2500/1A	SG-200N1-A1
TA3		2500/1A	SG-200N1-A1

Voltage transformers

Tag	Number of	Ratio	Location
TV1	400/110V	400/110V	SG-200N1-A2
TV2	400/110V	400/110V	SG-200N1-A2

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
64 - DEFLPDEF1	375A	582A		5138ms	5233ms
50-1 - DPHHPDOC1	5150A			300ms	323ms
51 - DPHLPDOC1	2200A			12504ms	13057ms
50 - DPHLPDOC2	1375A	2500A		300ms	325ms
50 - PHIPTOC1	5750A	5833A		50ms	64ms

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	2024-12-11	2024-12-11	2024-12-12
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-12-11T07:37:57.852Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-12-11T10:37:50.612Z	PROVERLIS Digitaly signed by Witness waived 2024-12-12T10:31:34.698Z

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

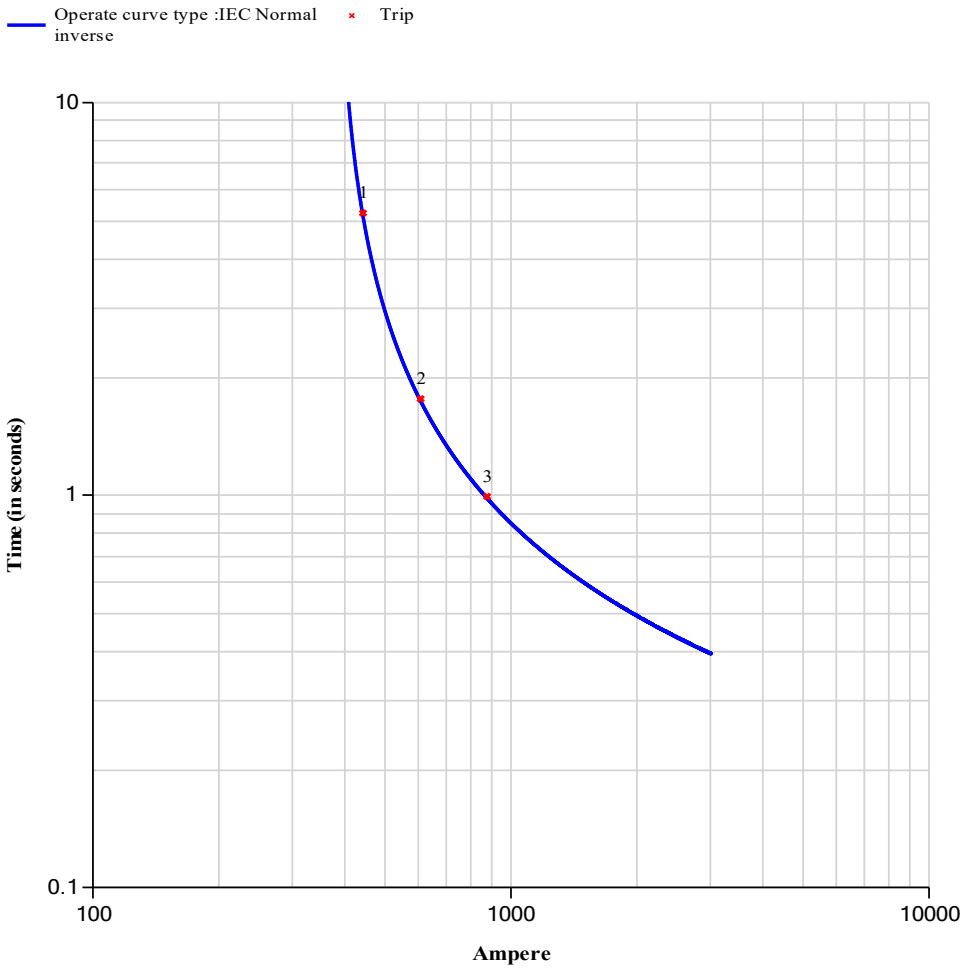
ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : DEFLPDEF1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 100 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Pol reversal : False
Io signal Sel : Calculate Io
Uo signal Sel : Calculate Uo
Pol quantity : Zero seq. volt.
Start value : 0.150 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Time multiplier : 0.12
Operate curve type : IEC Normal inverse
Operate delay time : 100 msec
Operation mode : Phase angle
Characteristic angle : -90 deg
Max forward angle : 30 deg
Max reverse angle : 30 deg
Min forward angle : 30 deg
Min reverse angle : 30 deg
Voltage start value : 0.02 xUn
Enable voltage limit : True



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	I0	I0"(A)	I0(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	582	0.233	327.01	531	0.212	247.89	662	0.265	79.23	441.473	0.177	338.89	5138	5233	1.85
2	785	0.314	355.29	901	0.36	270.39	813	0.325	153.58	606.669	0.243	275.68	1738	1762	1.38
3	1186	0.474	357.86	1129	0.452	279.54	1046	0.418	158.82	874.623	0.35	296.97	983	994	1.12

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

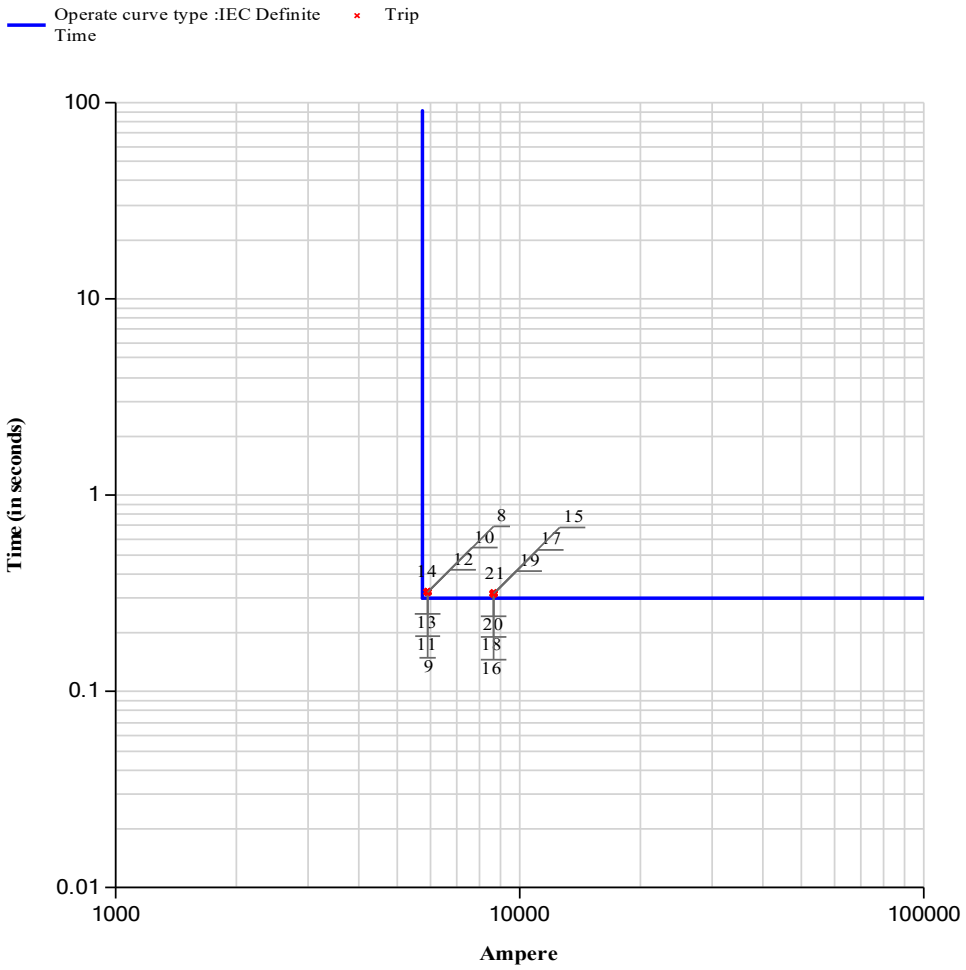
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHHPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 2.30 xIn
Start value mult. : 1.0
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	2.231	0	2.231	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
2	2.231	0	2.231	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	2.231	240	2.231	60	63.509	0	63.509	240	63.509	120	0	0	0
4	2.231	-60	0	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
5	2.231	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	2.231	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
8	2.369	0	2.369	240	2.369	120	63.509	0	63.509	240	63.509	120	300	321	7
9	2.369	0	2.369	180	0	120	63.509	0	63.509	240	63.509	120	300	323	7.67

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHHPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	2.369	240	2.369	60	63.509	0	63.509	240	63.509	120	300	323	7.67
11	2.369	-60	0	240	2.369	120	63.509	0	63.509	240	63.509	120	300	323	7.67
12	2.369	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	2.369	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	2.369	120	63.509	0	63.509	240	63.509	120	300	324	8
15	3.45	0	3.45	240	3.45	120	63.509	0	63.509	240	63.509	120	300	317	5.67
16	3.45	0	3.45	180	0	120	63.509	0	63.509	240	63.509	120	300	316	5.33
17	0	0	3.45	240	3.45	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	3.45	-60	0	240	3.45	120	63.509	0	63.509	240	63.509	120	300	320	6.67
19	3.45	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
20	0	0	3.45	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	3.45	120	63.509	0	63.509	240	63.509	120	300	318	6

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

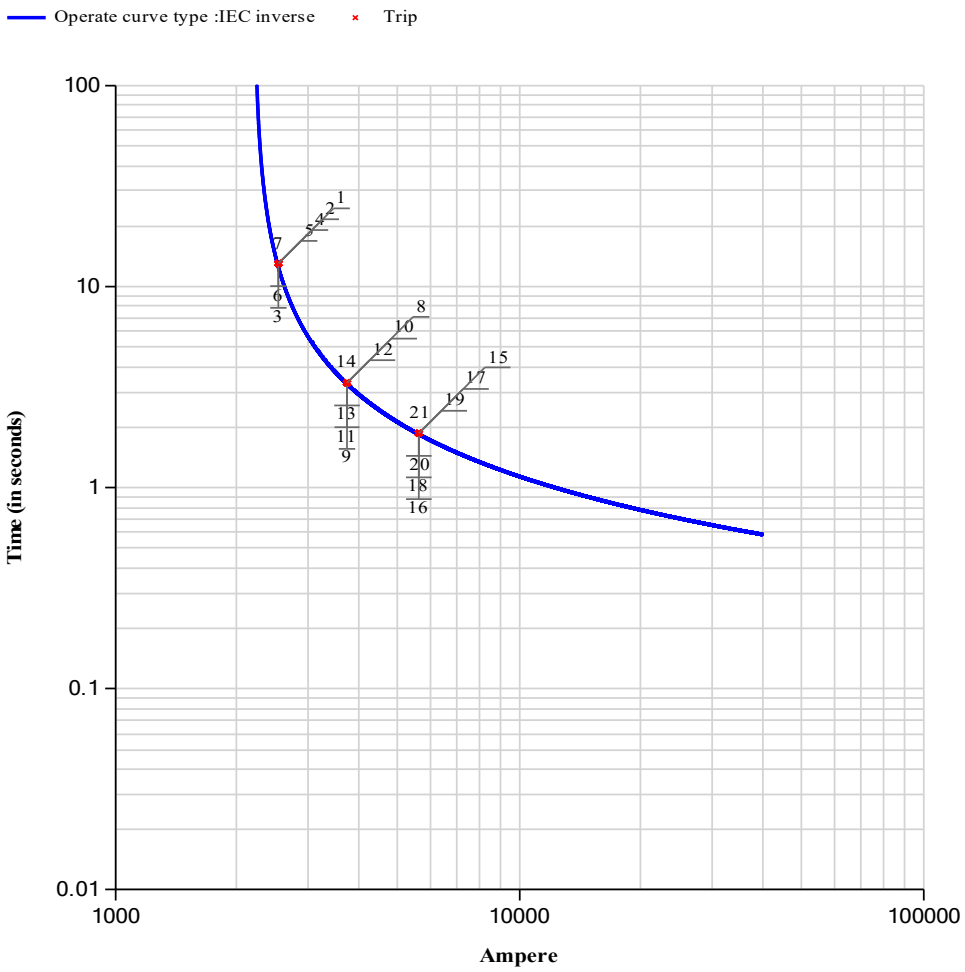
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.88 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC inverse
Time multiplier : 0.25
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	1.012	0	1.012	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
2	1.012	0	1.012	180	0	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
3	0	0	1.012	240	1.012	60	63.509	0	63.509	240	63.509	120	12504	13055	4.41
4	1.012	-60	0	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
5	1.012	0	0	0	0	0	63.509	0	63.509	240	63.509	120	12504	13054	4.4
6	0	0	1.012	240	0	0	63.509	0	63.509	240	63.509	120	12504	13056	4.41
7	0	0	0	0	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
8	1.496	0	1.496	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3329	1.46
9	1.496	0	1.496	180	0	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	1.496	240	1.496	60	63.509	0	63.509	240	63.509	120	3281	3327	1.4
11	1.496	-60	0	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49
12	1.496	0	0	0	0	0	63.509	0	63.509	240	63.509	120	3281	3334	1.62
13	0	0	1.496	240	0	0	63.509	0	63.509	240	63.509	120	3281	3330	1.49
14	0	0	0	0	1.496	120	63.509	0	63.509	240	63.509	120	3281	3332	1.55
15	2.253	0	2.253	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1868	1.3
16	2.253	0	2.253	180	0	120	63.509	0	63.509	240	63.509	120	1844	1873	1.57
17	0	0	2.253	240	2.253	60	63.509	0	63.509	240	63.509	120	1844	1870	1.41
18	2.253	-60	0	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1875	1.68
19	2.253	0	0	0	0	0	63.509	0	63.509	240	63.509	120	1844	1868	1.3
20	0	0	2.253	240	0	0	63.509	0	63.509	240	63.509	120	1844	1870	1.41
21	0	0	0	0	2.253	120	63.509	0	63.509	240	63.509	120	1844	1871	1.46

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

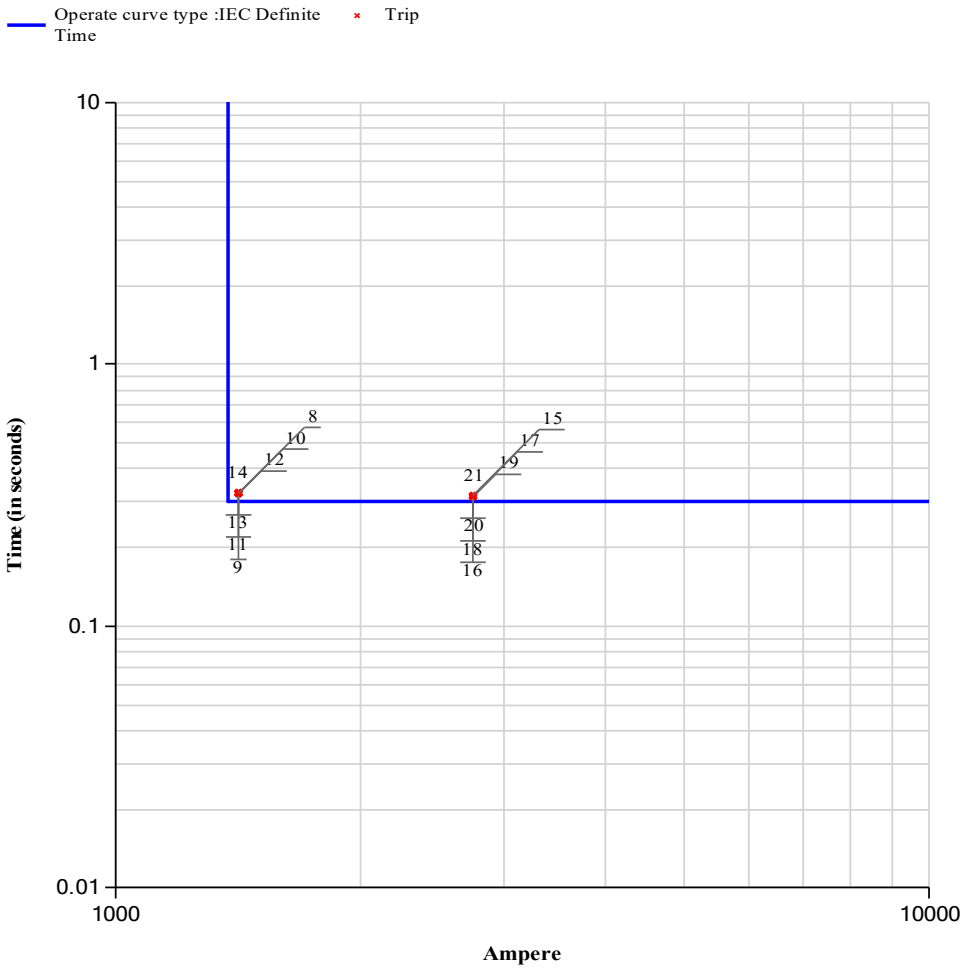
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC2
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.55 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	0.534	0	0.534	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
2	0.534	0	0.534	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	0.534	240	0.534	60	63.509	0	63.509	240	63.509	120	0	0	0
4	0.534	-60	0	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
5	0.534	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	0.534	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
8	0.567	0	0.567	240	0.567	120	63.509	0	63.509	240	63.509	120	300	322	7.33
9	0.567	0	0.567	180	0	120	63.509	0	63.509	240	63.509	120	300	322	7.33

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

PROJECT : CROSSWIND

CLIENT : ROSETTI MARINO Group of Companies

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC2

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0.567	240	0.567	60	63.509	0	63.509	240	63.509	120	300	322	7.33
11	0.567	-60	0	240	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
12	0.567	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	0.567	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
15	1.1	0	1.1	240	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33
16	1.1	0	1.1	180	0	120	63.509	0	63.509	240	63.509	120	300	314	4.67
17	0	0	1.1	240	1.1	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	1.1	-60	0	240	1.1	120	63.509	0	63.509	240	63.509	120	300	313	4.33
19	1.1	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	312	4
20	0	0	1.1	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

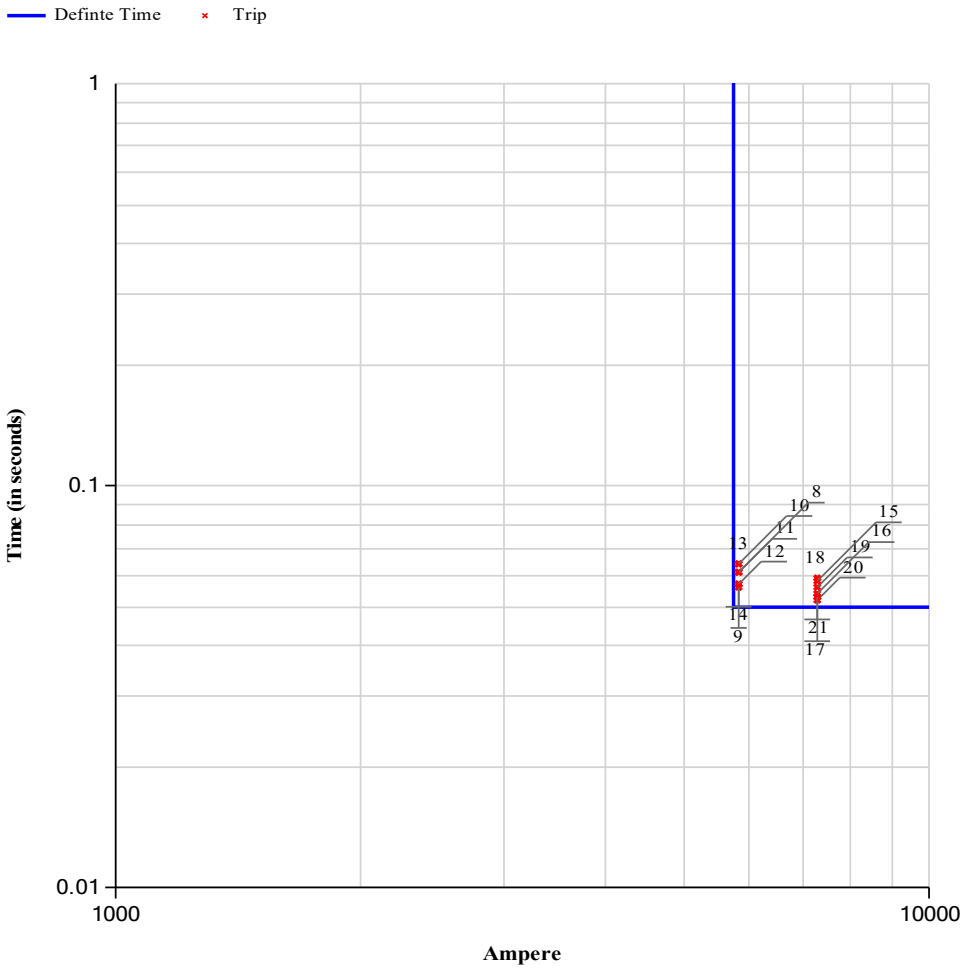
ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : PHIPTOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Num of start phases : 1 Out of 3
Reset delay time : 20 ms
Start value : 2.30 xIn
Start valure Mult : 1.0
Operate delay time : 50 ms



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	5663	2.265	0	0	0	0	0	0	0	0	0	0
2	0	0	0	5663	2.265	240	0	0	0	0	0	0
3	0	0	0	0	0	0	5663	2.265	120	0	0	0
4	5663	2.265	0	5663	2.265	180	0	0	0	0	0	0
5	0	0	0	5663	2.265	240	5663	2.265	60	0	0	0
6	5663	2.265	300	0	0	0	5663	2.265	120	0	0	0
7	5663	2.265	0	5663	2.265	240	5663	2.265	120	0	0	0
8	5833	2.333	0	0	0	0	0	0	0	50	61	22
9	0	0	0	5833	2.333	240	0	0	0	50	56	12

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : PHIPTOC1

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0	0	0	0	5833	2.333	120	50	64	28
11	5833	2.333	0	5833	2.333	180	0	0	0	50	61	22
12	0	0	0	5833	2.333	240	5833	2.333	60	50	57	14
13	5833	2.333	300	0	0	0	5833	2.333	120	50	64	28
14	5833	2.333	0	5833	2.333	240	5833	2.333	120	50	57	14
15	7287	2.915	0	0	0	0	0	0	0	50	58	16
16	0	0	0	7287	2.915	240	0	0	0	50	54	8
17	0	0	0	0	0	0	7287	2.915	120	50	53	6
18	7287	2.915	0	7287	2.915	180	0	0	0	50	59	18
19	0	0	0	7287	2.915	240	7287	2.915	60	50	56	12
20	7287	2.915	300	0	0	0	7287	2.915	120	50	52	4
21	7287	2.915	0	7287	2.915	240	7287	2.915	120	50	53	6

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			
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ITEM	Tag	A1/+05-QF1	: INCOMER SW - A1/+05-QF1		Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)		Module		
TASK	code	C10002753	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form	FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	INCOMER SW-A1/+05-QF1	Instrument Type / Serial N° :	FLUKE 175_1714079
Cubicle N°:	A1/+05-QF1	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	LOCAL POSITION	CM	DI	REF615	PCS CABINET	NA	NA	NA	Y	NA	NA	NA	NA	NA
2	REMOTE POSITION	CM	DI	REF615	PCS CABINET	NA	NA	NA	Y	NA	NA	NA	NA	NA
3	CLOSE COMMAND	CM	DO	PCS CABINET	REF615	NA	NA	NA	Y	NA	NA	NA	NA	NA
4	OPEN COMMAND	CM	DO	PCS CABINET	REF615	NA	NA	NA	Y	NA	NA	NA	NA	NA
5														
6														
7	**SEE NOTE													
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	**SEE NOTE													
2														
3														

Comments: See the attachment for the signal's list.

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	2025-04-28	2025-04-28	2025-04-29
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2025-04-28T11:57:09.229Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-28T12:28:52.786Z	PROVERLIS Digitaly signed by Witness waived 2025-04-29T07:57:30.833Z

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/ DEVICE MODEL	UNIT	SCALE FACTOR	IEC61850 Technical Key	Note
A2/+02	FP1	CIRCUIT-BREAKER - PROTECTION TRIPPED "50"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - PROTECTION TRIPPED "51"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - FUNCTION TRIPPED "74TCS"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - FUNCTION TRIPPED "86"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - READY TO CLOSE	SW-DI	REF615			SG200N1 FP1	1=ready
A2/+02	FP1	CIRCUIT-BREAKER - OPEN OR TEST POSITION	SW-DI	REF615			SG200N1 FP1	1=open
A2/+02	FP1	CIRCUIT-BREAKER - CLOSED AND INSERTED	SW-DI	REF615			SG200N1 FP1	1=closed
A2/+02	FP1	CIRCUIT-BREAKER - WATCHDOG	SW-DI	REF615			SG200N1 FP1	0=Failure
A2/+02	FP1	MCBs ALARM	SW-DI	REF615			SG200N1 FP1	0=alarm
A2/+02	FP1	SA1 ON "LOCAL" POSITION	SW-DI	REF615			SG200N1 FP1	1=local
A2/+02	FP1	SA1 ON "REMOTE" POSITION	SW-DI	REF615			SG200N1 FP1	1=remote
A2/+02	FP1	SA2 ON "MAINTENANCE" POSITION	SW-DI	REF615			SG200N1 FP1	1=maintenance
A2/+02	FP1	INTERTRIP TO 6.6 KV SWBD	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - CLOSE COMMAND	SW-DO	REF615			SG200N1 FP1	1=close command
A2/+02	FP1	CIRCUIT-BREAKER - OPEN COMMAND	SW-DO	REF615			SG200N1 FP1	1=open command
A2/+02	FP1	MEASURE - CURRENT "L1"	SW-AI	REF615	A	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - CURRENT "L2"	SW-AI	REF615	A	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - CURRENT "L3"	SW-AI	REF615	A	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - VOLTAGE "L1-L2"	SW-AI	REF615	V	1	SG200N1 FP1	

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File: 123A90-PML-COM-PRO-03047

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/ DEVICE MODEL	UNIT	SCALE FACTOR	IEC61850 Technical Key	Note
A2/+02	FP1	MEASURE - VOLTAGE "L2-L3"	SW-AI	REF615	V	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - VOLTAGE "L3-L1"	SW-AI	REF615	V	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - FREQUENCY	SW-AI	REF615	Hz	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - APPARENT POWER	SW-AI	REF615	kVA	1	SG200N1 FP1	

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

5.4.4.2 SG-200N1 - I/O list Common signals from Switchboard – Network Modbus TCP-IP

Internal Common Signals from/to SG-200N1 located on cubicle A2/+02
Network Modbus TCP-IP to PCS Cabinets
This I/O list concern the common warning, alarm & feedback.
For specific signal tags and all information see I/O list 1723002197-EL-LIS-00042

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG / DIGITAL	RELAY / DEVICE MODEL	UNIT	SCALE FACTOR	Note
A2/+02	A4	SG-200N1 - SURGE ARRESTER FAULT	SW-DI	Module I/O			0=failure
A2/+02	A4	SG-200N1 - LOSS 230VAC AUXILIARY VOLTAGE	SW-DI	Module I/O			1=alarm
A2/+02	A4	SG-200N1 - "FP1" WATCHDOG PROTECTION	SW-DI	Module I/O			0=failure
A2/+02	A4	SG-200N1 - MOTOR FEEDER FAULT LOOP [BUS-3]	SW-DI	Module I/O			0=failure
A2/+02	A4	available	SW-DI	Module I/O			
A2/+02	A4	available	SW-DI	Module I/O			

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

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

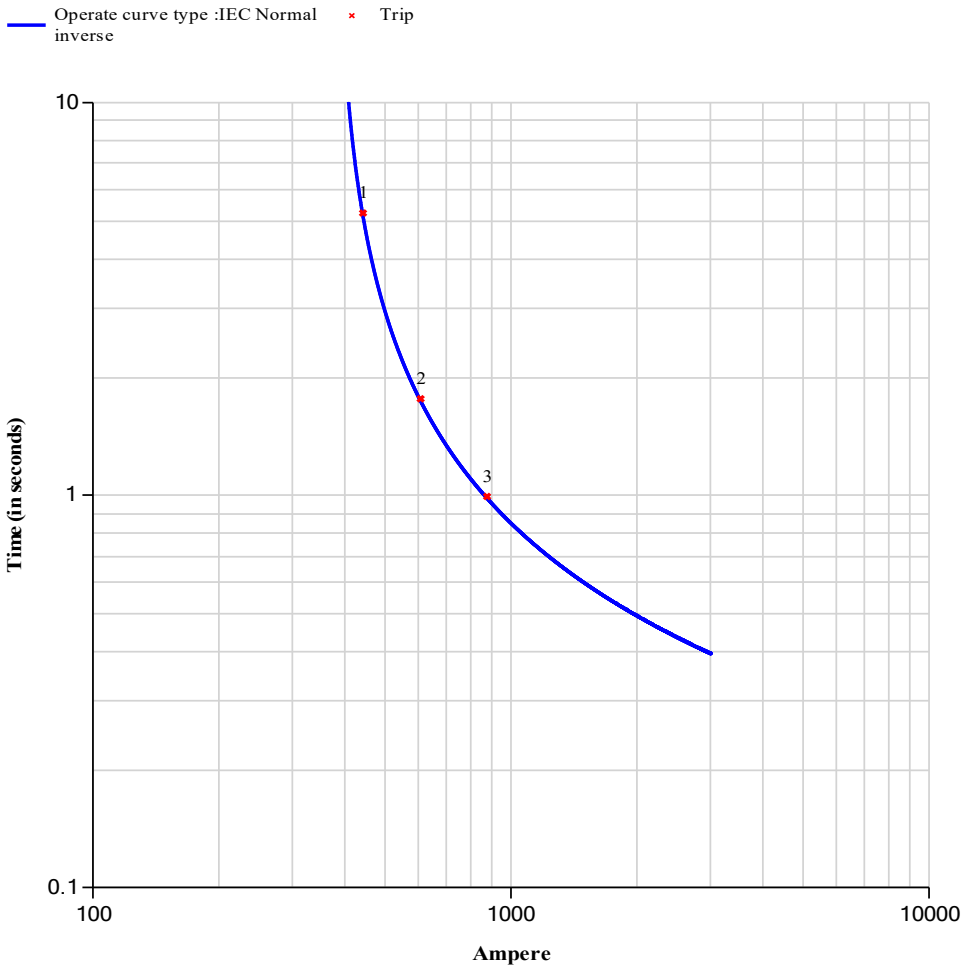
ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : DEFLPDEF1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 100 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Pol reversal : False
Io signal Sel : Calculate Io
Uo signal Sel : Calculate Uo
Pol quantity : Zero seq. volt.
Start value : 0.150 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Time multiplier : 0.12
Operate curve type : IEC Normal inverse
Operate delay time : 100 msec
Operation mode : Phase angle
Characteristic angle : -90 deg
Max forward angle : 30 deg
Max reverse angle : 30 deg
Min forward angle : 30 deg
Min reverse angle : 30 deg
Voltage start value : 0.02 xUn
Enable voltage limit : True



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	I0	I0"(A)	I0(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	582	0.233	327.01	531	0.212	247.89	662	0.265	79.23	441.473	0.177	338.89	5138	5233	1.85
2	785	0.314	355.29	901	0.36	270.39	813	0.325	153.58	606.669	0.243	275.68	1738	1762	1.38
3	1186	0.474	357.86	1129	0.452	279.54	1046	0.418	158.82	874.623	0.35	296.97	983	994	1.12

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

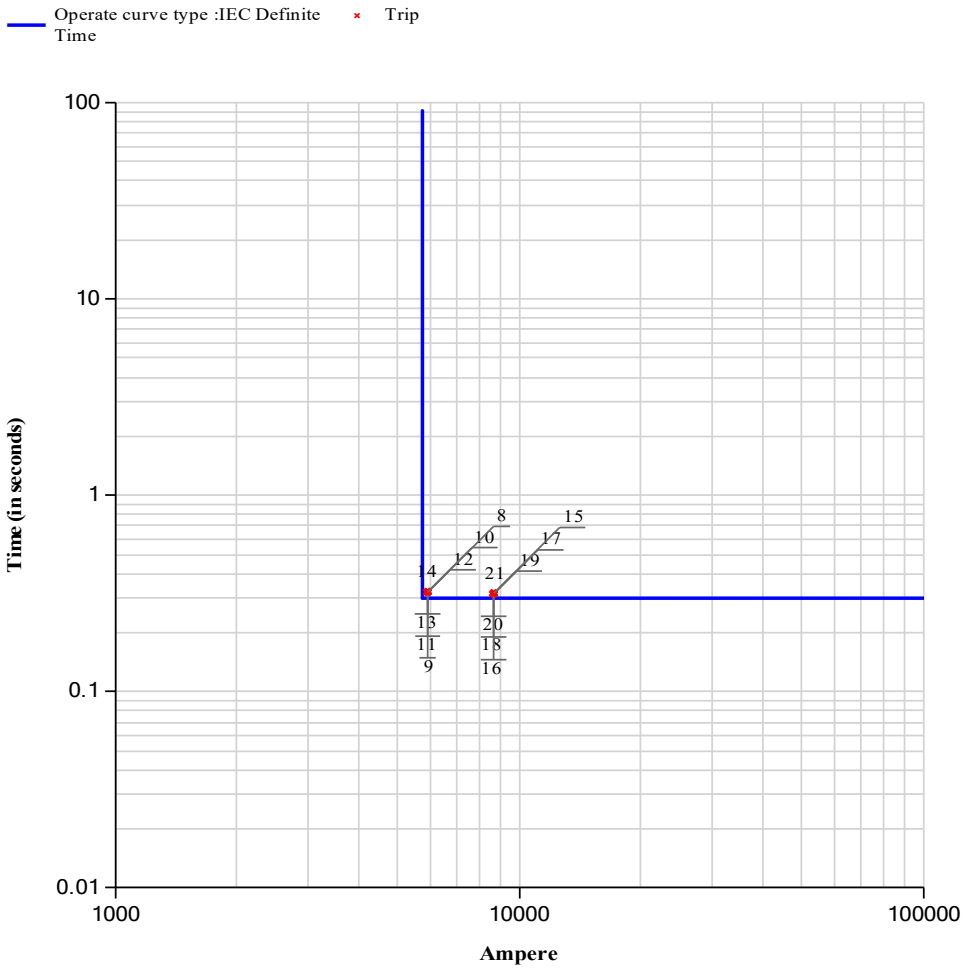
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHHPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 2.30 xIn
Start value mult. : 1.0
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	2.231	0	2.231	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
2	2.231	0	2.231	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	2.231	240	2.231	60	63.509	0	63.509	240	63.509	120	0	0	0
4	2.231	-60	0	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
5	2.231	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	2.231	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
8	2.369	0	2.369	240	2.369	120	63.509	0	63.509	240	63.509	120	300	321	7
9	2.369	0	2.369	180	0	120	63.509	0	63.509	240	63.509	120	300	323	7.67

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHHPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	2.369	240	2.369	60	63.509	0	63.509	240	63.509	120	300	323	7.67
11	2.369	-60	0	240	2.369	120	63.509	0	63.509	240	63.509	120	300	323	7.67
12	2.369	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	2.369	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	2.369	120	63.509	0	63.509	240	63.509	120	300	324	8
15	3.45	0	3.45	240	3.45	120	63.509	0	63.509	240	63.509	120	300	317	5.67
16	3.45	0	3.45	180	0	120	63.509	0	63.509	240	63.509	120	300	316	5.33
17	0	0	3.45	240	3.45	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	3.45	-60	0	240	3.45	120	63.509	0	63.509	240	63.509	120	300	320	6.67
19	3.45	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
20	0	0	3.45	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	3.45	120	63.509	0	63.509	240	63.509	120	300	318	6

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

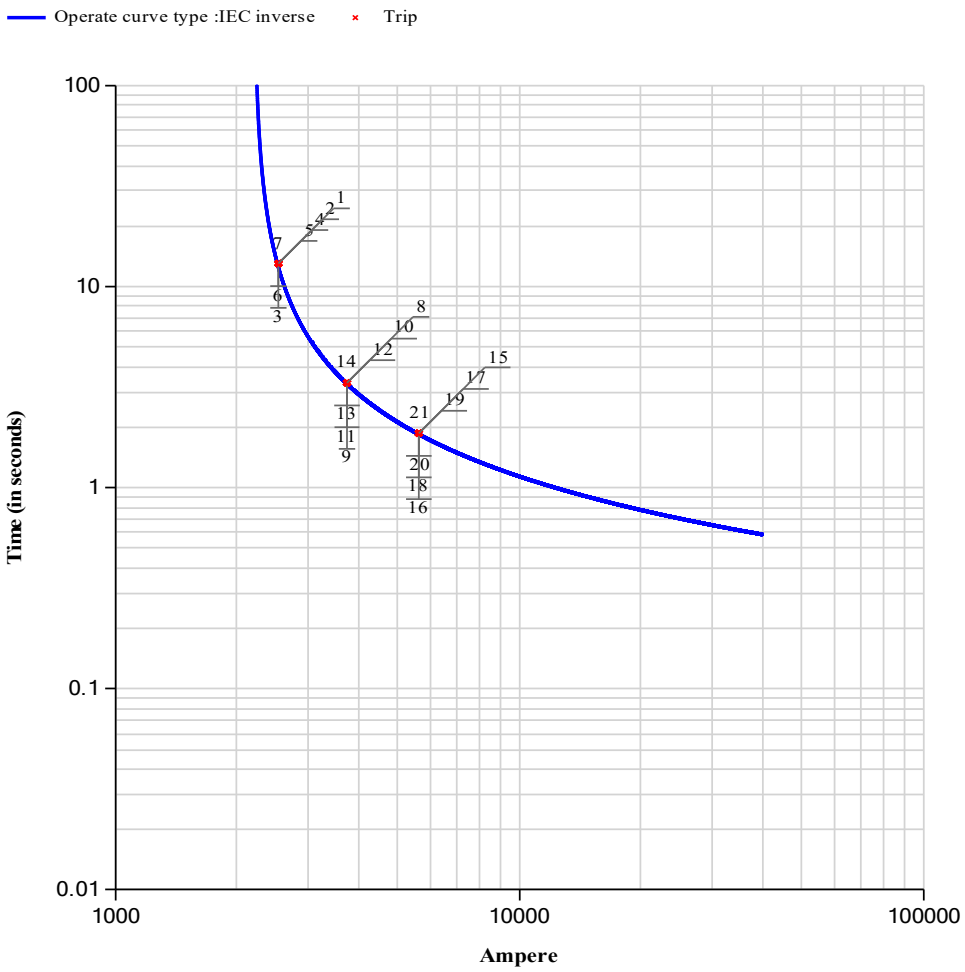
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.88 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC inverse
Time multiplier : 0.25
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	1.012	0	1.012	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
2	1.012	0	1.012	180	0	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
3	0	0	1.012	240	1.012	60	63.509	0	63.509	240	63.509	120	12504	13055	4.41
4	1.012	-60	0	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
5	1.012	0	0	0	0	0	63.509	0	63.509	240	63.509	120	12504	13054	4.4
6	0	0	1.012	240	0	0	63.509	0	63.509	240	63.509	120	12504	13056	4.41
7	0	0	0	0	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
8	1.496	0	1.496	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3329	1.46
9	1.496	0	1.496	180	0	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	1.496	240	1.496	60	63.509	0	63.509	240	63.509	120	3281	3327	1.4
11	1.496	-60	0	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49
12	1.496	0	0	0	0	0	63.509	0	63.509	240	63.509	120	3281	3334	1.62
13	0	0	1.496	240	0	0	63.509	0	63.509	240	63.509	120	3281	3330	1.49
14	0	0	0	0	1.496	120	63.509	0	63.509	240	63.509	120	3281	3332	1.55
15	2.253	0	2.253	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1868	1.3
16	2.253	0	2.253	180	0	120	63.509	0	63.509	240	63.509	120	1844	1873	1.57
17	0	0	2.253	240	2.253	60	63.509	0	63.509	240	63.509	120	1844	1870	1.41
18	2.253	-60	0	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1875	1.68
19	2.253	0	0	0	0	0	63.509	0	63.509	240	63.509	120	1844	1868	1.3
20	0	0	2.253	240	0	0	63.509	0	63.509	240	63.509	120	1844	1870	1.41
21	0	0	0	0	2.253	120	63.509	0	63.509	240	63.509	120	1844	1871	1.46

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

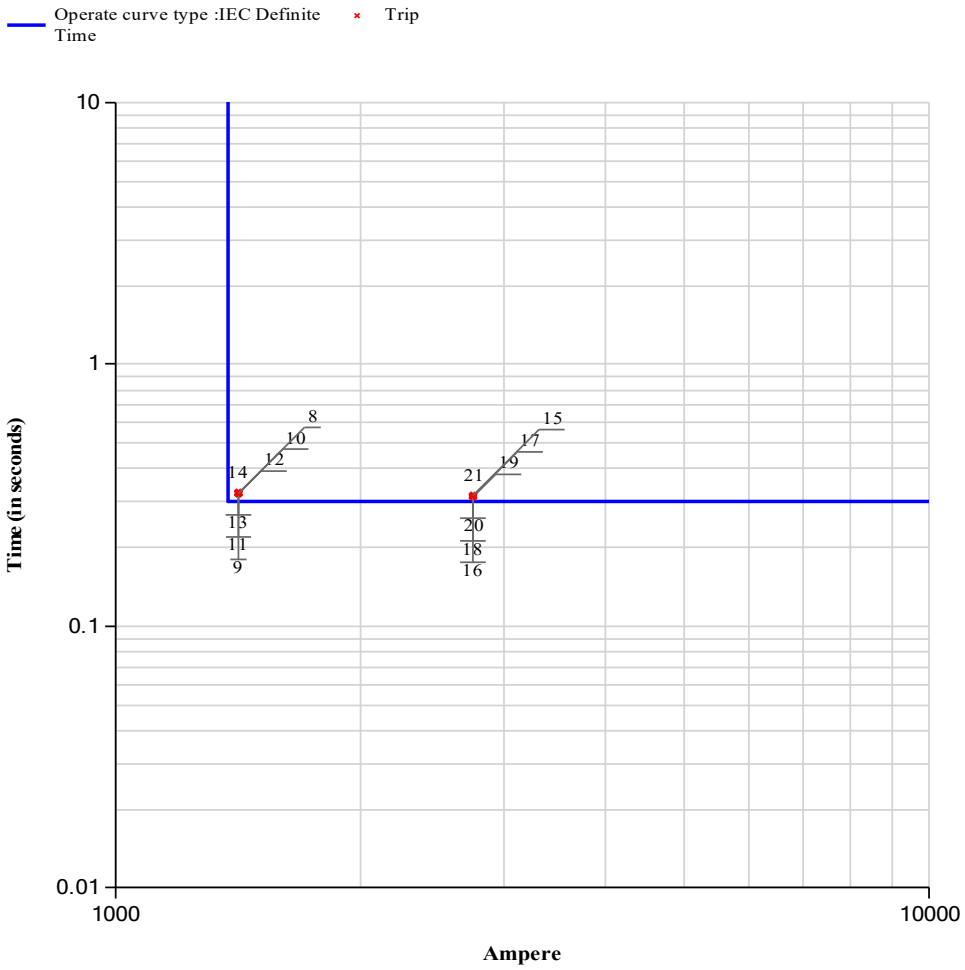
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC2
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.55 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	0.534	0	0.534	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
2	0.534	0	0.534	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	0.534	240	0.534	60	63.509	0	63.509	240	63.509	120	0	0	0
4	0.534	-60	0	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
5	0.534	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	0.534	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
8	0.567	0	0.567	240	0.567	120	63.509	0	63.509	240	63.509	120	300	322	7.33
9	0.567	0	0.567	180	0	120	63.509	0	63.509	240	63.509	120	300	322	7.33

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

PROJECT : CROSSWIND

CLIENT : ROSETTI MARINO Group of Companies

FUNCTIONAL GROUP : BLPH

SYSTEM : SG-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC2

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0.567	240	0.567	60	63.509	0	63.509	240	63.509	120	300	322	7.33
11	0.567	-60	0	240	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
12	0.567	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	0.567	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
15	1.1	0	1.1	240	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33
16	1.1	0	1.1	180	0	120	63.509	0	63.509	240	63.509	120	300	314	4.67
17	0	0	1.1	240	1.1	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	1.1	-60	0	240	1.1	120	63.509	0	63.509	240	63.509	120	300	313	4.33
19	1.1	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	312	4
20	0	0	1.1	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

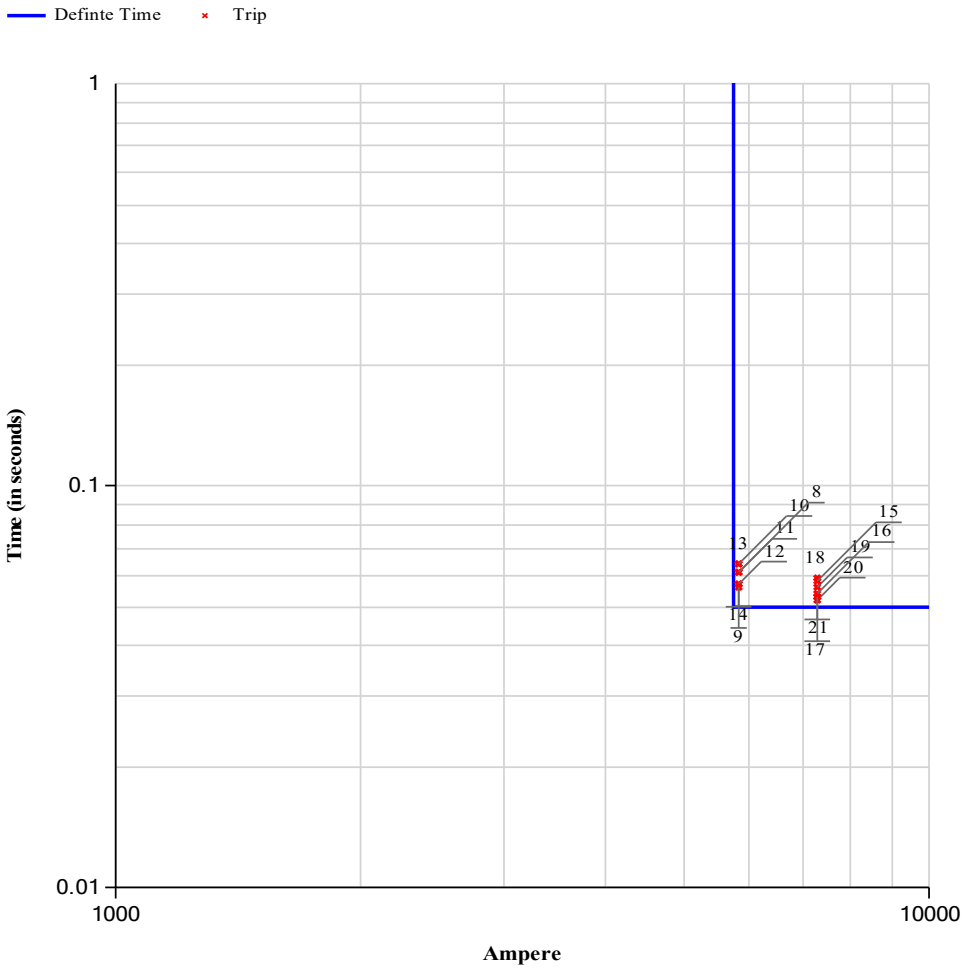
ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : PHIPTOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Num of start phases : 1 Out of 3
Reset delay time : 20 ms
Start value : 2.30 xIn
Start valure Mult : 1.0
Operate delay time : 50 ms



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	5663	2.265	0	0	0	0	0	0	0	0	0	0
2	0	0	0	5663	2.265	240	0	0	0	0	0	0
3	0	0	0	0	0	0	5663	2.265	120	0	0	0
4	5663	2.265	0	5663	2.265	180	0	0	0	0	0	0
5	0	0	0	5663	2.265	240	5663	2.265	60	0	0	0
6	5663	2.265	300	0	0	0	5663	2.265	120	0	0	0
7	5663	2.265	0	5663	2.265	240	5663	2.265	120	0	0	0
8	5833	2.333	0	0	0	0	0	0	0	50	61	22
9	0	0	0	5833	2.333	240	0	0	0	50	56	12

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : PHIPTOC1

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0	0	0	0	5833	2.333	120	50	64	28
11	5833	2.333	0	5833	2.333	180	0	0	0	50	61	22
12	0	0	0	5833	2.333	240	5833	2.333	60	50	57	14
13	5833	2.333	300	0	0	0	5833	2.333	120	50	64	28
14	5833	2.333	0	5833	2.333	240	5833	2.333	120	50	57	14
15	7287	2.915	0	0	0	0	0	0	0	50	58	16
16	0	0	0	7287	2.915	240	0	0	0	50	54	8
17	0	0	0	0	0	0	7287	2.915	120	50	53	6
18	7287	2.915	0	7287	2.915	180	0	0	0	50	59	18
19	0	0	0	7287	2.915	240	7287	2.915	60	50	56	12
20	7287	2.915	300	0	0	0	7287	2.915	120	50	52	4
21	7287	2.915	0	7287	2.915	240	7287	2.915	120	50	53	6

VENDOR :	TEST EQUIPMENT :	CONTRACTOR :	YARD :	CLIENT :
DARIO AZZOLARI	OMICRON CMC 356 **Sn. :** DJ297G			
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ITEM	Tag	DP-200N1-Q39	: AUX SW FROM DP - DP-200N1-Q39	Dwg	1723002197-EL-DG-00013		
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module			
TASK	code	C10002755	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FTR-2	Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

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

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

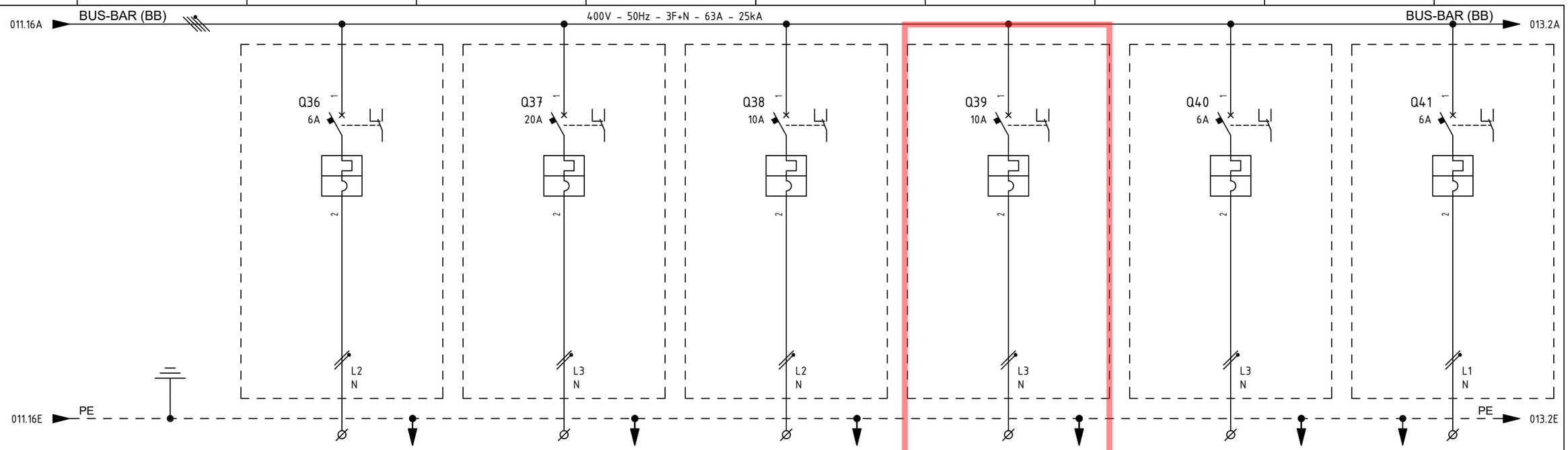
ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
I	10A	NA	NA	FIXED	NA

Testing & measurement instruments used

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

Comments:

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-28	2024-10-28	2024-10-28
Signature	Digitaly signed by Davide Zucconelli 2024-10-28T09:35:26.312Z	Digitaly signed by Kristian Castellani 2024-10-28T12:53:25.127Z	Digitaly signed by Witness waived 2024-10-28T13:25:31.585Z



ITEM				1	CP-200E2	CP-100E1	SG-100D1	SG-200N1	SG-200D2	UP-200F3
UTILITY				2	AUXILIARY TRAFO SOLARE 0.5MVA	AUXILIARY GIS	AUXILIARY 6.6KV SWITCHBOARD	AUXILIARY LV SWITCHBOARD	AUXILIARY LV SWITCHBOARD 800/460V	AC UPS PAS AUXILIARY
CUBICLE				3	+03	+03	+03	+03	+03	+03
RATED POWER	RATED CURRENT			4/5	0.5 KW / 2.72 A	3 KW / 16.3 A	1 KW / 5.43 A	1 KW / 5.43 A	0.5 KW / 2.72 A	0.2 KW / 0.82 A
TYPICAL FUNCTIONAL				6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE			7	S302P-C6	S302P-C20	S302P-C10	S302P-C10	S302P-C6	S302P-C6
	VERSION			8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS			9	In=6A - Curve C	In=20A - Curve C	In=10A - Curve C	In=10A - Curve C	In=6A - Curve C	In=6A - Curve C
	Icu		KA	10	25kA	25kA	25kA	25kA	25kA	25kA
OVERLOAD	L	Range	A	11	-	-	-	-	-	-
		Range	t	12	-	-	-	-	-	-
SEL. SHORT-CIRCUIT	S	Range	A	13	-	-	-	-	-	-
		Range	t	14	-	-	-	-	-	-
INST. SHORT-CIRCUIT	I	Range	A	15	-	-	-	-	-	-
		Range	t	16	-	-	-	-	-	-
EARTH FAULT PROTECTION	G	Range	A	17	-	-	-	-	-	-
		Range	t	18	-	-	-	-	-	-
CONTACTOR (ABB)				19	-	-	-	-	-	-
THERMAL OVERLOAD RELAY (ABB)				20	-	-	-	-	-	-
SURGE ARRESTERS (DHENN)				21	-	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)				22	-	-	-	-	-	-
FUSE HOLDER (ABB)				23	-	-	-	-	-	-
TWILIGHT SWITCH (ABB)				24	-	-	-	-	-	-
VOLTMETER (FRER)				25	-	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE			26	-	-	-	-	-	-
	PERFORMANCE/CLASS			27	-	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE			28	-	-	-	-	-	-
	PERFORMANCE/CLASS			29	-	-	-	-	-	-
POWER TERM. BLOCK (CABUR)			$Type/mm^2$	30	SCREW / 4	SCREW / 6	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR			mm^2	31	3G2.5	3G6	3G2.5	3G2.5	3G2.5	3G2.5

=
+

DWG n° : 231298/SD/13

Item n° : PF1002888/101

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "DP-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

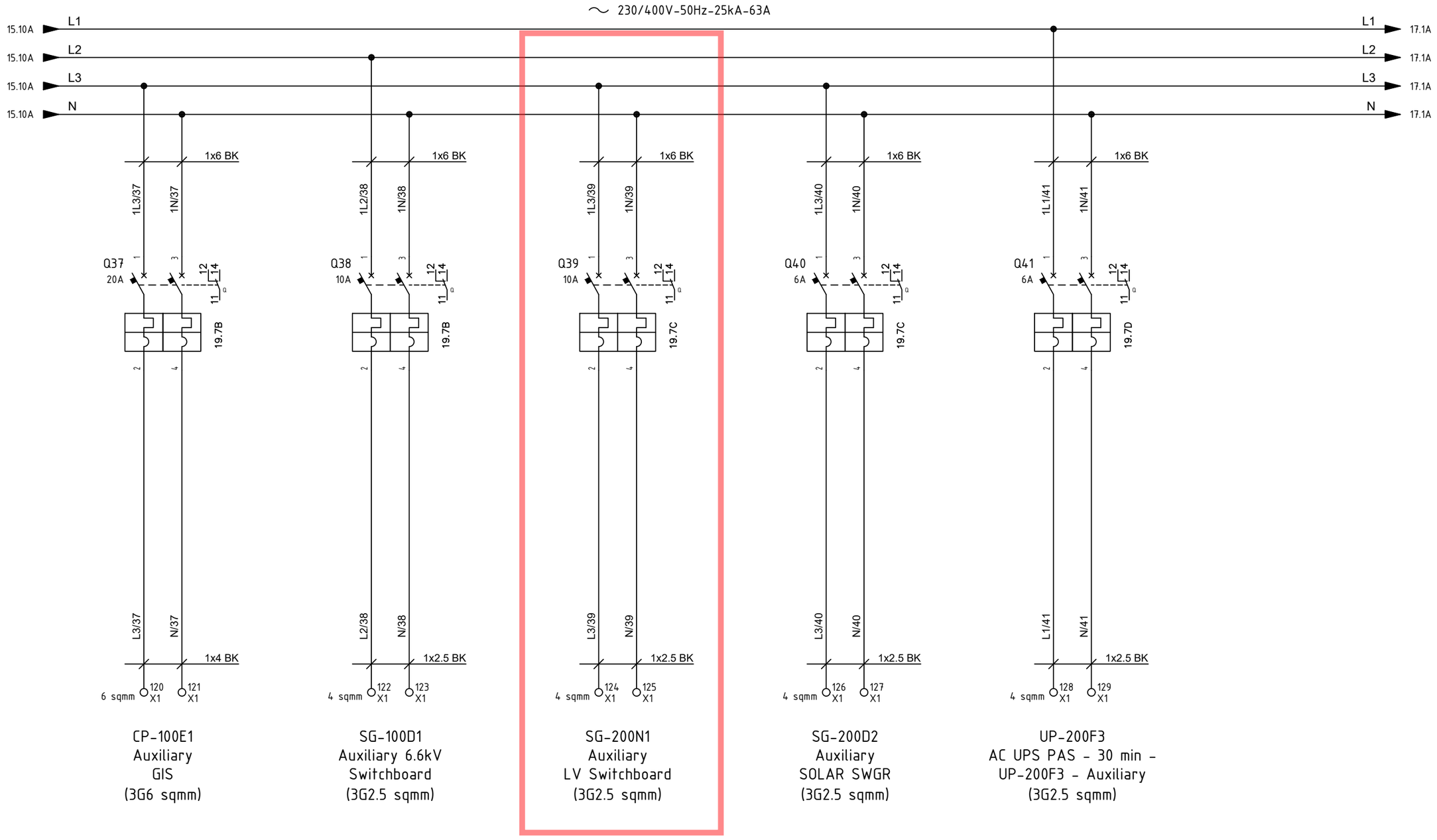
DRAWING NO. 1723002197-EL-DG-00013

SHEET 012

REV. 04

F.to UNI A3: 420mmx297mm

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



CP-100E1
Auxiliary
GIS
(3G6 sqmm)

SG-100D1
Auxiliary 6.6kV
Switchboard
(3G2.5 sqmm)

SG-200N1
Auxiliary
LV Switchboard
(3G2.5 sqmm)

SG-200D2
Auxiliary
SOLAR SWGR
(3G2.5 sqmm)

UP-200F3
AC UPS PAS - 30 min -
UP-200F3 - Auxiliary
(3G2.5 sqmm)

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	19/08/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
0	29/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231298/SD/33

Item n° : PF1002888/101

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

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00033

SHEET 1.6

REV. 02

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

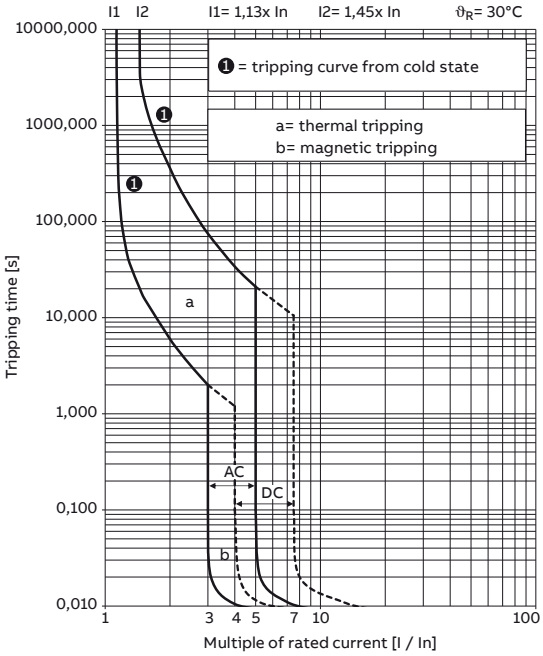
F.to UNI A3: 420mmx297mm

Miniature Circuit breakers S300P

Tripping characteristics

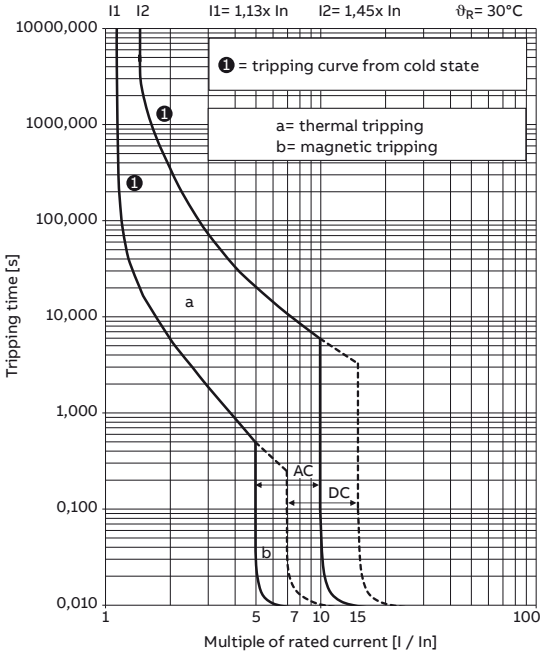
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



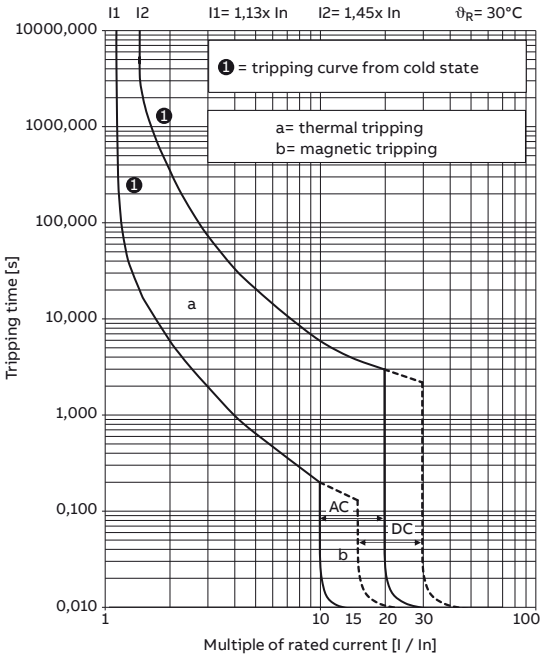
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



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

Tripping Characteristic IEC/EN 60898-1



ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A2/+05-QF1	: DRAWER SPARE - A2/+05-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002756		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A2/+05-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	397	V	NA	A OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

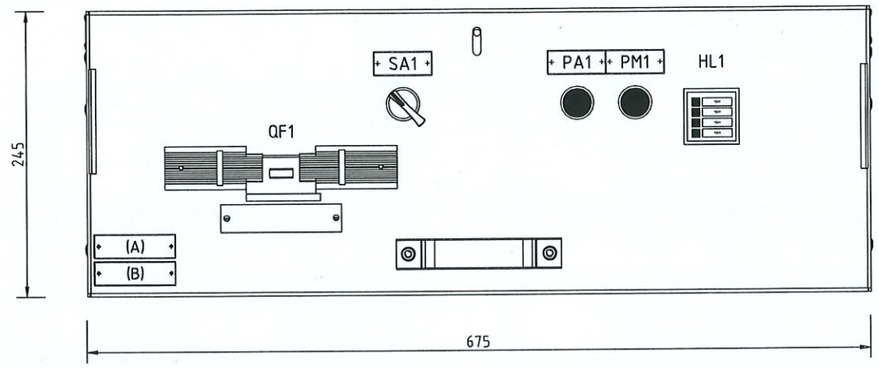
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-15	2024-10-15	2024-10-15
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-15T06:30:12.284Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-15T06:58:31.315Z	PROVERLIS Digitaly signed by Witness waived 2024-10-15T07:33:33.365Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

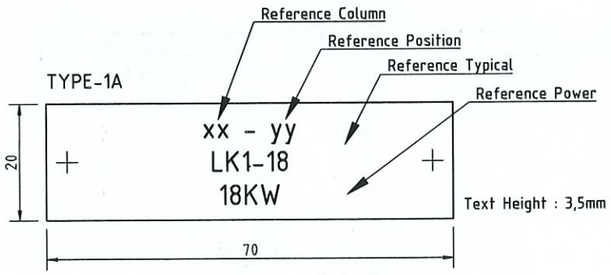


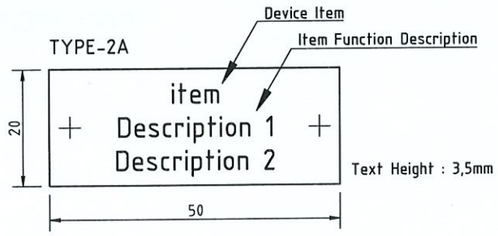
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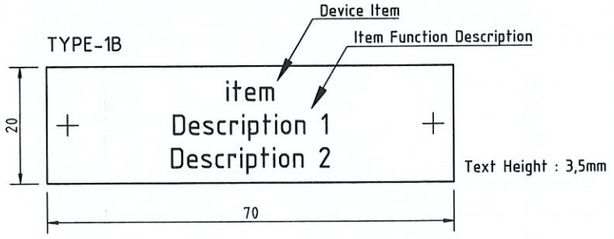
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

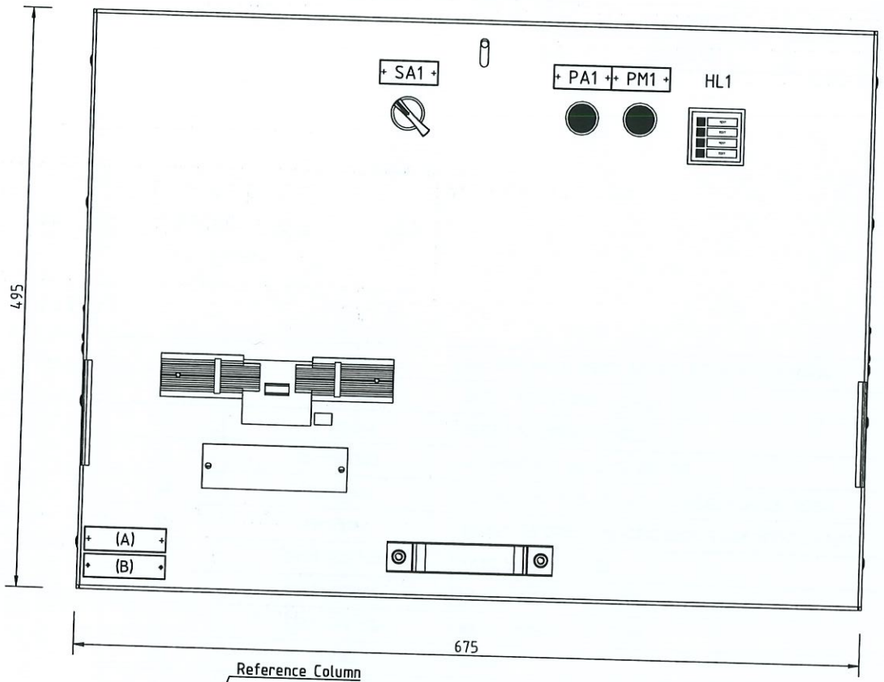
REV. 00

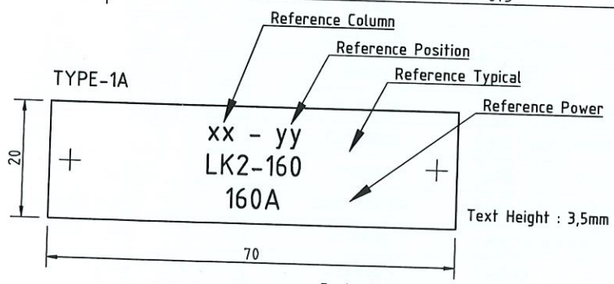
F.to UNI A3: 420mmx297mm

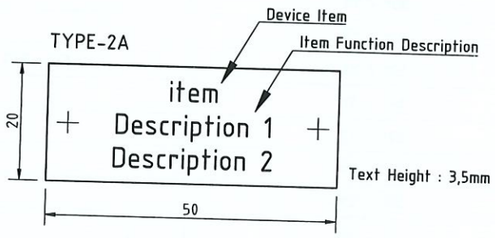
File Name : 1723002197-EL-DG-00031 Rev. 00

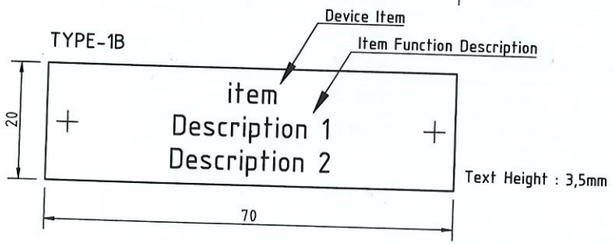
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

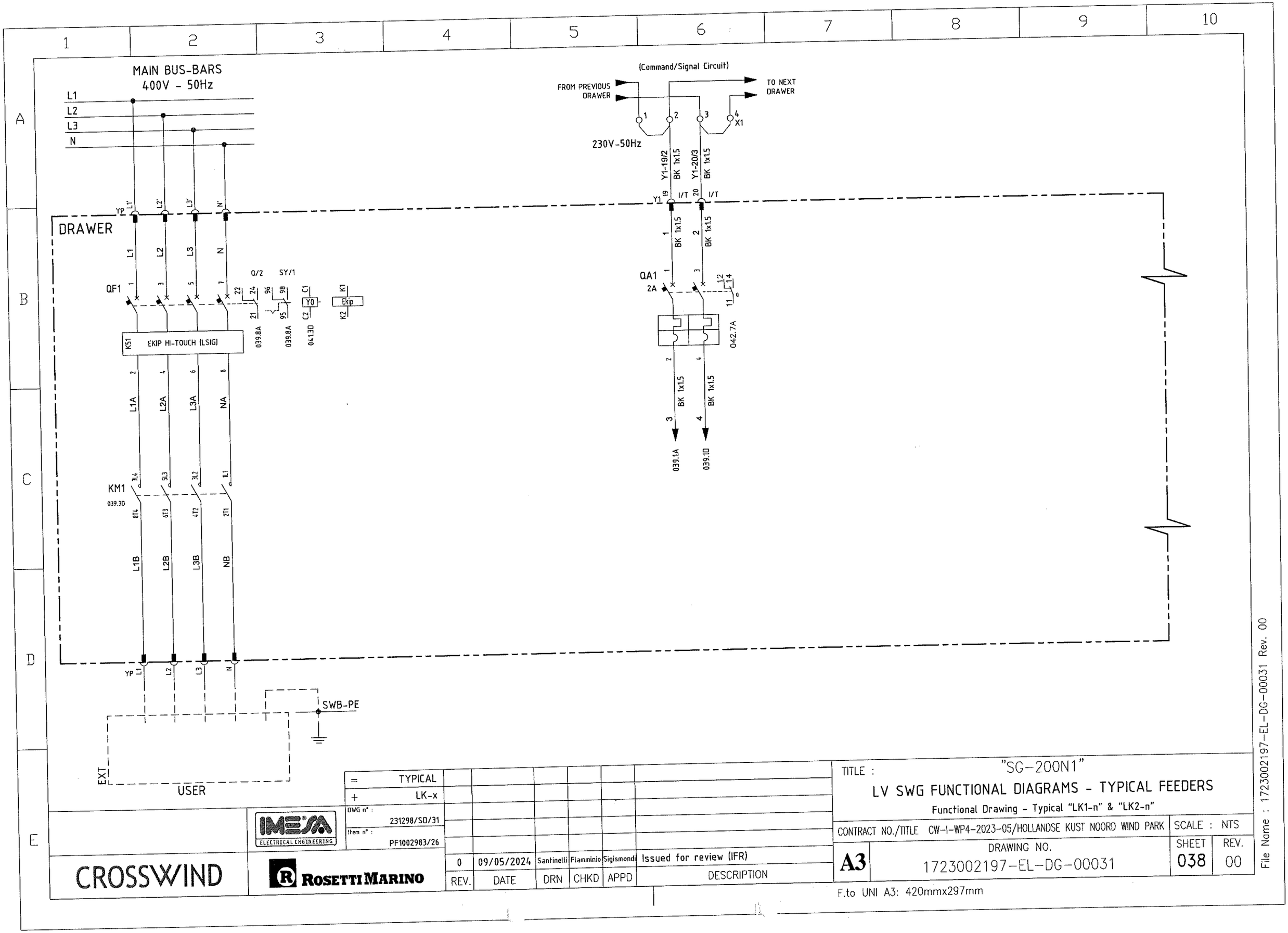
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

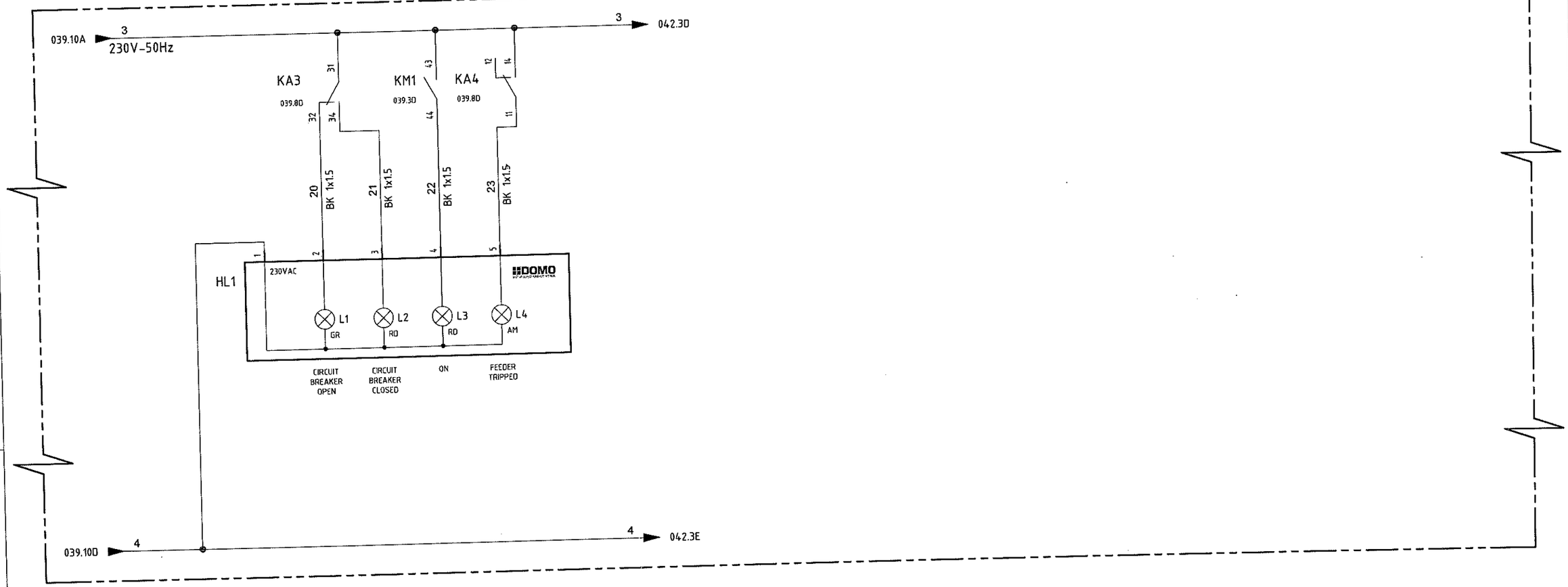
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

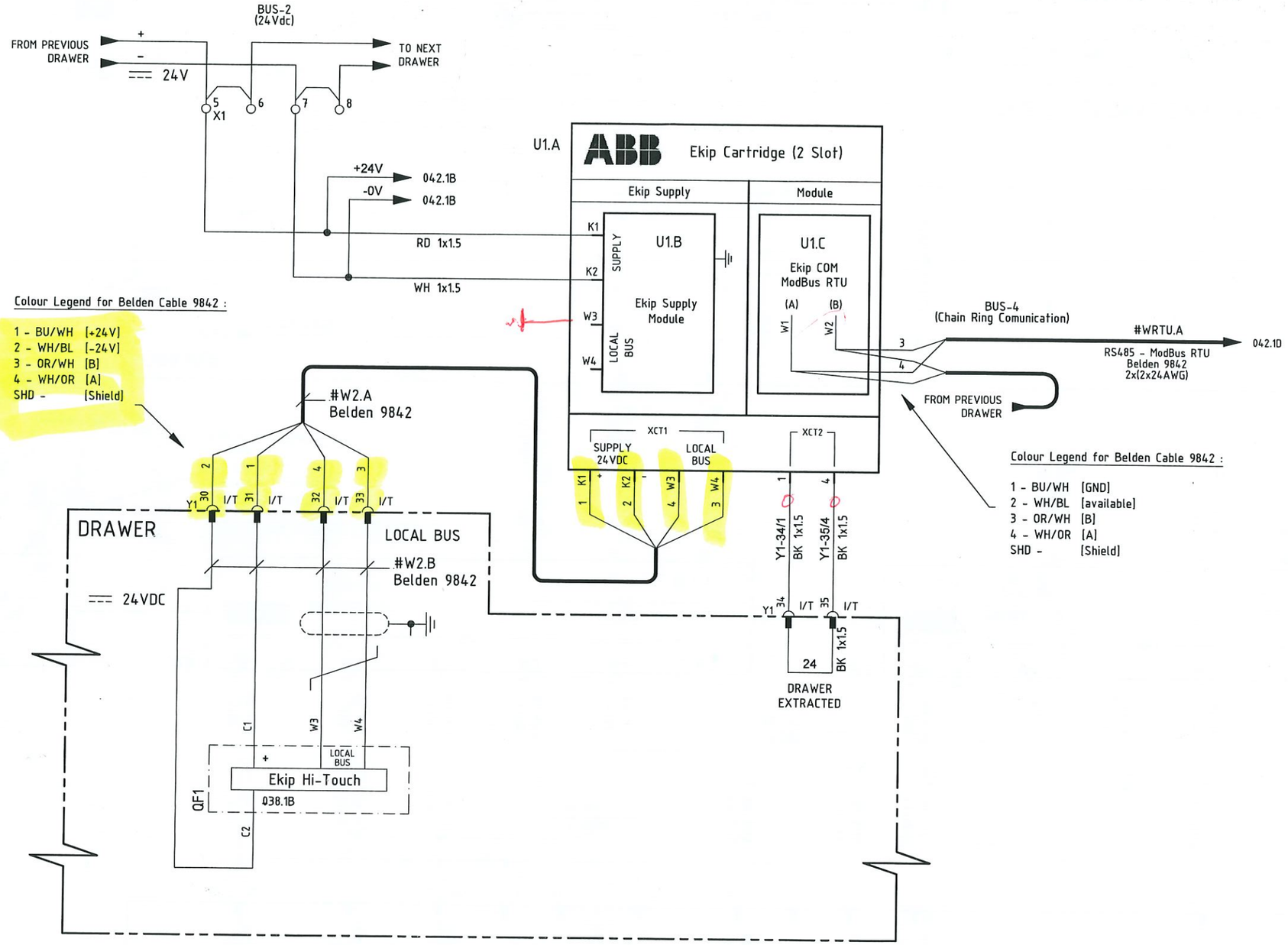
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

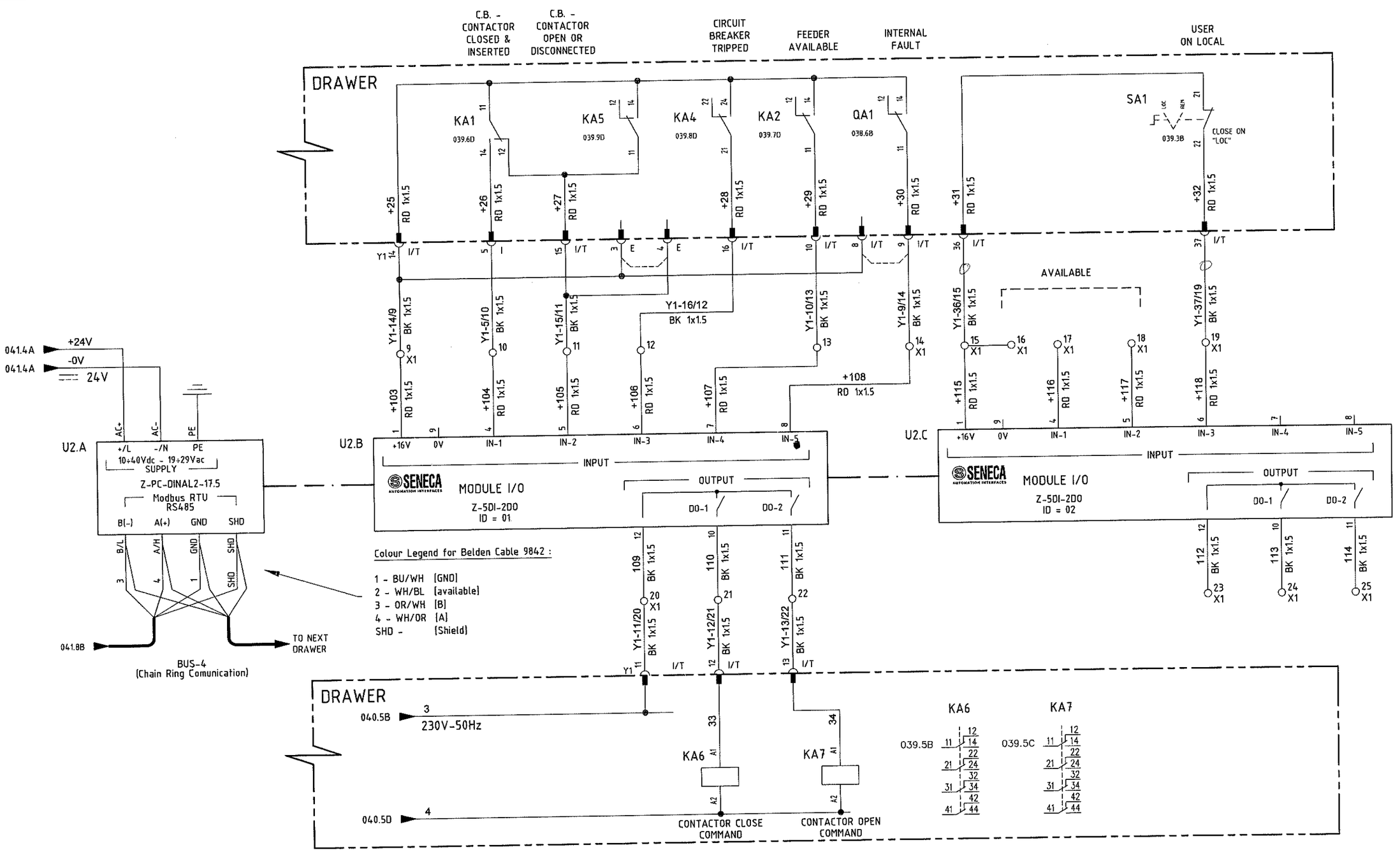
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

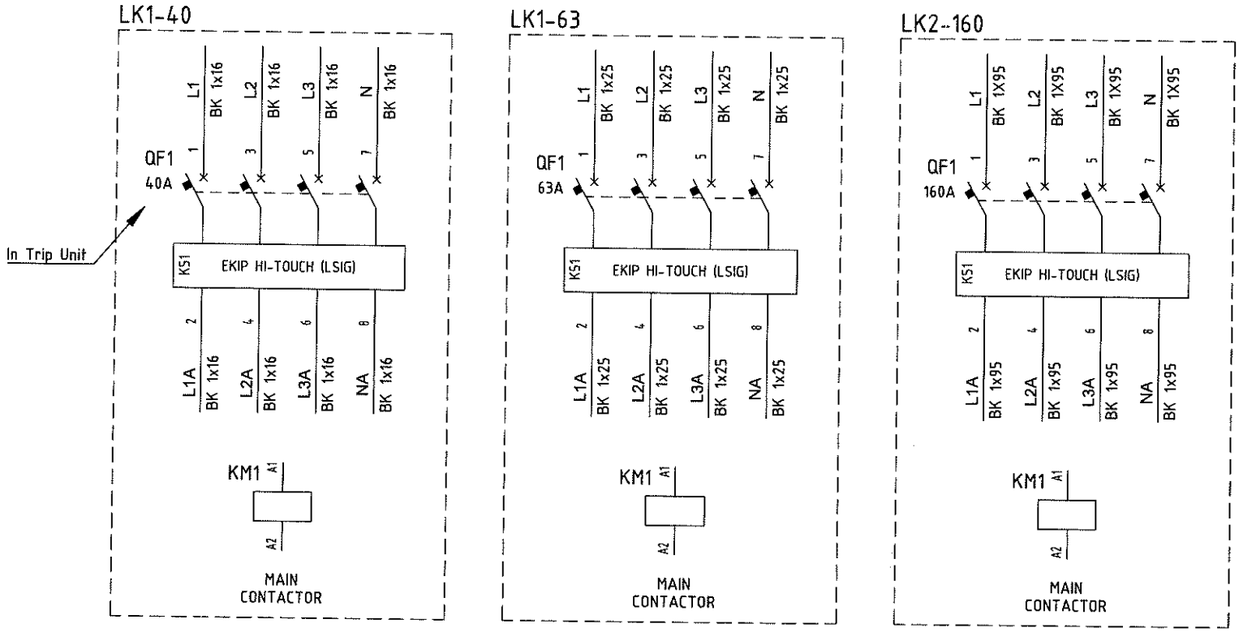
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A2/+05-QF1	:	DRAWER SPARE - A2/+05-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	:	400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002757	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°:	EF5000453690N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A2/+05
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	20A			3s	
S	100A	200A		0.1s	103ms
I	200A	400A		INSTANT	25ms
G	8A			0.1s	

Testing & measurement instruments used

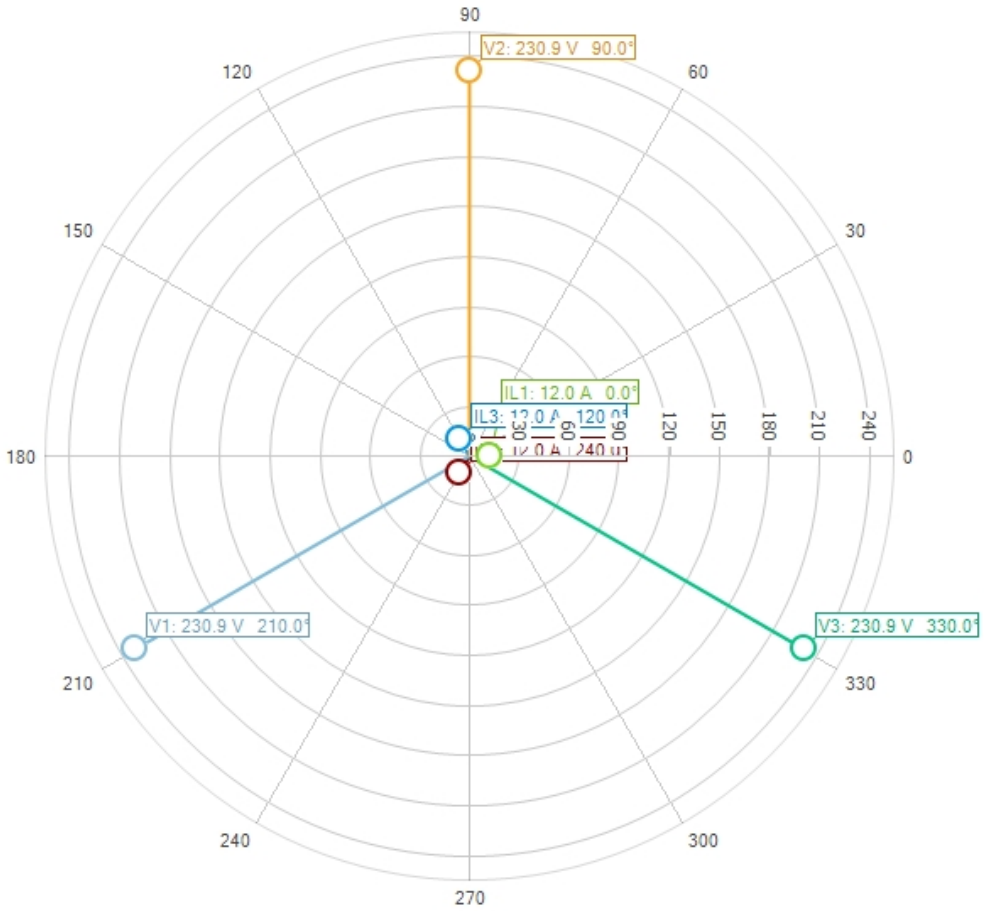
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-19	2024-09-19	2024-09-20
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-19T10:24:58.840Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-19T11:49:52.535Z	PROVERLIS Digitaly signed by Witness waived 2024-09-20T06:10:45.219Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

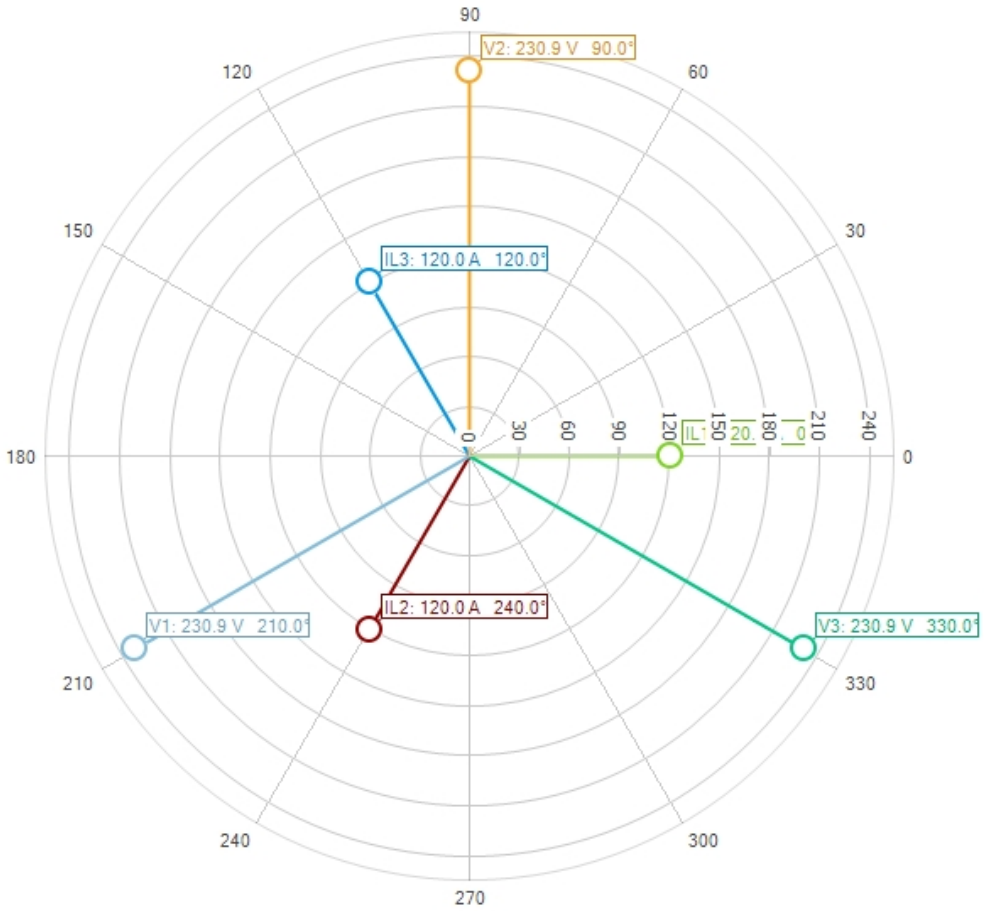
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

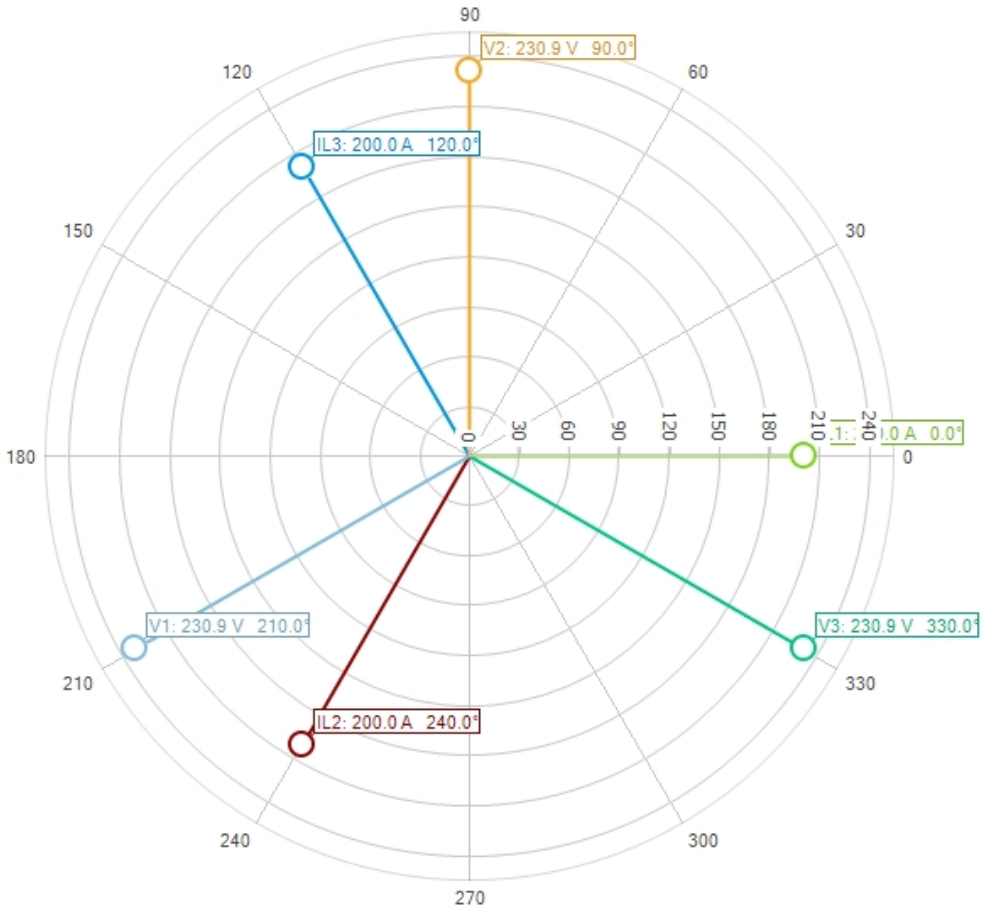
Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

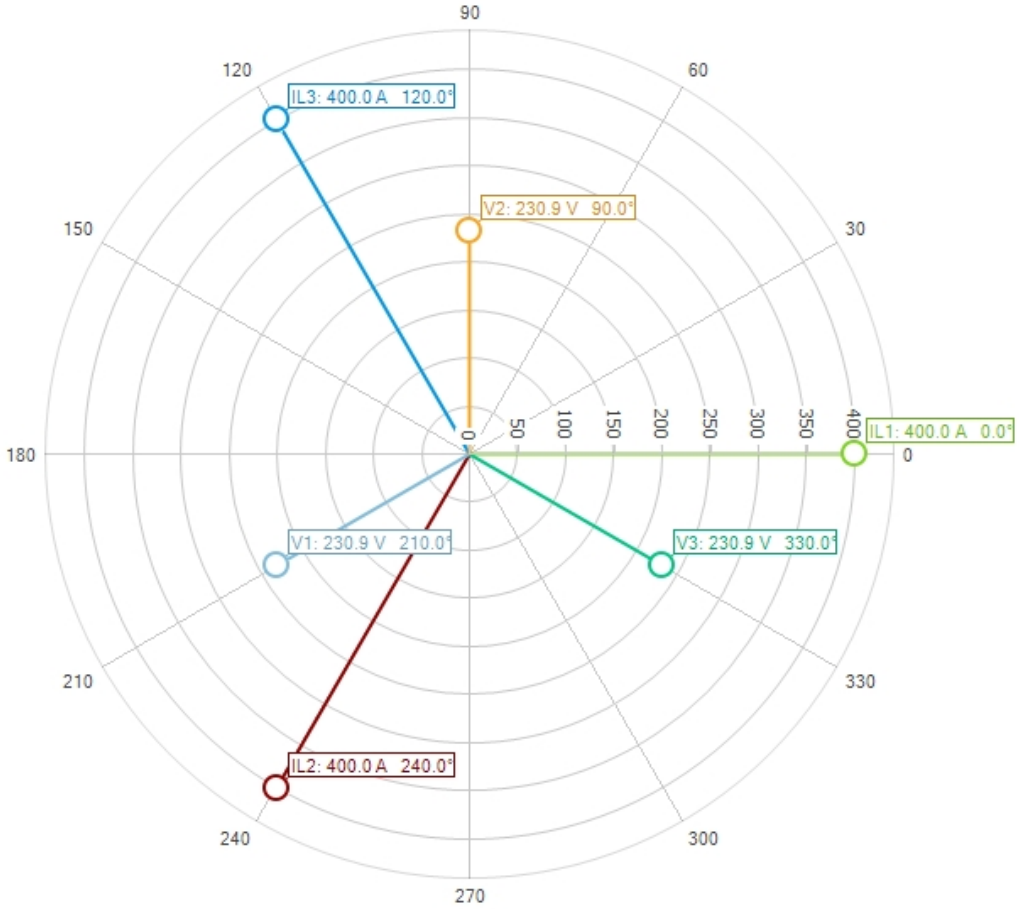
Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

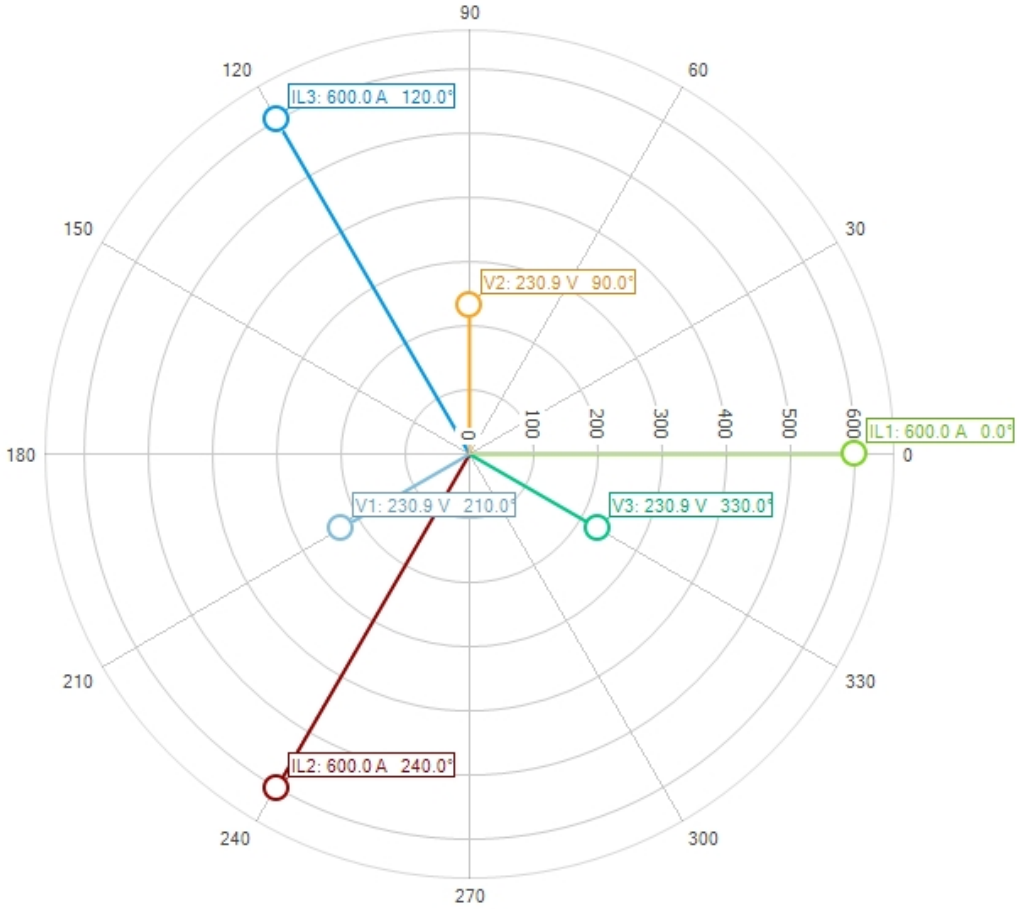
Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A2/+05-QF1	: DRAWER SPARE - A2/+05-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002758	Location: Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity: FTS	Discipline	Electrical	Form: FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175 _ 17140769
Cubicle N°:	A2/+05-QF1	Calibration certificate date:	7715/24 _ 10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A2/+05 - KA1/11-14	A2/+05 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A2/+05 - KA1/11-12	A2/+05 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A2/+05 - KA5/11-14	A2/+05 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A2/+05 - KA4/21-24	A2/+05 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A2/+05 - KA2/11-14	A2/+05 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A2/+05 - QA1/11-14	A2/+05 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A2/+05 - SA1/21-24	A2/+05 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

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

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	rm comm	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-02	2024-10-02	2024-10-02
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-02T06:36:44.249Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-02T08:43:23.268Z	PROVERLIS Digitaly signed by Witness waived 2024-10-02T09:13:16.203Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A2/+08-QF1	: DRAWER TEMPORARY GENERATOR - A2/+08-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002759		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	SG-200N1-A2/+08
Breaker rating (A)	210A	Nominal current (A)	320A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				NA
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	401	V	1 A	OK
11	Attach test procedure, if any				NA

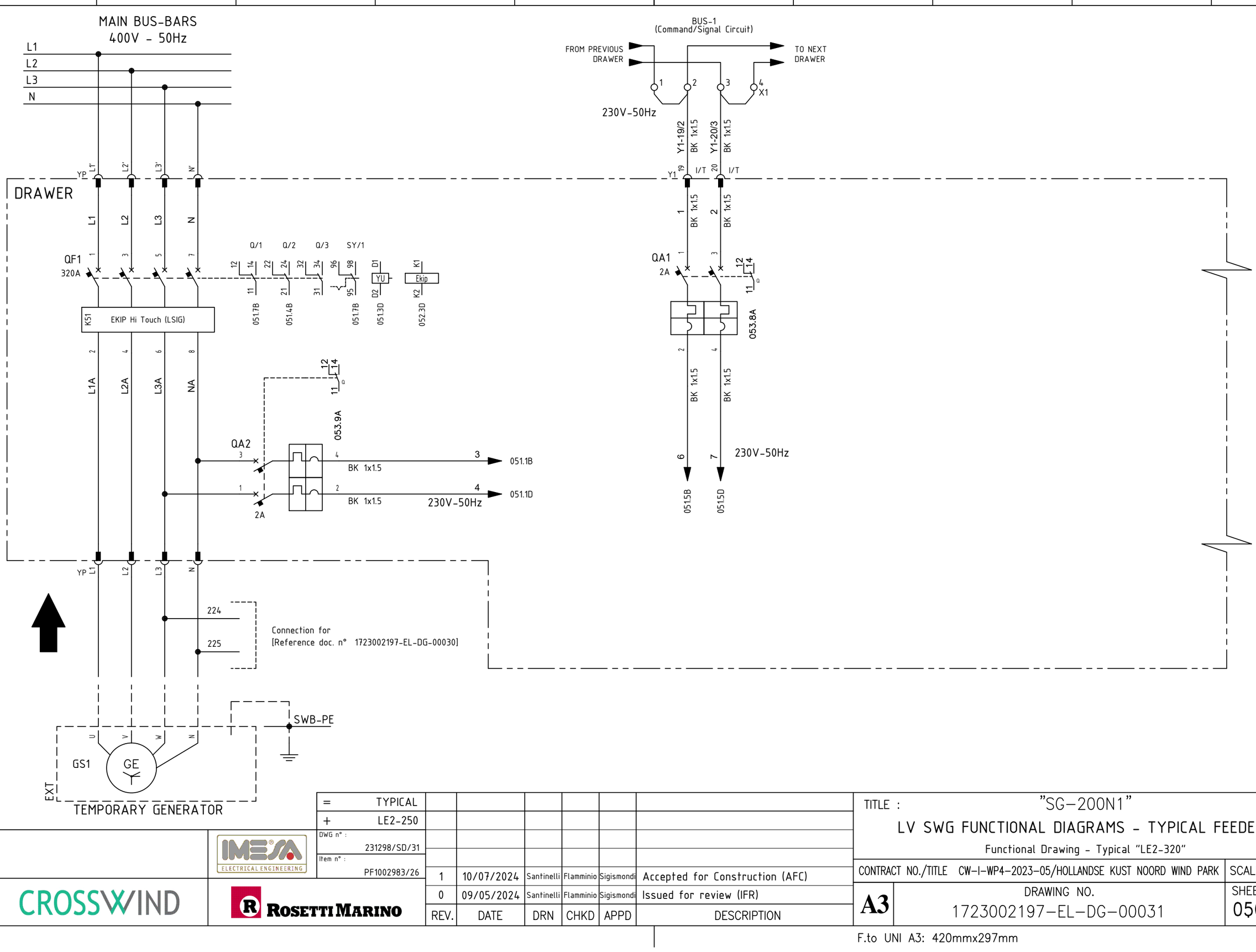
FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

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

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

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-26	2024-09-26	2024-09-26
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-26T09:04:19.755Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-26T13:20:32.802Z	PROVERLIS Digitaly signed by Witness waived 2024-09-26T13:27:30.770Z



=	TYPICAL
+	LE2-250
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LE2-320"

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

SCALE : NTS

A3

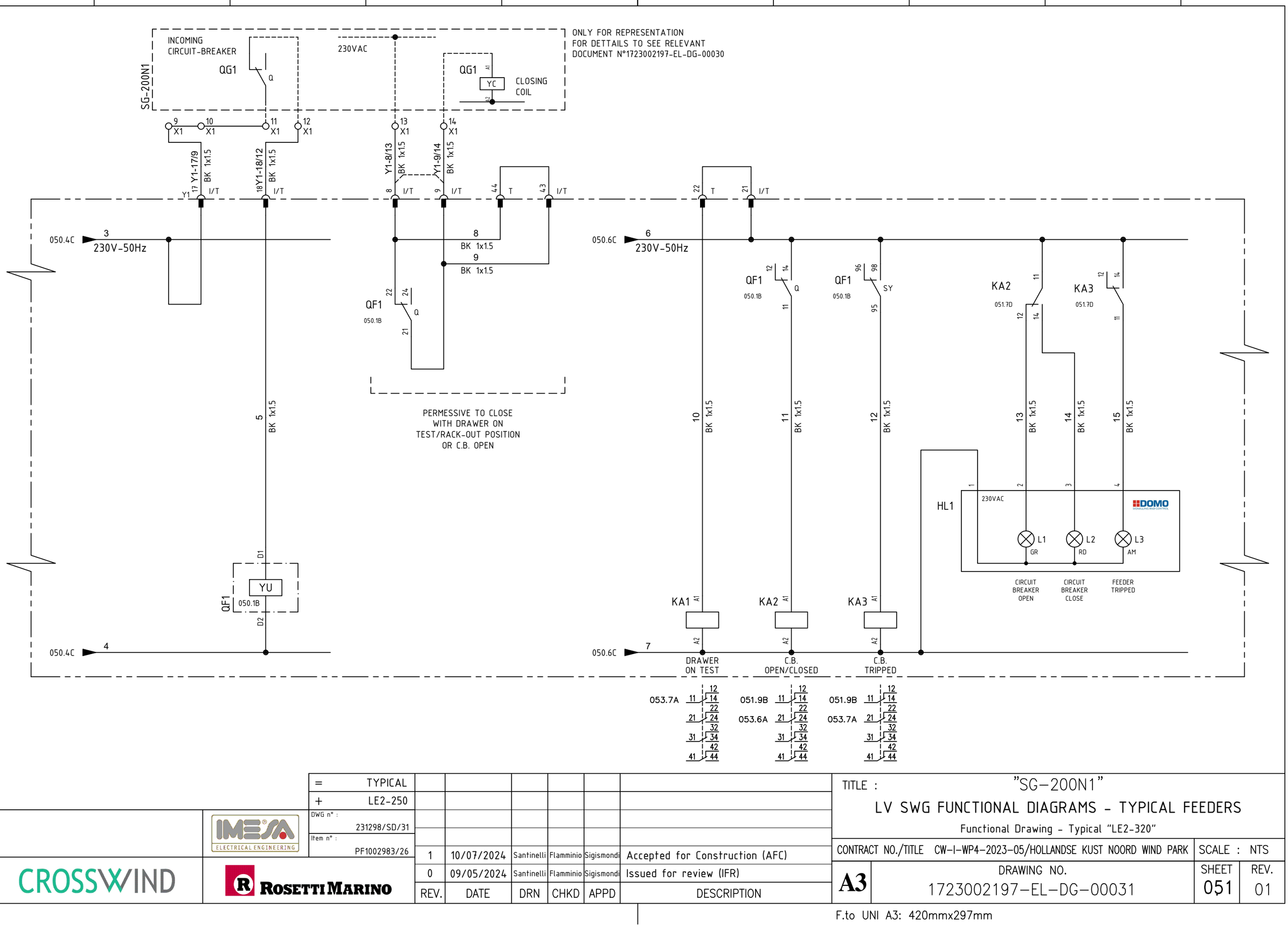
DRAWING NO. 1723002197-EL-DG-00031

SHEET 050

REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 01



=	TYPICAL						
+	LE2-250						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
		1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
		0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LE2-320"

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

SCALE : NTS

A3

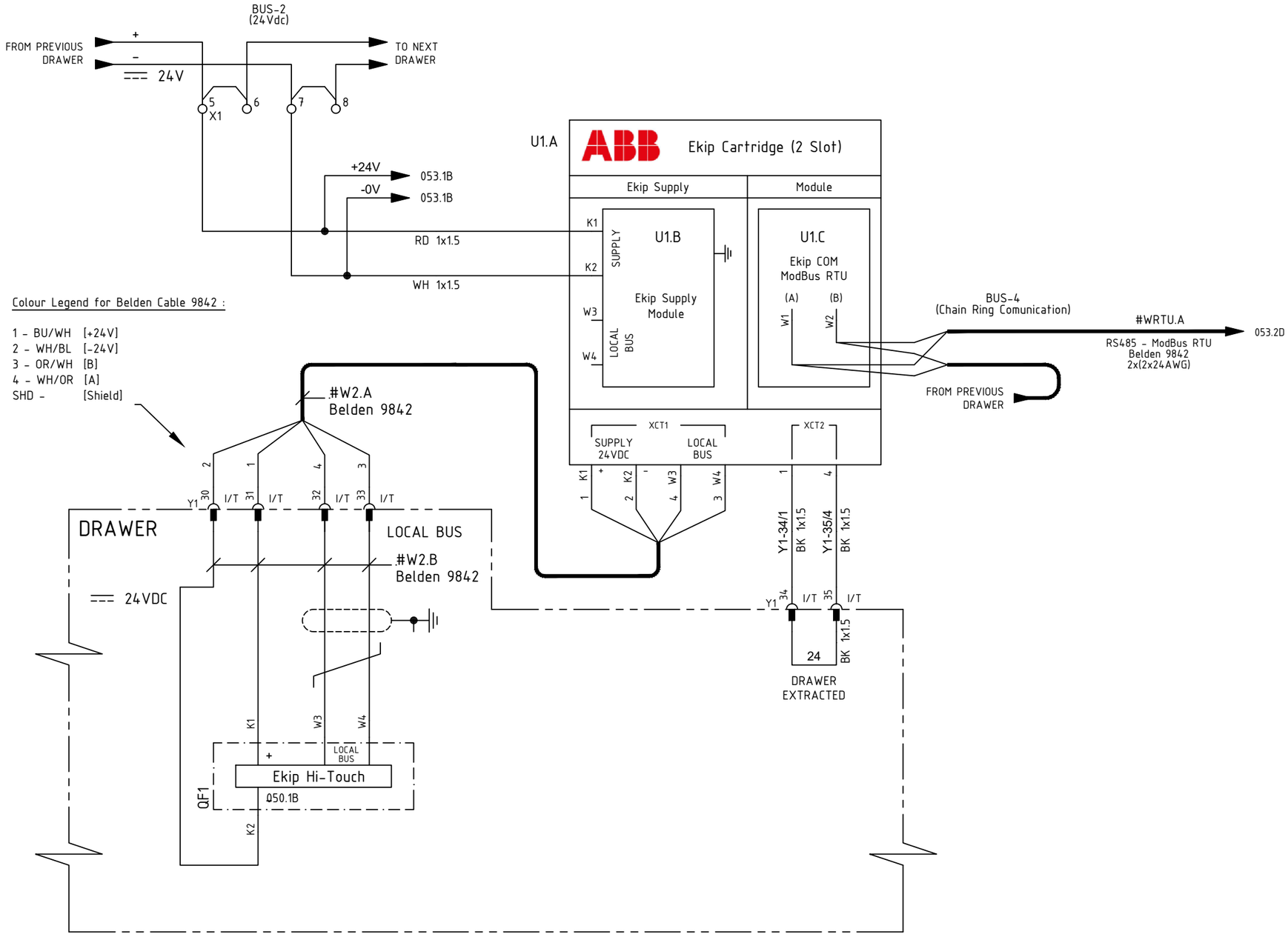
DRAWING NO. 1723002197-EL-DG-00031

SHEET 051

REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 01



=	TYPICAL						
+	LE2-250						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
		1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
		0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LE2-320"

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

SCALE : NTS

A3

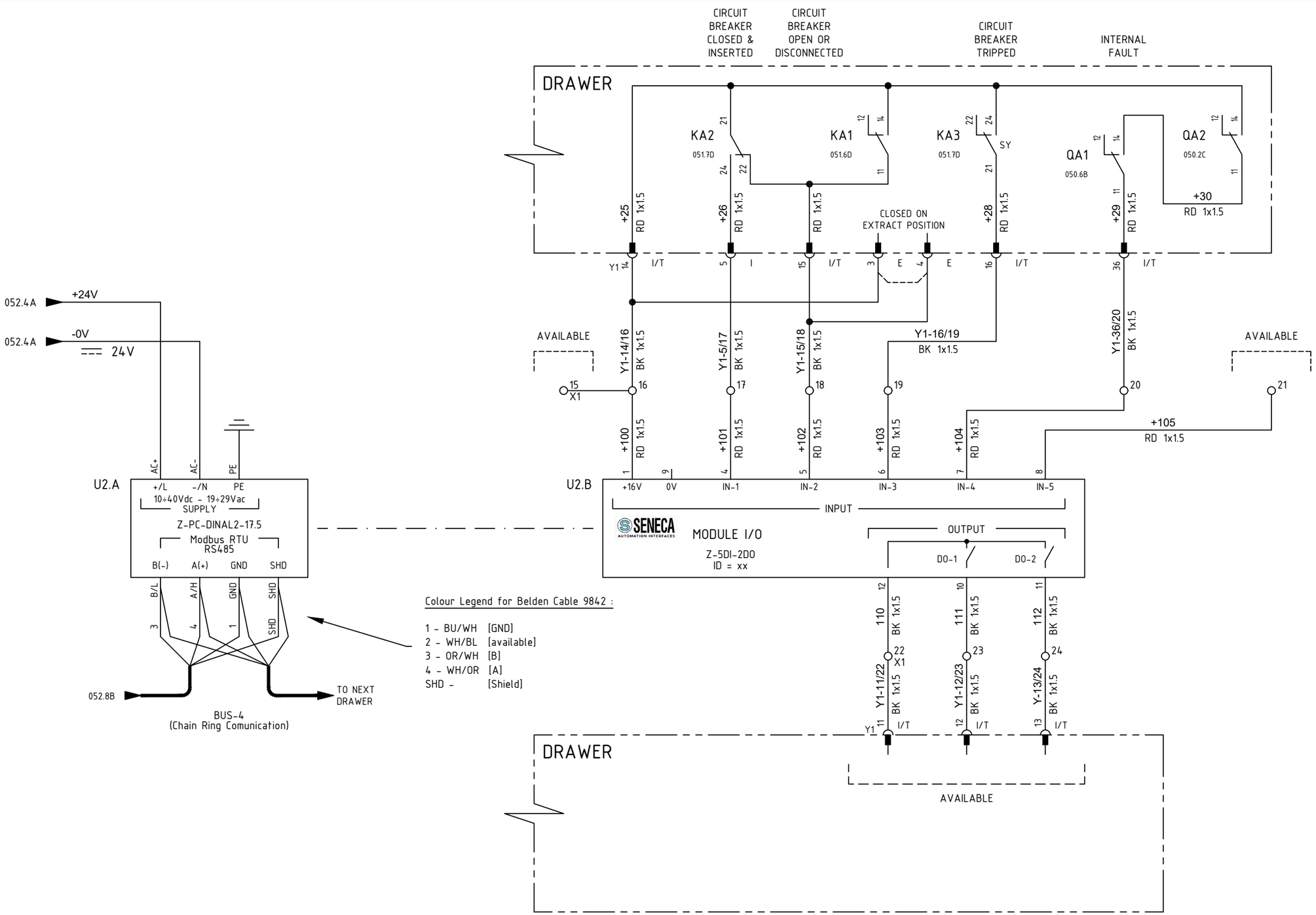
DRAWING NO. 1723002197-EL-DG-00031

SHEET 052

REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 01



=	TYPICAL
+	LE2-250
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 053 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 01

IMESA ELECTRICAL ENGINEERING

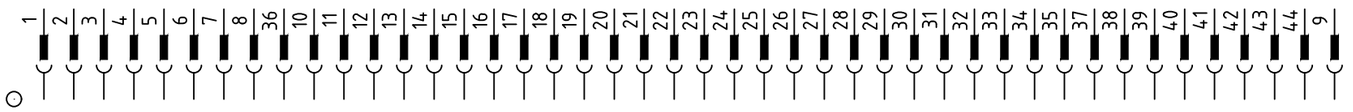
CROSSWIND

ROSETTI MARINO

TYPICAL - LE2-320 - Y1

AUXILIARY SOCKET
136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			●	●				●	●																																			
RACKED-OUT			✕	✕				✕	✕																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED-IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
PIN USED			053.6B	053.7B	053.6B			051.4B	053.8B		053.7D	053.7D	053.8D	053.5B	053.6B	053.7B	051.2B	051.3B	050.6A	050.6A	051.6B	051.6B								052.3C	052.3C	052.4C	052.4C	052.6C	052.7C							051.5B	051.4B	051.4B



← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
← CROS-REFERENCE USED PIN

=	TYPICAL
+	LE2-250
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 054 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 01

TYPICAL - LE2-320

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	050.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	050.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	050.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	050.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	052.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	052.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	052.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	052.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	051.2A	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	051.2A	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	051.3A	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	051.3A	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	051.4A	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	051.4A	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	053.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	053.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	053.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	053.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	053.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	053.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	053.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	053.7D	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	053.7D	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	053.8D	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LE2-250

DWG n° : 231298/SD/31

Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LE2-320"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 055

REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 01

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
GS1	050		1	Generatore sincrono trifase indotto collegato a stella e neutro accessibile		TYPICAL LE2-320
HL1	051	ML22/483L230STLTTR	1	MULTILED 48x48 - 3 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LE2-320
KA1	051	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LE2-320
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LE2-320
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LE2-320
KA2	051	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LE2-320
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LE2-320
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LE2-320
KA3	051	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LE2-320
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LE2-320
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LE2-320
QA1	050	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LE2-320
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LE2-320
QA2	050	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LE2-320
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LE2-320
QF1	050	1SDA100556R1	1	XT5S 400 BREAKING PART 4p F F	ABB	TYPICAL LE2-320
		1SDA100692R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=320A XT5 4p	ABB	TYPICAL LE2-320
		1SDA066434R1	1	AUX-C 3Q+1SY 250Vac/dc XT2..XT6 F/P	ABB	TYPICAL LE2-320
		1SDA104958R1	1	YU-C XT5 F/R 220-240Vac-220-250Vdc	ABB	TYPICAL LE2-320
U1.2	052	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LE2-320
U1.3	052	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LE2-320
U1.A	052	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LE2-320
U2.A	053	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LE2-320
U2.B	053	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LE2-320
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LE2-320
		HD400GR_	16	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LE2-320
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LE2-320
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LE2-320
		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LE2-320

= TYPICAL
+ LE2-250

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

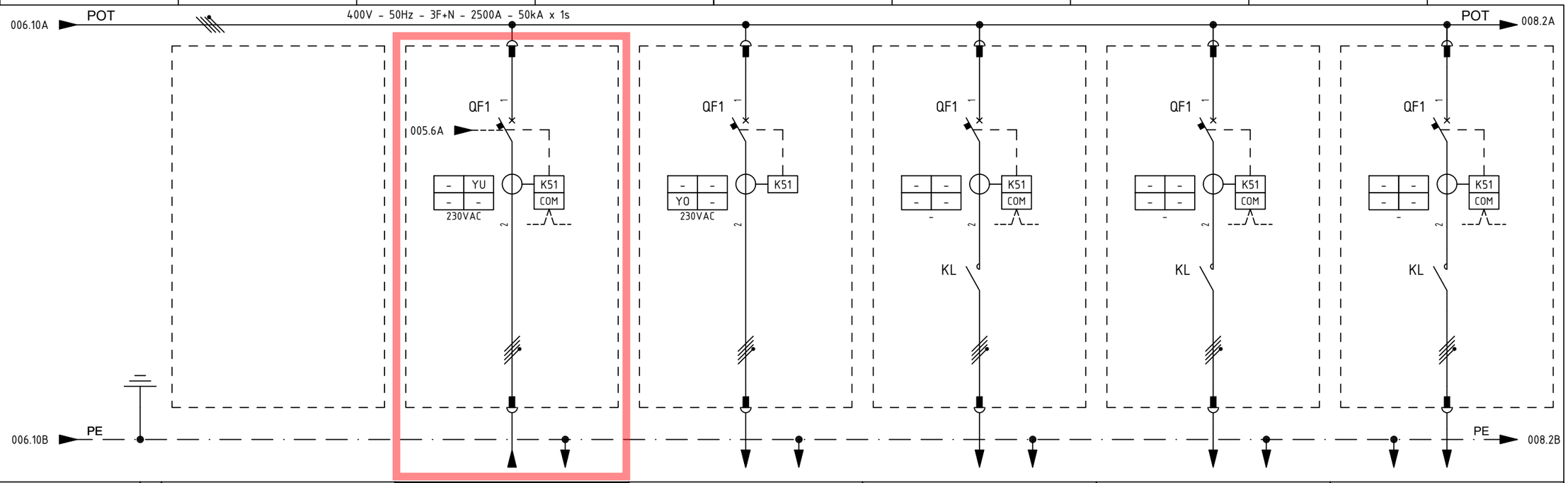
Functional Drawing - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 056 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 01



ITEM				JB-200E2	UP-200F3	SPARE	DP-200N1	JB-200E3
UTILITY			2	TEMPORARY GENERATOR / MOBILE BATTERY PACK	AC UPS PAS - 30 MIN UP-200F3 - LINE A	SPARE	DB - LIGHTING & SMALL POWER - BoP	CRANE
COLUMN/CUBICLE			3	A2 / +08	A3 / +01	A3 / +02	A3 / +03	A3 / +04
RATED POWER | RATED CURRENT			4/5	138 kW | 210 A	36.0 kW | 57.8 A	- kW | - A	15.35 kW | 23.7 A	25 kW | 37.8 A
TYPICAL FUNCTIONAL			6	LE2-320	L1-100	LK1-40	LK1-100	LK1-63
CIRCUIT BREAKER (ABB)	TYPE		7	XT5S - 400	XT2S - 160	XT2S - 160	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 320A)	EKIP DIP LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 40A)	EKIP HI TOUCH LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 63A)
	Icu	KA	10	50 kA	50 kA	50 kA	50 kA	50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In
		Range t	12	k/I^2	k/I^2	k/I^2	k/I^2	k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In	(1 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In	(0.6 - 10) x In
		Range t	14	0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2	0.05 - 0,4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In	(1 - 10) x In	(1.5 - 15) x In	(1.5 - 15) x In	(1.5 - 15) x In
		Range t	16	instantaneous	<= 0.02 sec	instantaneous	instantaneous	instantaneous
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In	(0.2 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In	(0.1 - 1) x In
		Range t	18	t=k / t=k/I^2	0.1 - 0.8 sec	t=k / t=k/I^2	t=k / t=k/I^2	t=k / t=k/I^2
CONTACTOR (ABB)			19	-	-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC	AF80-40-00-13 (70A-AC1); 100-250VAC/DC	AF52-40-00-13 (100A-AC1); 100-250VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	-
SURGE ARRESTER (DEHN)			21	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-
FUSE HOLDER (ITALWEBER)			23	-	-	-	-	-
INDIRECT PROTECTION (ABB)			24	-	-	-	-	-
VOLTMETER			25	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-
LOCK-OUT RELAY (-)			30	-	-	-	-	-
POWER CONDUCTOR		mmq	31	5 x (1 x 95)	4G35	-	5G50	5G16

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DWG n° : 231298/SD/11

Item n° : PF1002983/26

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

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 007

REV. 03

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A2/+08-QF1	:	DRAWER TEMPORARY GENERATOR - A2/+08-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	:	400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002760	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°:	EFH0053578700010	Relay type:	EKIP HI-TOUCH LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A2/+08
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	200A			3s	
S	800A	960A		0.1s	101ms
I	1250A	1600A		INSTANT	22ms
G	20A			0.1s	

Testing & measurement instruments used

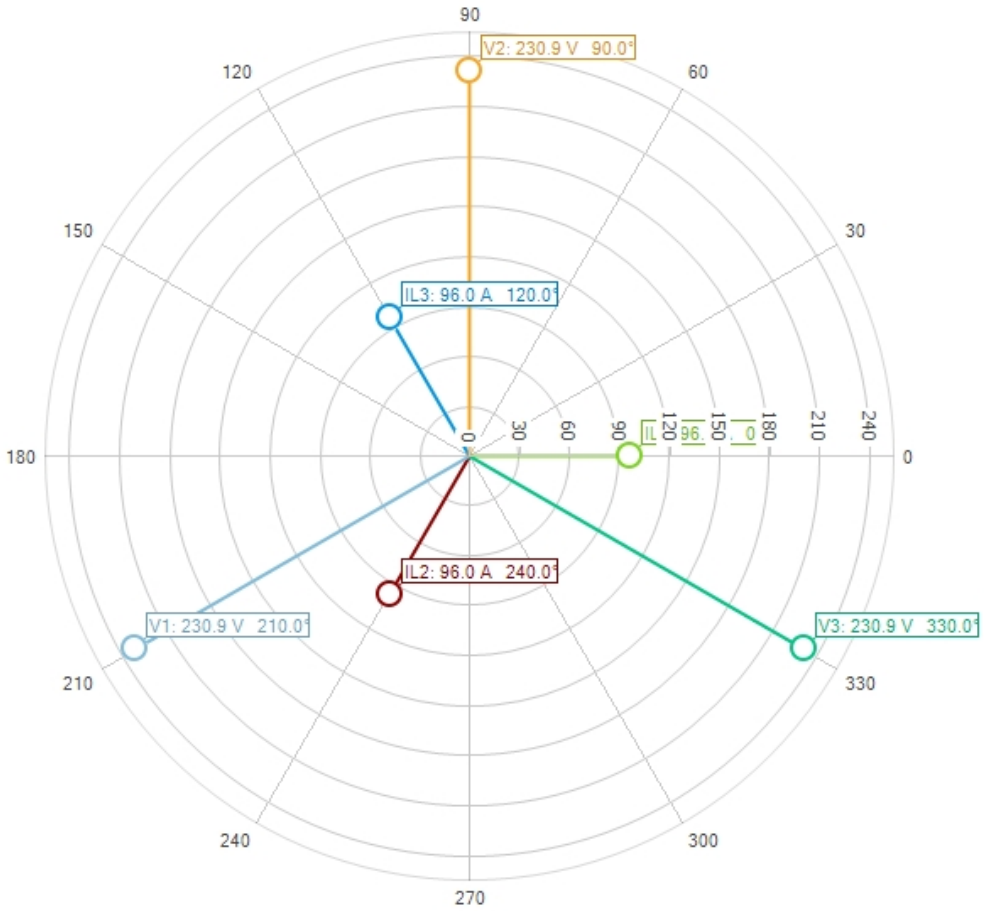
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: The protection settings that have been implemented on drawer A2/+08 were defined by the Commissioning team to allow the internal testing of the SG-200N1. The definitive settings will be implemented asap, in the meantime a PUNCH B ref. C30000115 has been raised to ensure traceability of this outstanding task.

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-26	2024-09-26	2024-09-26
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-26T09:36:29.020Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-26T13:21:15.538Z	PROVERLIS Digitaly signed by Witness waived 2024-09-26T13:28:16.014Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	320	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	50	% I1
		Threshold I1	0.625	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	3.90	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.111	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

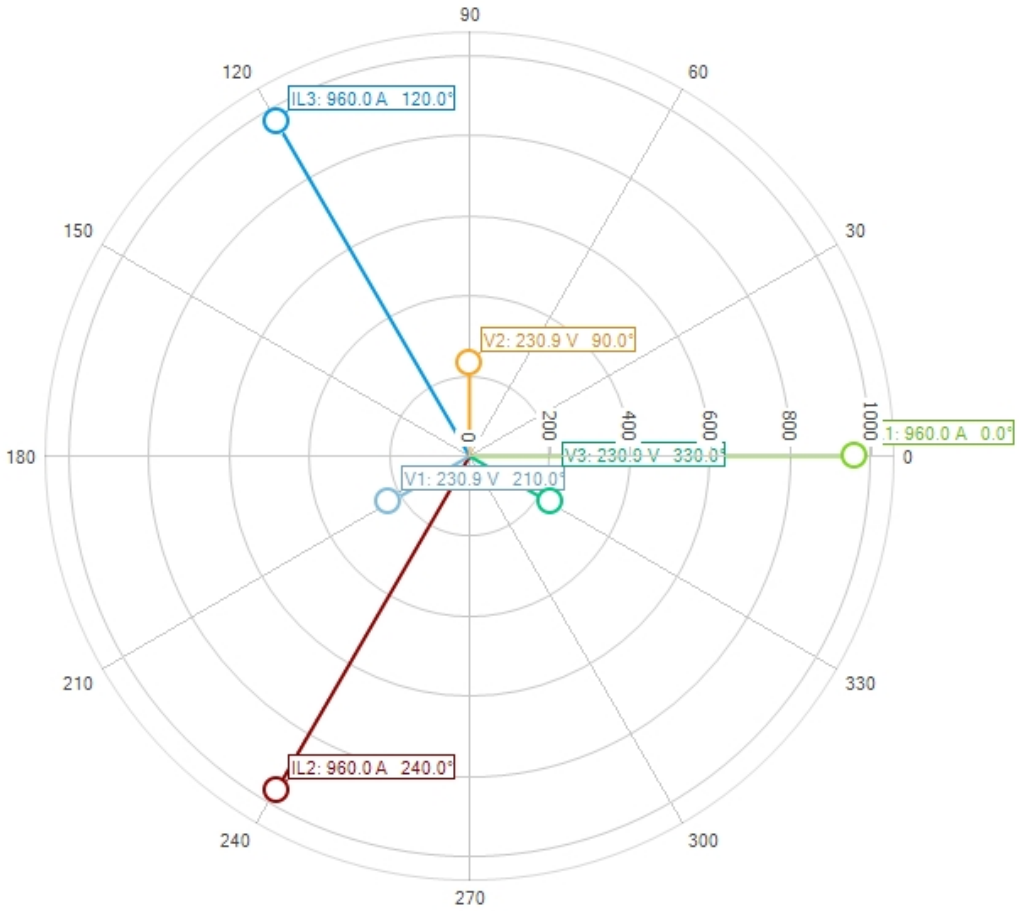
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

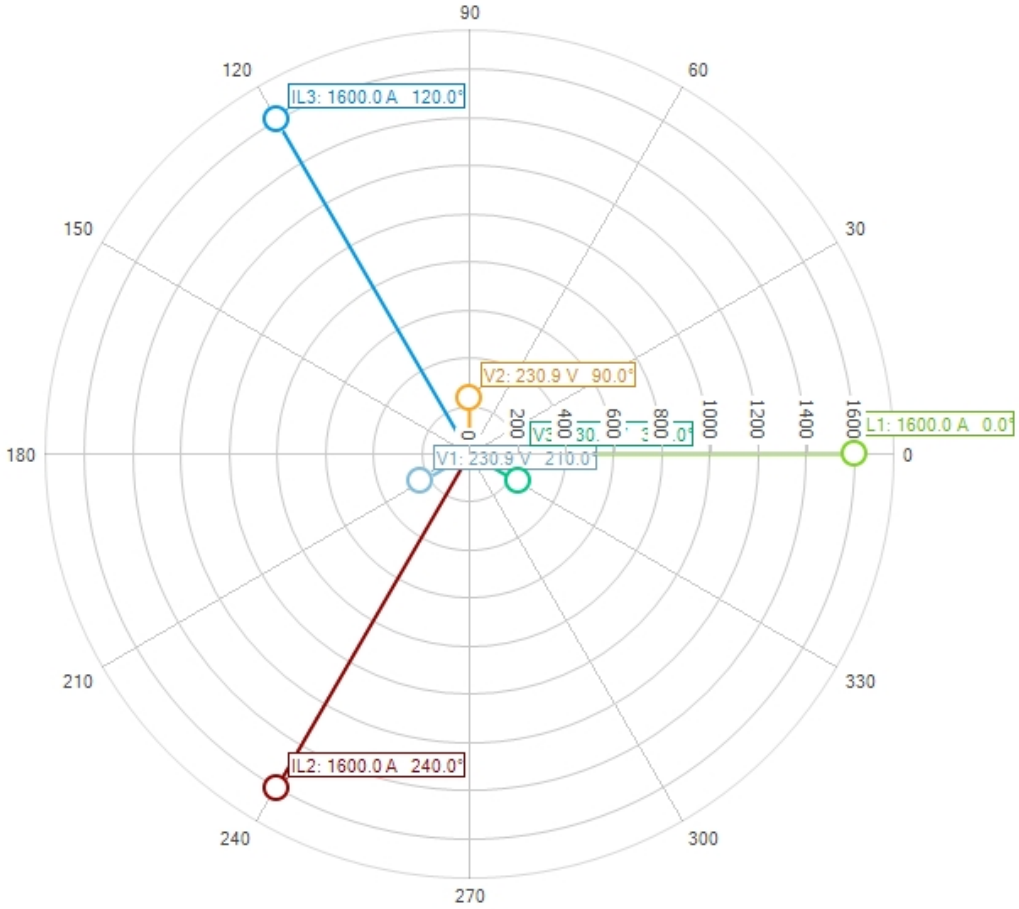
Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

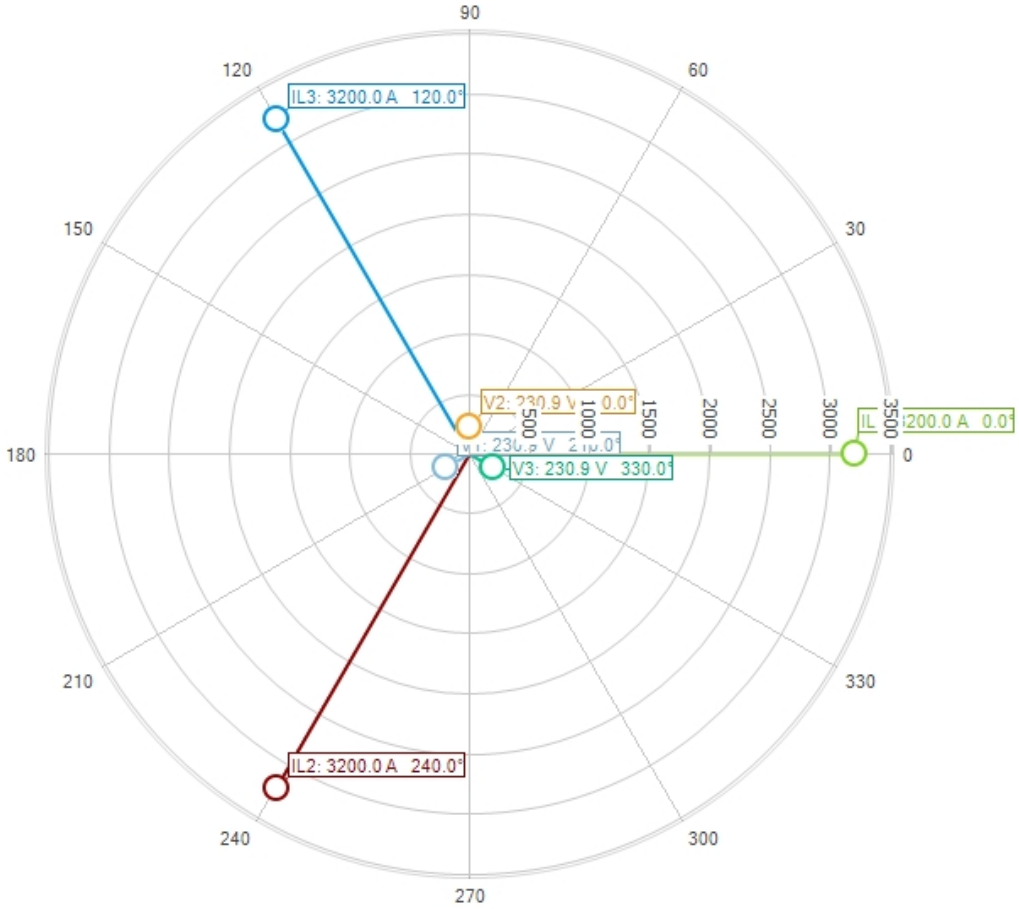
Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 22 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

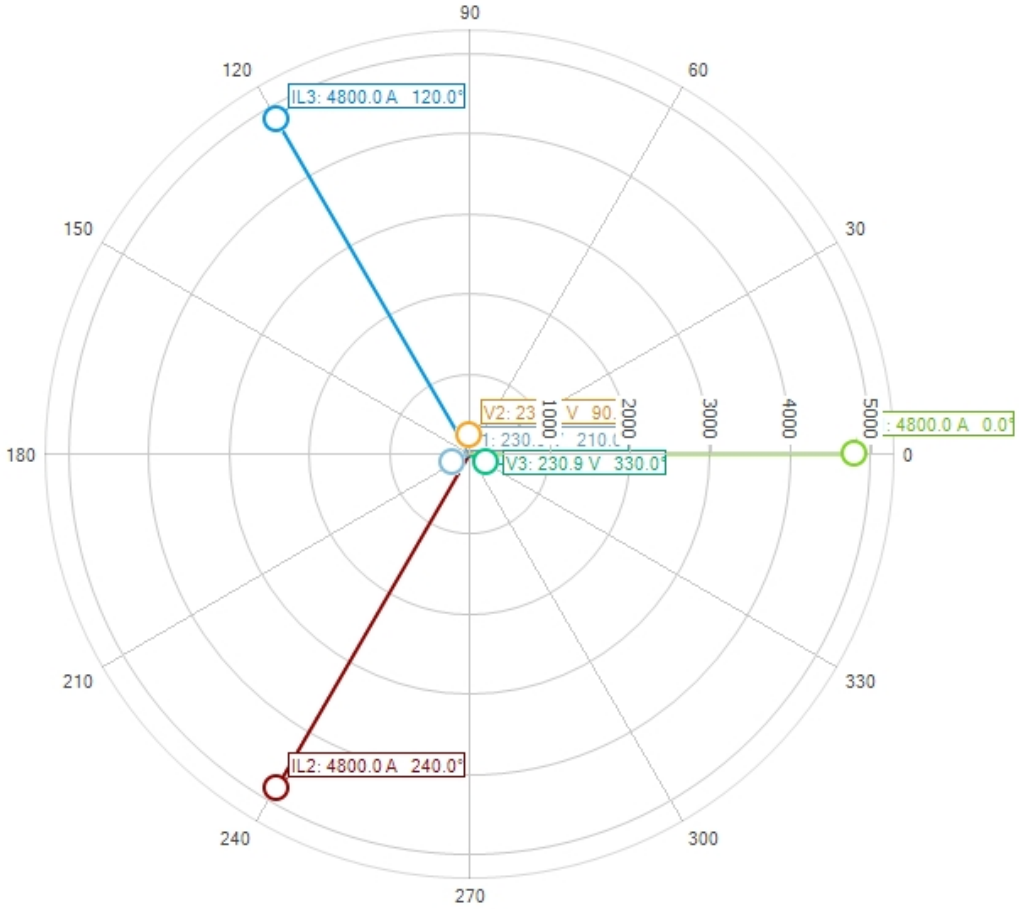
Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A3/+02-QF1	: DRAWER SPARE - A3/+02-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002761		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A3/+02-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	402	V	NA A	OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

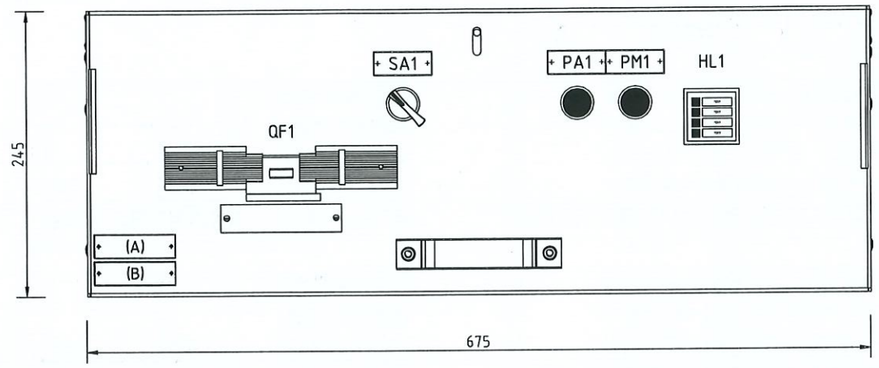
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-15	2024-10-15	2024-10-15
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-15T06:28:06.304Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-15T06:59:23.561Z	PROVERLIS Digitaly signed by Witness waived 2024-10-15T07:34:04.760Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

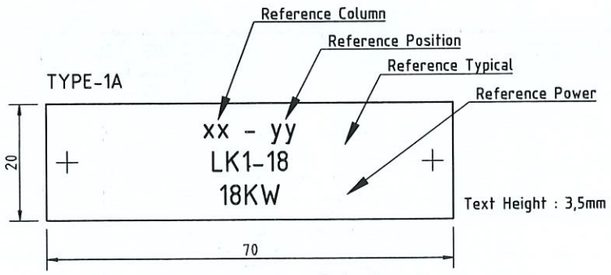


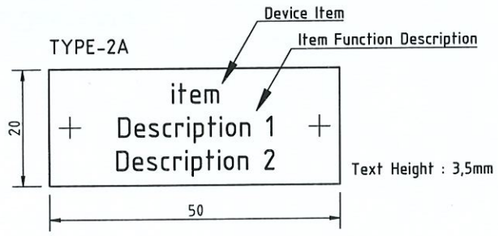
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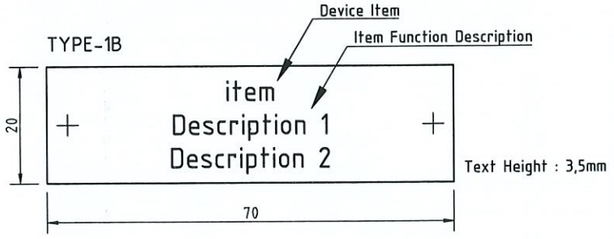
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

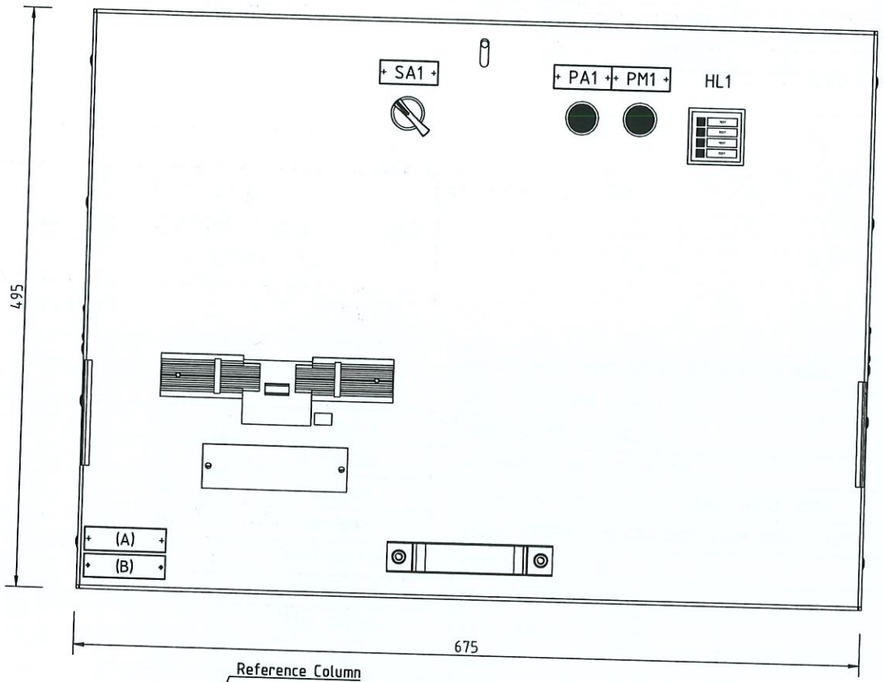
REV. 00

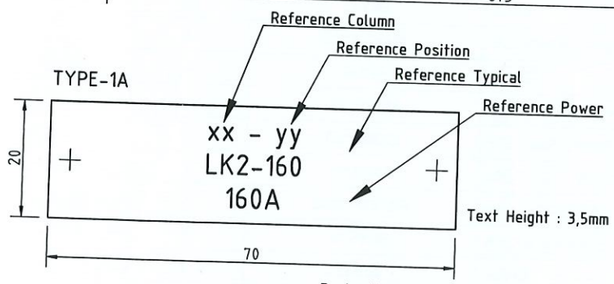
F.to UNI A3: 420mmx297mm

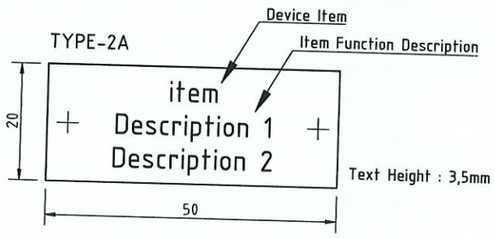
File Name : 1723002197-EL-DG-00031 Rev. 00

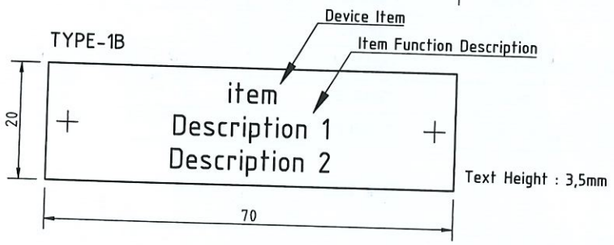
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

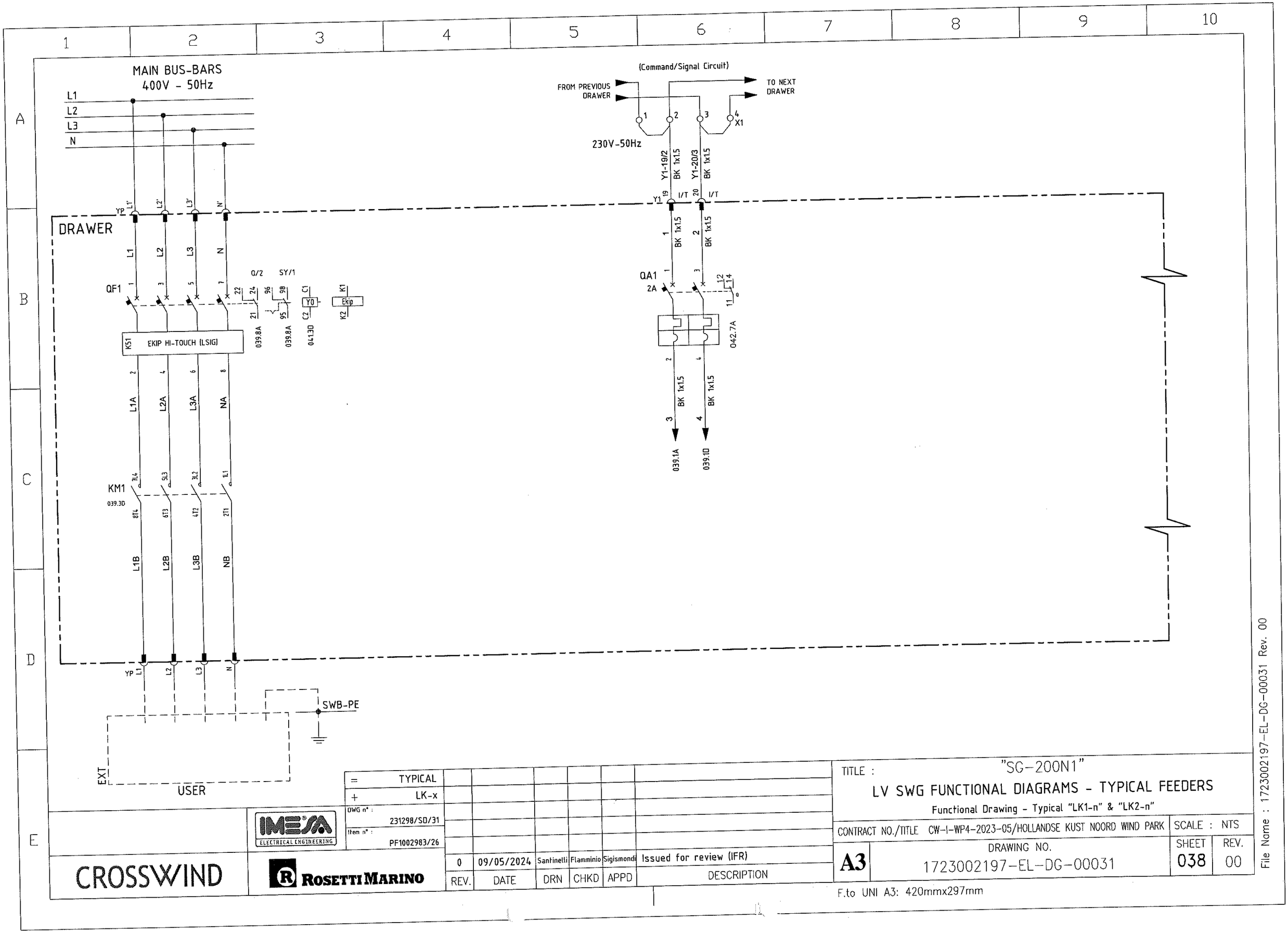
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

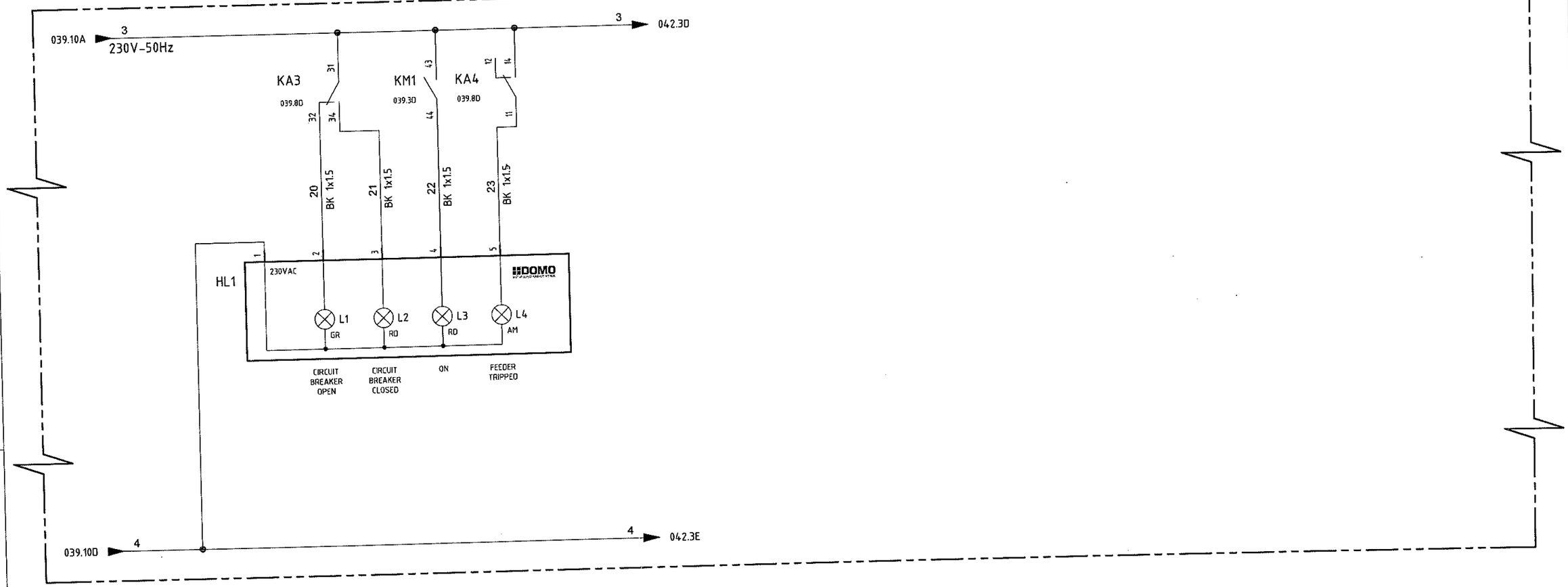
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

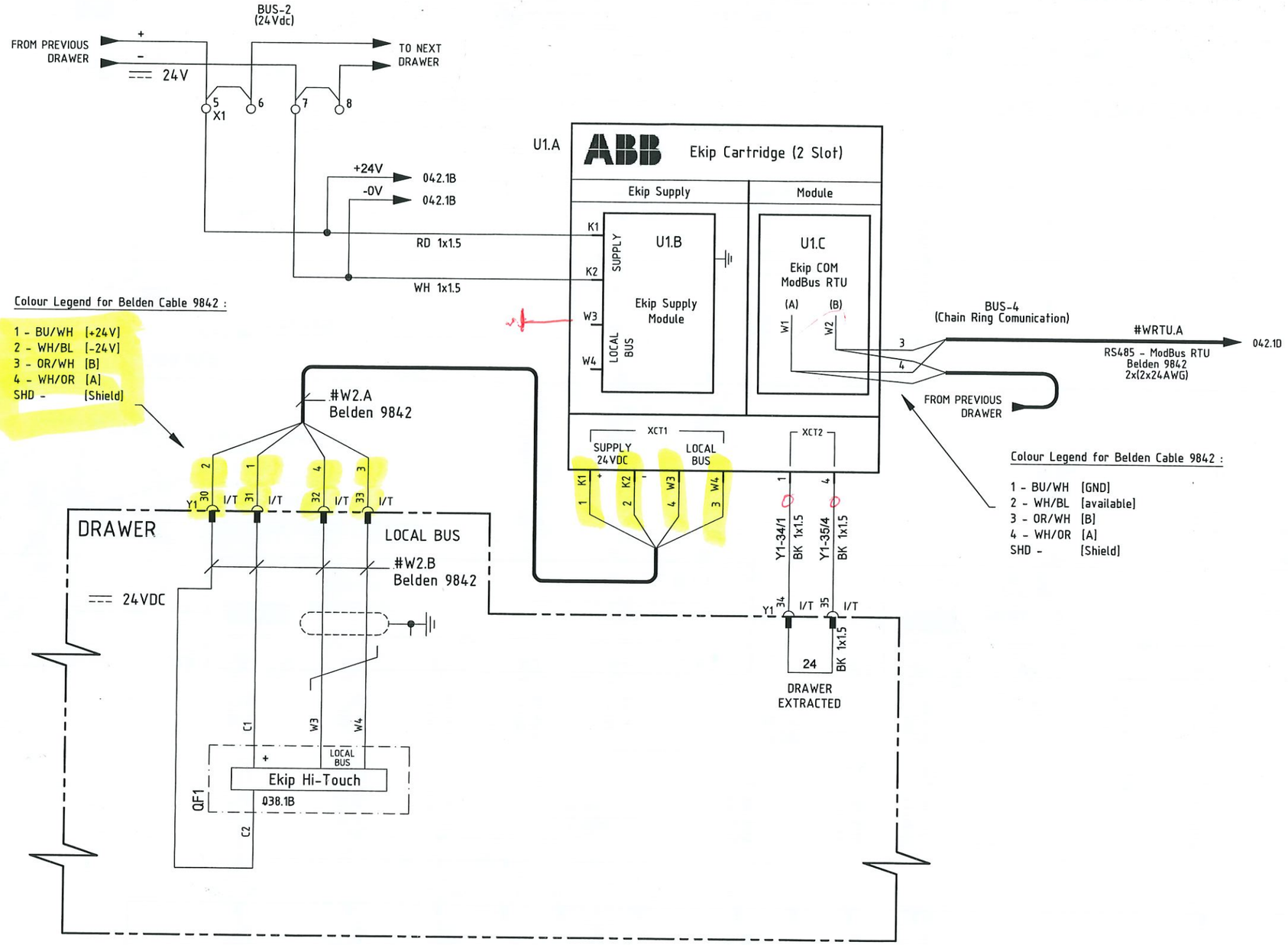
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

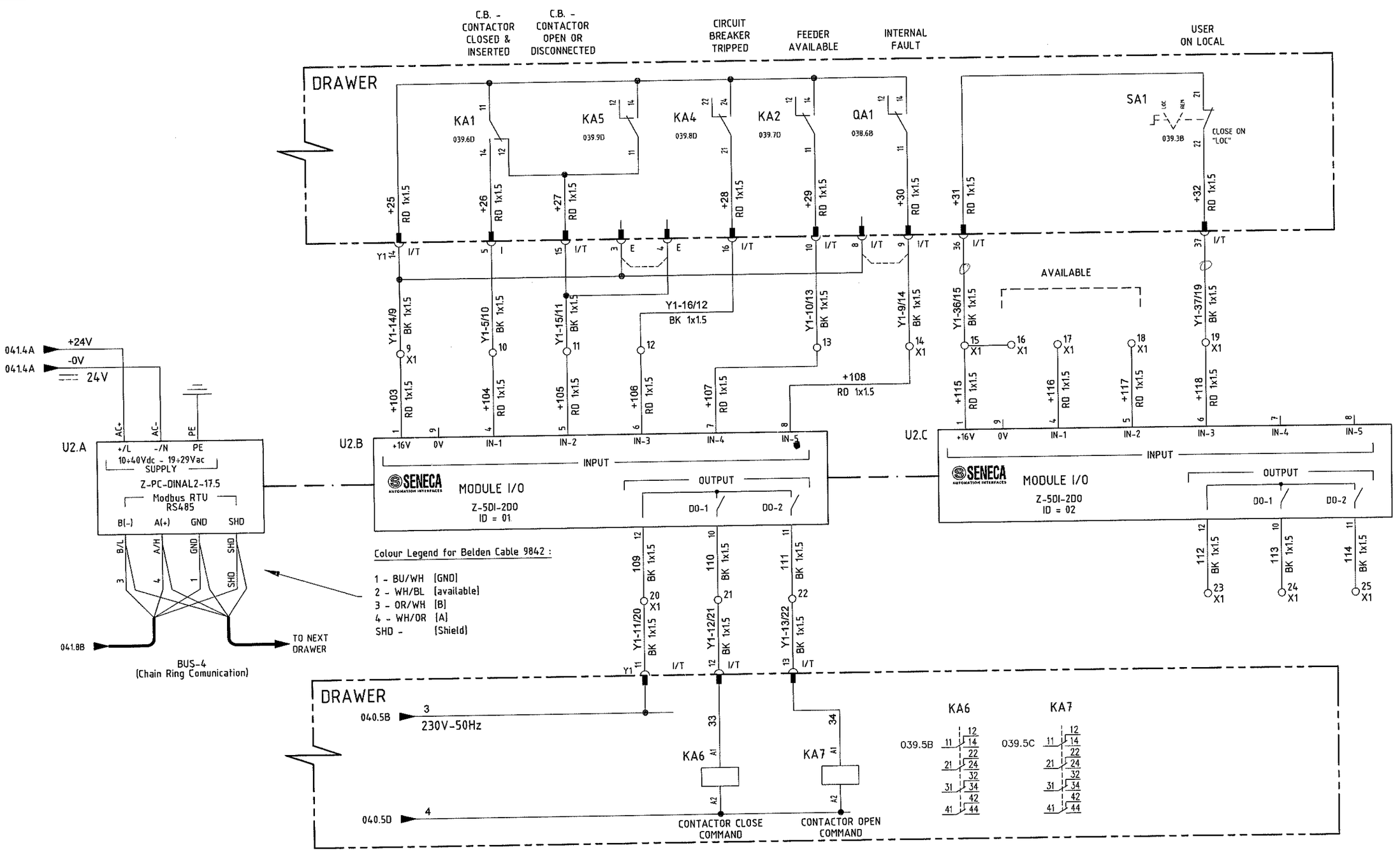
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

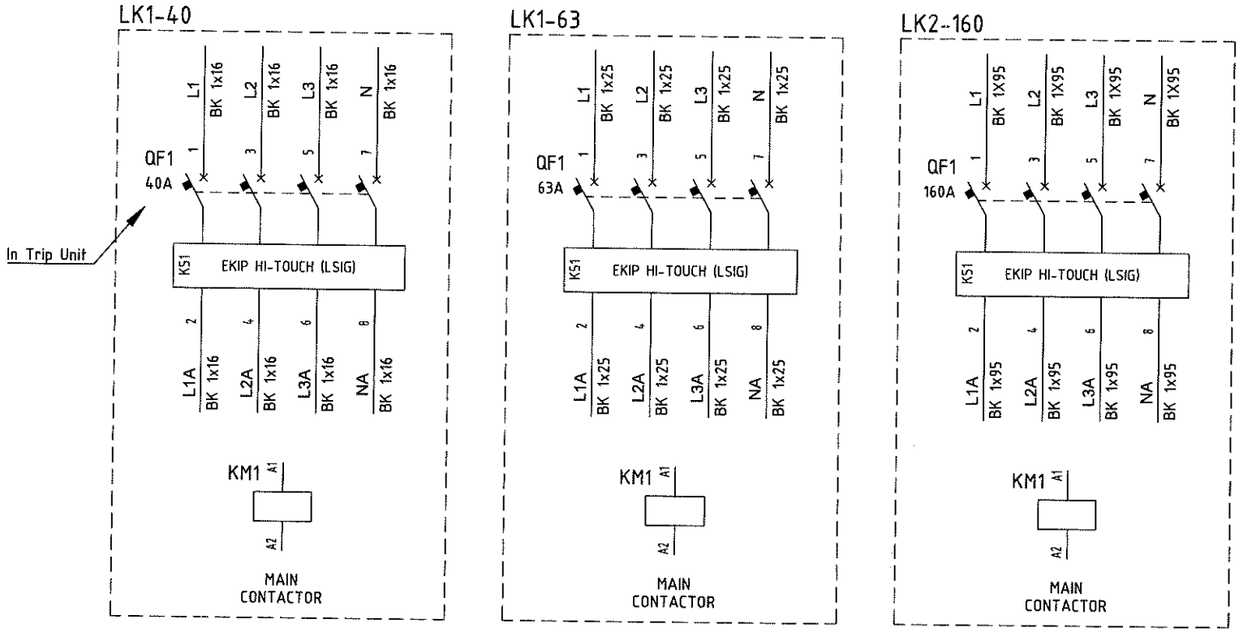
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A3/+02-QF1	: DRAWER SPARE - A3/+02-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module			
TASK	code	C10002762	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°:	EF8000153690000A	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A3/+02
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	20A			3s	
S	100A	120A		0.1s	101ms
I	200A	400A		INSTANT	25ms
G	8A			0.1s	

Testing & measurement instruments used

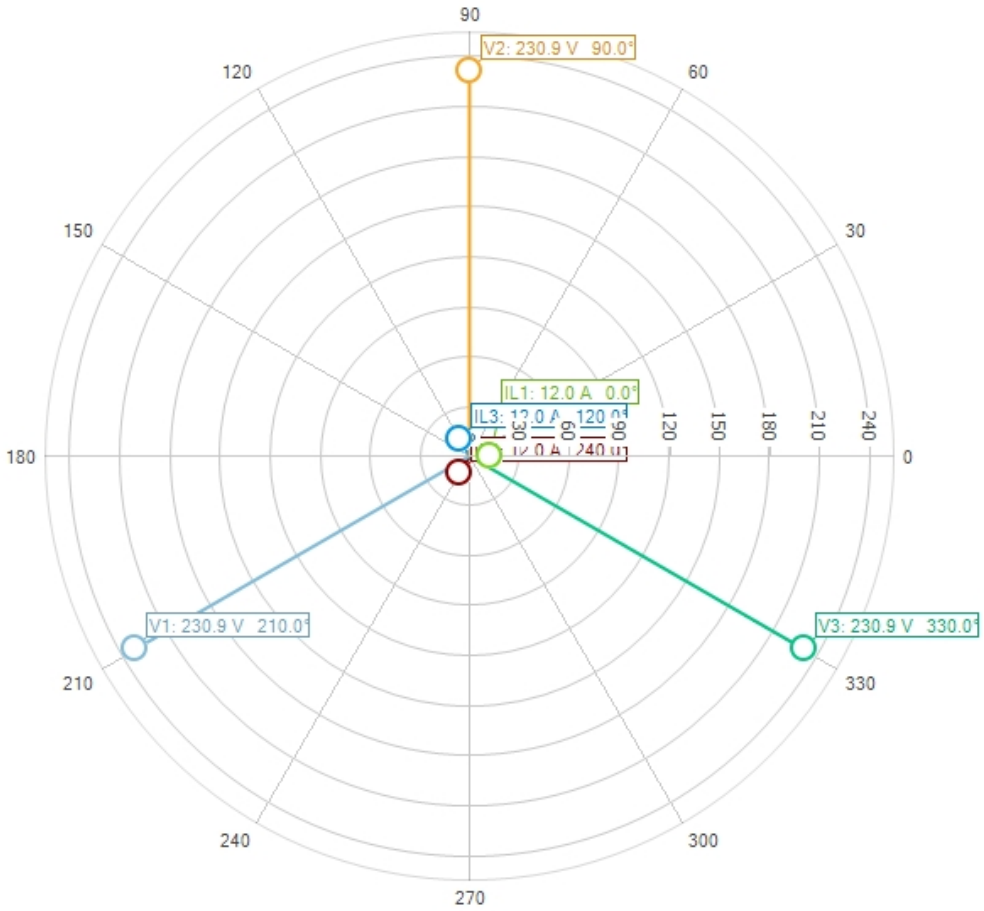
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-19	2024-09-19	2024-09-20
Signature	Digitaly signed by Mattia Girotti 2024-09-19T06:08:16.293Z	Digitaly signed by Kristian Castellani 2024-09-19T06:57:56.257Z	Digitaly signed by Witness waived 2024-09-20T06:19:04.790Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

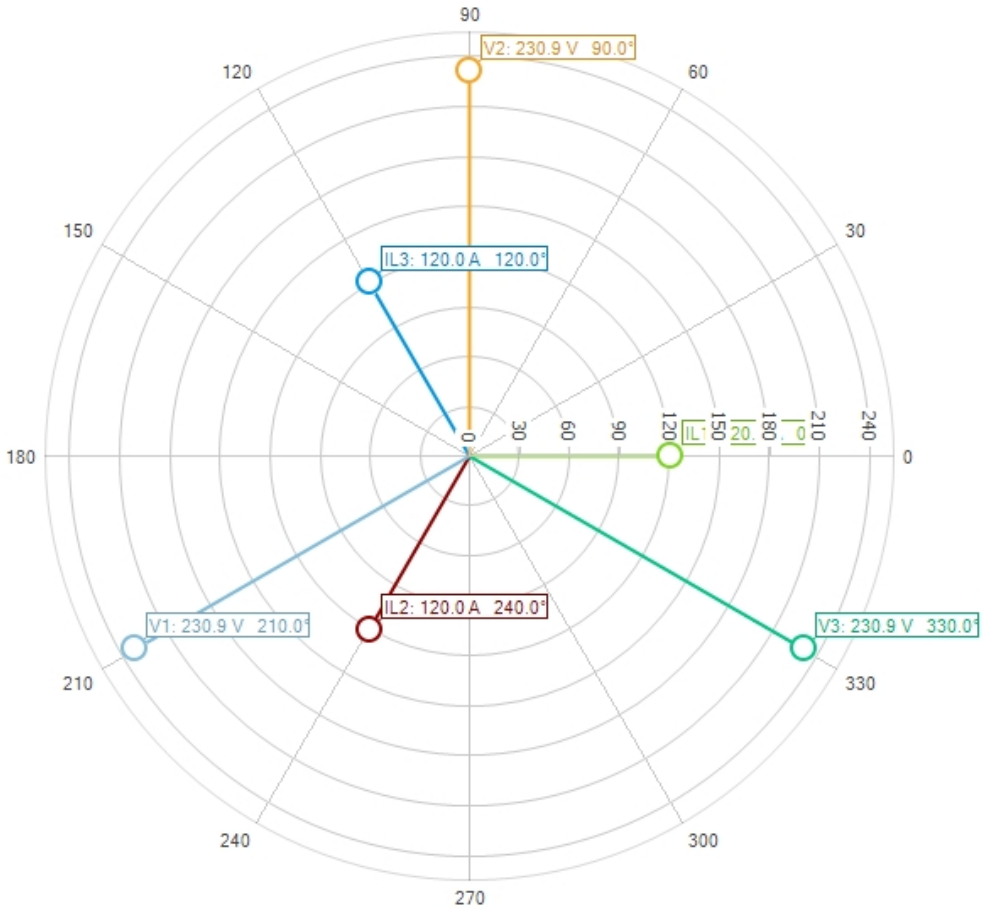
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

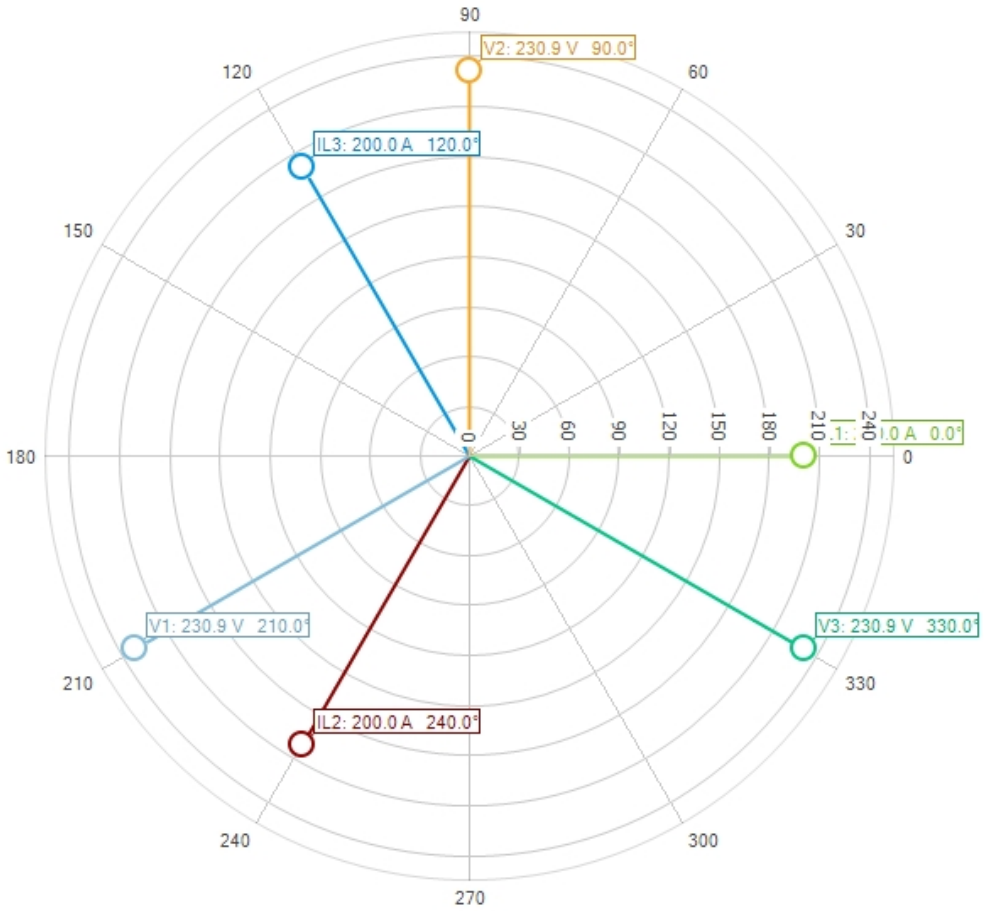
Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

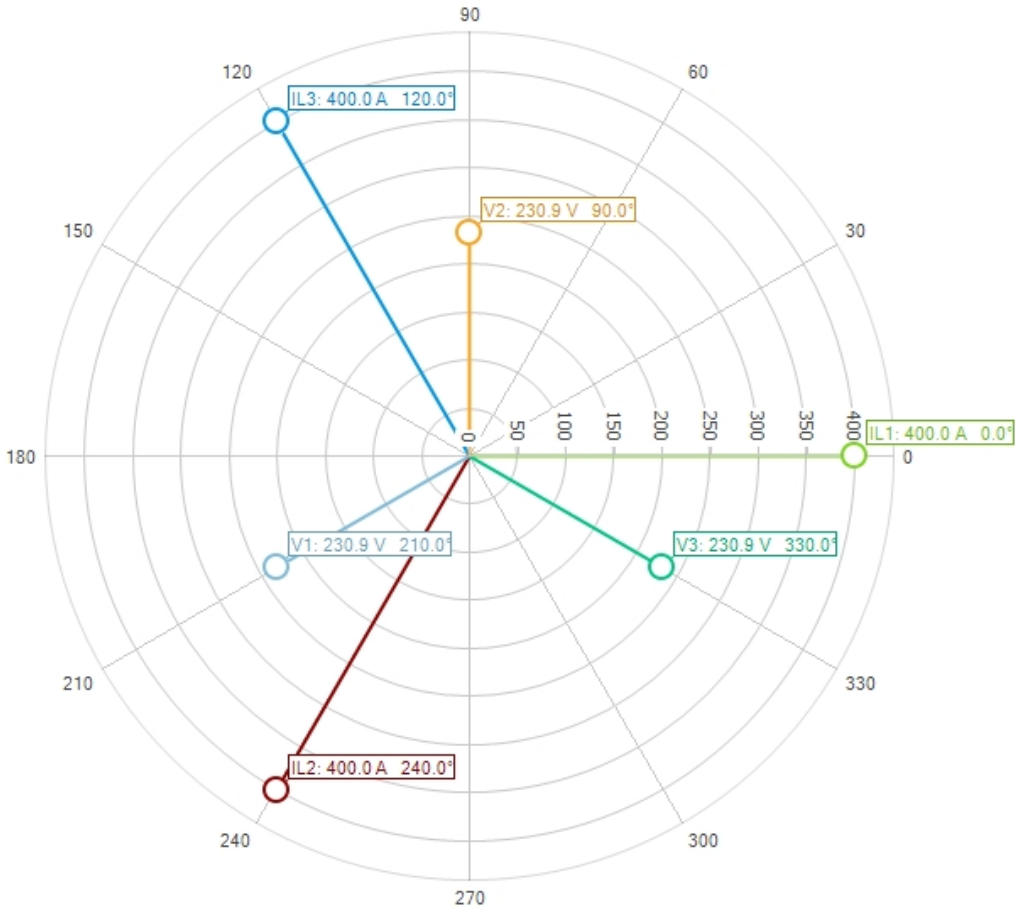
Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

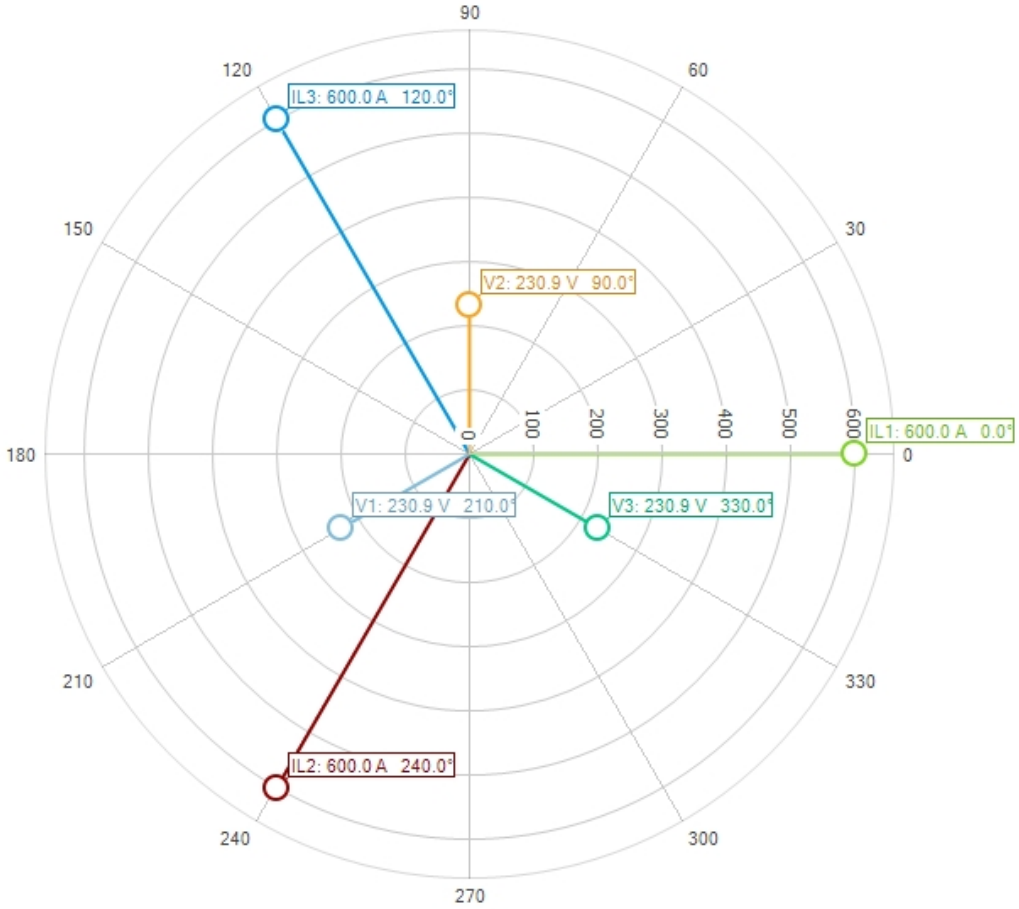
Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A3/+02-QF1	: DRAWER SPARE - A3/+02-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002763	Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A3/+02	Calibration certificate date:	7715/24_10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A3/+02 - KA1/11-14	A3/+02 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A3/+02 - KA1/11-12	A3/+02 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A3/+02 - KA5/11-14	A3/+02 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A3/+02 - KA4/21-24	A3/+02 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A3/+02 - KA2/11-14	A3/+02 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A3/+02 - QA1/11-14	A3/+02 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A3/+02 - SA1/21-22	A3/+02 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

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

Comments: The test of the cubicle was carried out on a test bench.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-03	2024-10-03	2024-10-03
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-03T08:34:31.349Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-03T13:47:05.572Z	PROVERLIS Digitaly signed by Witness waived 2024-10-03T14:23:29.649Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A3/+05-QF1	: DRAWER SPARE - A3/+05-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002764		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A3/+05-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				PL
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	399	V	0.3 A	OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

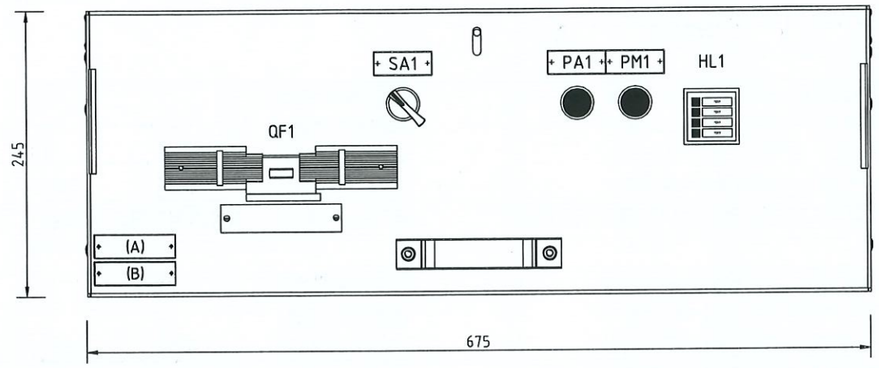
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments: See PL ref.:C30000237, for the problem in the EKIP.

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	2024-10-21	2024-10-22	2024-10-22
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-21T09:10:37.519Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-22T06:17:33.743Z	PROVERLIS Digitaly signed by Witness waived 2024-10-22T07:53:38.880Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

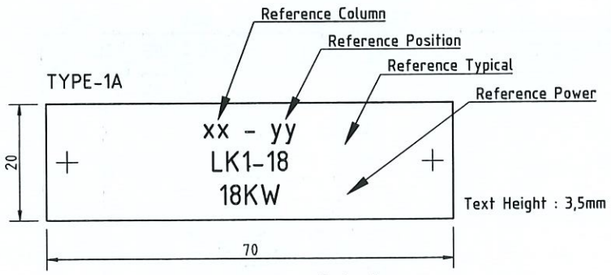


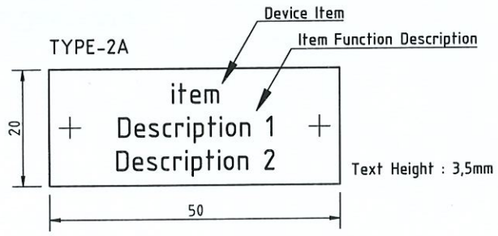
NOTE :

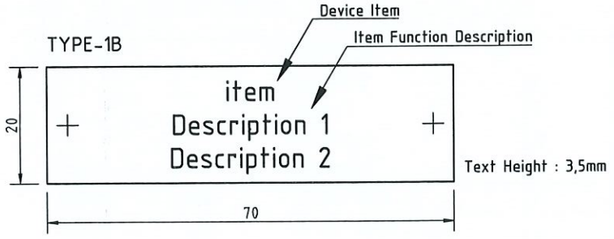
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

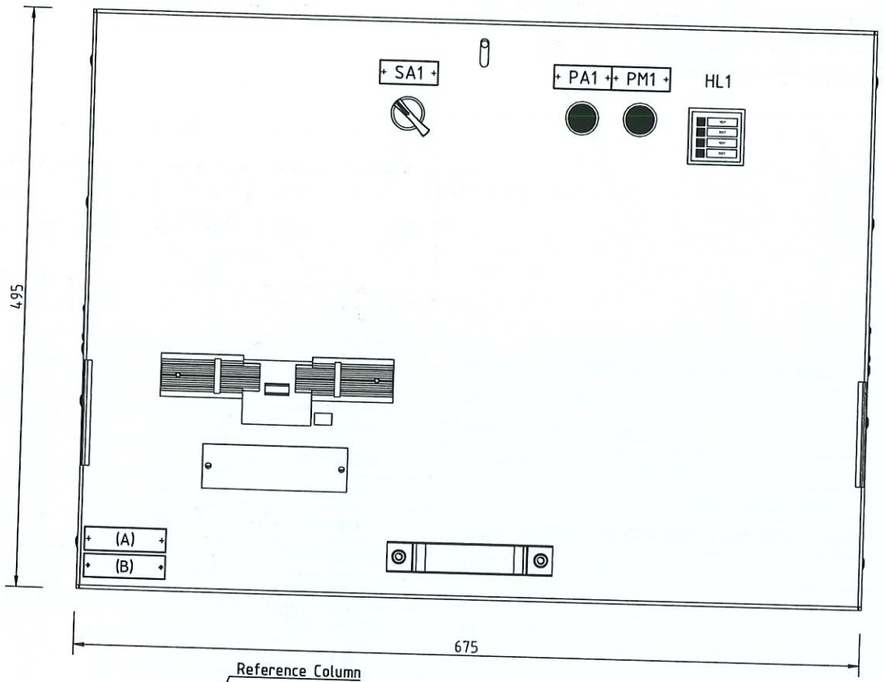
REV. 00

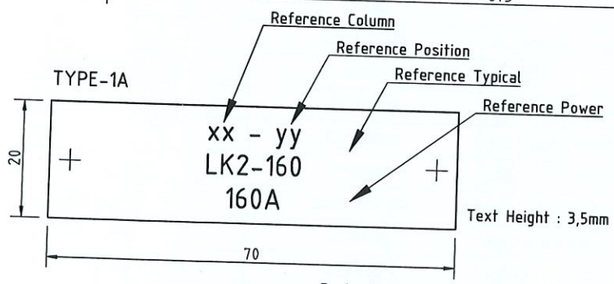
F.to UNI A3: 420mmx297mm

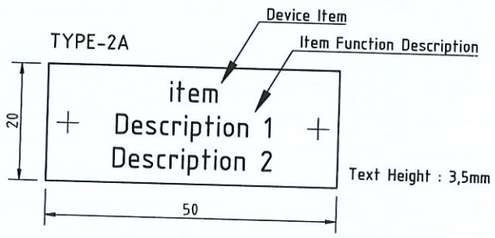
File Name : 1723002197-EL-DG-00031 Rev. 00

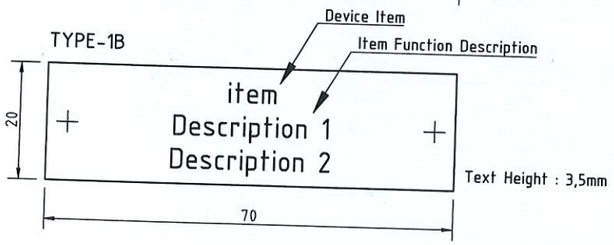
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

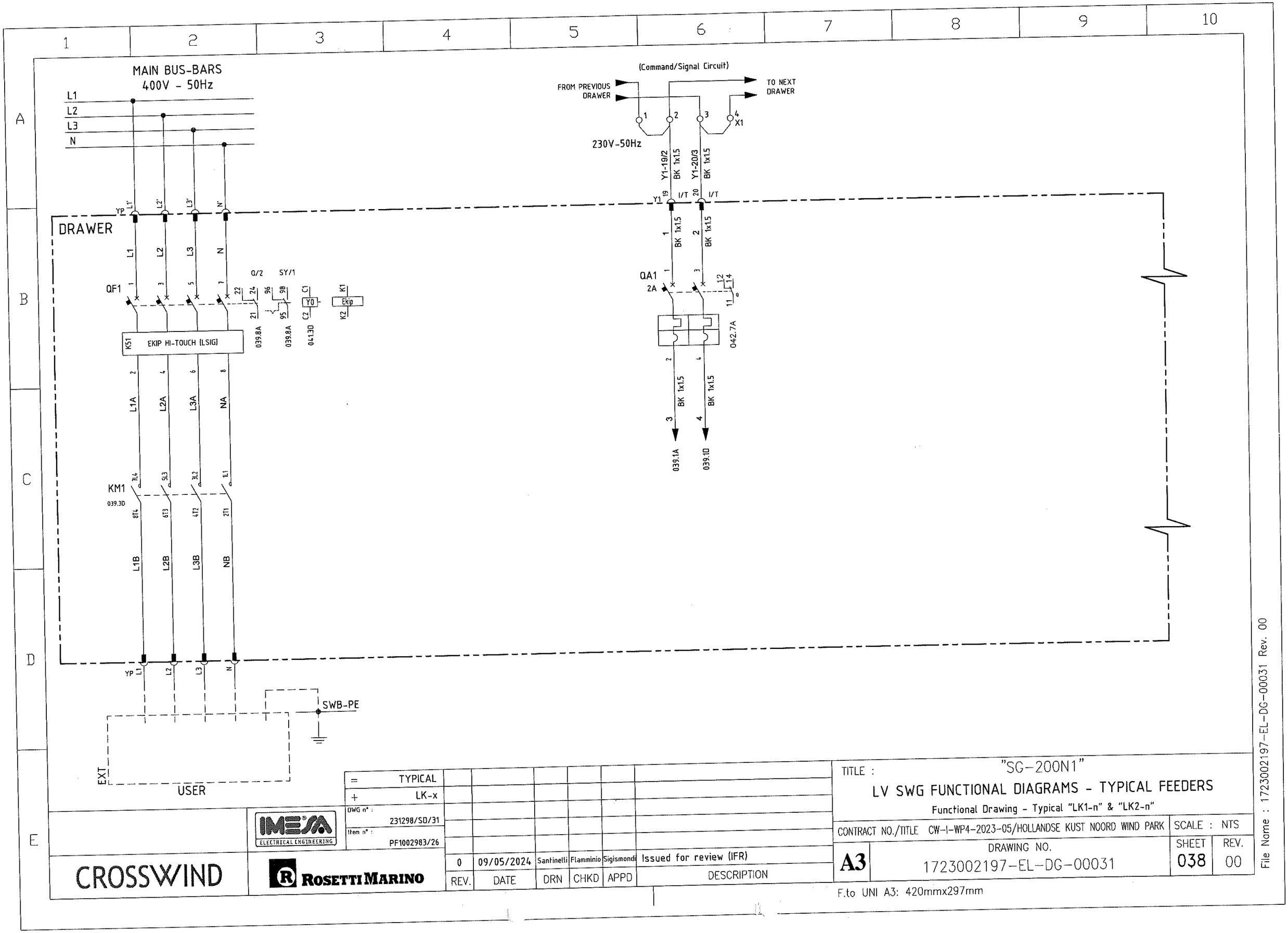
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

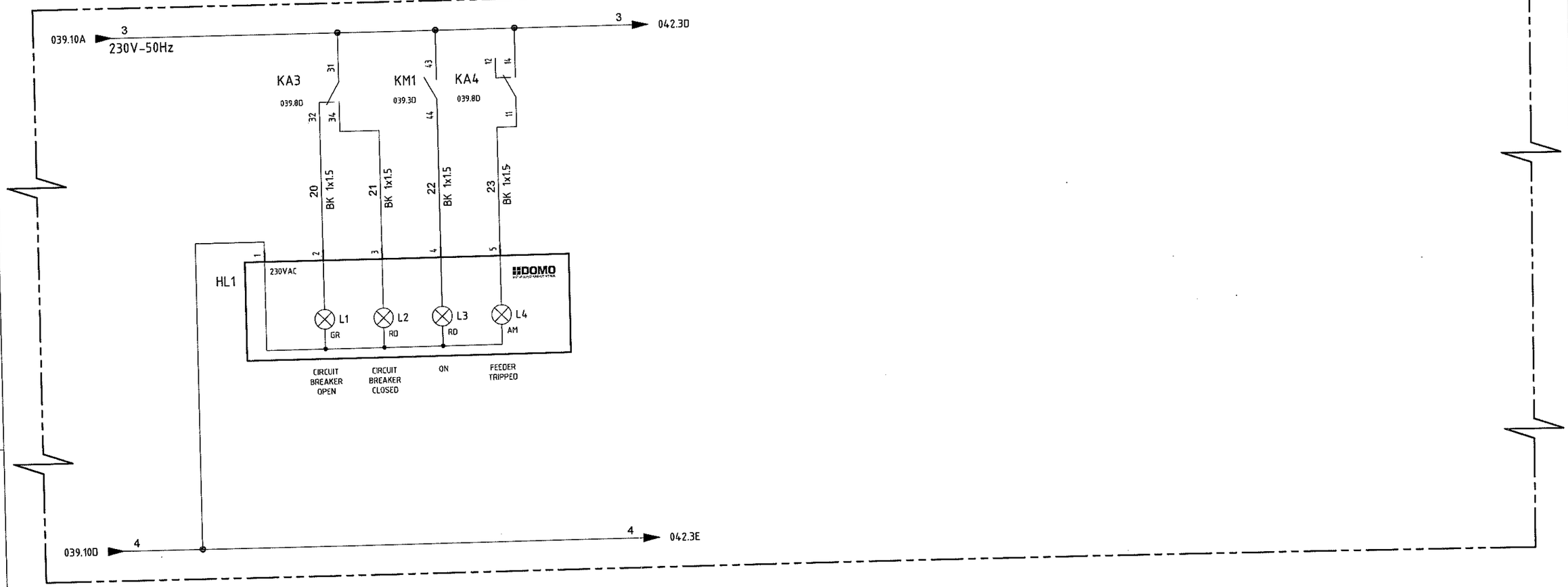
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

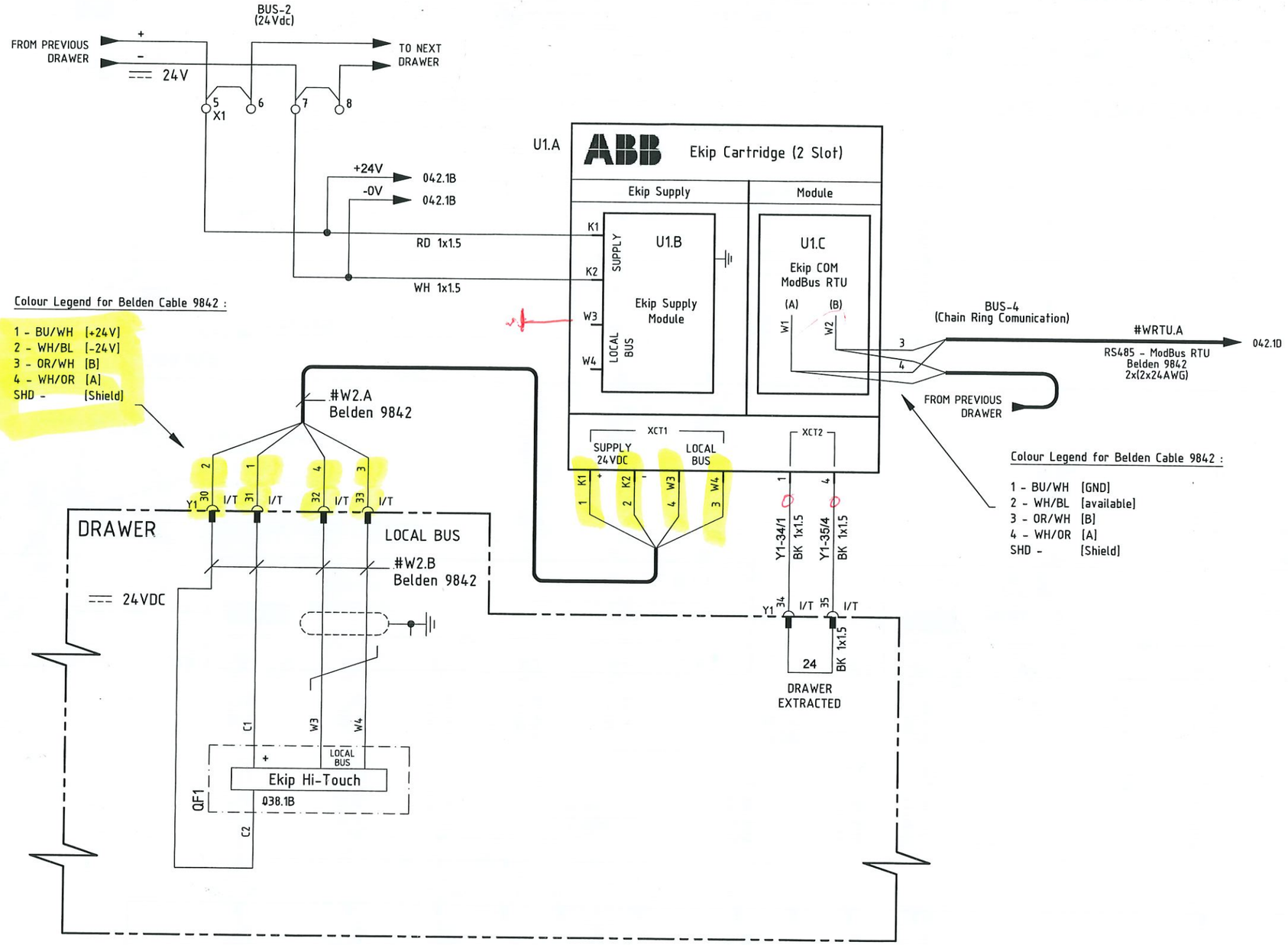
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

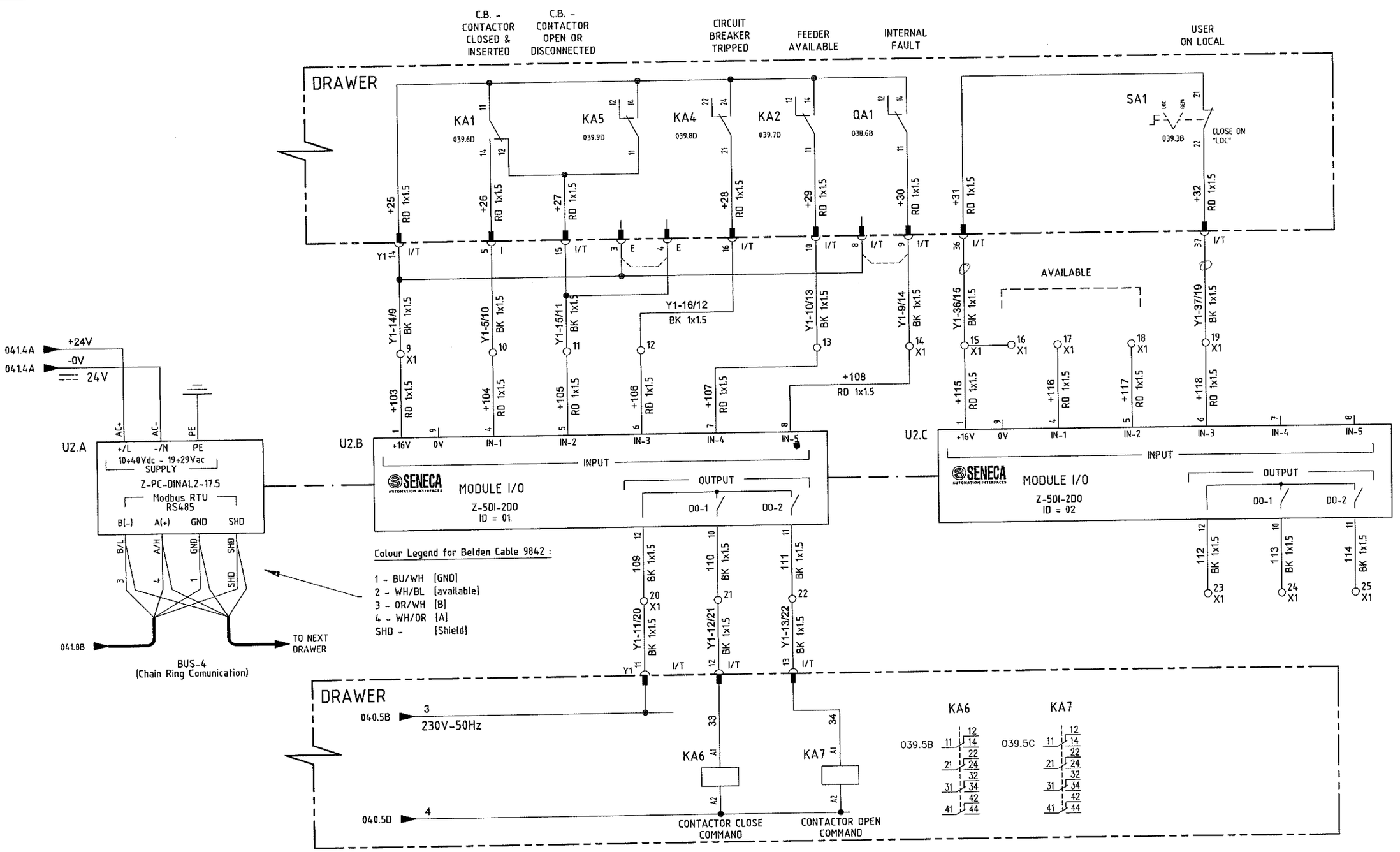
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

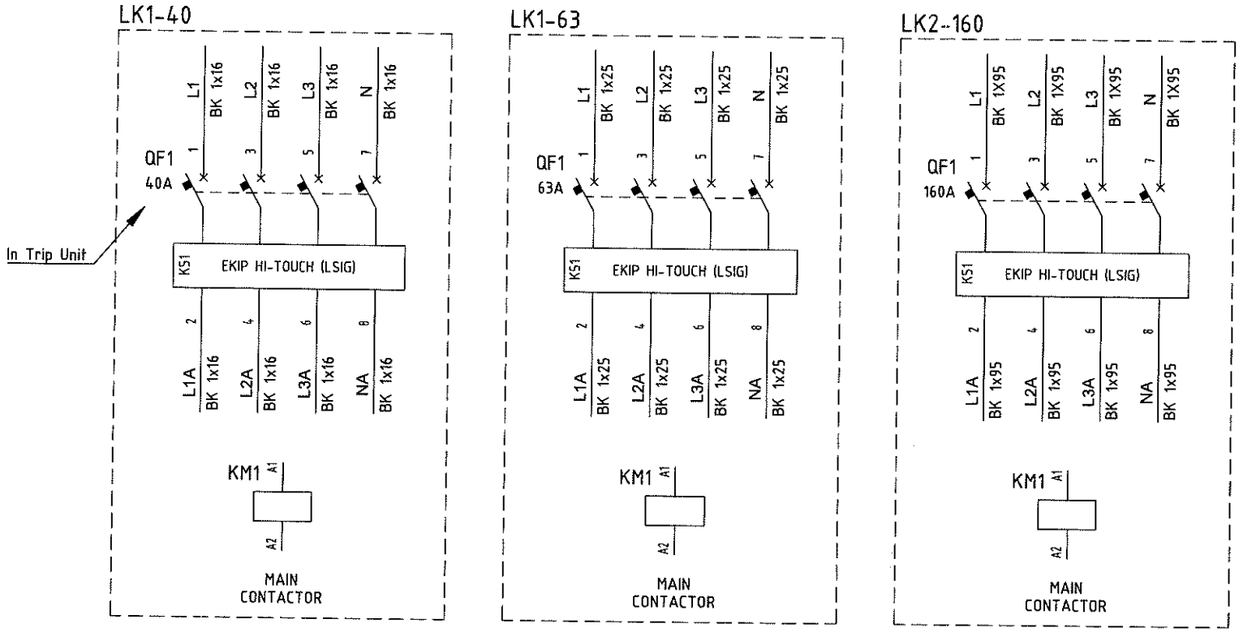
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A3/+05-QF1	:	DRAWER SPARE - A3/+05-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	:	400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002765	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°:	EH7000253690N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A3/+05
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	20A			3s	
S	100A	120A		0.1s	101ms
I	200A	400A		INSTANT	25ms
G	8A			0.1s	

Testing & measurement instruments used

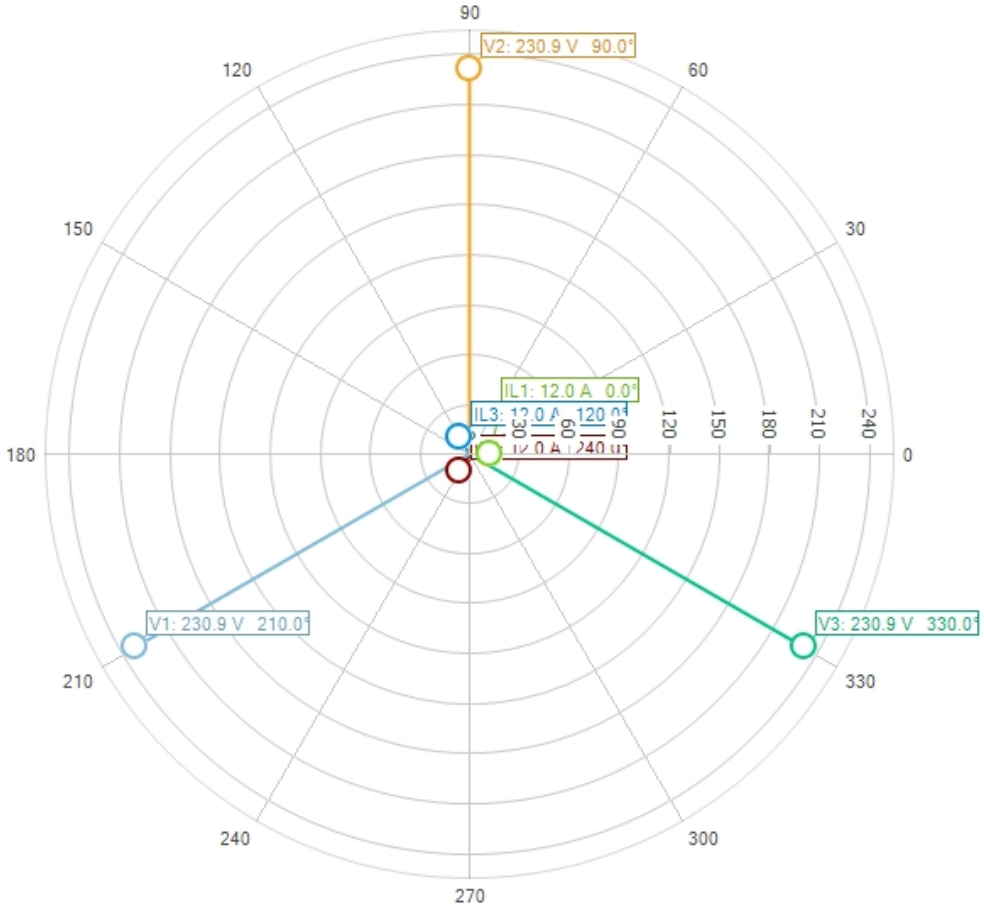
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

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	2024-10-02	2024-10-02	2024-10-02
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-02T06:48:27.061Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-02T08:42:28.382Z	PROVERLIS Digitaly signed by Witness waived 2024-10-02T09:18:29.220Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

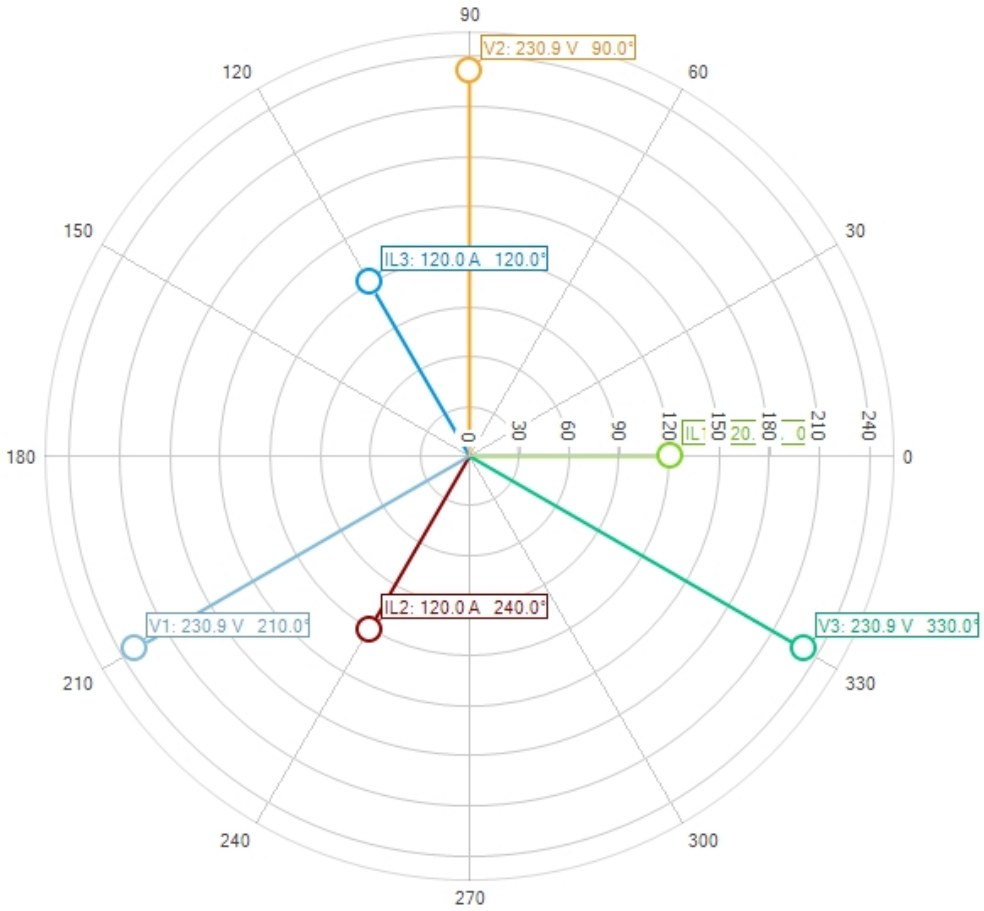
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

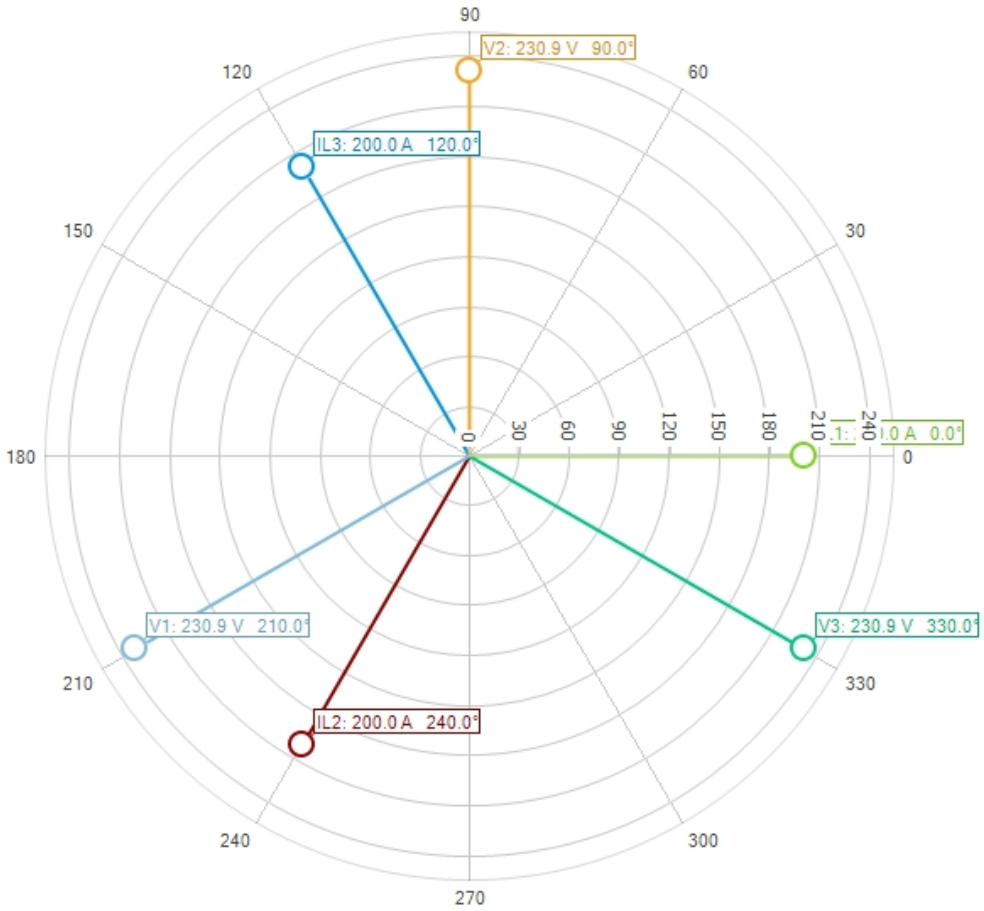
Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

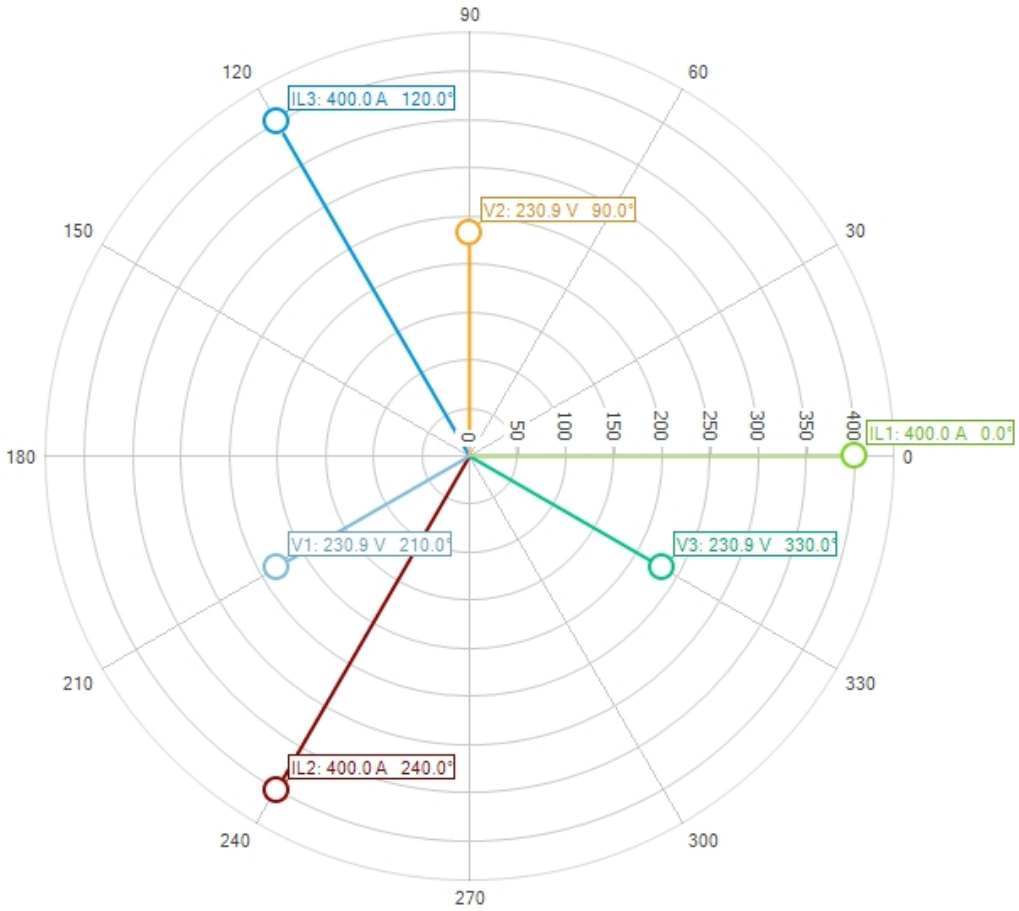
Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

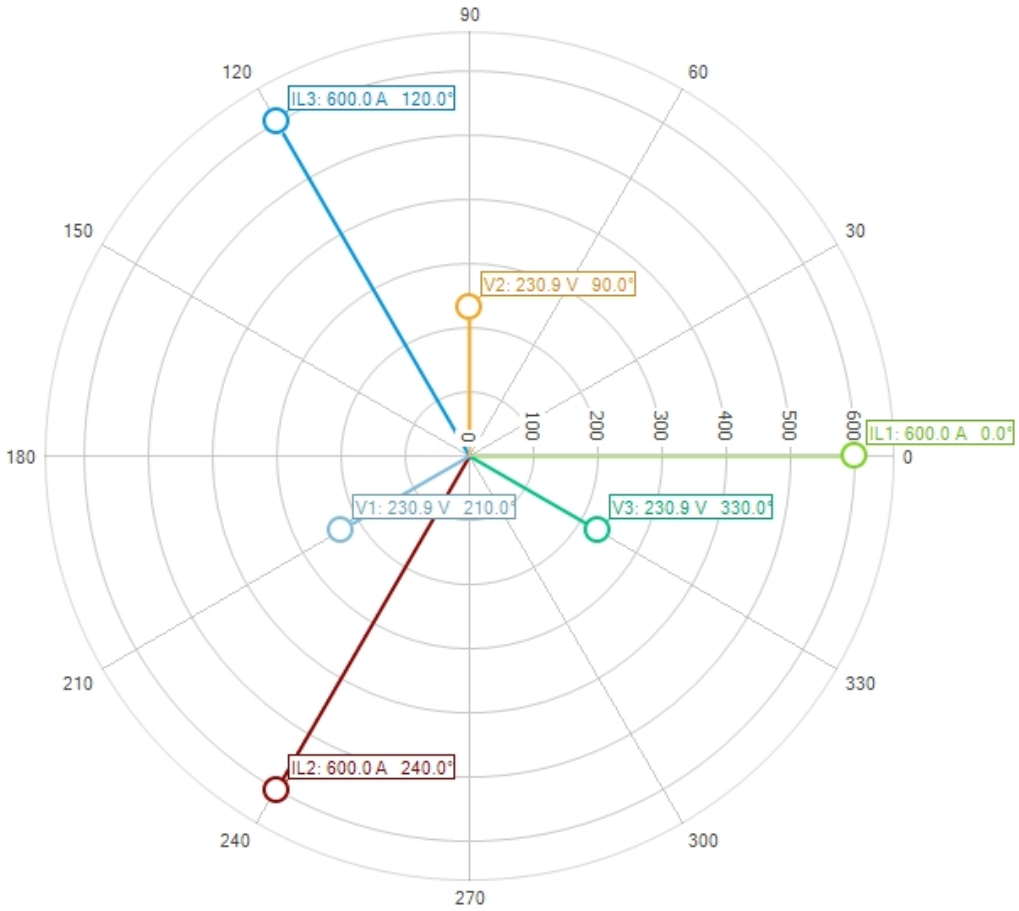
Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A3/+05-QF1	: DRAWER SPARE - A3/+05-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002766	Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A3/+05	Calibration certificate date:	7715/24_10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A3/+05 - KA1/11-14	A3/+05 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A3/+05 - KA1/11-12	A3/+05 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A3/+05 - KA5/11-14	A3/+05 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A3/+05 - KA4/21-24	A3/+05 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A3/+05 - KA2/11-14	A3/+05 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A3/+05 - QA1/11-14	A3/+05 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A3/+05 - SA1/21-22	A3/+05 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

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

Comments: The test of the cubicle was carried out on a test bench.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-03	2024-10-03	2024-10-03
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-03T08:35:01.682Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-03T13:47:47.619Z	PROVERLIS Digitaly signed by Witness waived 2024-10-03T14:23:49.497Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A4/+05-QF1	: DRAWER SPARE - A4/+05-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002767		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A4/+05-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

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

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

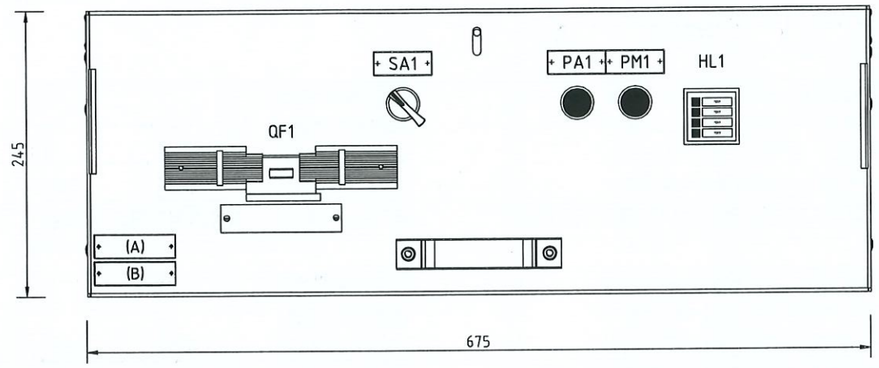
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-15	2024-10-15	2024-10-15
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-15T06:25:56.716Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-15T07:00:01.529Z	PROVERLIS Digitaly signed by Witness waived 2024-10-15T07:34:33.032Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

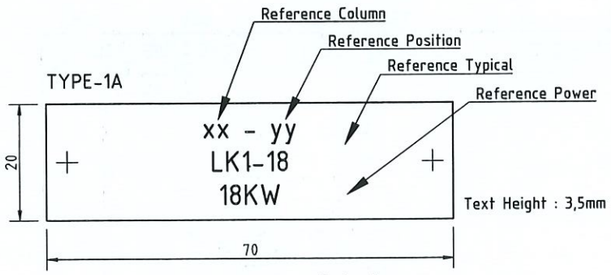


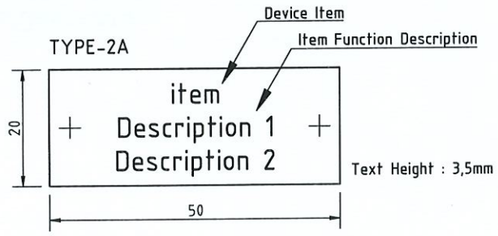
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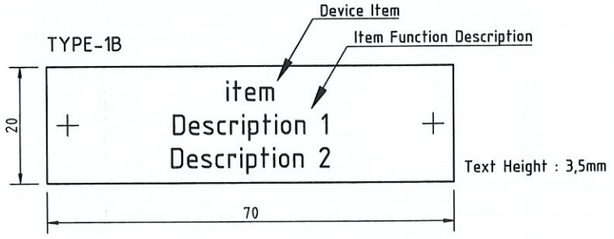
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

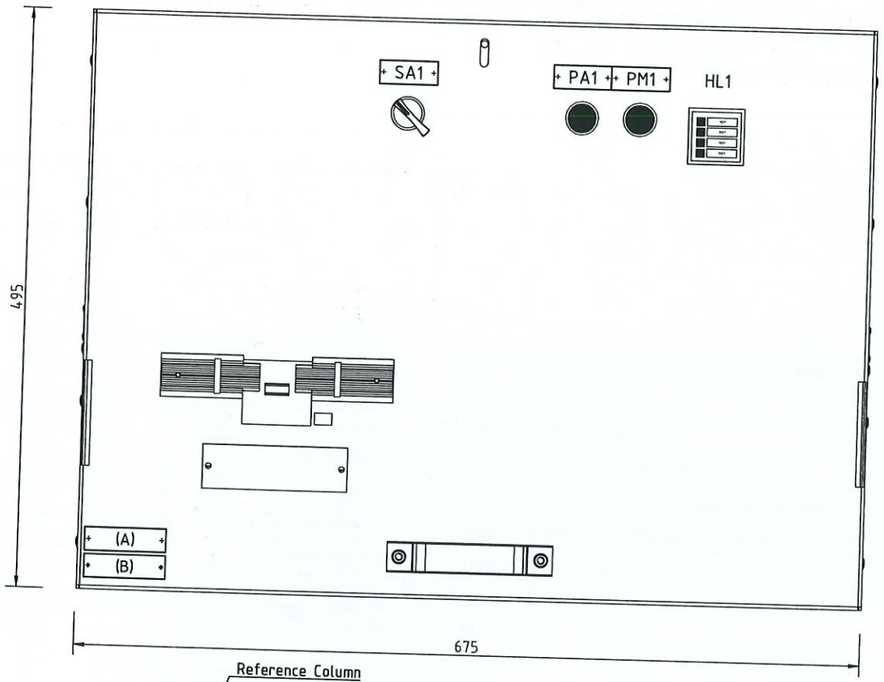
REV. 00

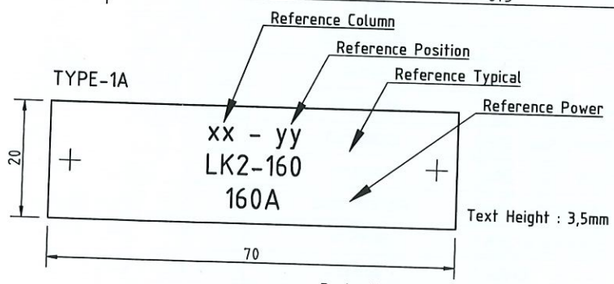
F.to UNI A3: 420mmx297mm

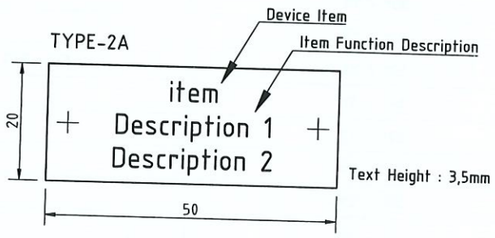
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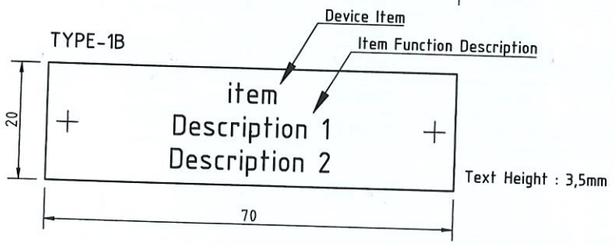
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

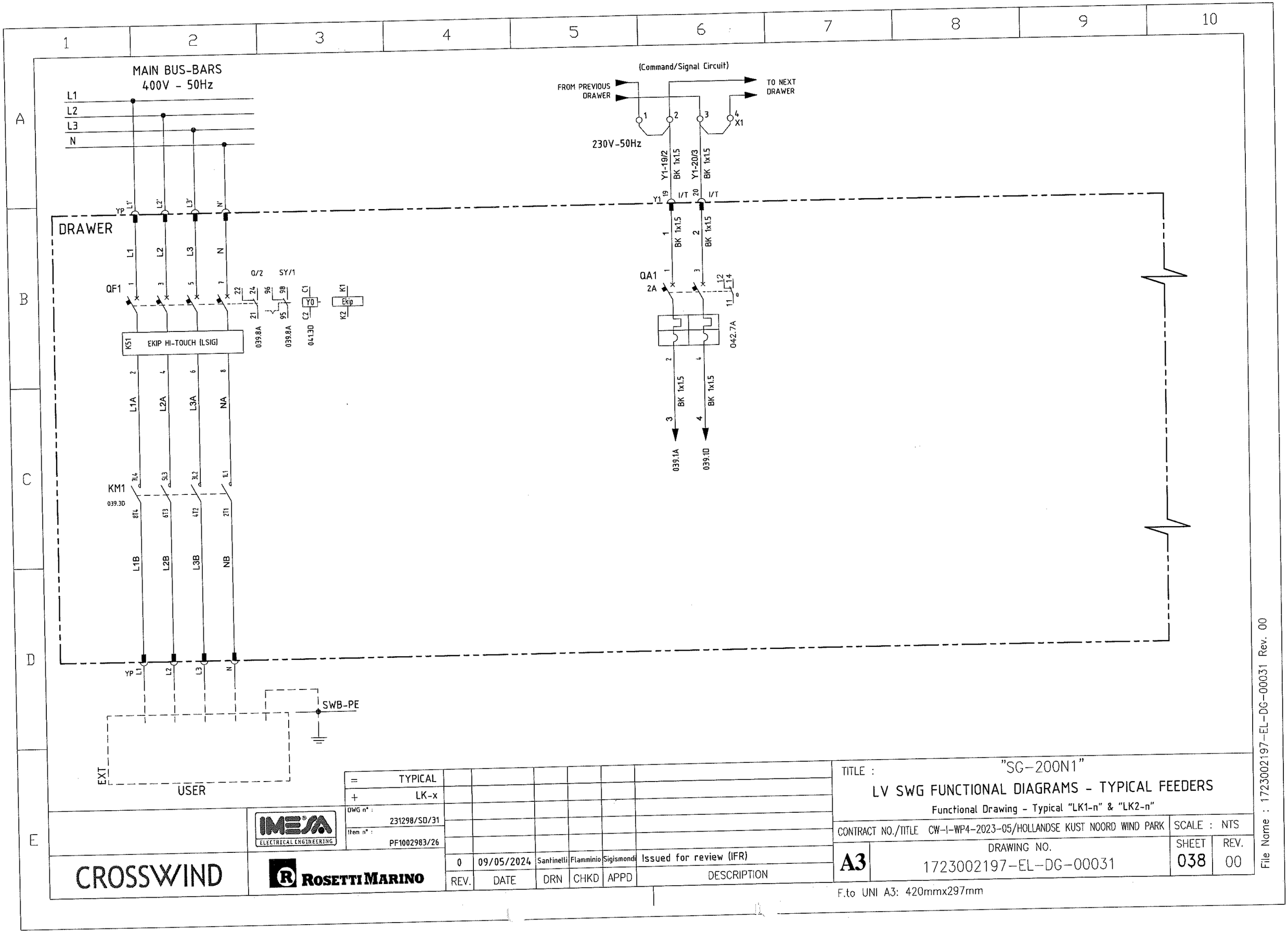
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

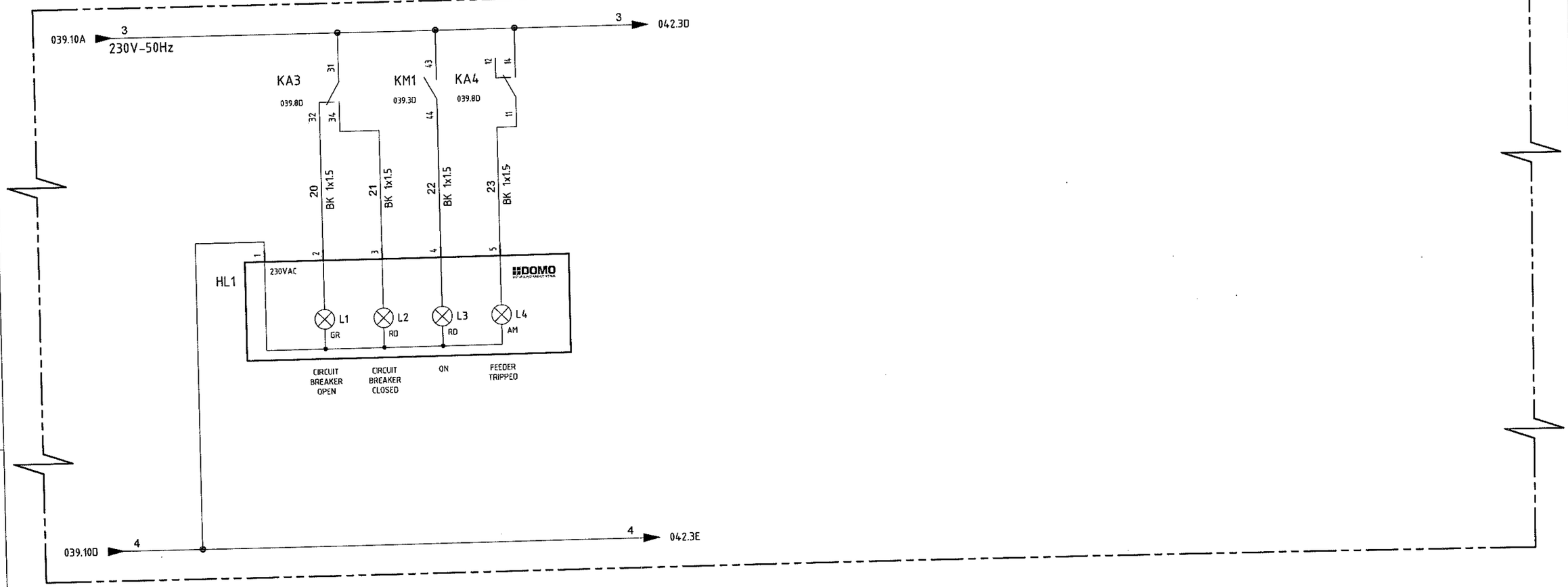
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

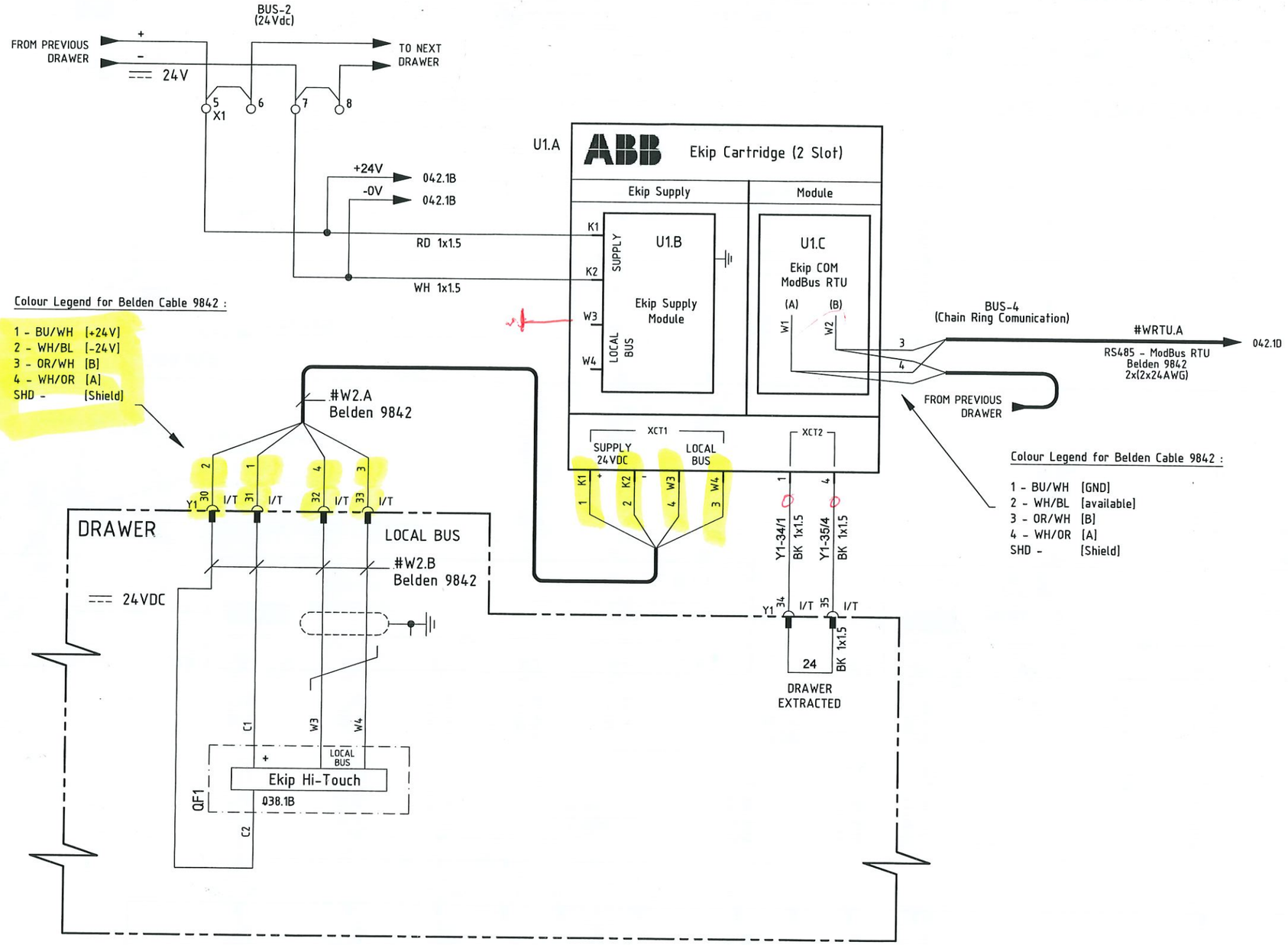
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

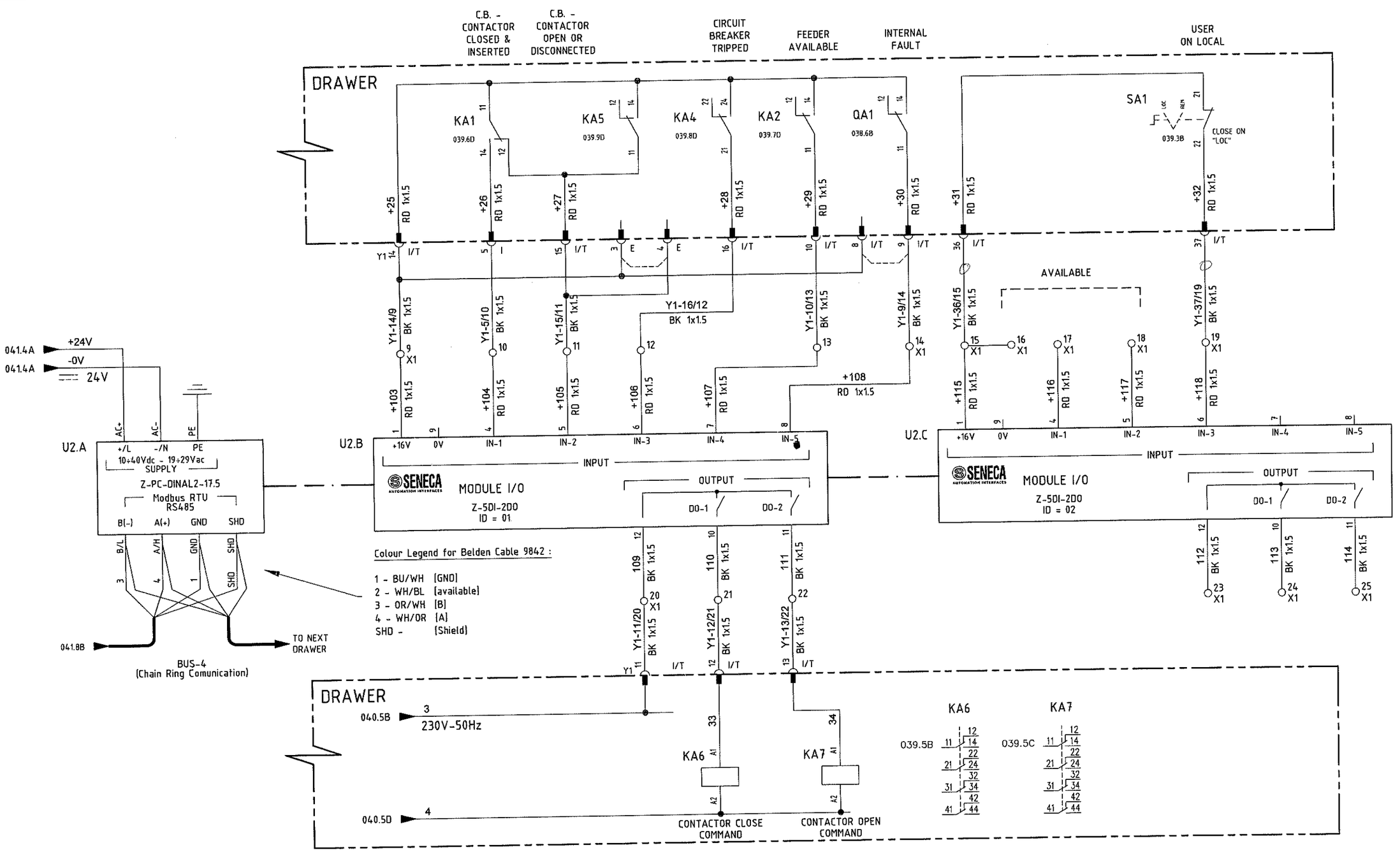
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

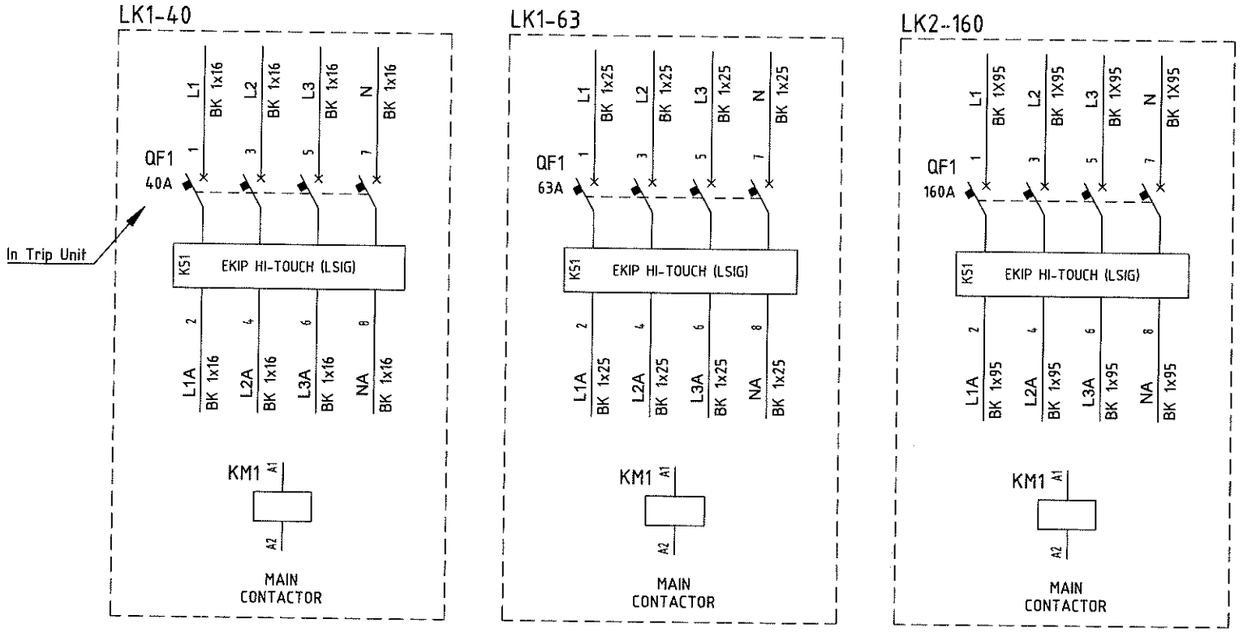
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A4/+05-QF1	:	DRAWER SPARE - A4/+05-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	:	400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002768	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°:	EF5000353690N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A4/+05
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	20A			3s	
S	100A	120A		0.1s	104ms
I	200A	400A		INSTANT	26ms
G	8A			0.1s	

Testing & measurement instruments used

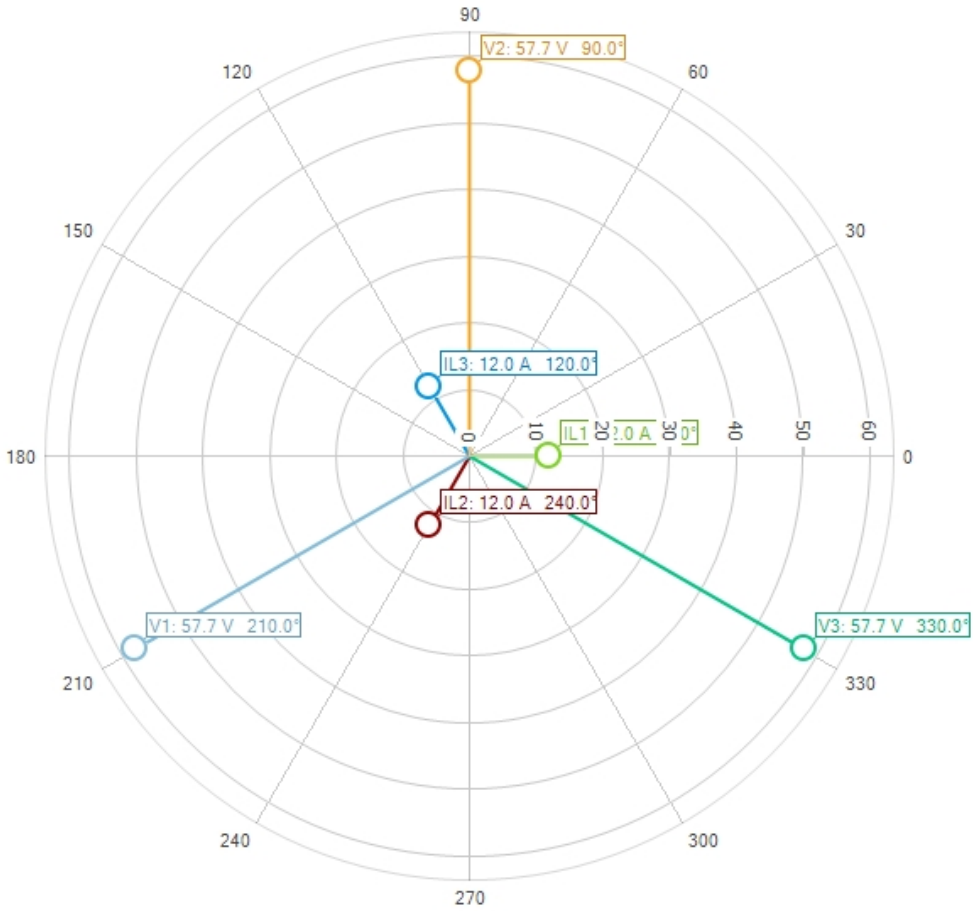
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-19	2024-09-19	2024-09-20
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-19T06:39:57.179Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-19T07:00:45.378Z	PROVERLIS Digitaly signed by Witness waived 2024-09-20T06:19:31.411Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

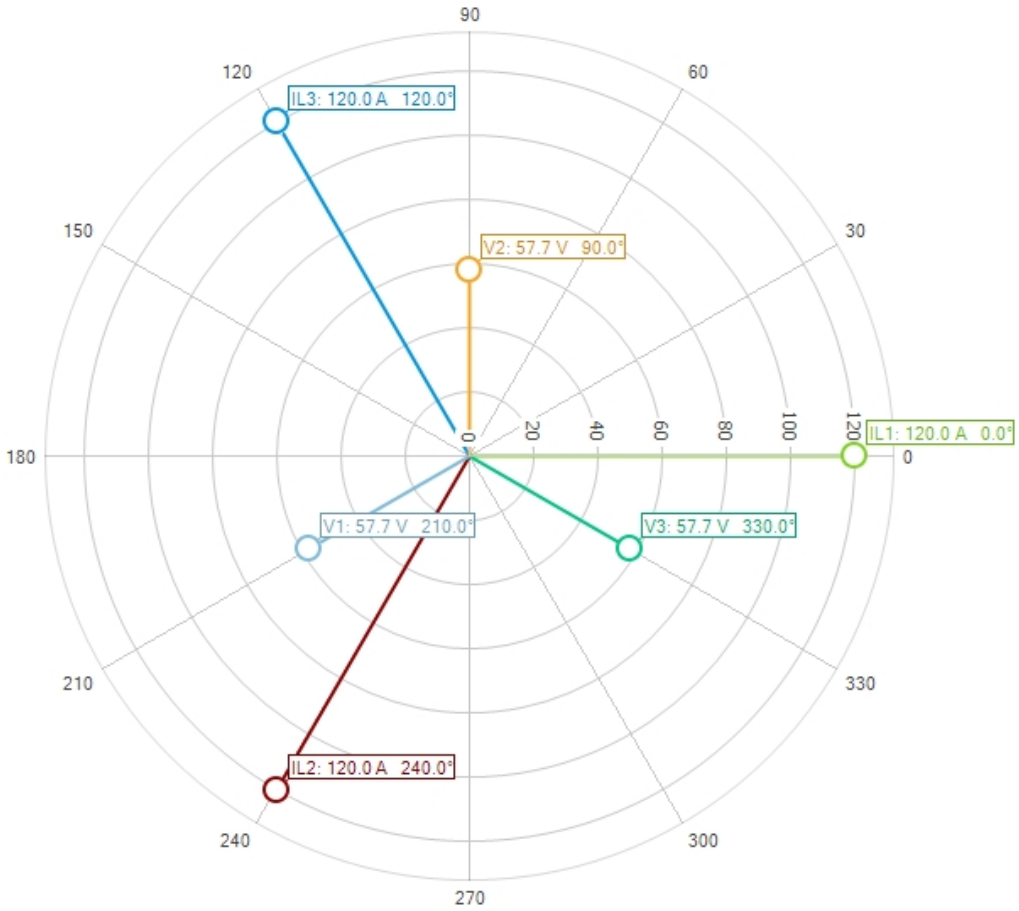
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

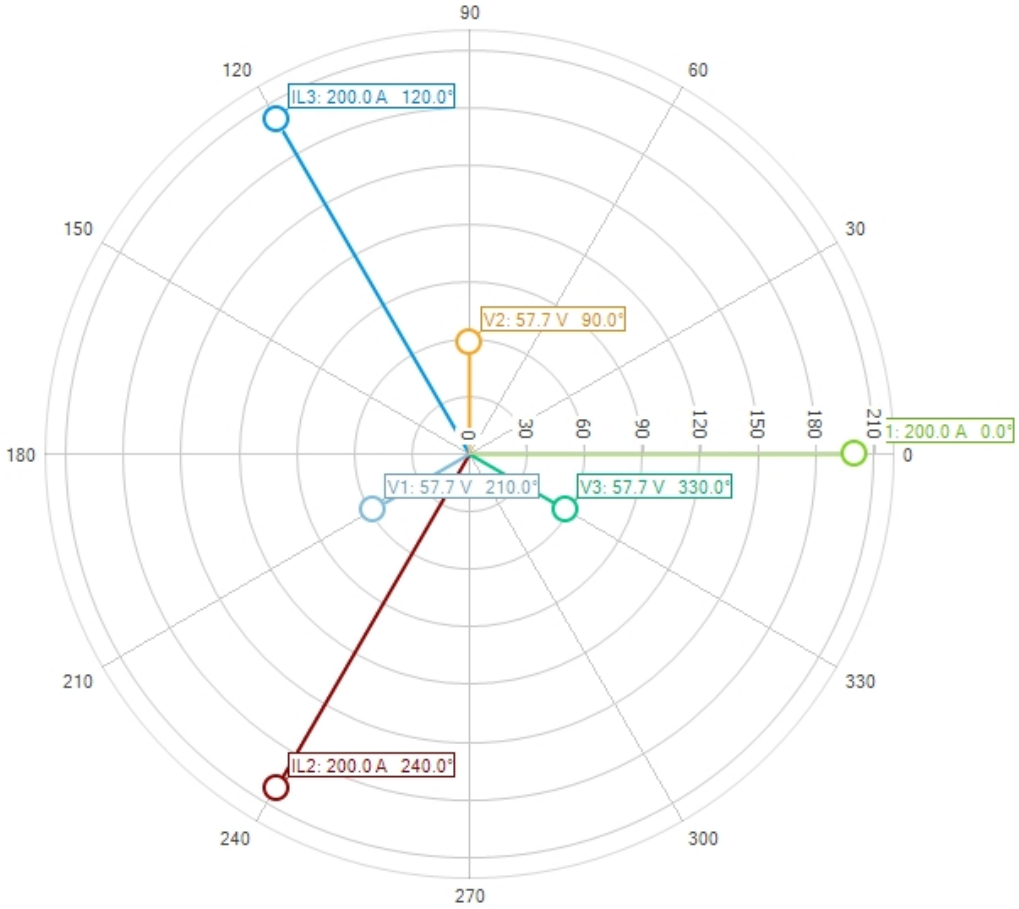
Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

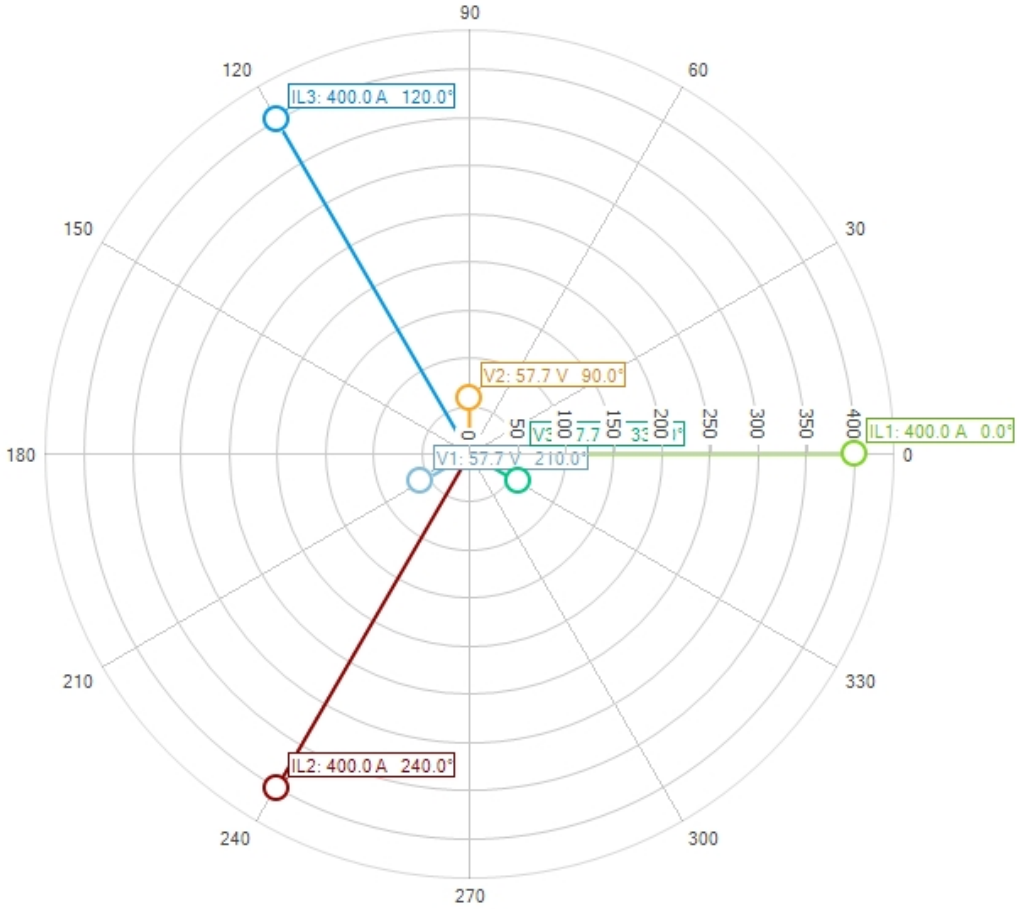
Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

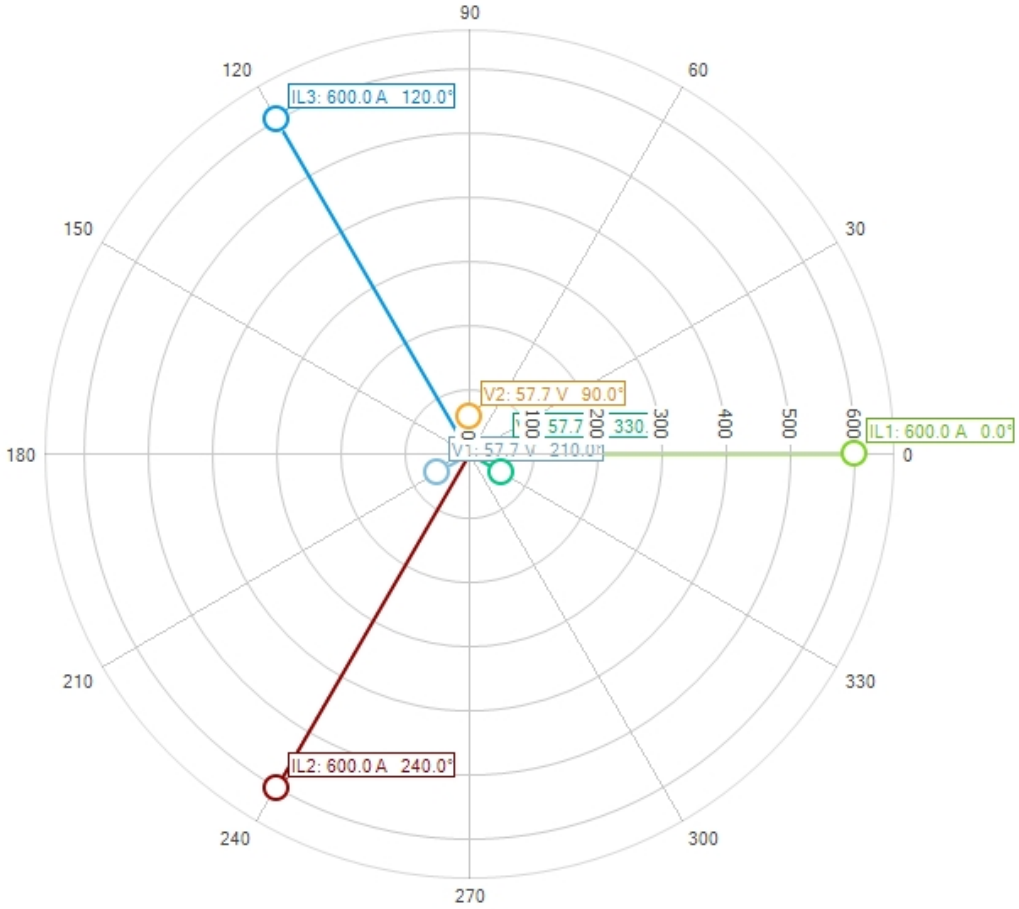
Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 27 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A4/+05-QF1	: DRAWER SPARE - A4/+05-QF1	Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module		
TASK	code	C10002769	Location: Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity: FTS	Discipline	Electrical	Form: FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A4/+05	Calibration certificate date:	7715/24_10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A4/+05 - KA1/11-14	A4/+05 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A4/+05 - KA1/11-12	A4/+05 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A4/+05 - KA5/11-14	A4/+05 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A4/+05 - KA4/21-24	A4/+05 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A4/+05 - KA2/11-14	A4/+05 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A4/+05 - QA1/11-14	A4/+05 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A4/+05 - SA1/21-22	A4/+05 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

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

Comments: The test of the cubicle was carried out on a test bench.

Page 1/1	Performed by	☐ WITNESS ☐● REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-03	2024-10-03	2024-10-03
Signature	Digitaly signed by Davide Zucconelli 2024-10-03T08:35:50.930Z	Digitaly signed by Kristian Castellani 2024-10-03T13:48:19.891Z	Digitaly signed by Witness waived 2024-10-03T14:24:05.009Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A4/+06-QF1	: DRAWER SPARE - A4/+06-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002770		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A4/+06-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	401	V	NA	A OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

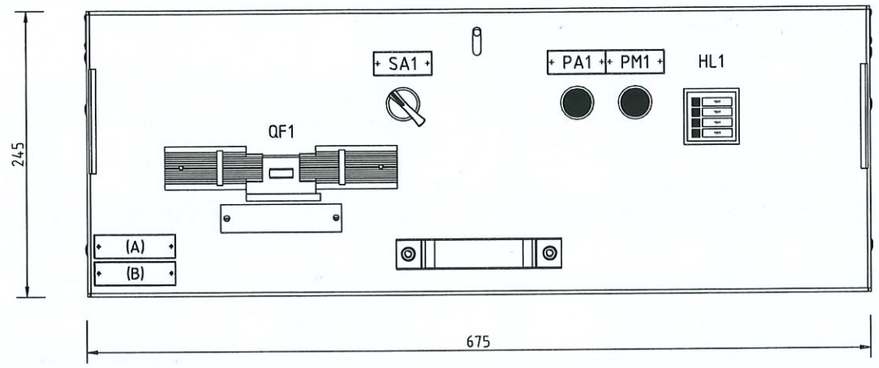
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-15	2024-10-15	2024-10-15
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-15T06:23:40.349Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-15T07:00:33.640Z	PROVERLIS Digitaly signed by Witness waived 2024-10-15T07:34:57.225Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

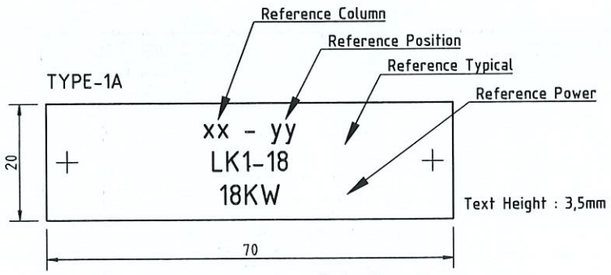


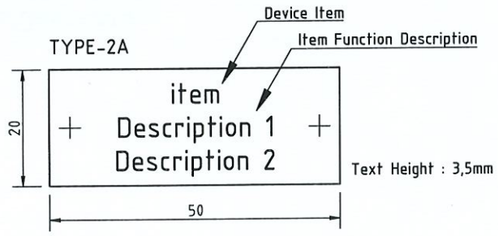
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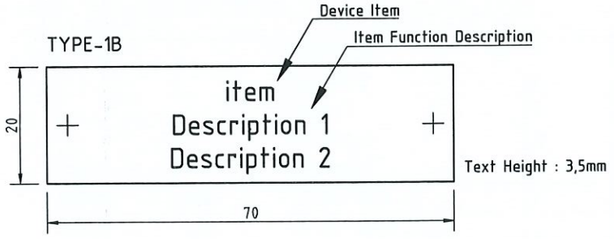
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

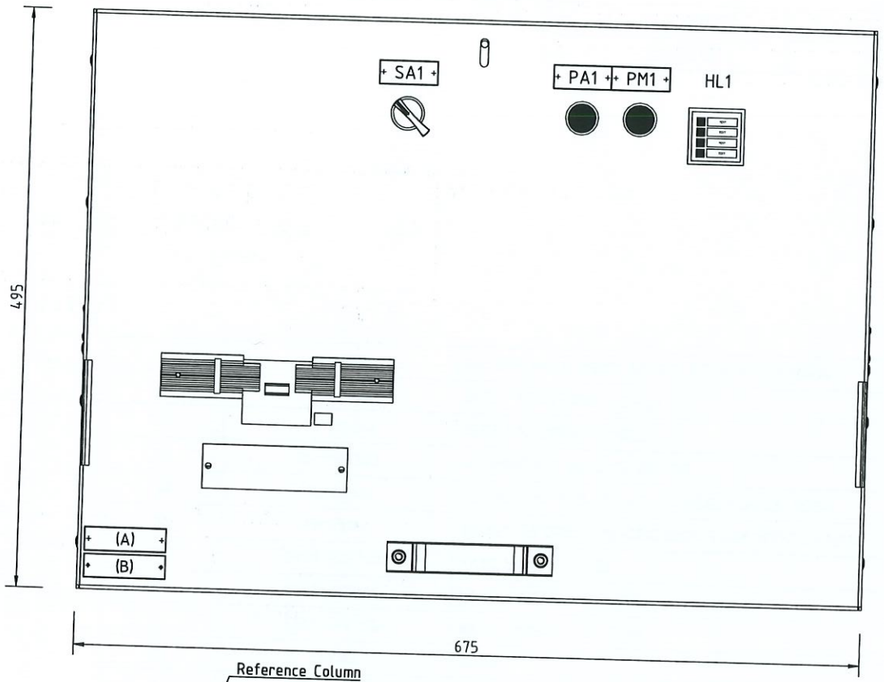
REV. 00

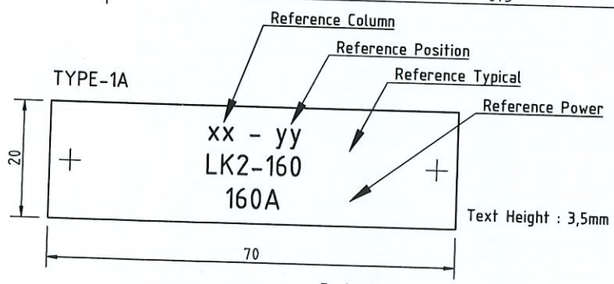
F.to UNI A3: 420mmx297mm

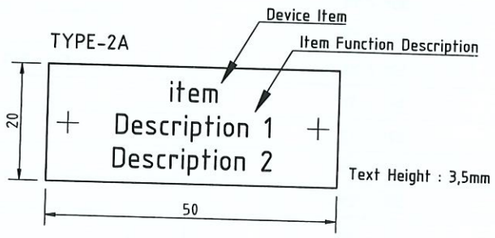
File Name : 1723002197-EL-DG-00031 Rev. 00

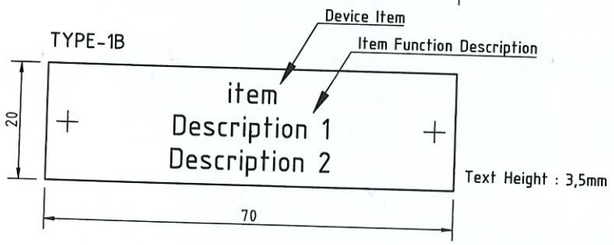
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

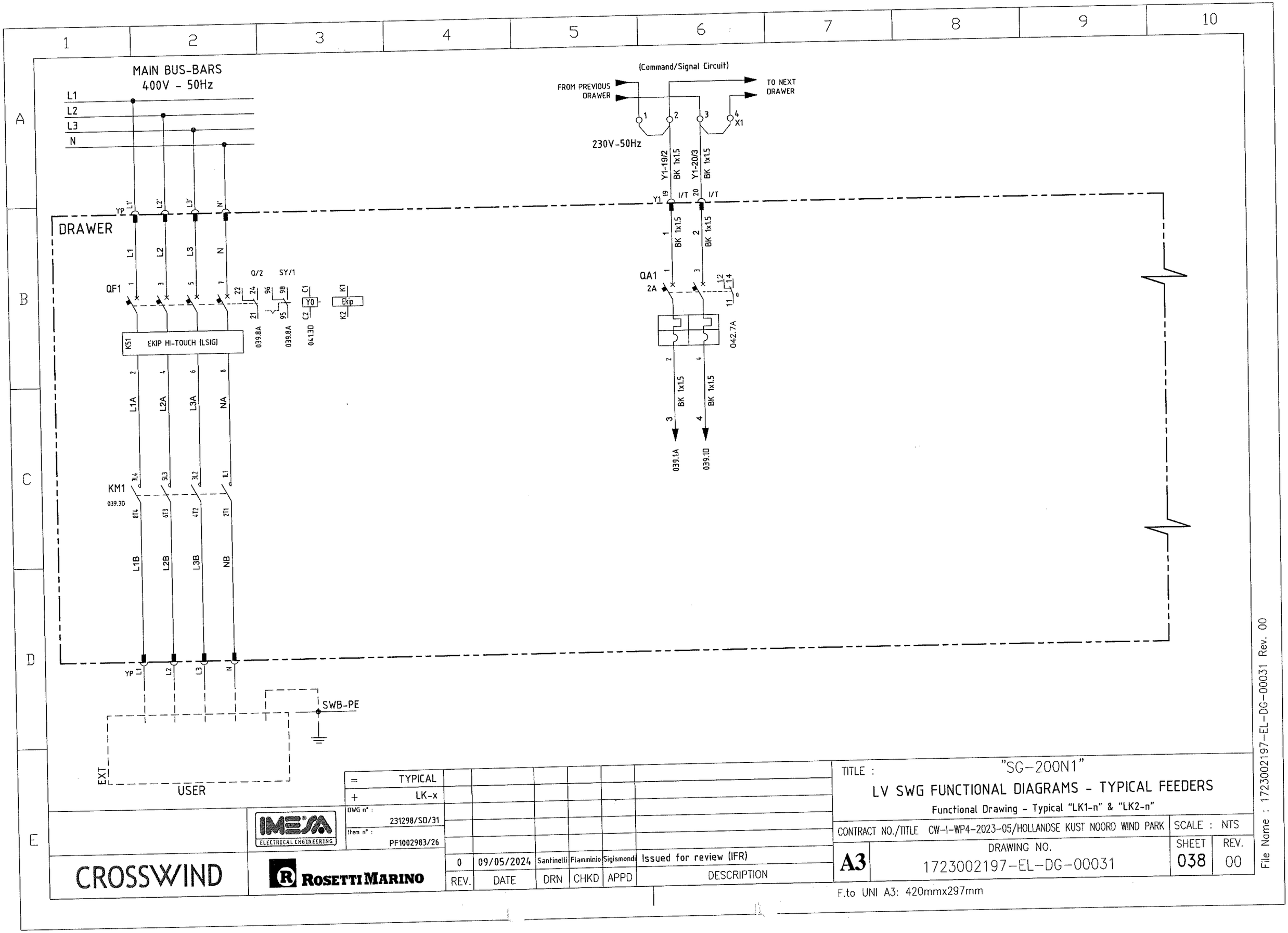
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

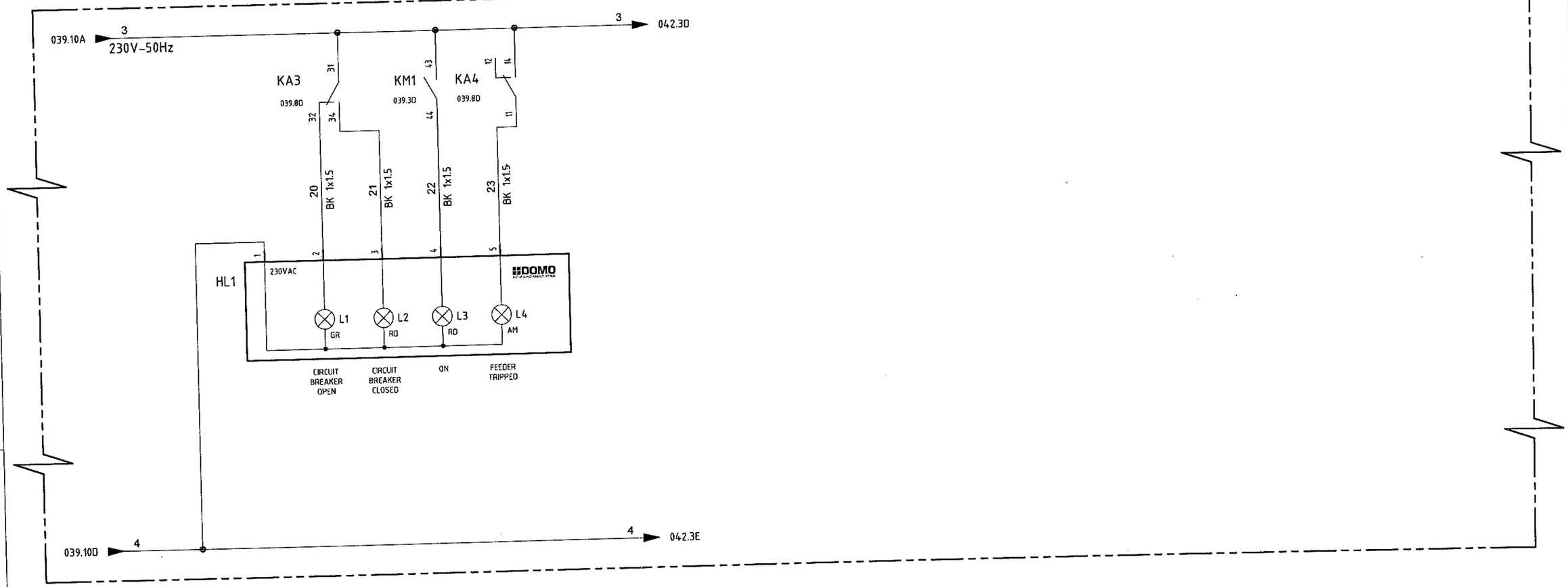
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

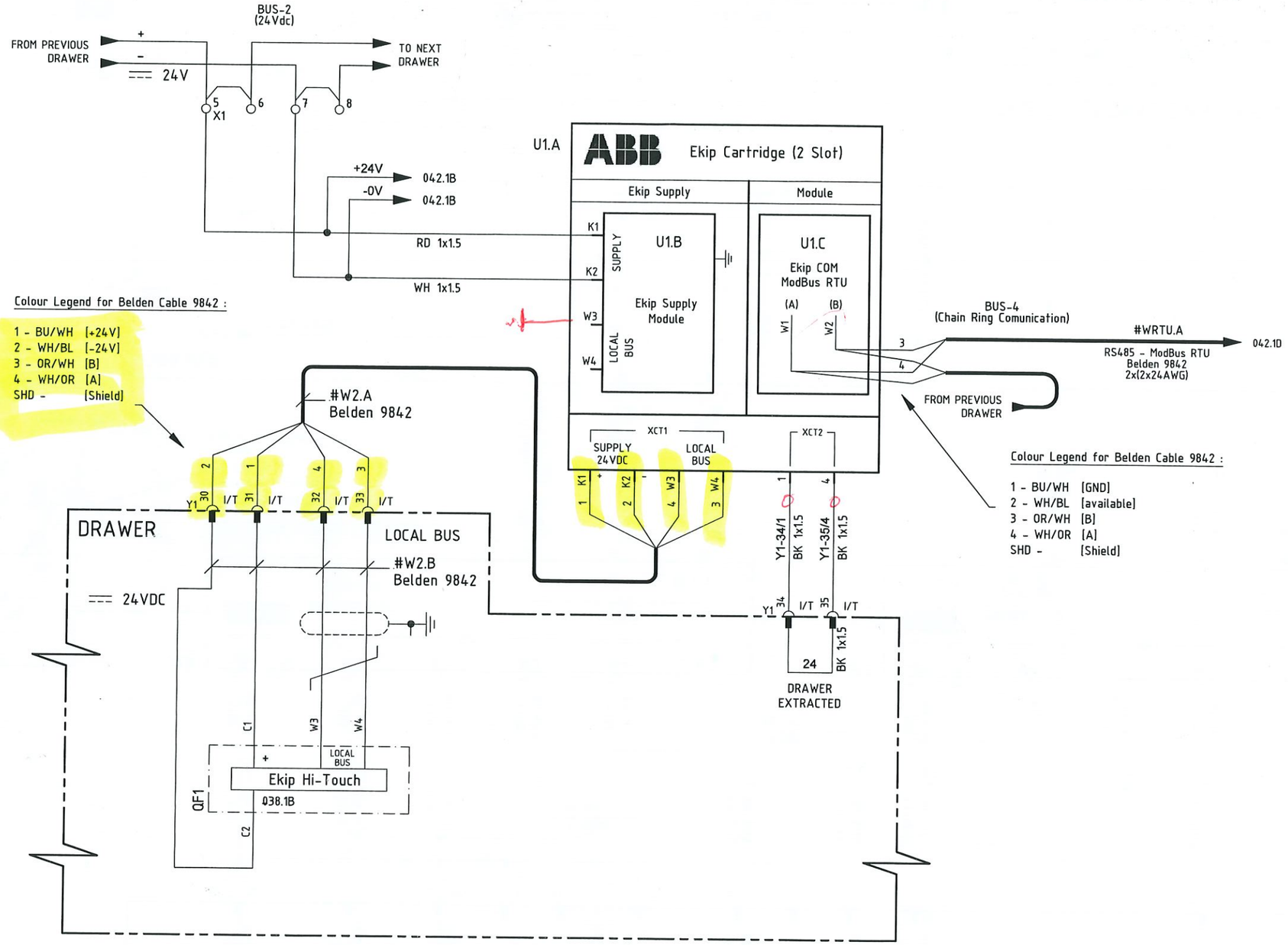
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

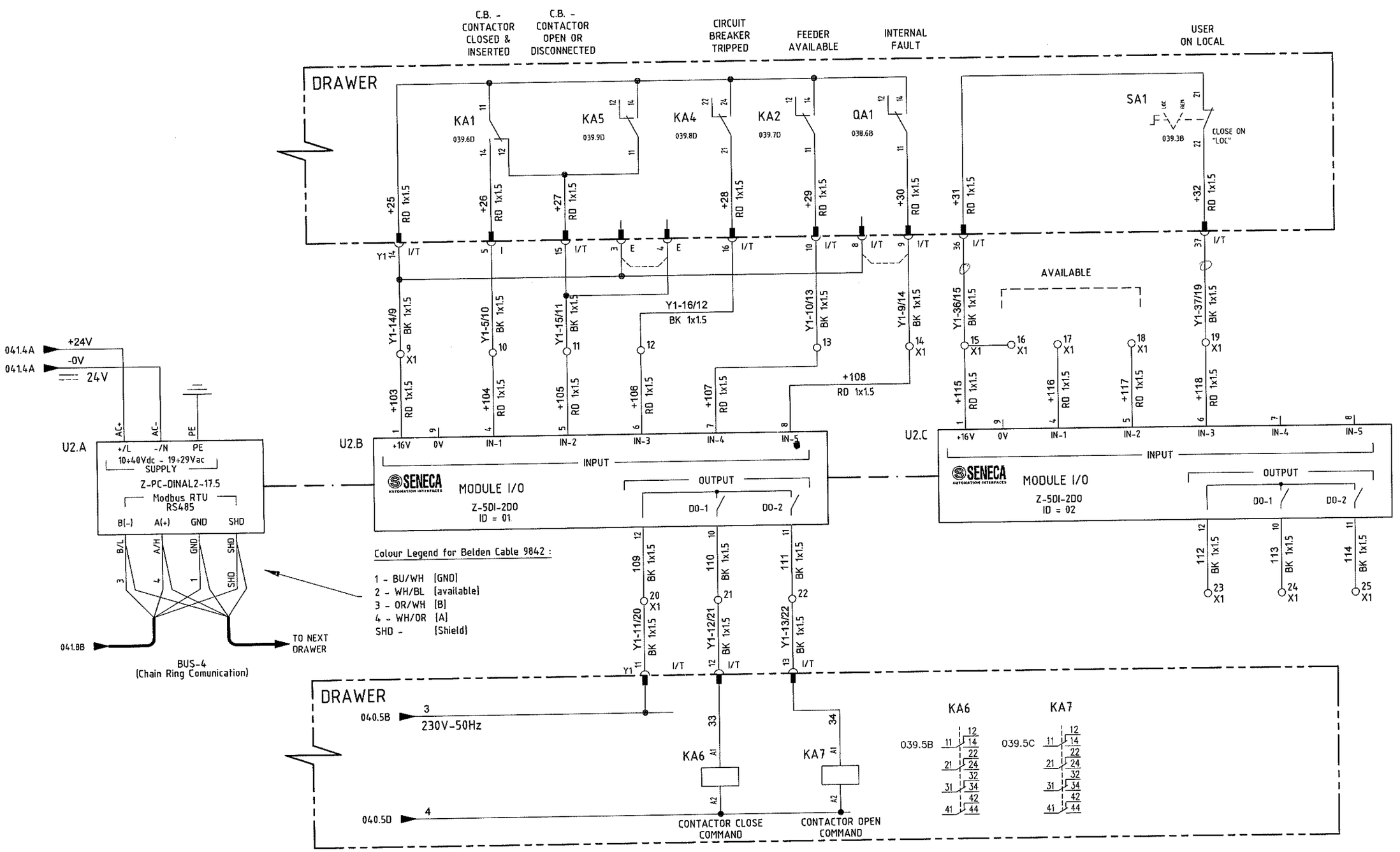
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

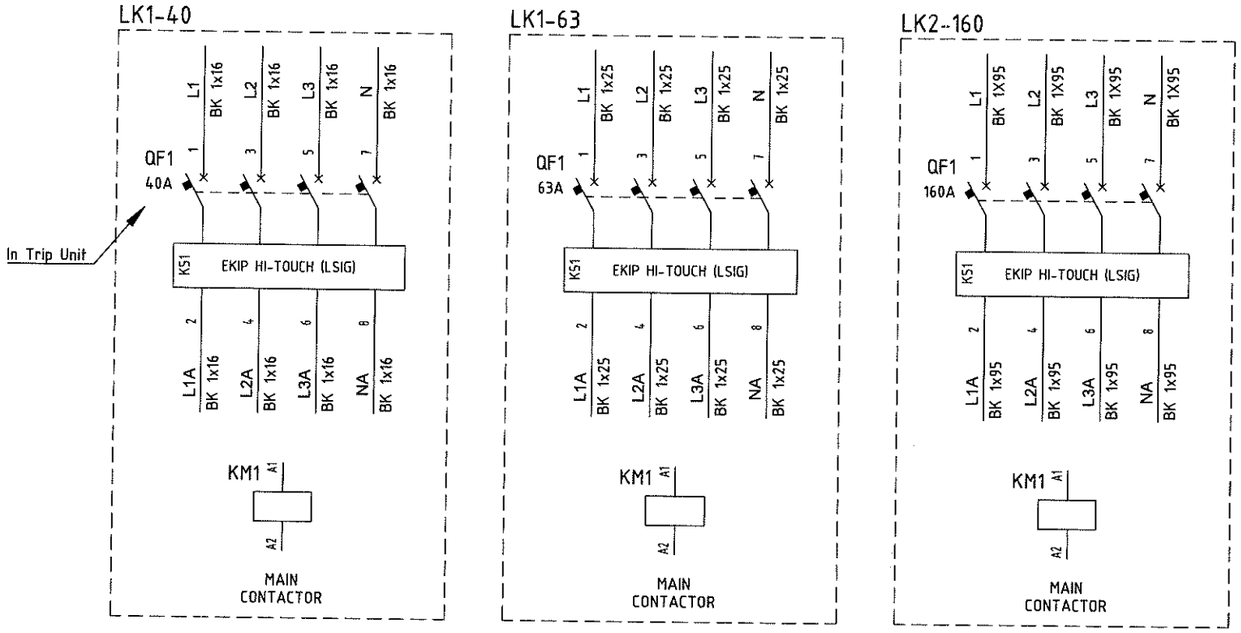
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A4/+06-QF1	: DRAWER SPARE - A4/+06-QF1		Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)		Module		
TASK	code	C10002771	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°:	EF5000853690N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A4/+06
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
L	20A			3s	
S	100A	120A		0.1s	102ms
I	200A	400A		INSTANT	28ms
G	8			0.1s	

Testing & measurement instruments used

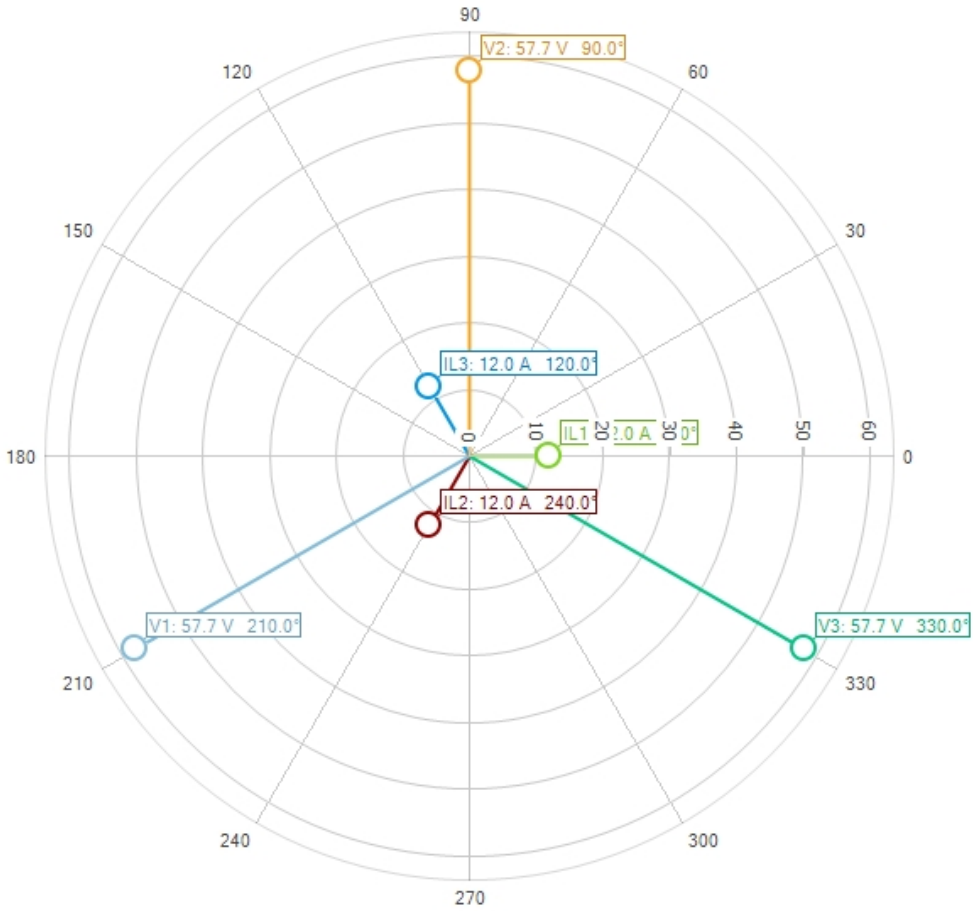
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-19	2024-09-19	2024-09-20
Signature	Digitaly signed by Mattia Girotti 2024-09-19T06:56:36.382Z	Digitaly signed by Kristian Castellani 2024-09-19T06:59:53.536Z	Digitaly signed by Witness waived 2024-09-20T06:20:19.681Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

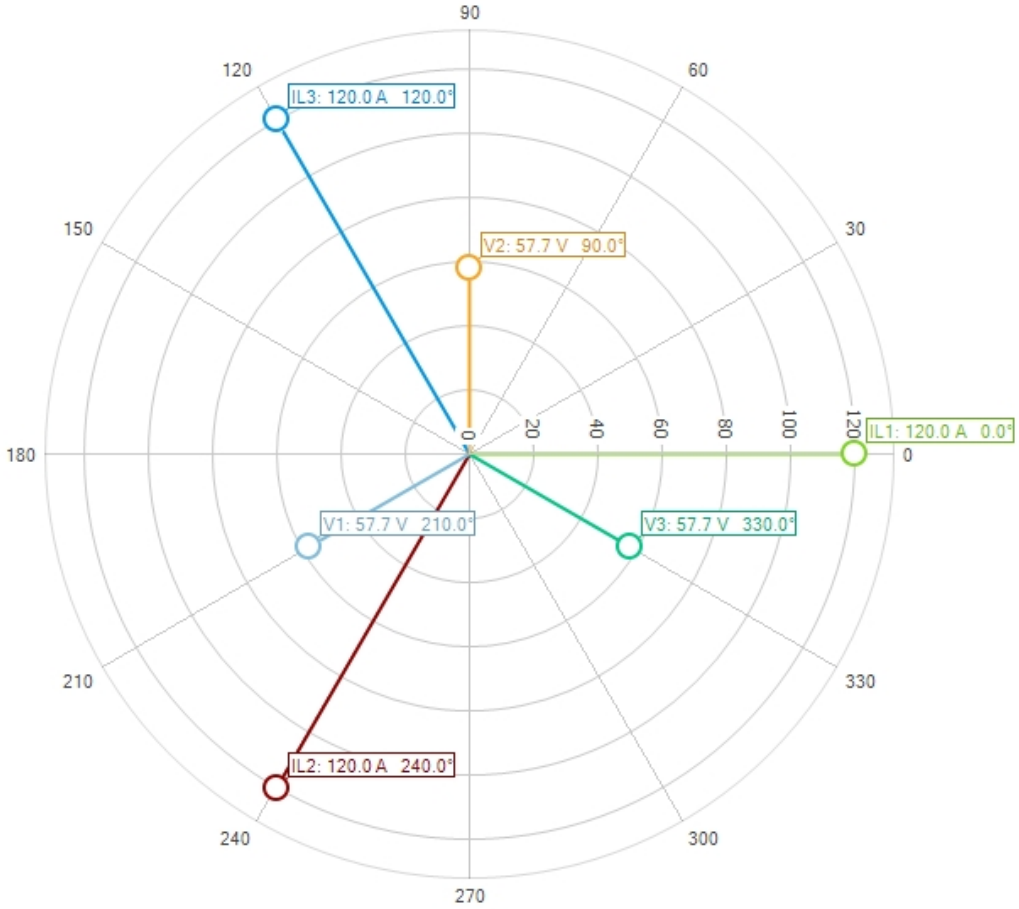
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

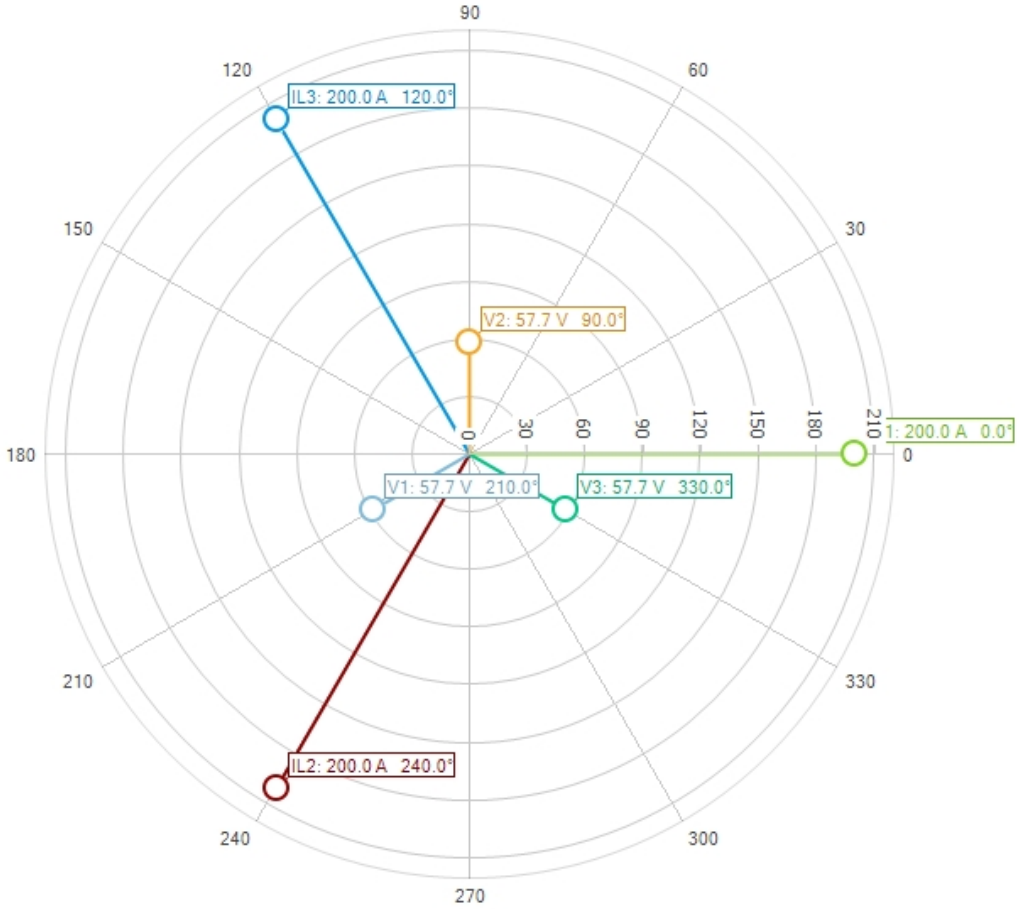
Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

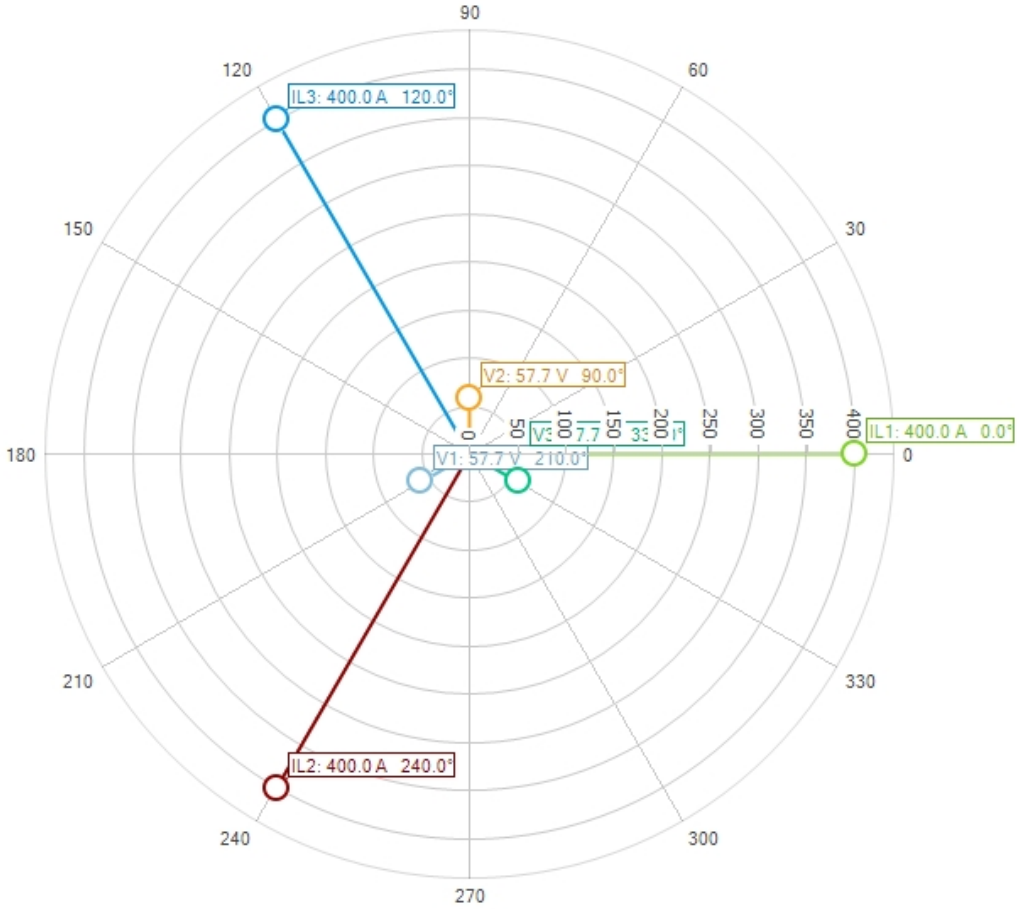
Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

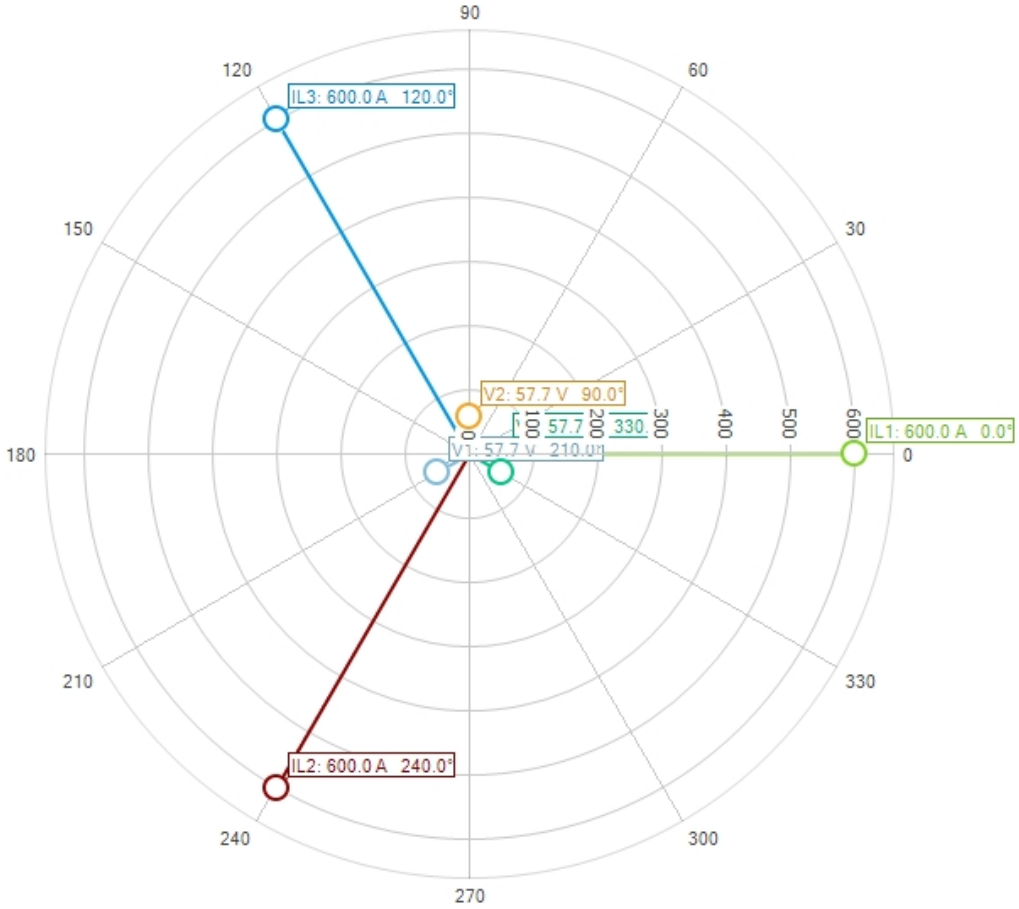
Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A4/+06-QF1	: DRAWER SPARE - A4/+06-QF1		Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)		Module		
TASK	code	C10002772	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form	FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A4/+06	Calibration certificate date:	7715/24_10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A4/+06 - QF1/21-24	A4/+06 - X1/14-15	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A4/+06 - QF1/21-22	A4/+06 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A4/+06 - KA1/11-14	A4/+06 - X1/14-16	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A4/+06 - QF1/15-18	A4/+06 - X1/14-17	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	INTERNAL FAULT	HW	DI	A4/+06 - QA1/11-14	A4/+06 - X1/14-18	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
6														
7														
8														

ANALOGIC

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

Comments: The test of the cubicle was carried out on a test bench.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-03	2024-10-03	2024-10-03
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-03T08:36:20.244Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-03T13:48:55.770Z	PROVERLIS Digitaly signed by Witness waived 2024-10-03T14:24:26.711Z

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A5/+01-QF1	: DRAWER SPARE - A5/+01-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002773		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A5/+01-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

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

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

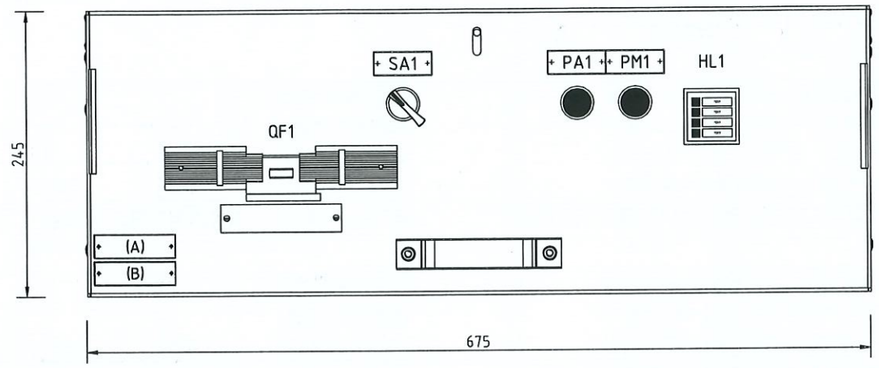
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-15	2024-10-15	2024-10-15
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-15T06:20:55.526Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-15T07:01:06.296Z	PROVERLIS Digitaly signed by Witness waived 2024-10-15T07:35:21.634Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

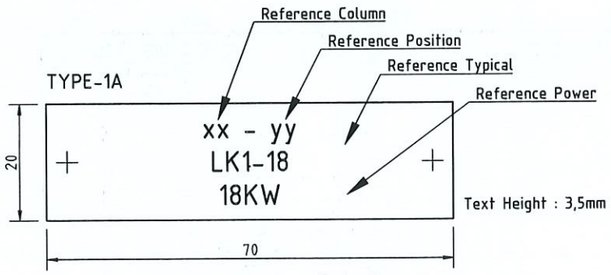


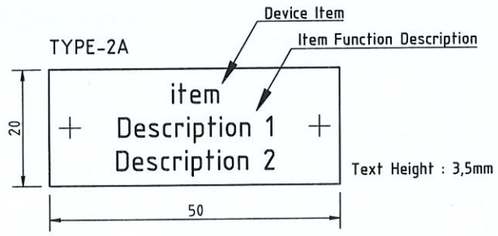
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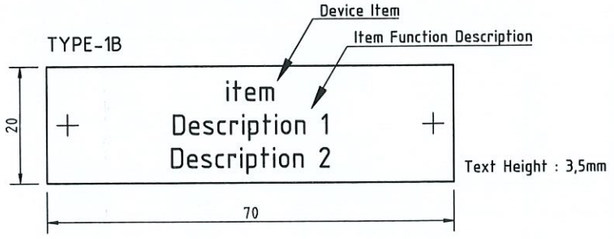
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

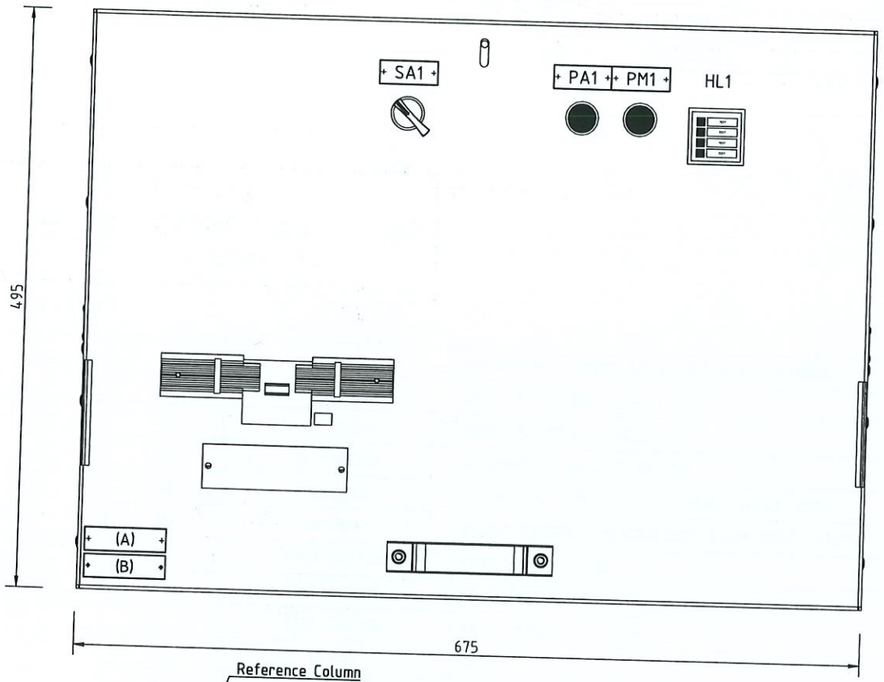
REV. 00

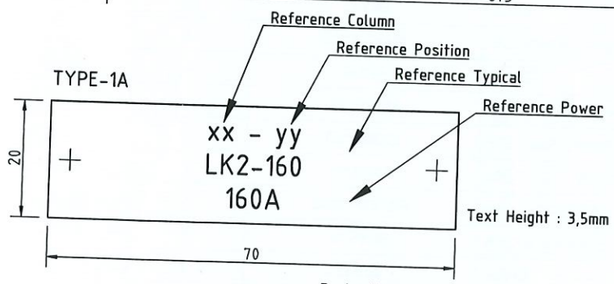
F.to UNI A3: 420mmx297mm

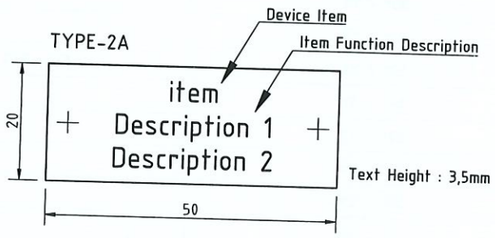
File Name : 1723002197-EL-DG-00031 Rev. 00

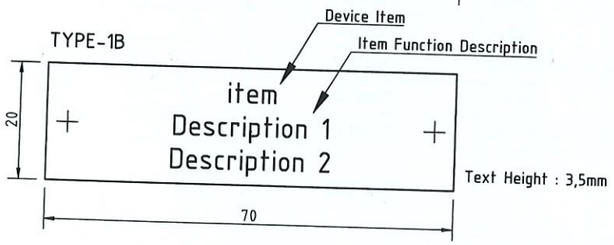
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

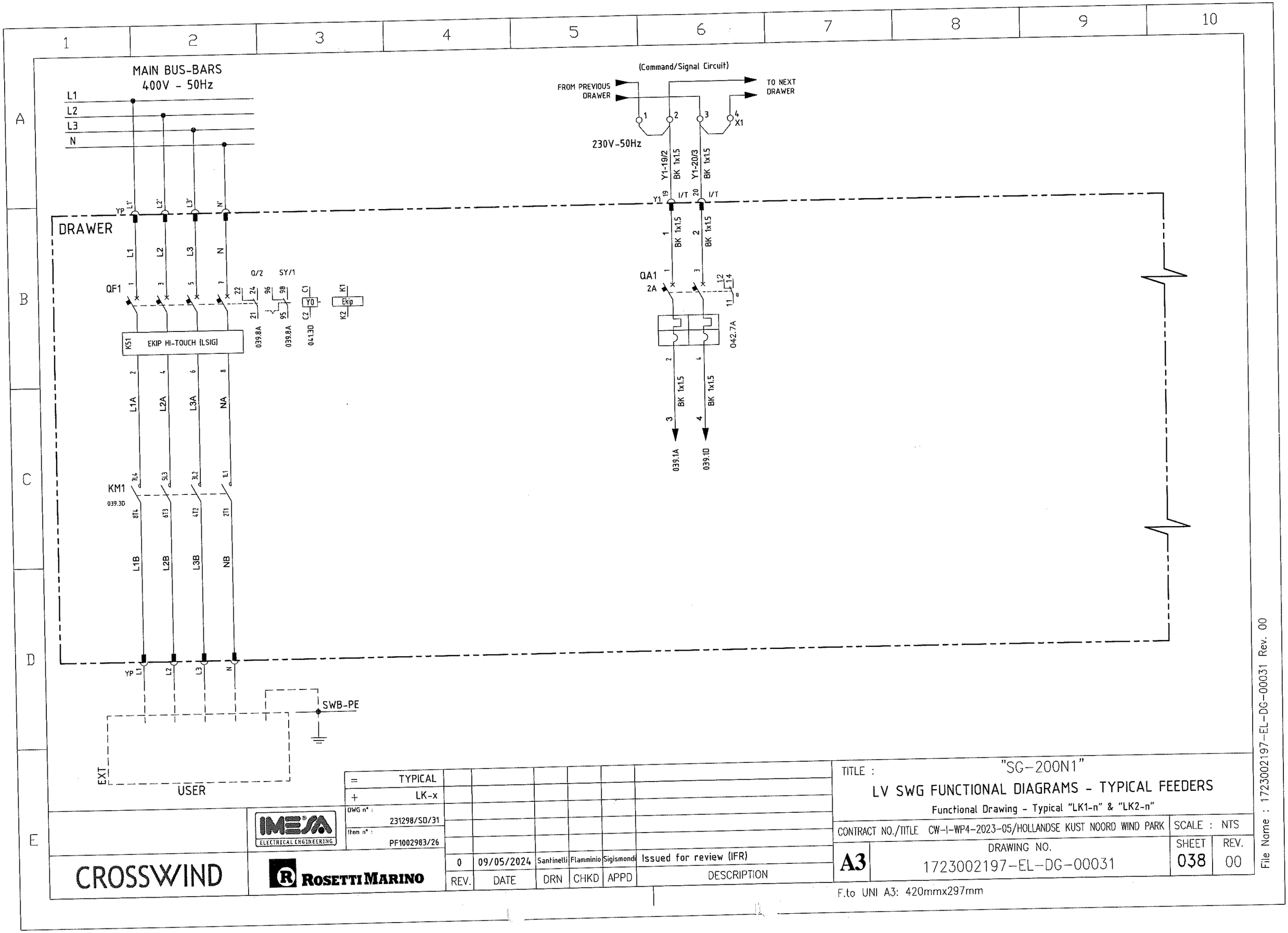
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

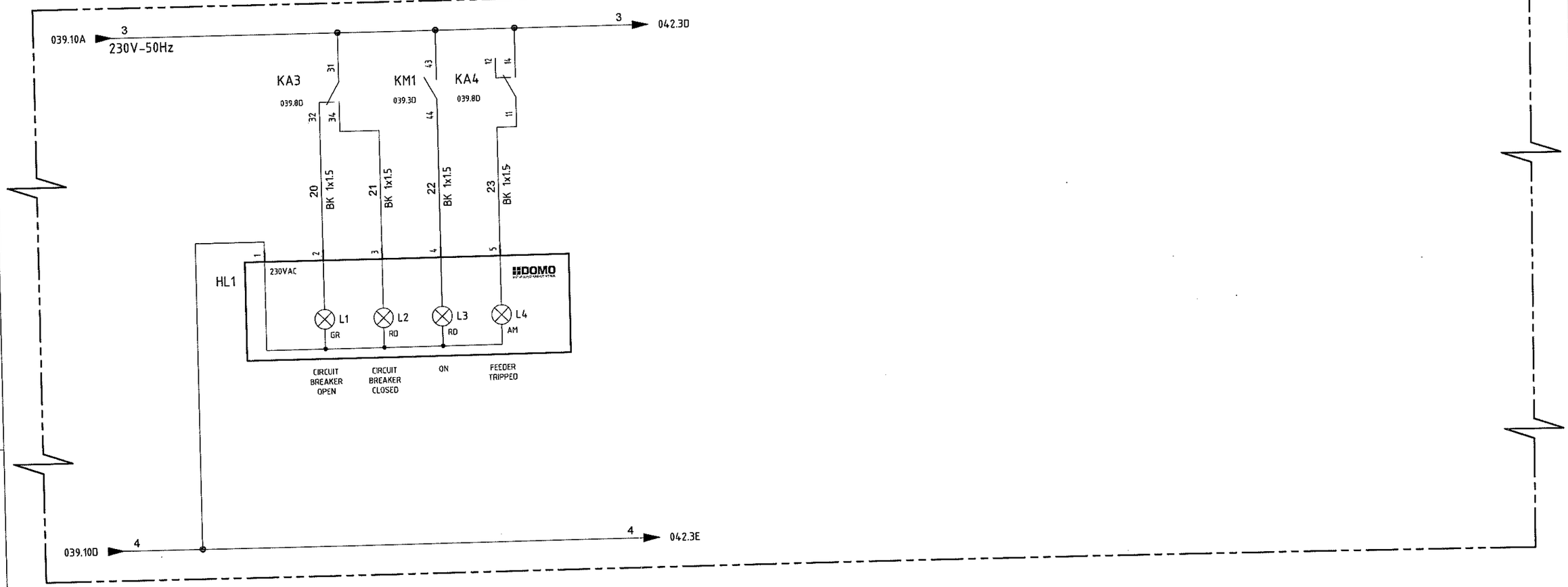
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

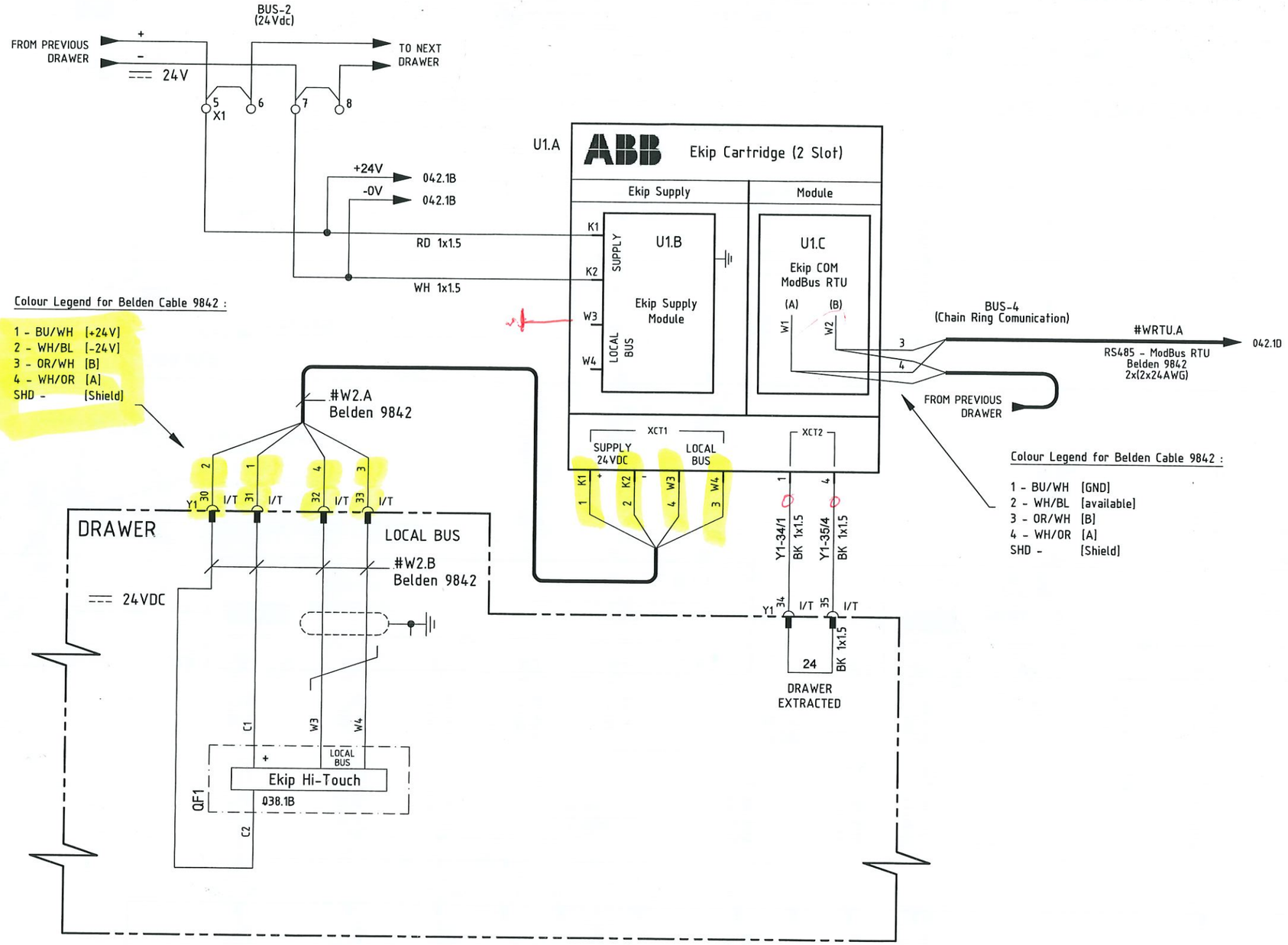
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

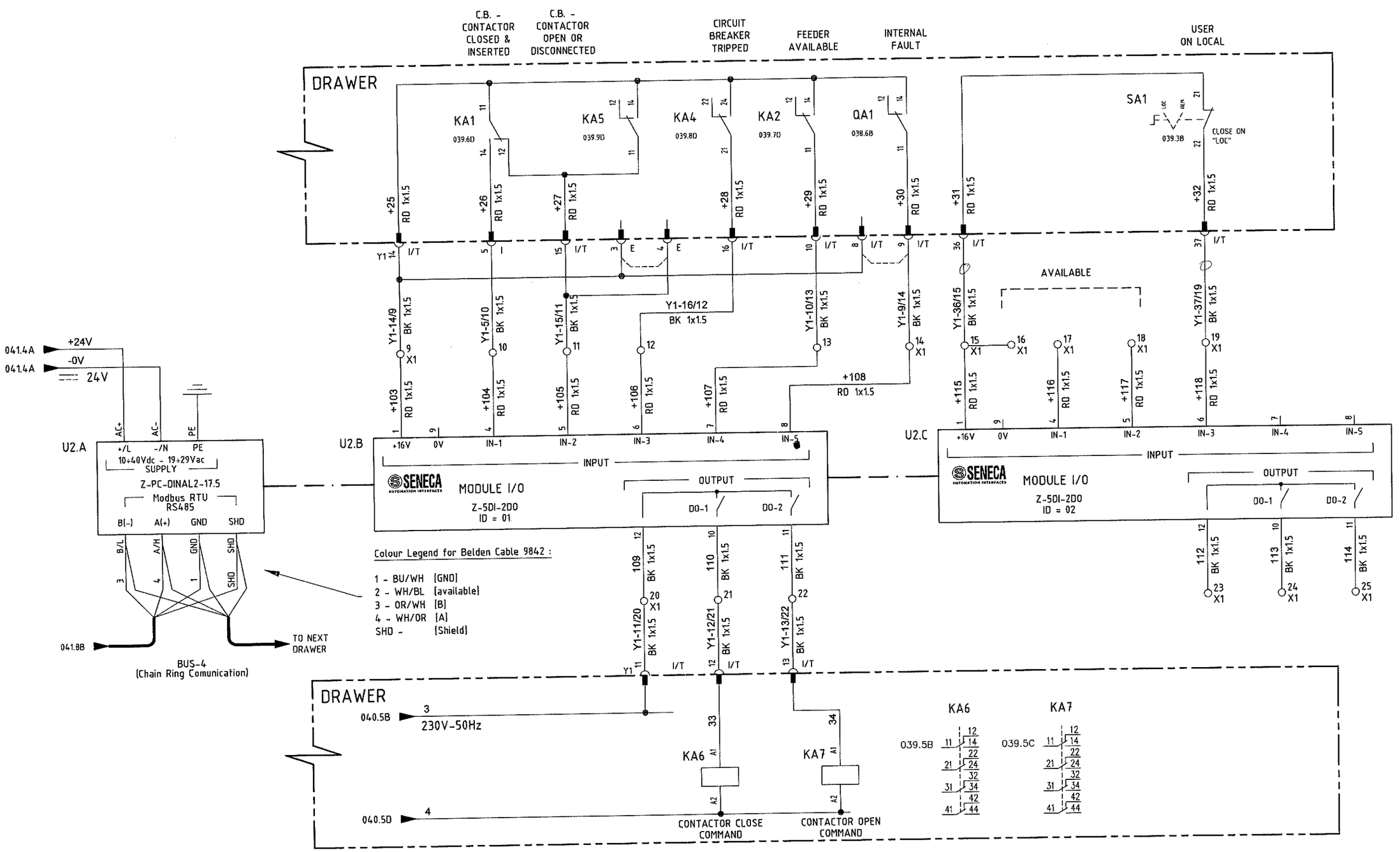
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

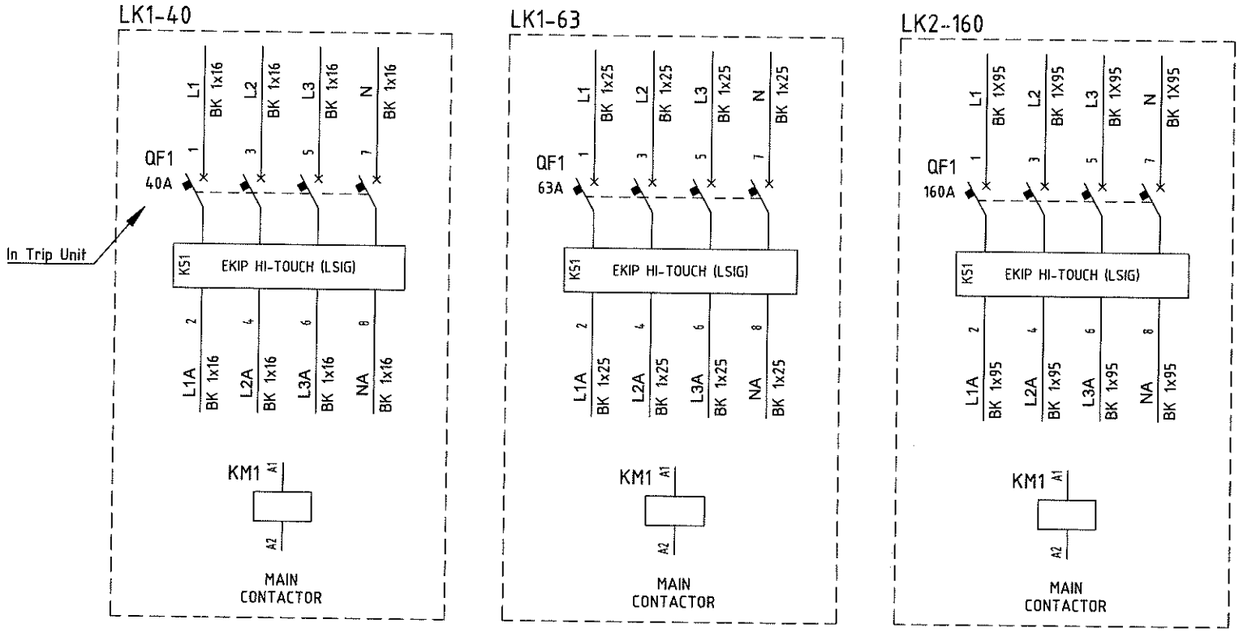
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A5/+01-QF1	:	DRAWER SPARE - A5/+01-QF1	Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	:	400 V Switchboard & Connection Box (SG-200N1)	Module	
TASK	code	C10002774	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°:	EF5000253690N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24 Vdc	Location:	B200	Cubicle:	A5/+01
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
L	20A			3s	
S	100A	120A		0.1s	101ms
I	200A	400A		INSTANT	29ms
G	8A			0.1	

Testing & measurement instruments used

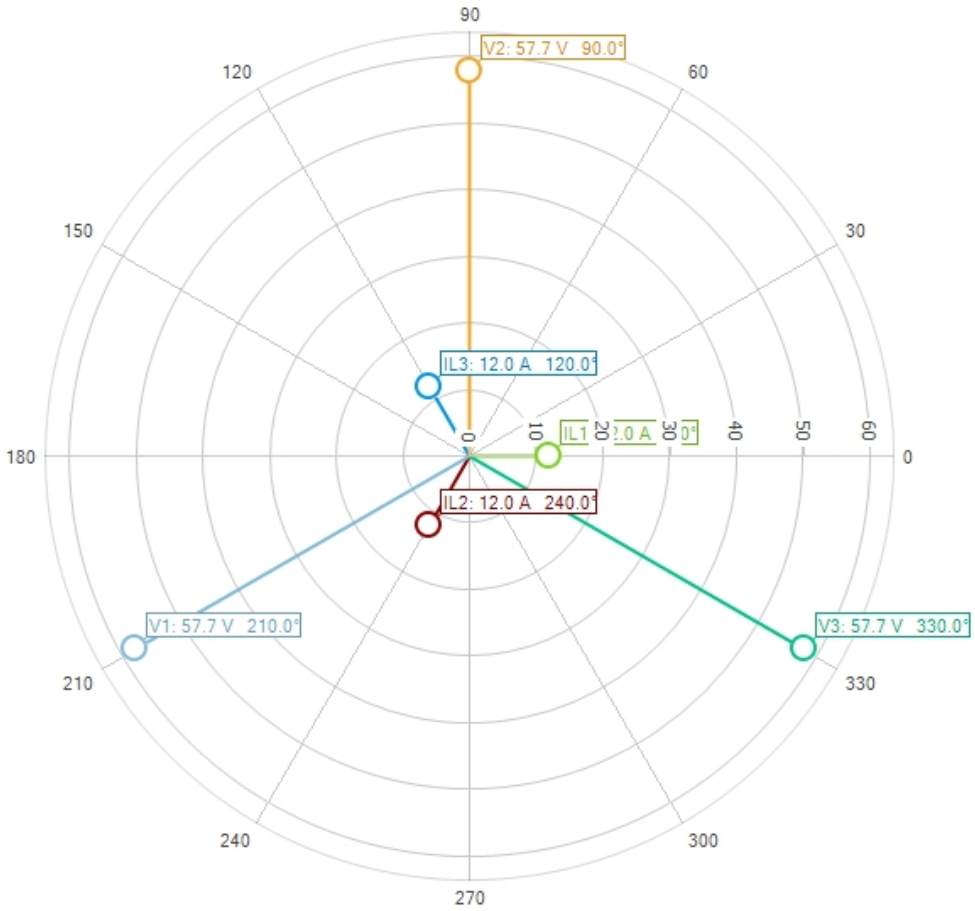
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-17	2024-09-18	2024-09-18
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-09-17T11:20:58.565Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-09-18T07:17:35.225Z	PROVERLIS Digitaly signed by Witness waived 2024-09-18T12:44:07.618Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Disabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

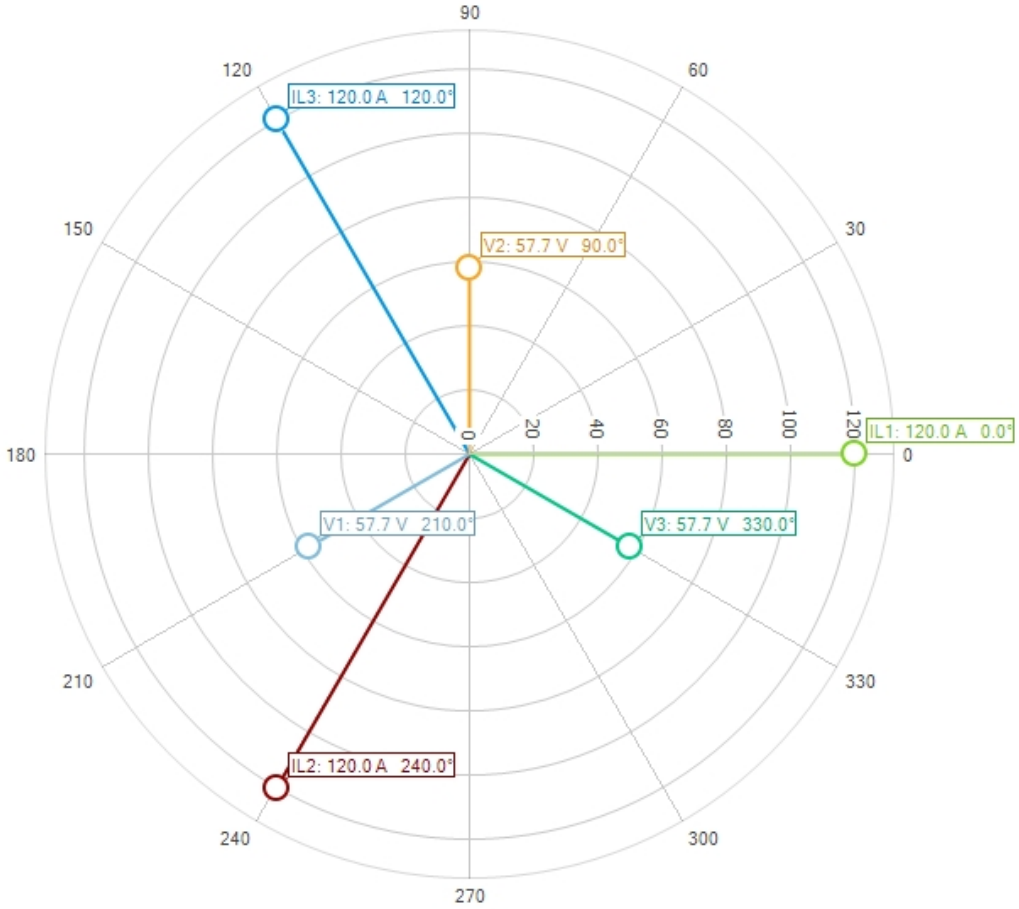
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

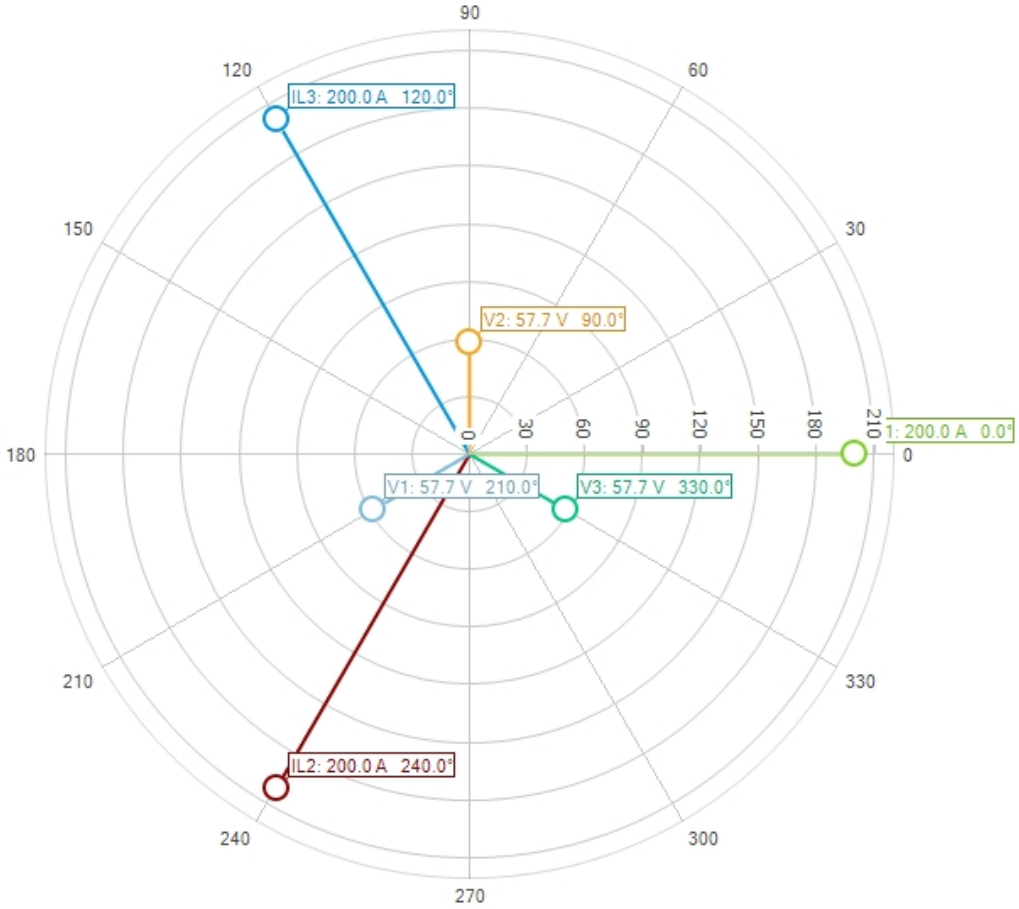
Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

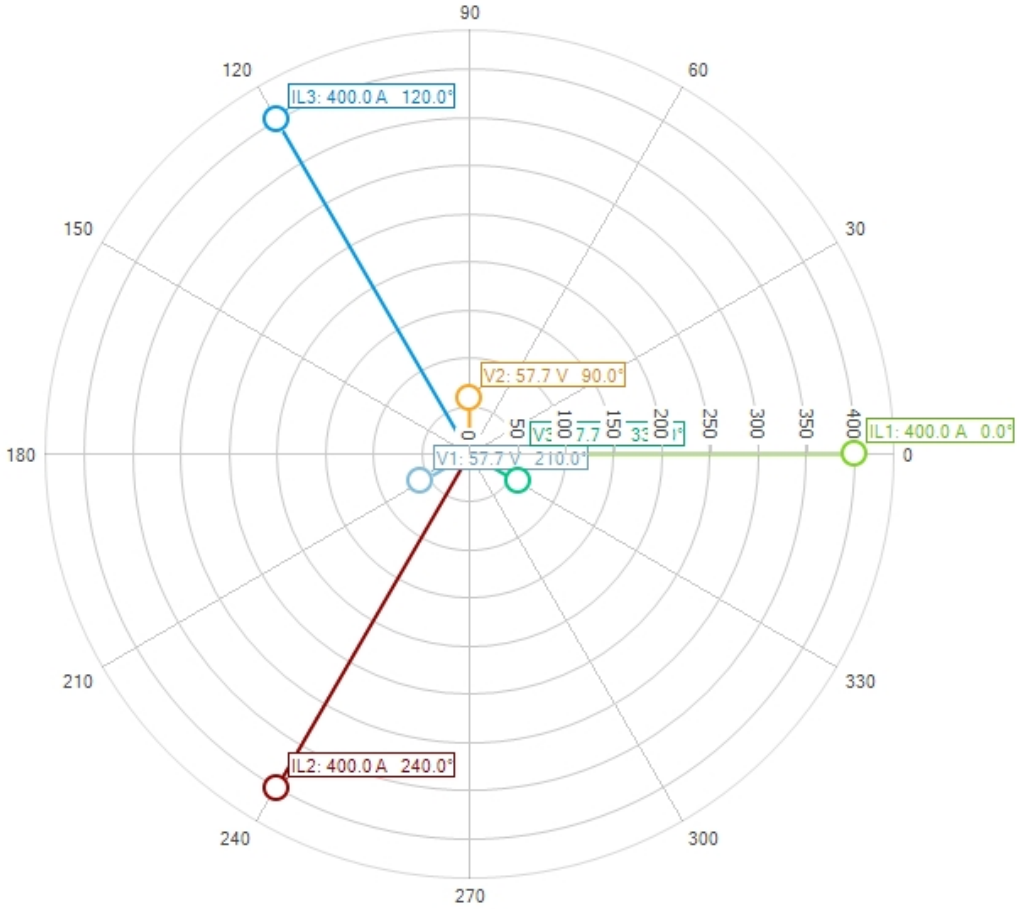
Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 100 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

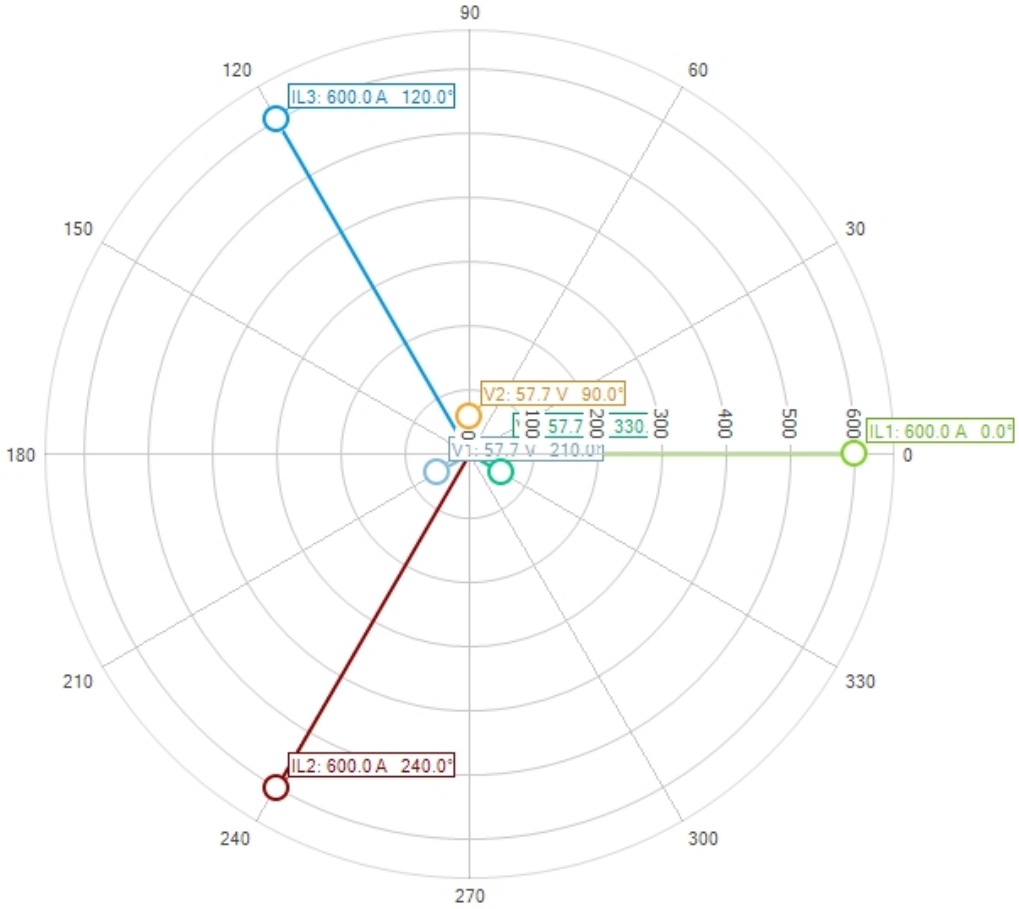
Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A5/+01-QF1	: DRAWER SPARE - A5/+01-QF1		Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)		Module		
TASK	code	C10002775	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form	FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A5/+01	Calibration certificate date:	7715/24_10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A5/+01 - KA1/11-14	A5/+01 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A5/+01 - KA1/11-12	A5/+01 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A5/+01 - KA5/11-14	A5/+01 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A5/+01 - KA4/21-24	A5/+01 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A5/+01 - KA2/11-14	A5/+01 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A5/+01 - QA1/11-14	A5/+01 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A5/+01 - SA1/21-22	A5/+01 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

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

Comments: The test of the cubicle was carried out on a test bench.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-02	2024-10-03	2024-10-03
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-02T13:14:26.538Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-03T07:09:30.559Z	PROVERLIS Digitaly signed by Witness waived 2024-10-03T14:24:51.960Z

ROSETTI MARINO | CROSSWIND

ITEM	Tag	A5/+06-QF1	: DRAWER SPARE - A5/+06-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002776		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A5/+06-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	401	V	NA	A OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

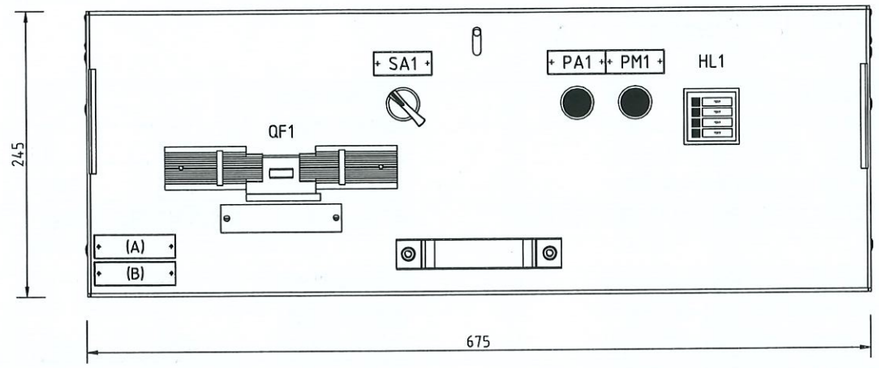
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-15	2024-10-15	2024-10-15
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-15T06:18:40.514Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-15T07:01:50.835Z	PROVERLIS Digitaly signed by Witness waived 2024-10-15T07:35:42.458Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

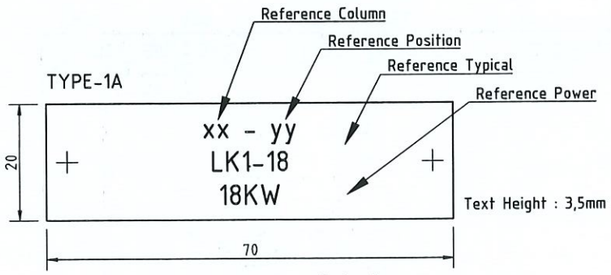


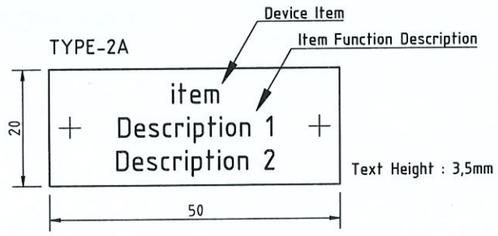
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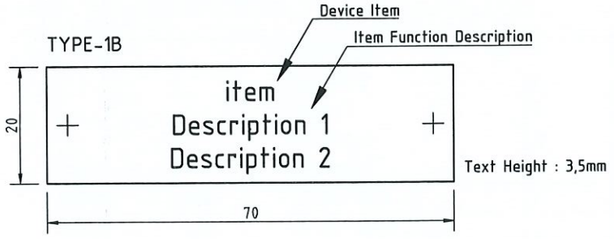
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

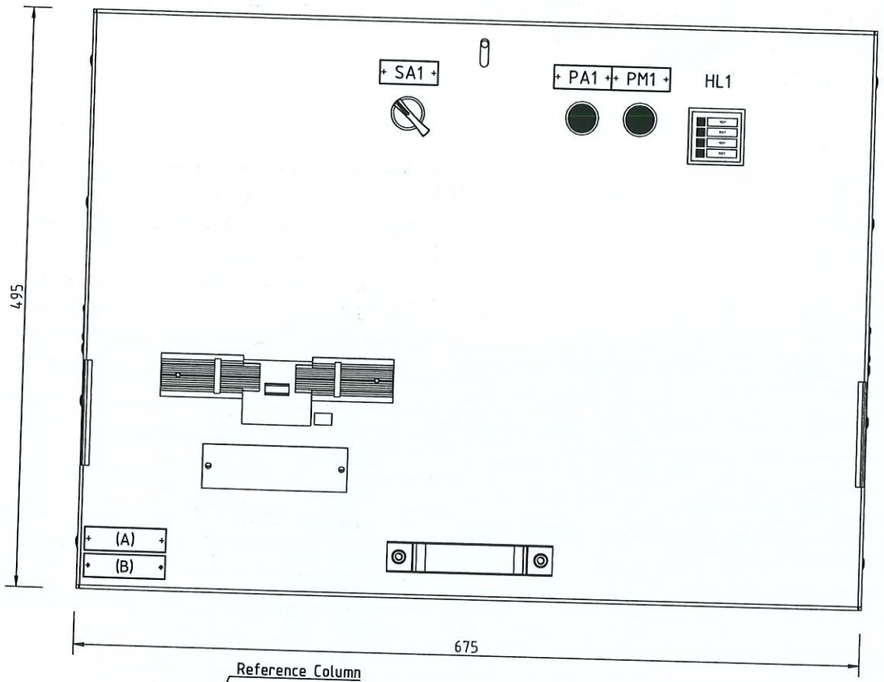
REV. 00

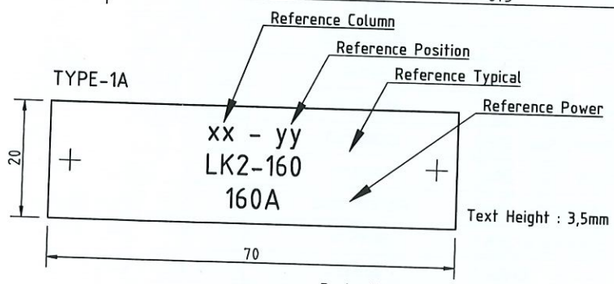
F.to UNI A3: 420mmx297mm

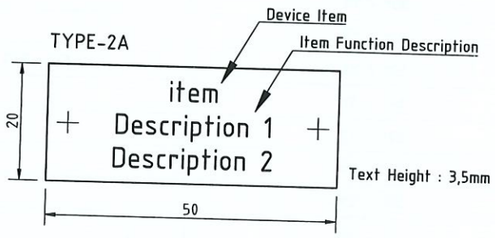
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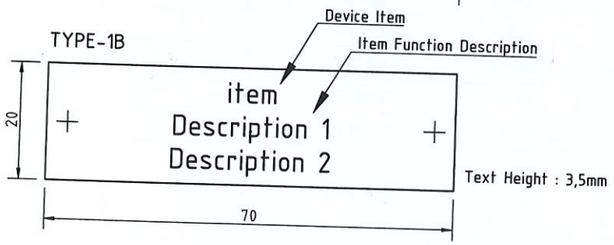
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

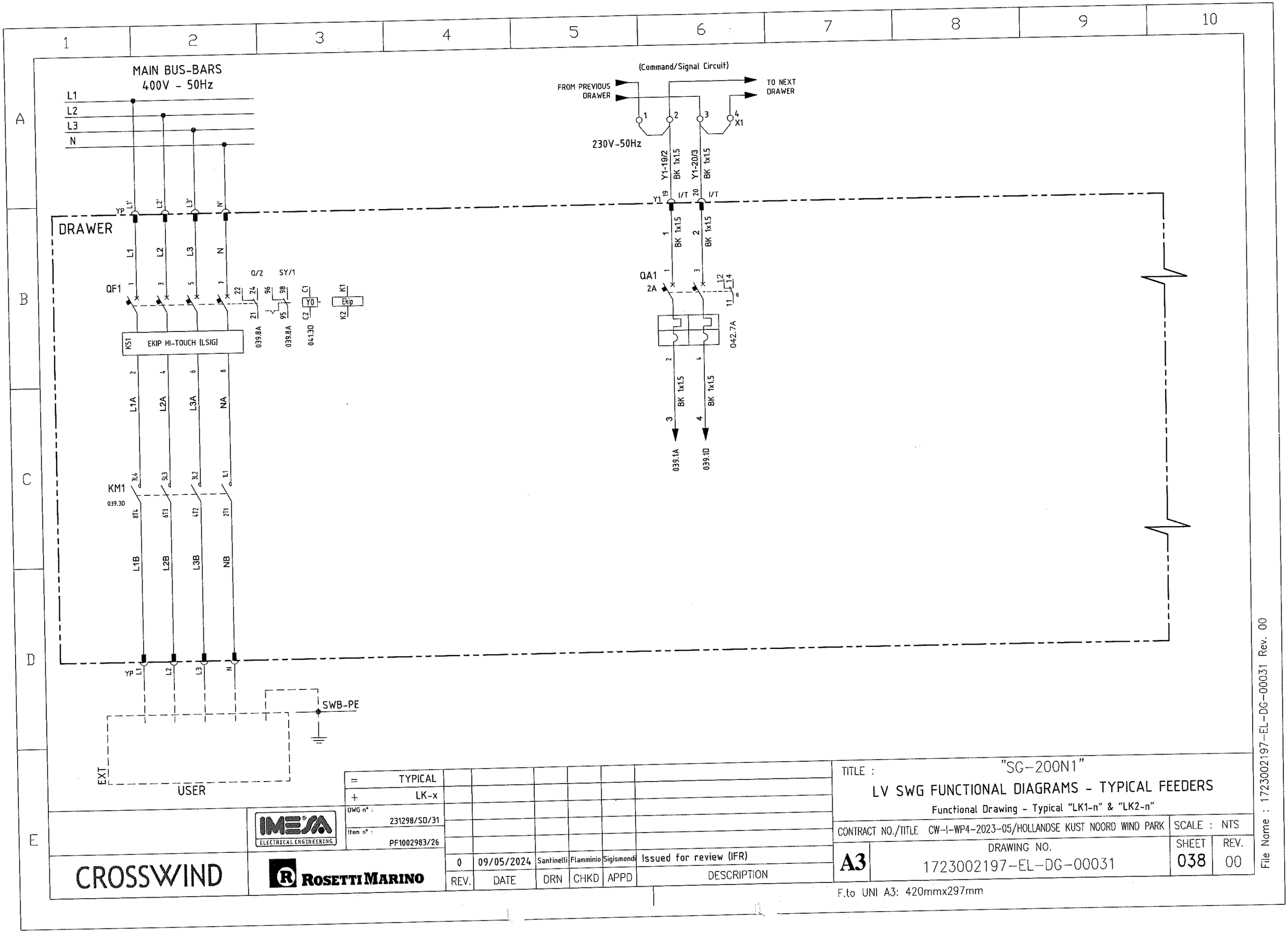
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

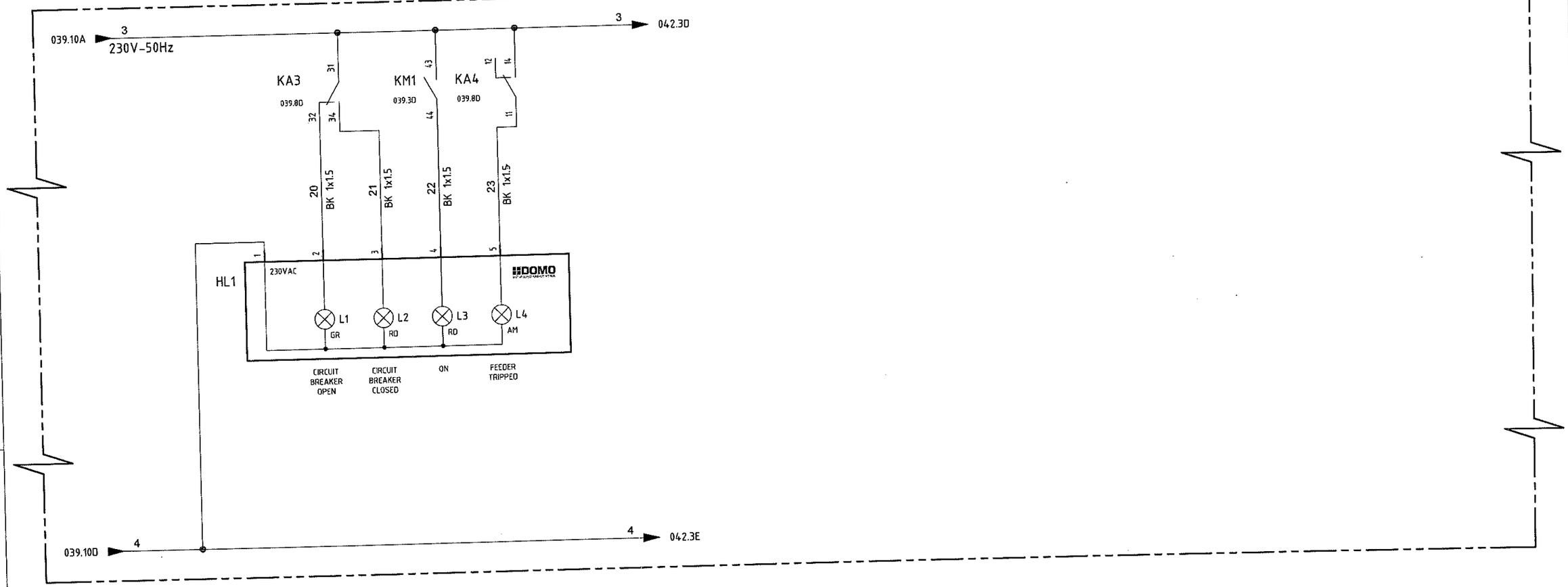
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

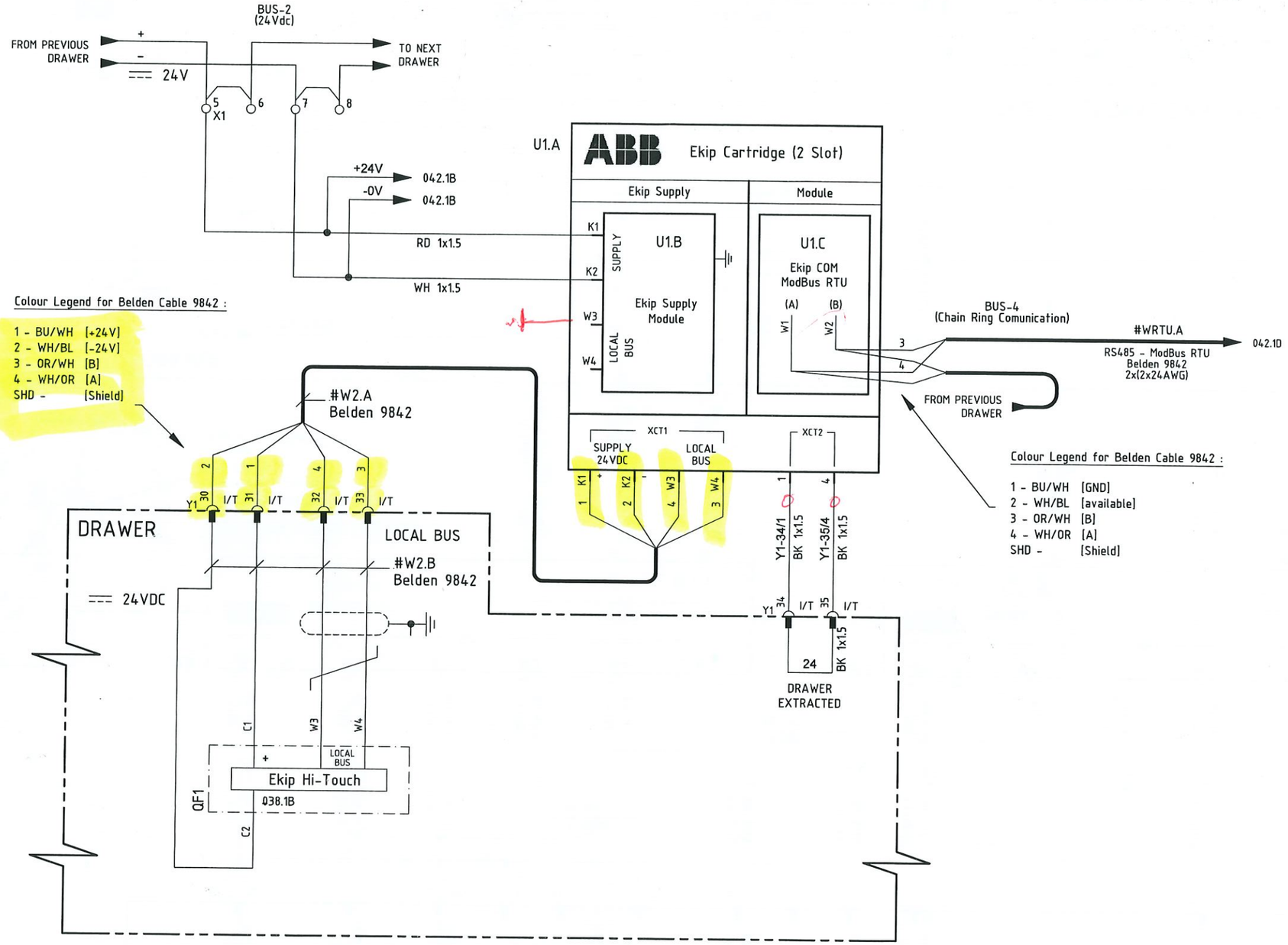
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

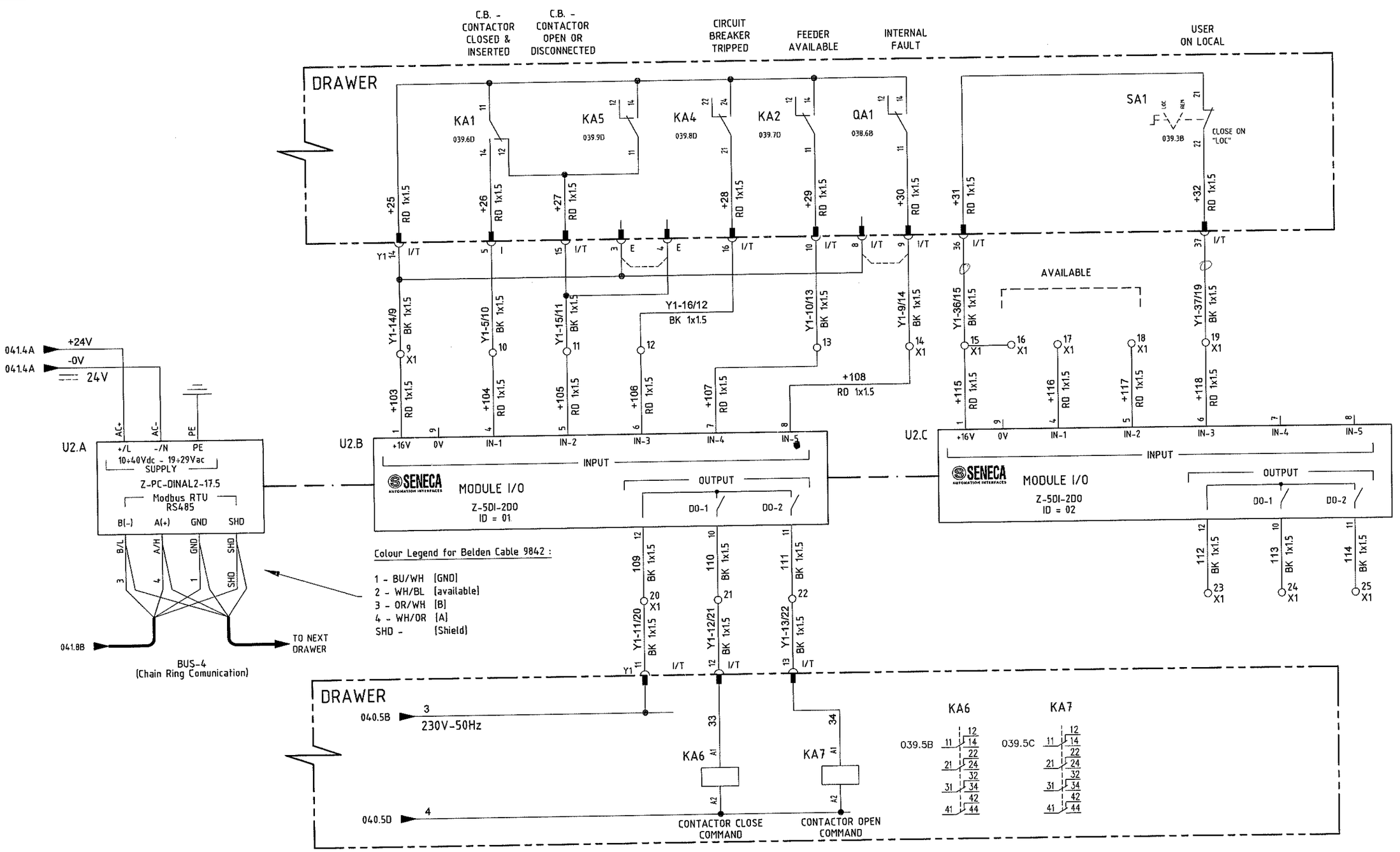
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

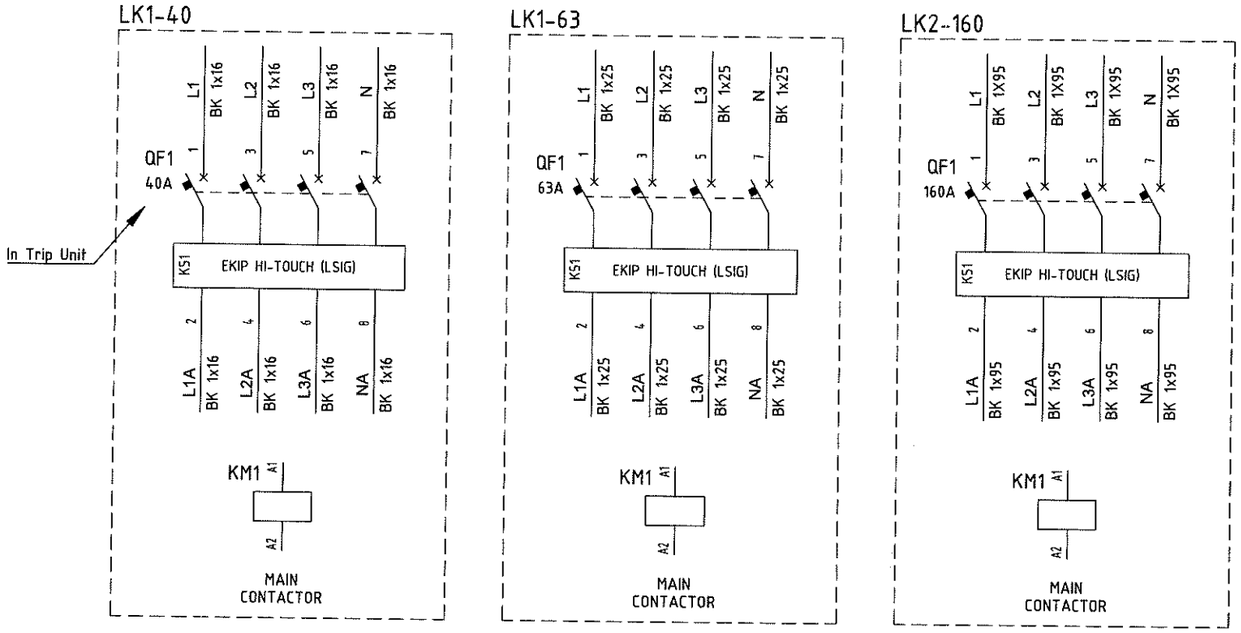
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A5/+06-QF1	:	DRAWER SPARE - A5/+06-QF1	Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	:	400 V Switchboard & Connection Box (SG-200N1)	Module	
TASK	code	C10002777	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°:	EF5001553690N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24 Vdc	Location:	B200	Cubicle:	A5/+06
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	20A			3s	
S	100A	120A		0.1	103ms
I	200A	400A		INSTANT	29ms
G	8A			0.1	

Testing & measurement instruments used

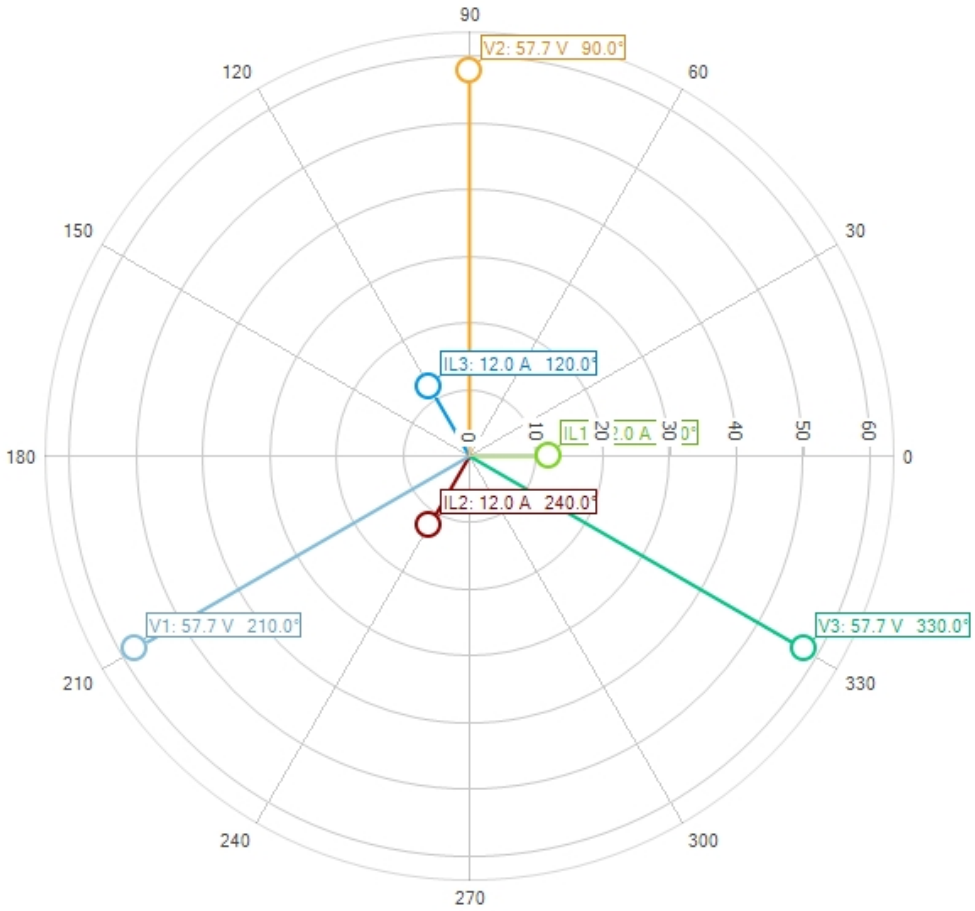
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-18	2024-09-18	2024-09-20
Signature	Digitaly signed by Mattia Girotti 2024-09-18T06:01:27.539Z	Digitaly signed by Kristian Castellani 2024-09-18T07:19:12.826Z	Digitaly signed by Witness waived 2024-09-20T06:21:06.586Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

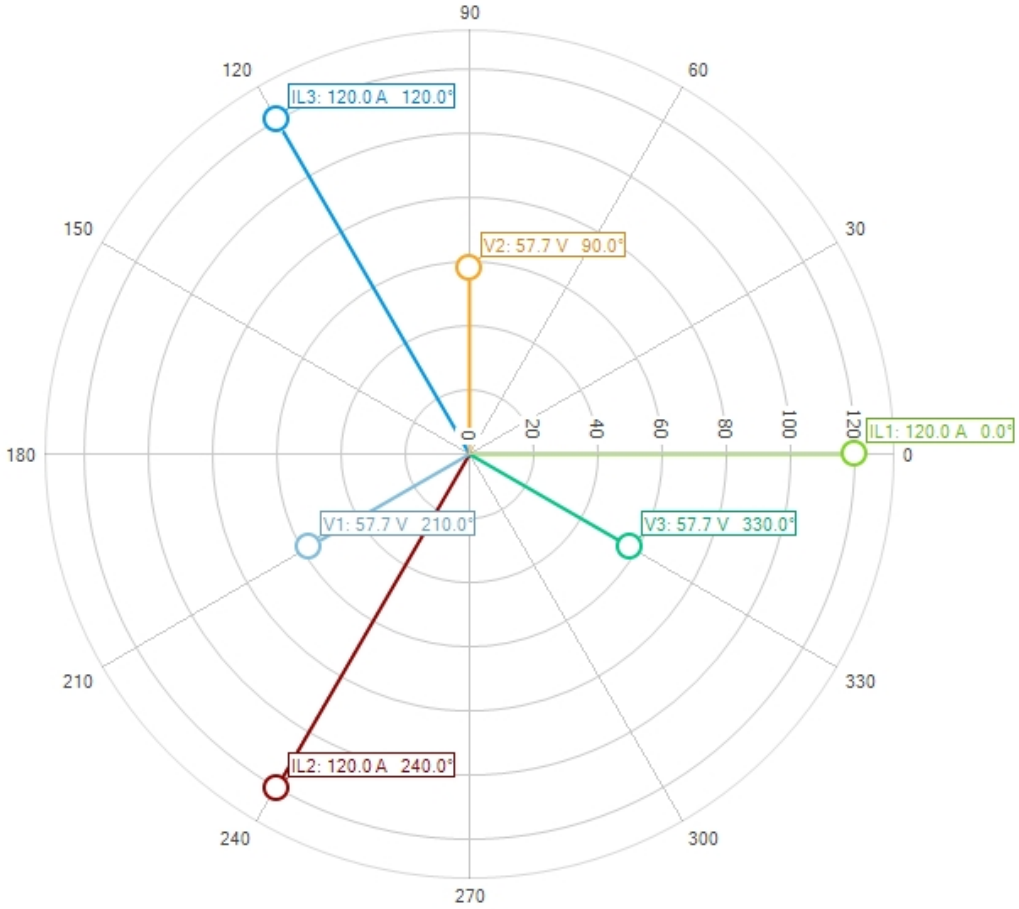
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

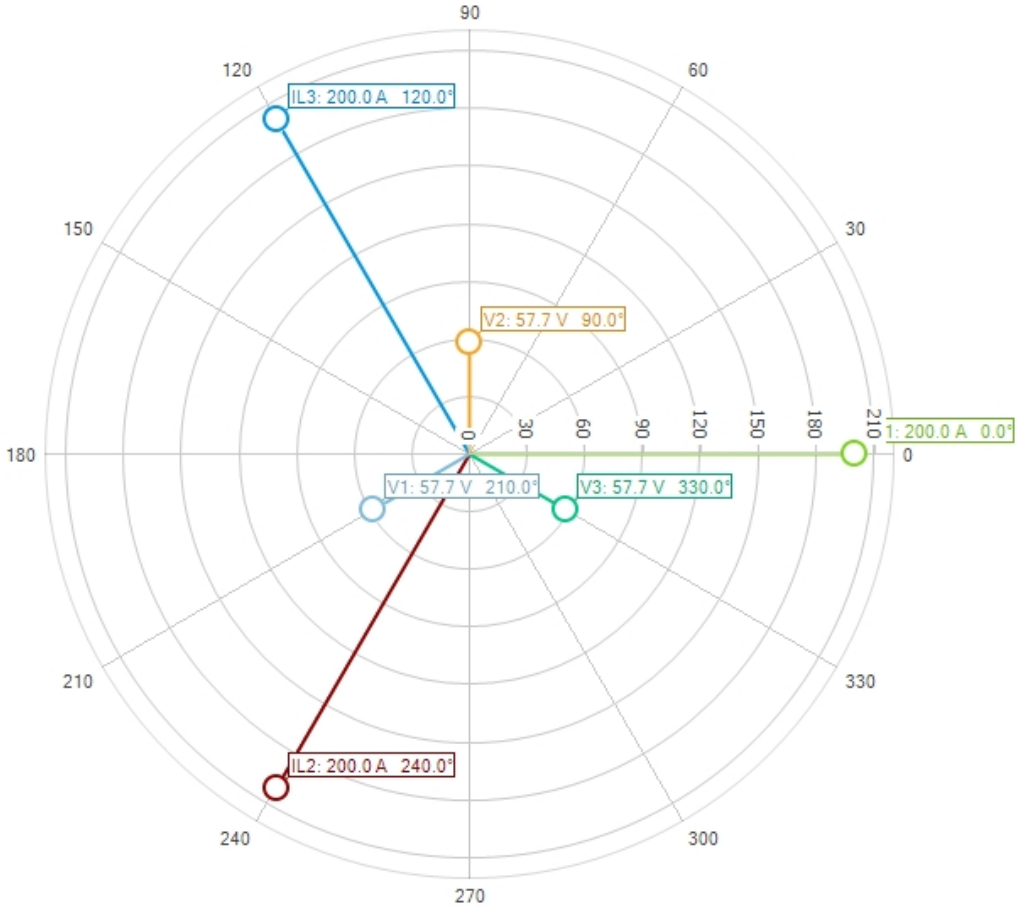
Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

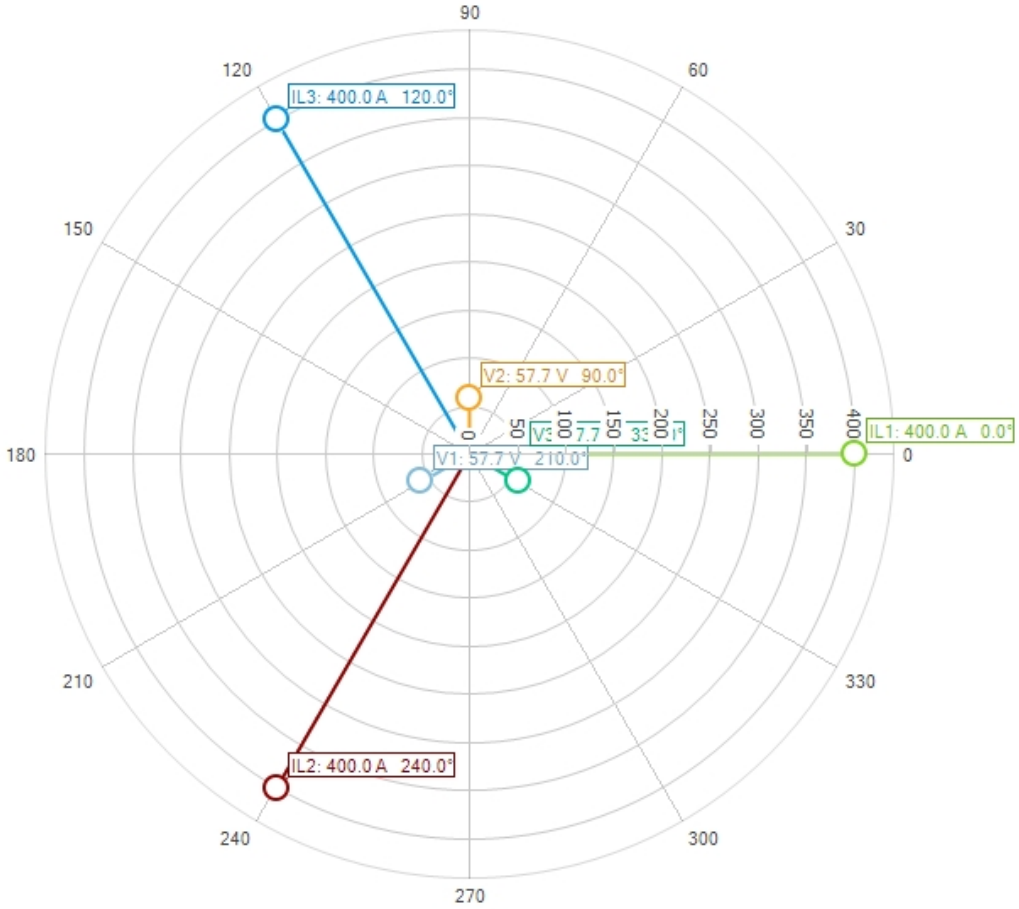
Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 100 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

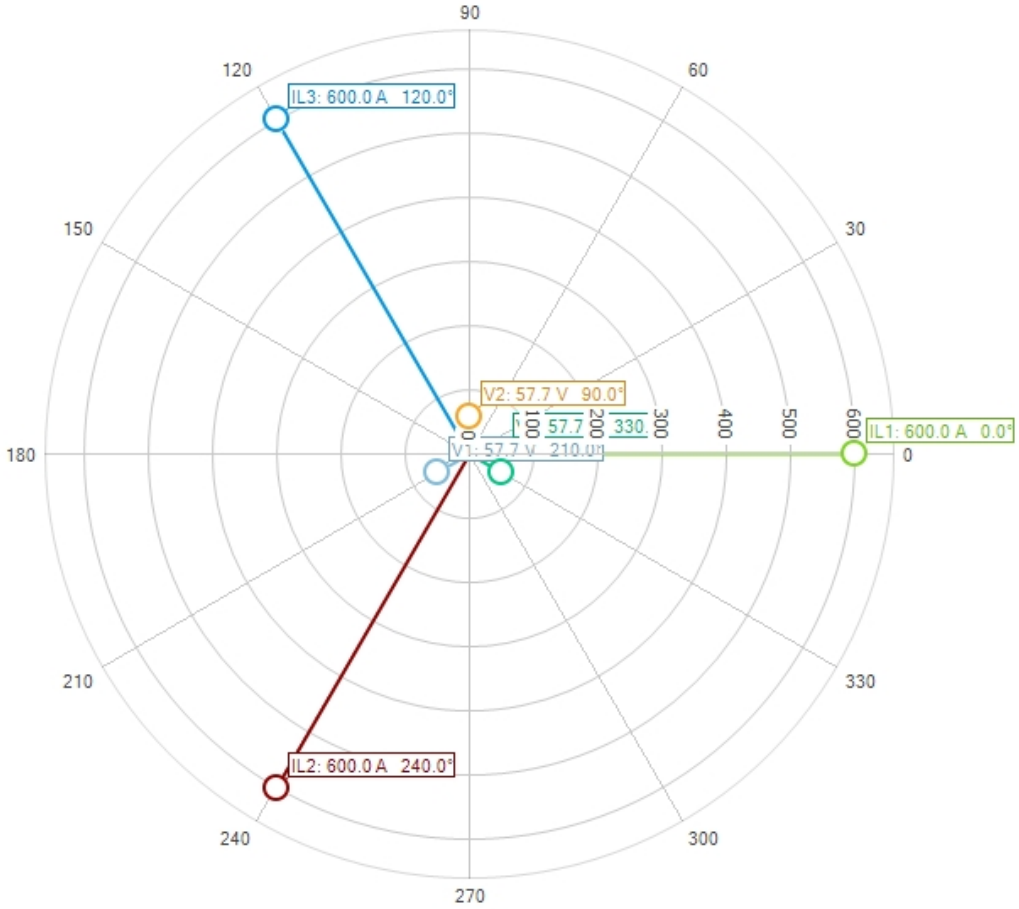
Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A5/+06-QF1	: DRAWER SPARE - A5/+06-QF1		Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)		Module		
TASK	code	C10002778	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form	FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175_17140769
Cubicle N°:	A5/+06	Calibration certificate date:	7715/24_10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	CB CLOSED & INSERTED	HW	DI	A5/+06 - KA1/11-14	A5/+06 - X1/9-10	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
2	CB OPEN OR DISCONNECTED	HW	DI	A5/+06 - KA1/11-12	A5/+06 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
3	DRAWER ON TEST	HW	DI	A5/+06 - KA5/11-14	A5/+06 - X1/9-11	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
4	CB TRIPPED	HW	DI	A5/+06 - KA4/21-24	A5/+06 - X1/9-12	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
5	FEEDER AVAILABLE	HW	DI	A5/+06 - KA2/11-14	A5/+06 - X1/9-13	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
6	INTERNAL FAULT	HW	DI	A5/+06 - QA1/11-14	A5/+06 - X1/9-14	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
7	USER ON LOCAL	HW	DI	A5/+06 - SA1/21-22	A5/+06 - X1/15-19	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A
8														

ANALOGIC

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

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	rm comm	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-10-02	2024-10-03	2024-10-03
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-10-02T12:53:17.581Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-03T07:10:11.058Z	PROVERLIS Digitaly signed by Witness waived 2024-10-03T14:25:28.017Z

ROSETTI MARINO

CROSSWIND

ITEM	Tag	A6/+04-QF1	: DRAWER SPARE - A6/+04-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10002779		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A6/+04-QF1
Breaker rating (A)	160A	Nominal current (A)	40A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	399	V	NA	A OK
11	Attach test procedure, if any				NA

FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

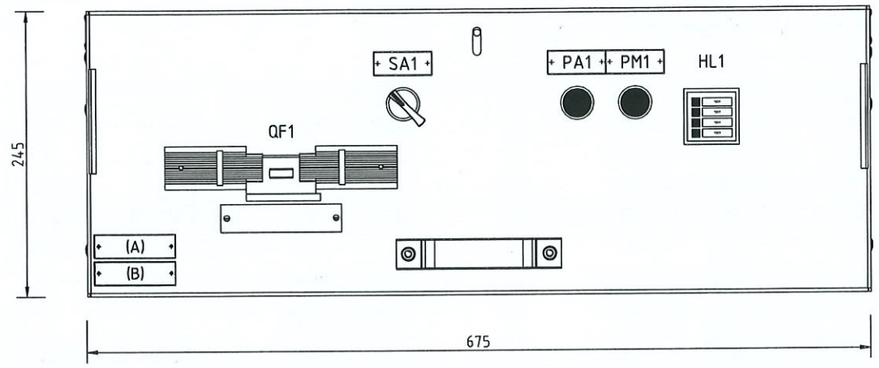
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-15	2024-10-15	2024-10-15
Signature	Digitaly signed by Mattia Girotti 2024-10-15T06:12:34.076Z	Digitaly signed by Kristian Castellani 2024-10-15T07:05:02.883Z	Digitaly signed by Witness waived 2024-10-15T07:36:06.929Z

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

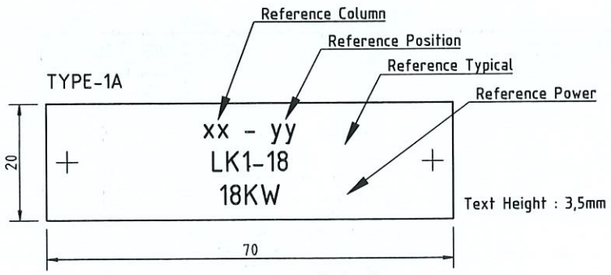


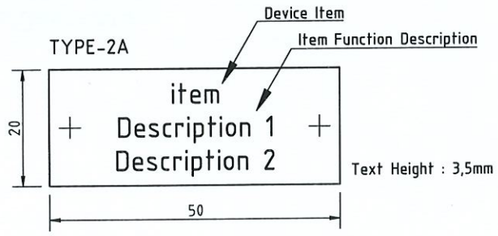
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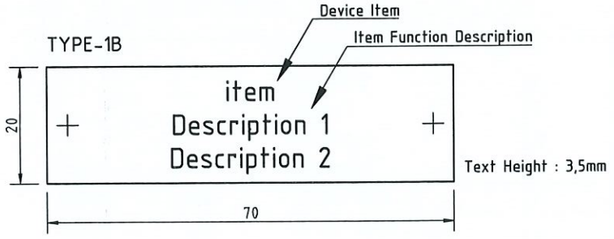
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	~~MOTOR~~ OK	Type-2A
PM1	RUN	~~MOTOR~~ OK	Type-2A
HL1	Multiled	Signalling	NO plate







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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 034

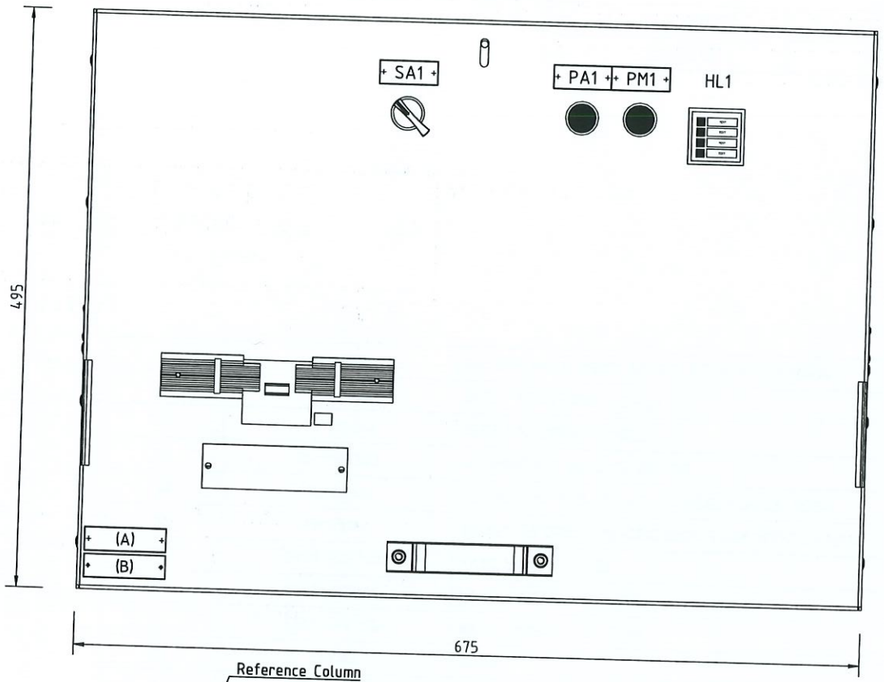
REV. 00

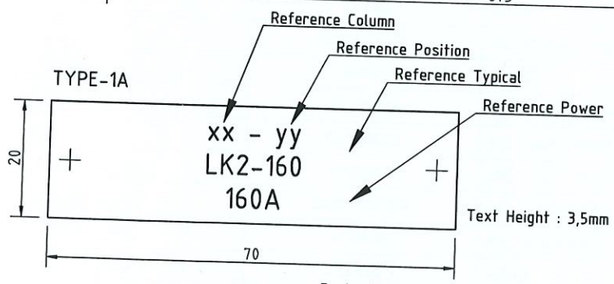
F.to UNI A3: 420mmx297mm

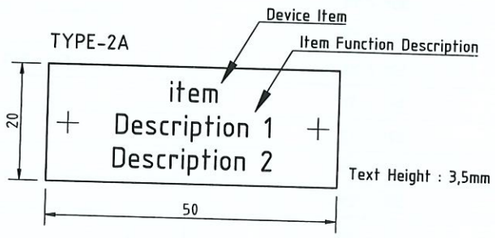
File Name : 1723002197-EL-DG-00031 Rev. 00

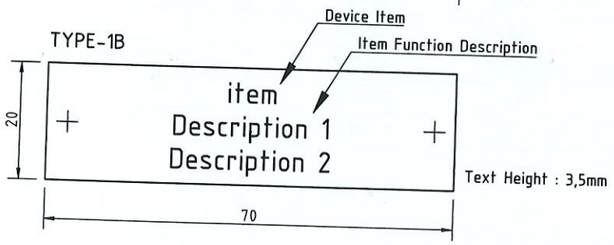
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

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

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

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

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

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

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

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

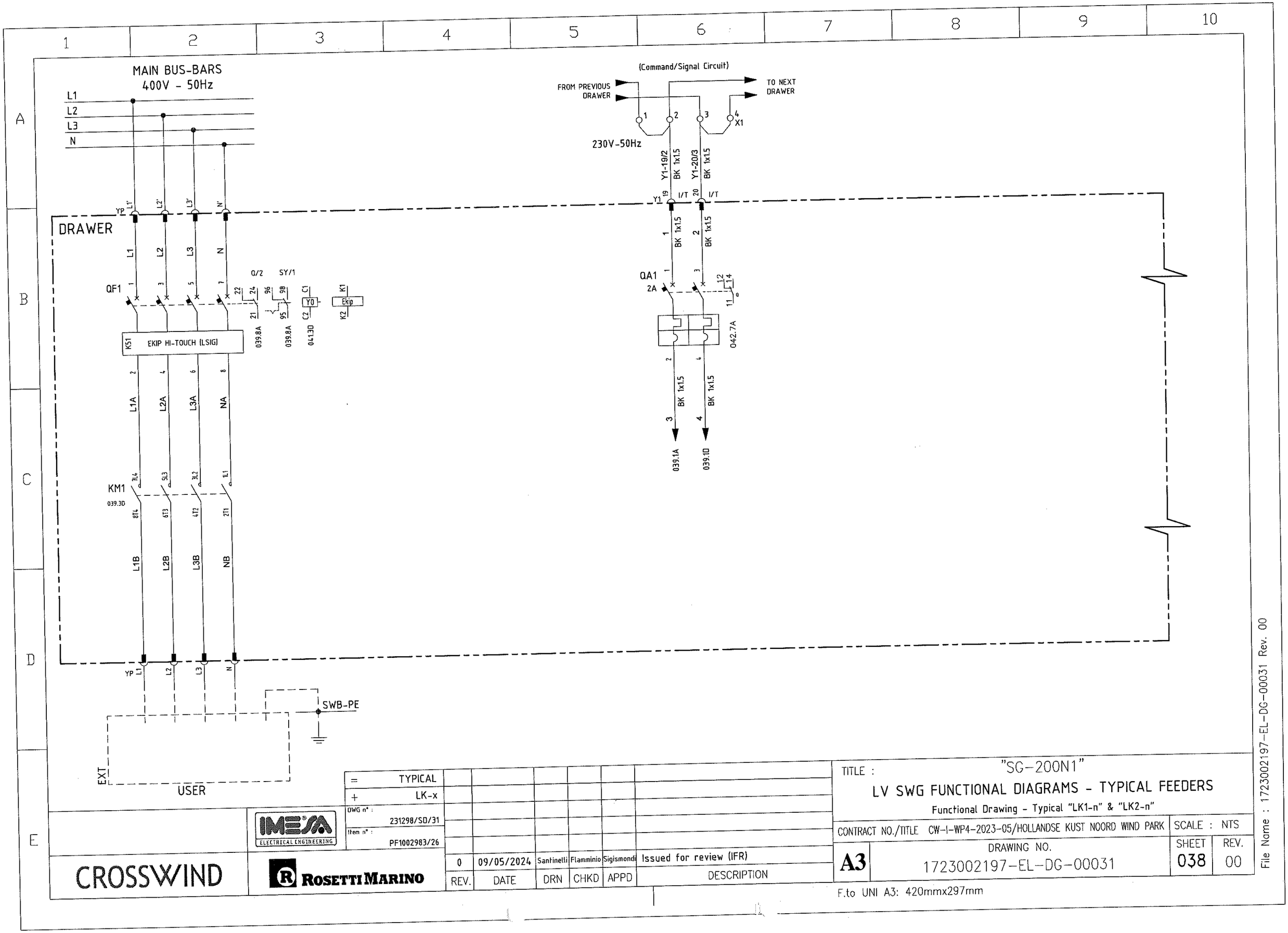
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

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

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

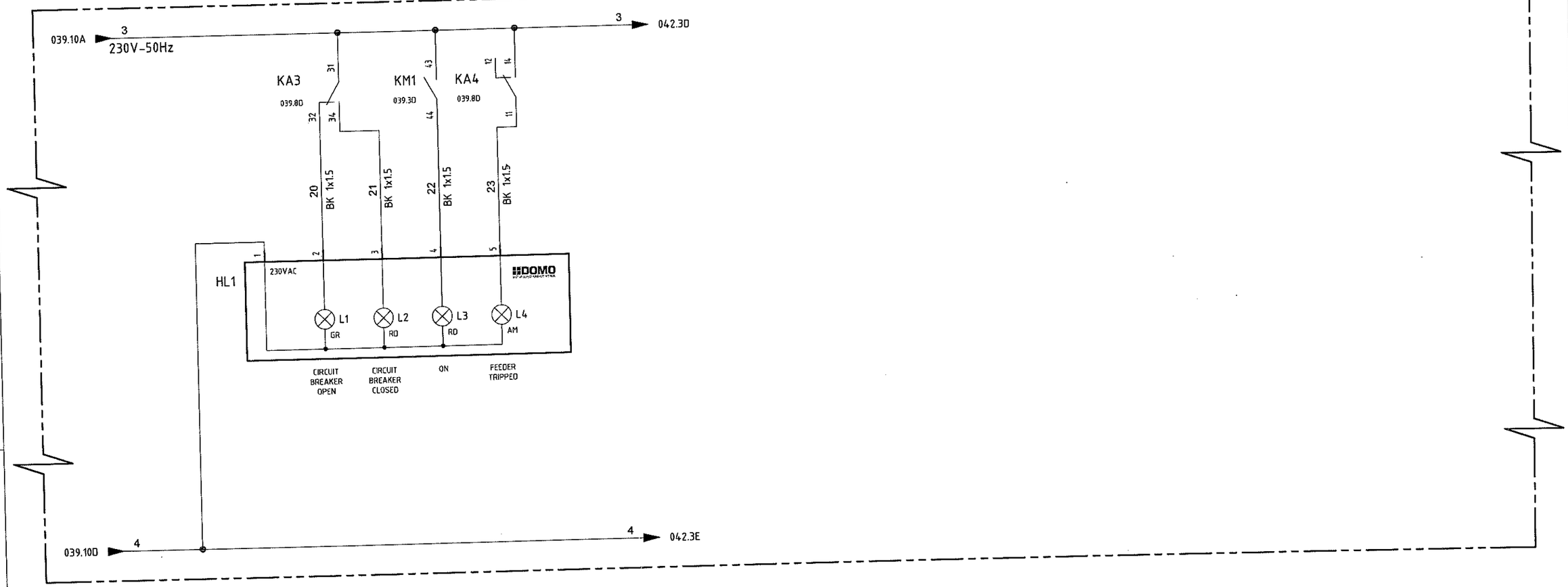
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

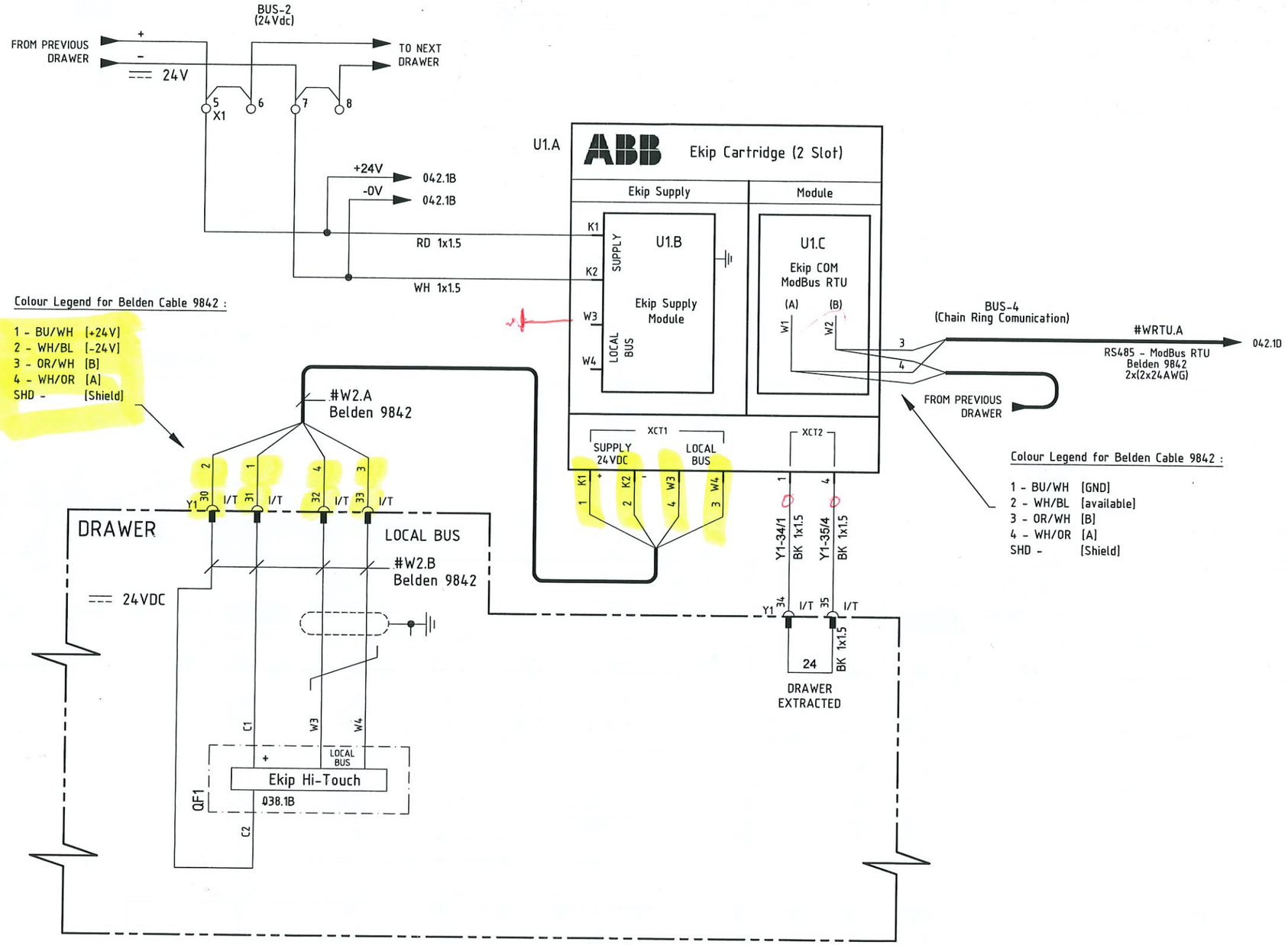
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

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



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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

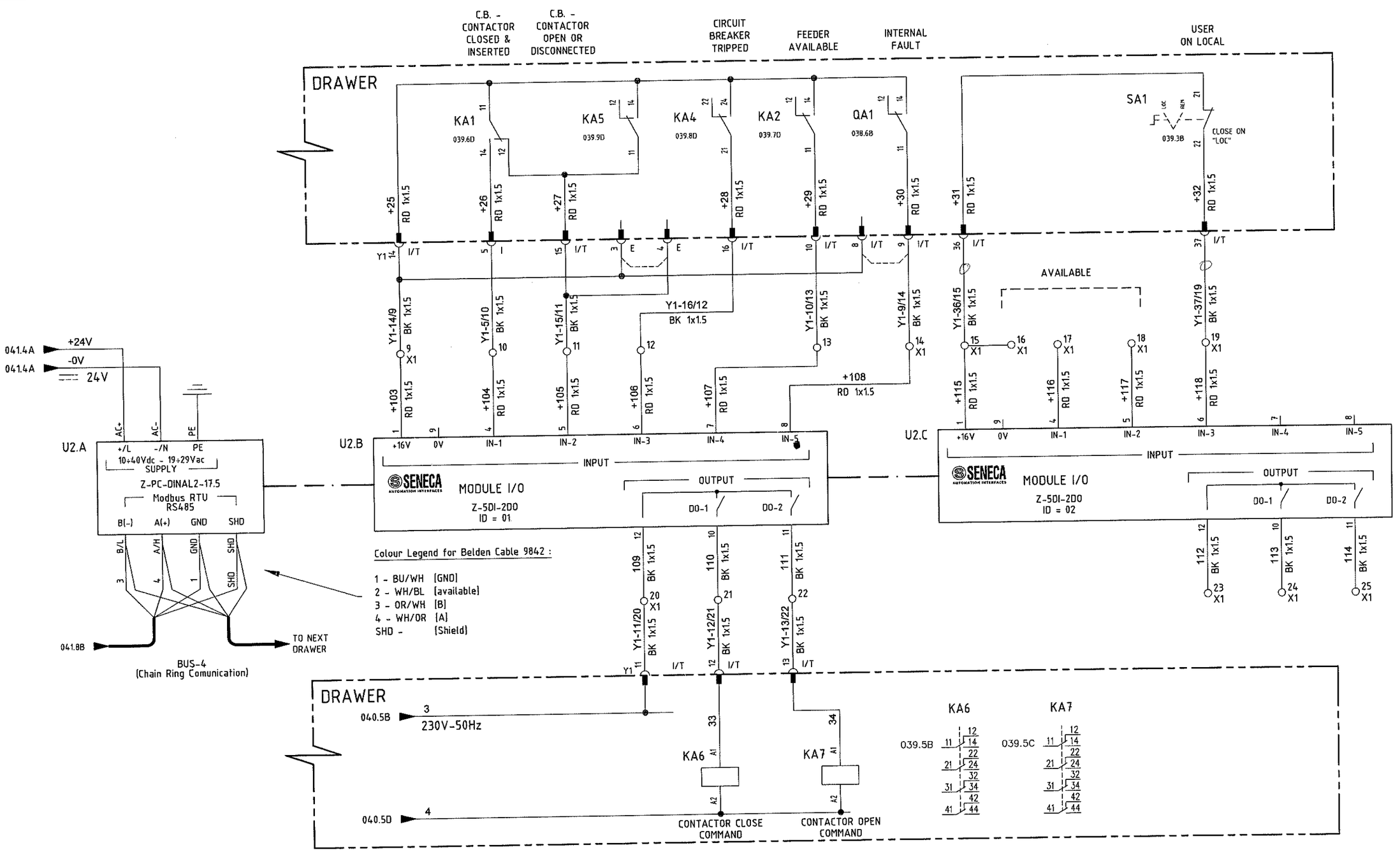
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

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



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

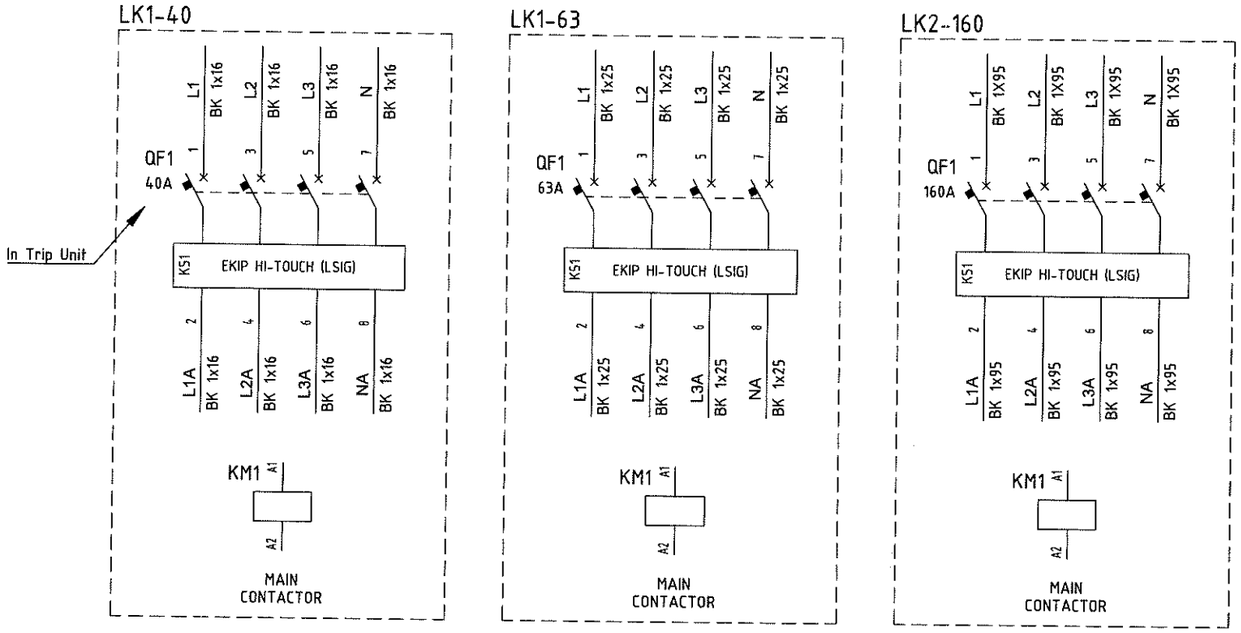
REV. 00

F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

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

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

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

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

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

ITEM	Tag	A6/+04-QF1	: DRAWER SPARE - A6/+04-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module			
TASK	code	C10002780	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°:	EF5001453690N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24 Vdc	Location:	B200	Cubicle:	A6/+04
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
L	18,8A			3s	
S	100A	120A		0,1s	104ms
I	200A	400A		INSTANT	28ms
G	8A			0,1S	

Testing & measurement instruments used

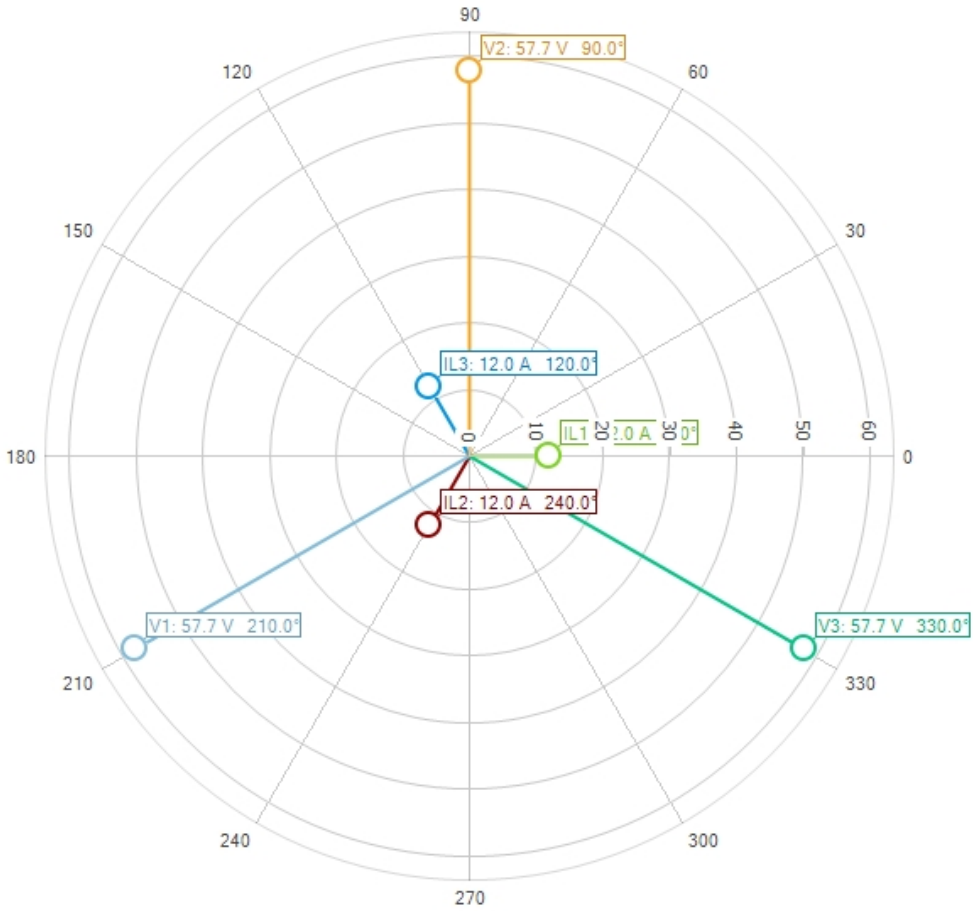
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: This is a SPARE DRAWER. The protection settings that have been implemented were defined by the Commissioning team solely for the purpose of testing the device. If this spare drawer will be re-purposed at a future date, then a new protection setting must be implemented accordingly.

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-17	2024-09-18	2024-09-20
Signature	Digitaly signed by Mattia Girotti 2024-09-17T13:41:08.468Z	Digitaly signed by Kristian Castellani 2024-09-18T07:20:36.946Z	Digitaly signed by Witness waived 2024-09-20T06:21:39.174Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.470	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

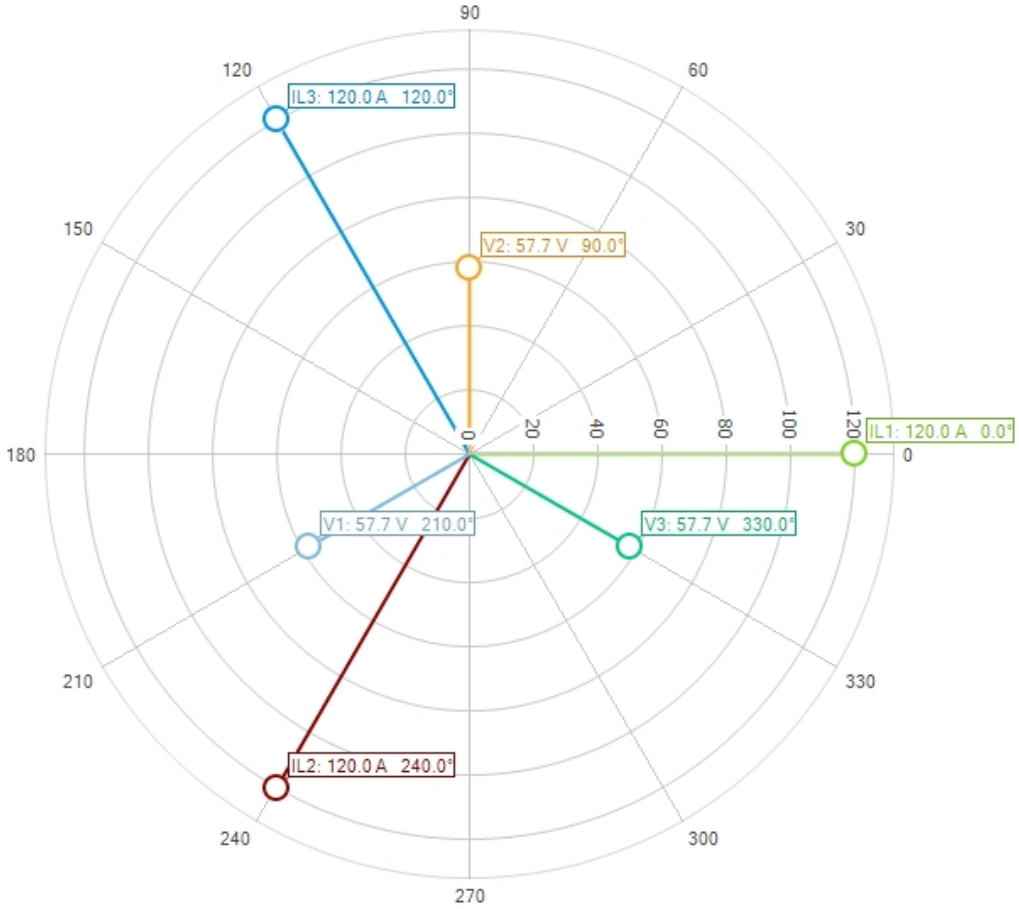
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

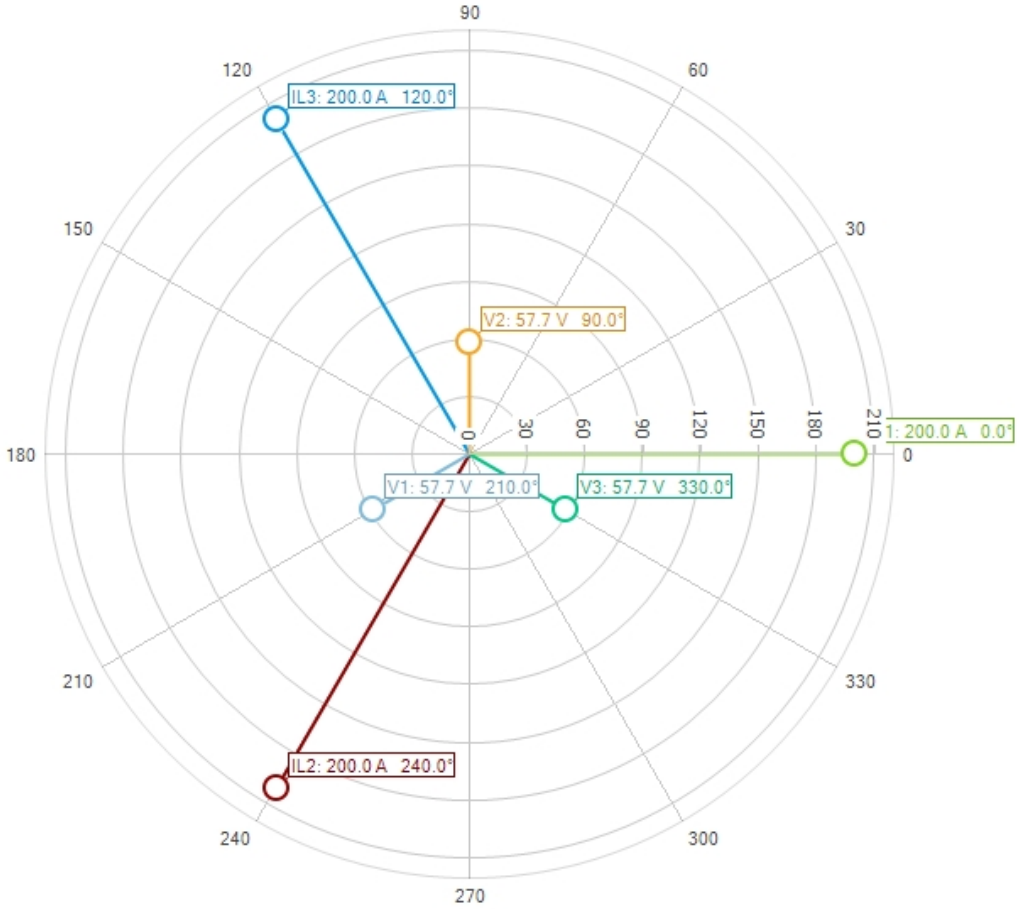
Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

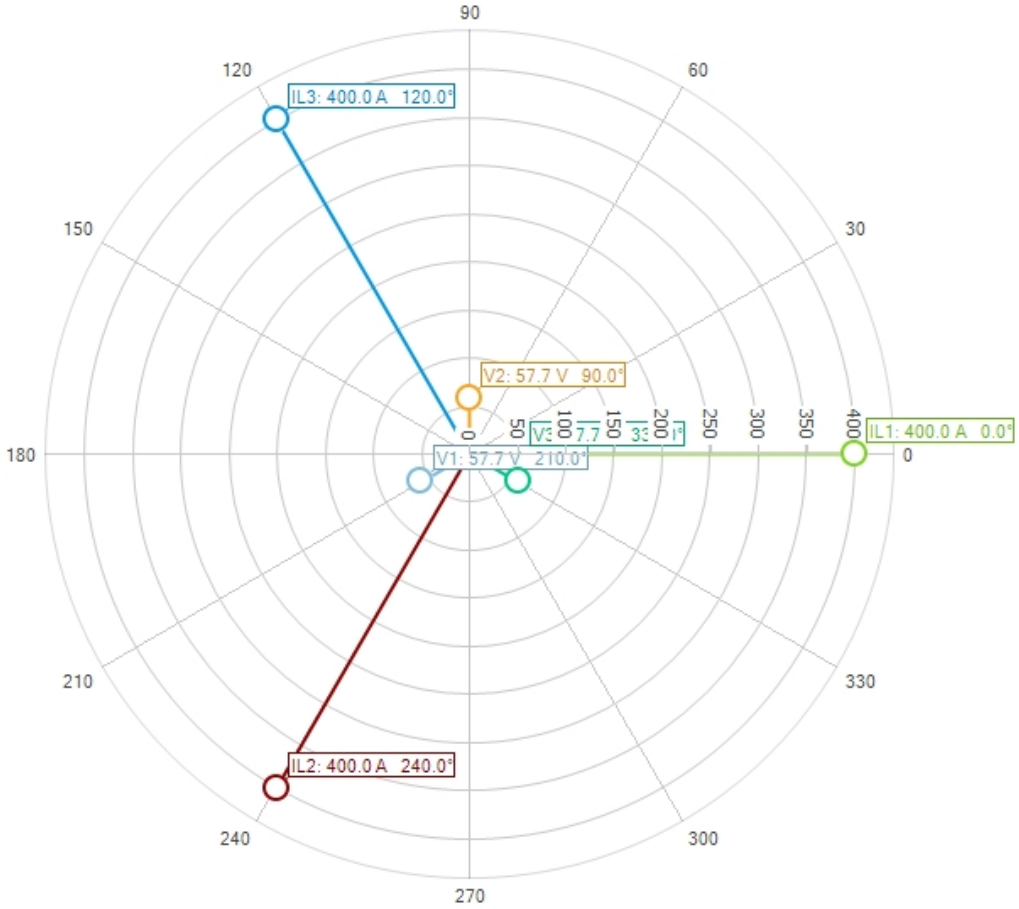
Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms.

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

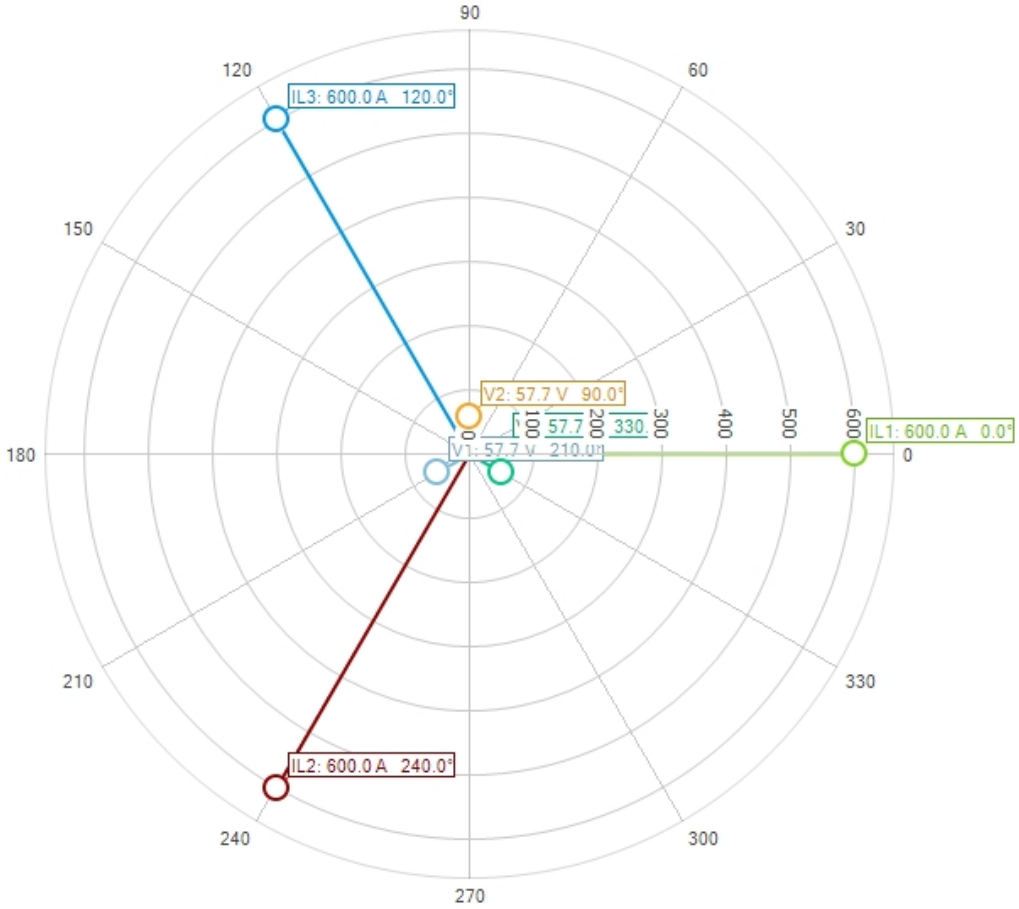
Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A6/+04-QF1	: DRAWER SPARE - A6/+04-QF1		Dwg	1723002197-EL-DG-00011	
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)		Module		
TASK	code	C10002781	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline Electrical	Form	FTR-6	Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	SPARE	Instrument Type / Serial N° :	FLUKE 175 / 17140769
Cubicle N°:	A6/+04	Calibration certificate date:	7715/24 - 10/07/2025

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

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	C.B. - CLOSED & INSERTED	HW	DI	A6/+04 - KA1/11-14	A6/+04 - X1/9-10	NA	NA	NA	Y	NA	NA	NA	NA	NA
2	C.B. - OPEN OR DISCONNECTED	HW	DI	A6/+04 - KA1/11-12	A6/+04 - X1/9-11	NA	NA	NA	Y	NA	NA	NA	NA	NA
3	C.B. - TRIPPED	HW	DI	A6/+04 - KA4/21-24	A6/+04 - X1/9-12	NA	NA	NA	NA	NA	Y	NA	NA	NA
4	INTERNAL FAULT	HW	DI	A6/+04 - QA1/11-14	A6/+04 - X1/9-14	NA	NA	NA	NA	NA	Y	NA	NA	NA
5	FEEDER AVAILABLE	HW	DI	A6/+04 - KA2/11-14	A6/+04 - X1/9-13	NA	NA	NA	Y	NA	NA	NA	NA	NA
6	USER ON LOCAL	HW	DI	A6/+04 - SA1/21-22	A6/+04 - X1/15-19	NA	NA	NA	Y	NA	NA	NA	NA	NA
7	DRAWER ON TEST	HW	DI	A6/+04 - KA5/11-14	A6/+04 - X1/9-11	NA	NA	NA	Y	NA	NA	NA	NA	NA
8														

ANALOGIC

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

Comments: The test of the cubicle was carried out on a test bench.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	rm comm	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-02	2024-10-03	2024-10-03
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-02T13:05:37.284Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-03T07:10:43.953Z	PROVERLIS Digitaly signed by Witness waived 2024-10-03T14:26:06.963Z

ITEM	Tag	SG-200N1	: LV 0,4 kV MCC Switchgear	Dwg	123A90-DDL-EL-DS-20024		
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module	LD_B-200		
TASK	code	C10002991	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FP05	LV Switchboard /MCC

DATA

Manufacturer	IMESA	Rated Voltage	400V	Bus Bar Rating A	2500A
Serial N°	231298/SD/040	Fault Level kA/s	105/1		
Type	MCC/F	IP Rating	IP20/IP30		

FUNCTION TEST REQUIREMENT

1	CheckK MC activities have been carried out			OK
2	Check equipment for cleaness			OK
3	Measure I/R value of bus bars including circuit breakers at 1000V (Min 50 MΩ)	>1000	MΩ	OK
4	Measure I/R value of polarities buses at 500 V (Min value: 10 MΩ)		MΩ	Note
5	Check polarity of bus wiring in each cubicle.			OK
6	Energise anti-condensation heater and check hygrostat working and that the system is heating correctly.			Note
7	Test bus tie breaker(s) operation .			NA
8	Verify that the secondary injection test on the protection relays and metering is present in the system			Note
9	Check incomer protection devices rating and settings in accordance with relay protection study.			Note
10	Test interface trips and signals (remote alarms & status). Check the ITR relevant presence in the system			Note
11	Check presence of Warning posts, safety tool kit.			OK
12	Ensure all HV/LV intertrips and interlocks are tested			Note
13	Ensure bus tie is open.			NA
14	Test synchronisation device is ok.			NA
15	Energise switchboard incoming supplies.			OK
16	Phase out incoming supplies.			OK
17	Phase out switchboard across bus sections.			PL
18	Carry out all manual and automatic changeover sequences.			PL
19	For switchboard with emergency supply, carry out all automatic changeover sequences upon loss of main supply.			NA
20	Check meters and indicators			OK

Comments:

Point 4: the vertical bars are connected to the horizontal ones the value is the same.
Point 6: the test with the temporary power is OK, Comm. Team will repeat the test when the definitive power is ready.
Point 8/9: refer to the FTR-2 of the Temporary Generator Drawer (C10002760).
Point 10: see incomer's FTR-6 (Electrical I/O check) and dreawer's FTR-5 (Remote signalling).
Point 12: detail test step will be provided in dedicated OTP.

Point 17/18: See P.L. ref.: C30000116

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	rm comm	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-09-27	2024-09-27	2024-09-28

PROVERLIS Digitaly signed by Mattia Girotti 2024-09-27T06:11:39.301Z
PROVERLIS Digitaly signed by Kristian Castellani 2024-09-27T07:28:22.200Z
PROVERLIS Digitaly signed by Witness waived 2024-09-28T08:17:54.833Z

Signature			

ITEM	Tag	UP-200F3-QF49	: SG-200-N1 AUX			Dwg	1724000372-EL-DG-00009
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)			Module	
TASK	code	C10004585		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FTR-2 Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer:	ABB	Serial N°:	NA	Relay type:	NA
Auxiliary supply:	NA	Location:	B300	Cubicle:	NA
Switchboard:	UP-200F3				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay Setting	Time delay Trip value
I	10A	NA	NA	FIXED	NA

Testing & measurement instruments used

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

Comments:

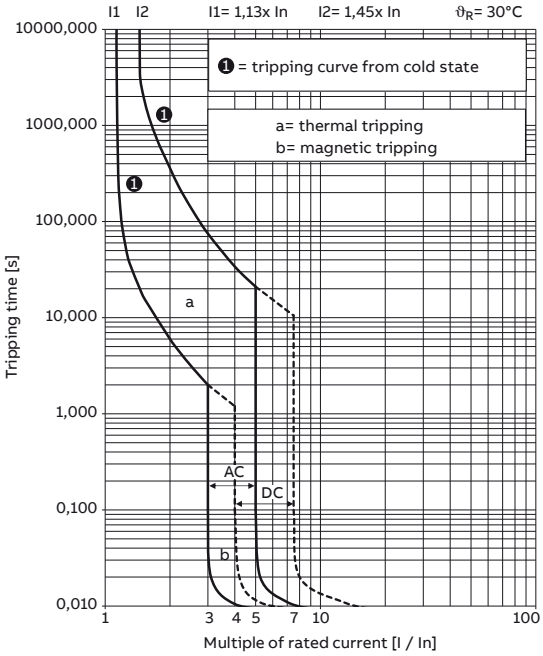
Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-08	2024-11-08	2024-11-08
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-11-08T14:22:35.875Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-08T15:19:15.567Z	PROVERLIS Digitaly signed by Witness waived 2024-11-08T16:28:45.856Z

Miniature Circuit breakers S300P

Tripping characteristics

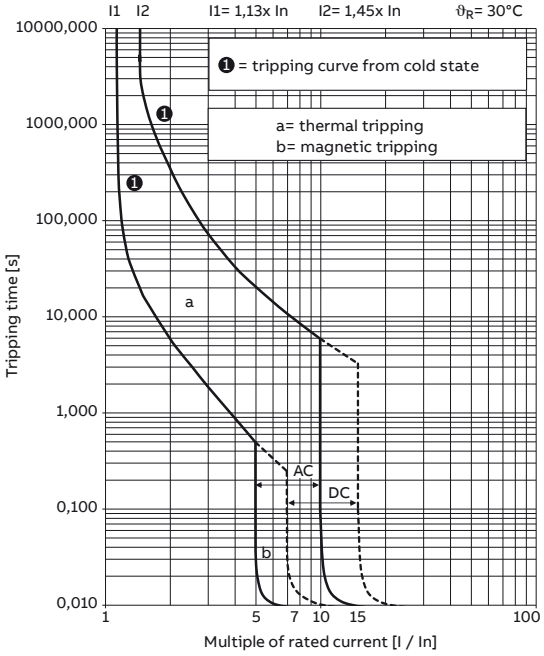
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



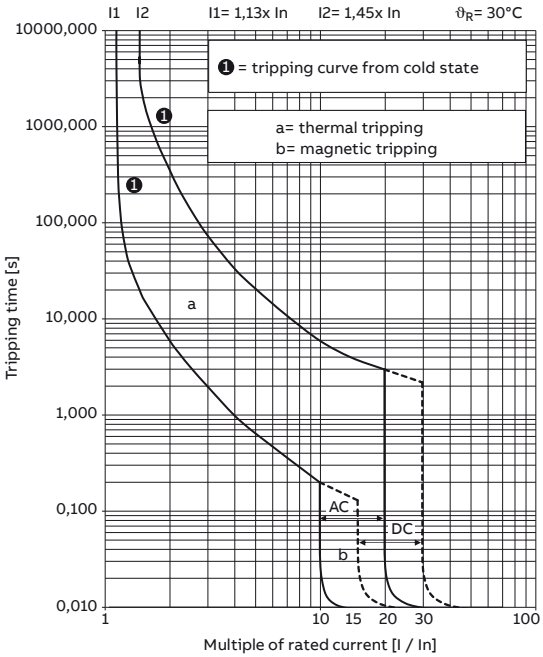
MCB Type S300P - C (5 ... 10 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



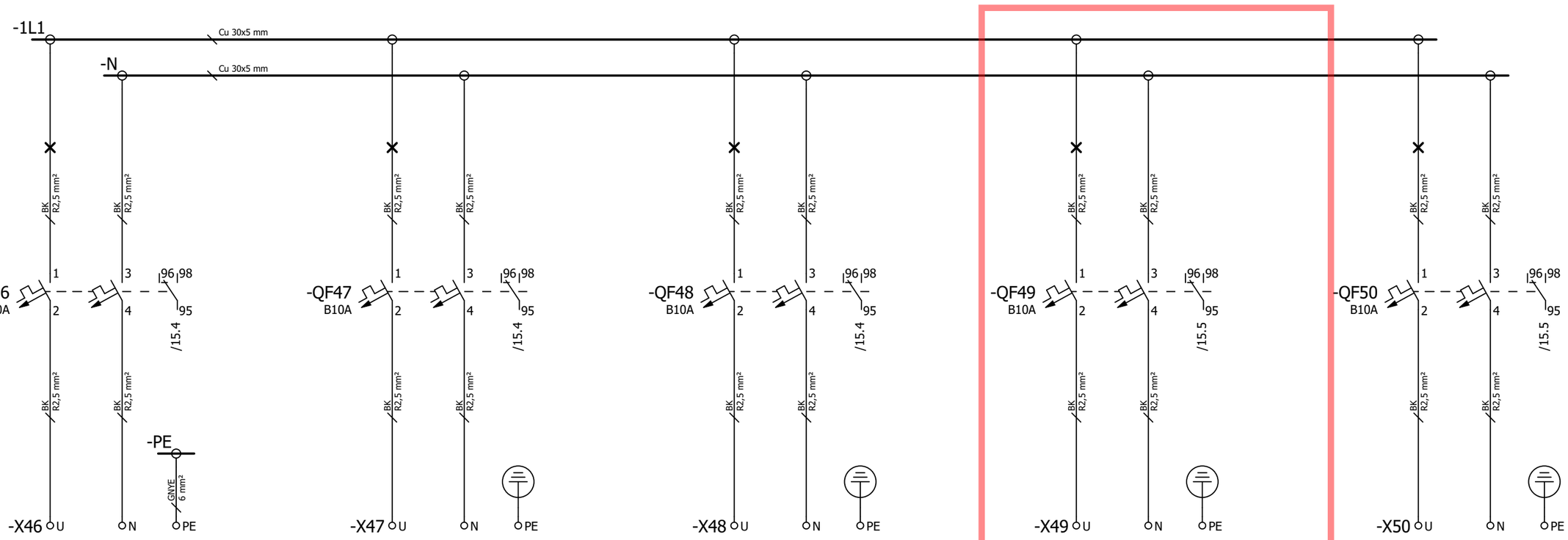
MCB Type S300P - D (10 ... 20 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



CAE EPLAN Electric P8

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Load
230V/N/PE~50Hz

B400-PCS-001
PCS-CONTROLLER AND I/O
CABINET-LINE B - 1.5KW

Load
230V/N/PE~50Hz

B400-EMCS-001
EMCS-CONTROLLER AND I/O
CABINET-LINE A - 1KW

Load
230V/N/PE~50Hz

B400-EMCS-001
EMCS-CONTROLLER AND I/O
CABINET-LINE B - 1KW

Load
230V/N/PE~50Hz

SG-200-N1
LV SWITCHBOARD AUXILIARY
1KW

Load
230V/N/PE~50Hz

SPARE

1000007888_010

				Date	23.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 40 kVA
Circuit diagram

1000007888.020
10009757

1000007888_010 en

=
+ MBC1
& EFS

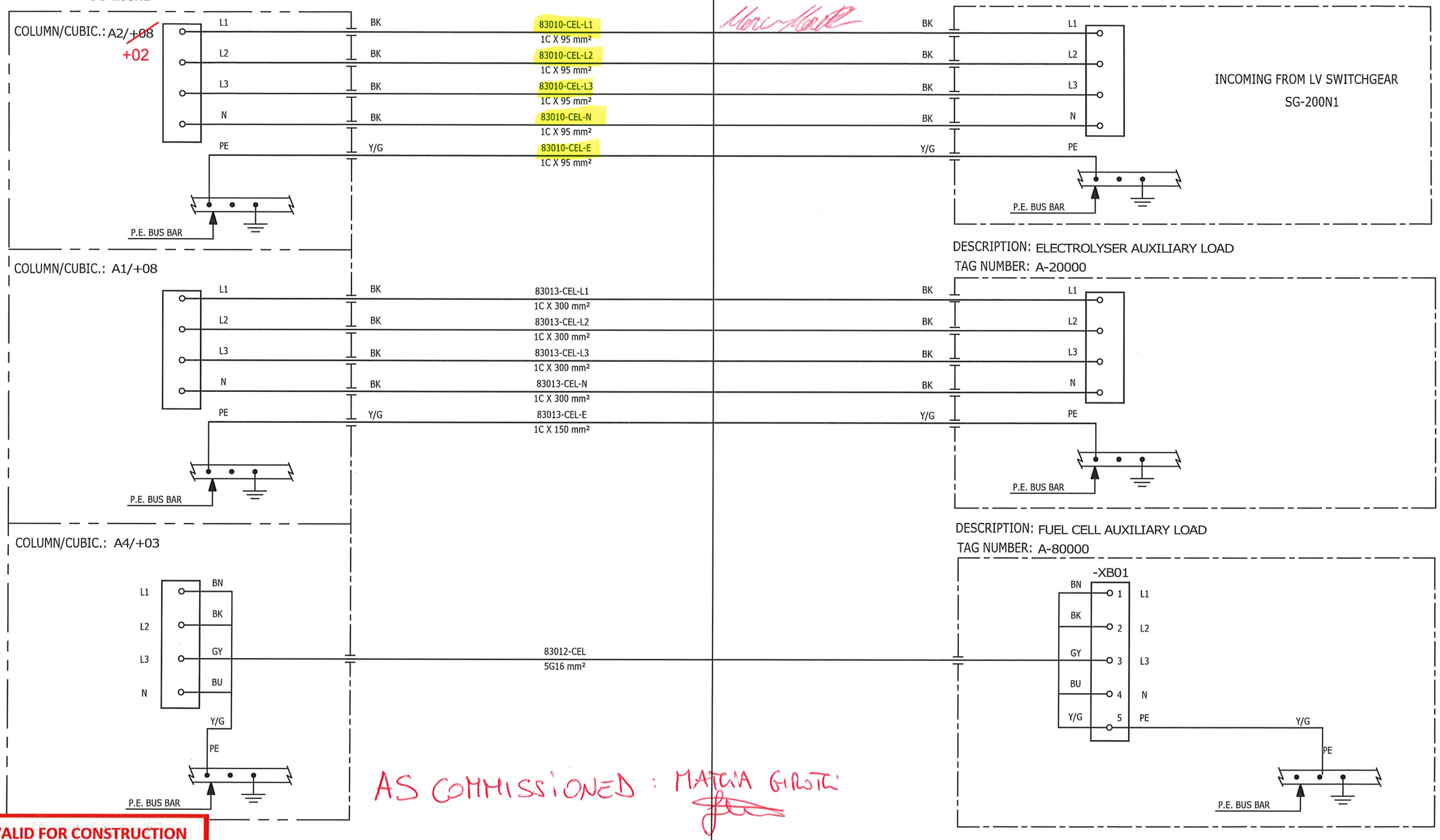
A3

sheet 10
sheets 17

Section 4.2 Electrical
“As-Commissioned” interconnection diagrams

NO MARK UP
19/3/25 MARCO MORETTO

FROM	TO
DESCRIPTION: LV Switchgear TAG NUMBER: SG-200N1	DESCRIPTION: TEMPORARY GENERATOR / MOBILE BATTERY PACK TAG NUMBER: JB-200E2
COLUMN/CUBIC.: A2/~~+08~~ +02	INCOMING FROM LV SWITCHGEAR SG-200N1
COLUMN/CUBIC.: A1/+08	DESCRIPTION: ELECTROLYSER AUXILIARY LOAD TAG NUMBER: A-20000
COLUMN/CUBIC.: A4/+03	DESCRIPTION: FUEL CELL AUXILIARY LOAD TAG NUMBER: A-80000



AS COMMISSIONED : MATTIA GIROTTI

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

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

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

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

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

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

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	123A90-DDL-EL-DG-20149	021	02

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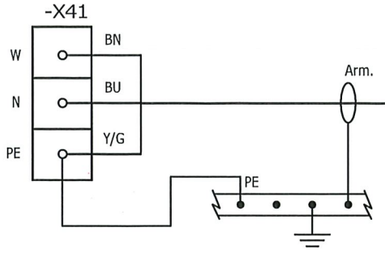
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FROM	TO

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TAG NUMBER: ~~DP-200F3~~ UP-200 F3

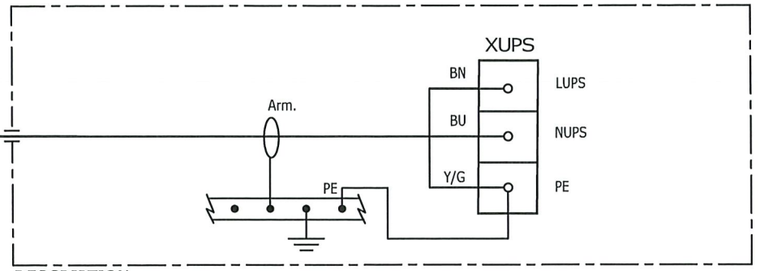
MARCO MORETTO
15/3/25

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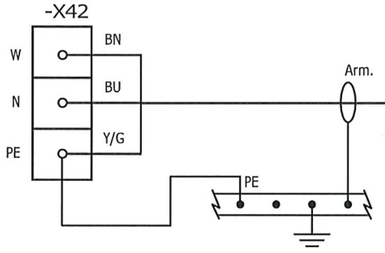


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DESCRIPTION: UCP - HVAC UPS ROOM
TAG NUMBER: B300-HSB-001

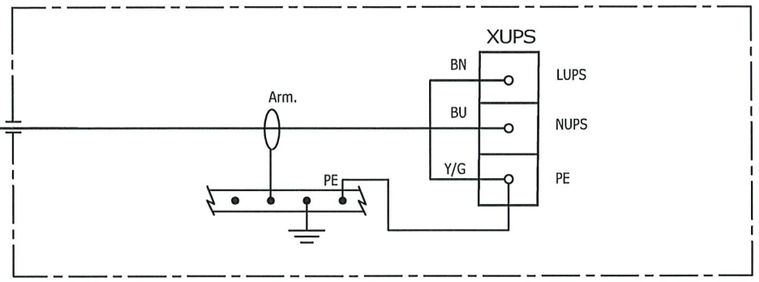


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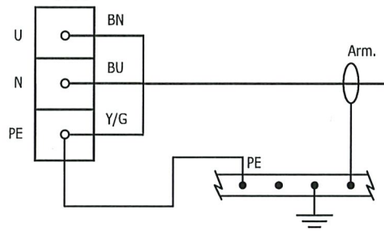
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TAG NUMBER: B400-HSB-001



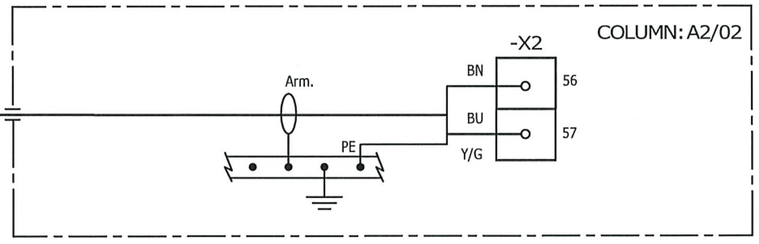
NO MARK UP
19/3/25
MARCO MORETTO

DESCRIPTION: LV SWITCHBOARD AUXILIARY
TAG NUMBER: SG-200N1

-X49



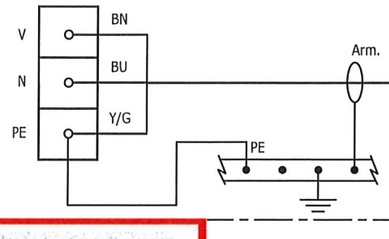
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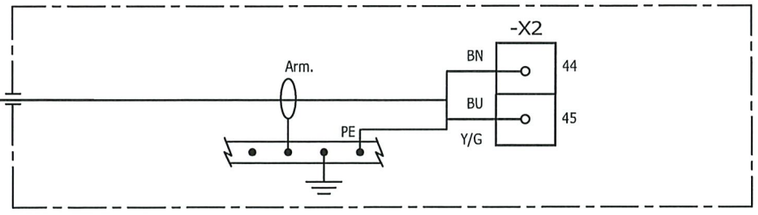
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TAG NUMBER: SG-200D2

NO MARK UP
18/3/25
MARCO MORETTO

-X51



84319-CEL
3G2.5 mm²



AS COMMISSIONED: MATTIA GIGLI

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

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

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

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

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
AC UPS – PAS DB DP-200F3

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 042 | REV. 02

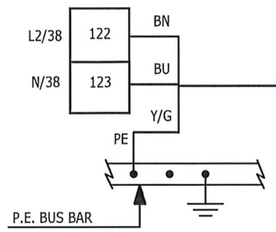
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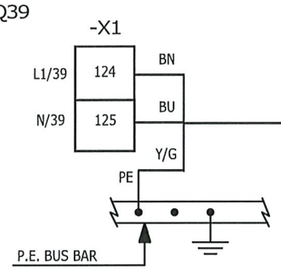
DESCRIPTION: LIGHTING & SMALL POWER DB BOP
TAG NUMBER: DP-200N1

CUBICLE/CB: +03/Q38



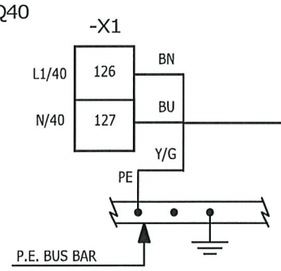
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CUBICLE/CB: +03/Q39



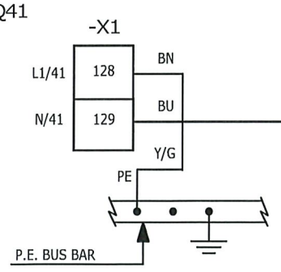
83120-CEL
3G2.5 mm²

CUBICLE/CB: +03/Q40



83121-CEL
3G2.5 mm²

CUBICLE/CB: +03/Q41



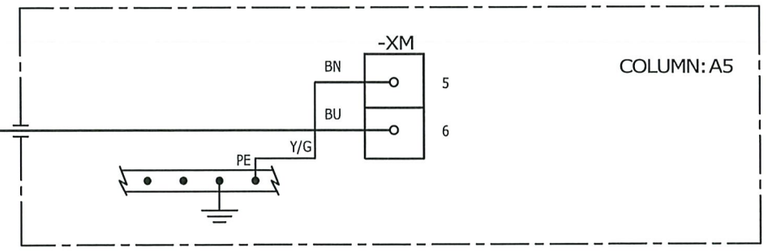
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NO MARK UP
MARCO MORETTO
18/3/25

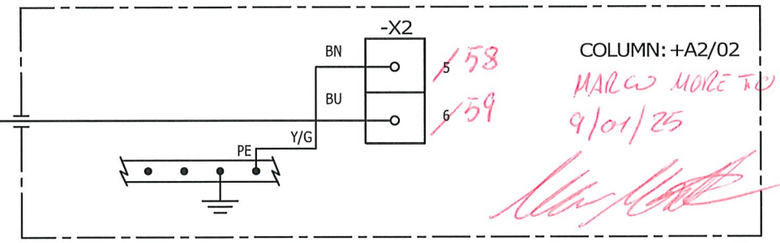
NO MARK UP
18/3/25
MARCO MORETTO

AS COMMISSIONED: MATTIA GIROTTI

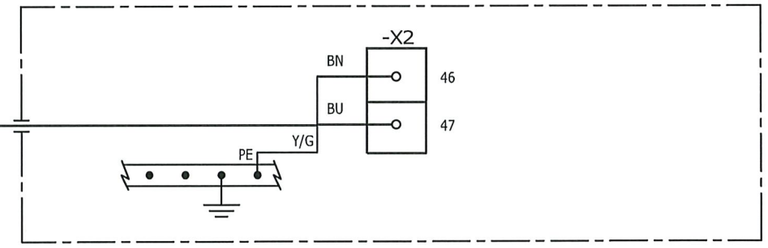
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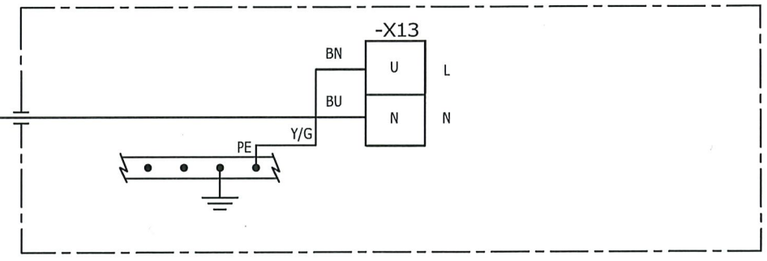
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TAG NUMBER: SG-200N1



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



DESCRIPTION: AC UPS PAS AUXILIARY
TAG NUMBER: UP-200F3



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	056	02

F.to UNI A3: 420mmx297mm

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

Section 4.3 Instrumentation functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & discipline : I

Instrumental	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
83-XS-001A	SHUTDOWN SEAWATER LIFT PUMP P-50001A	ONSHORE	C10003825	FJ01D	100	2025-04-04	RFO 1
83-XS-001B	SHUTDOWN SEAWATER LIFT PUMP P-50001B	ONSHORE	C10003824	FJ01D	100	2025-04-04	RFO 1

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	83-XS-001B	: SHUTDOWN SEAWATER LIFT PUMP P-50001B	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module			
TASK	code	C10003824	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ01D	Digital Loop

LOOP DATA

Loop TAG	83-XS-001B			TSLD	123A90-FDL-IN-DG-40014 rev. 1_A		
IO Type	Input	No	Output Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-SIS-001	Terminal	01A/01B	Slot	05	Rack 02	Chanel 01

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	No	Alarm/trip	Yes	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control		Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No		Yes		OK	OK
7	Loop not energized	Yes		Yes		OK	OK
8	Checking of line monitoring	No		No		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	NA
10	Associated safety Level / bar						
11	Associated outputs						

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/07/25

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ROSETTI COMM	RM COMM	CROSSWIND
Name	Alejandro Sasia	Giandonato Delmissier	PP Paul Williamson
Date	2025-03-27	2025-04-03	2025-04-04

PROVERLIS Digitaly signed by Alejandro Sasia 2025-03-27T15:08:18.382Z

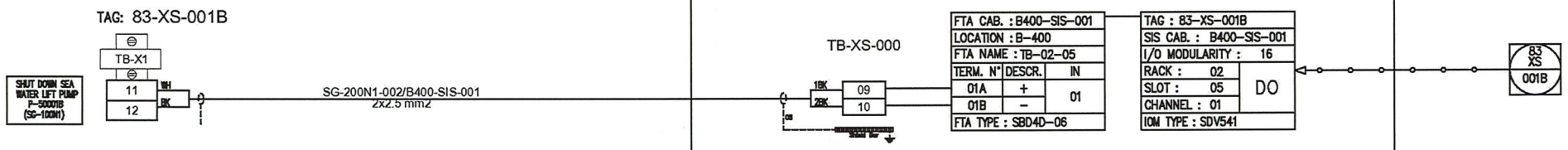
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-04-03T05:00:28.398Z

PROVERLIS Digitaly signed by PP Paul Williamson 2025-04-04T12:04:11.126Z

Signature			

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

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



NO MARK UP
27-03-2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV.: 0_A | DATE: 23/10/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
83-XS-001B
SHUTDOWN SEAWATER LIFT PUMP P-50001A

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

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 158	REV. 00

File Name : 123A90-DDL-IN-DG-40014_REV00

ROSETTI MARINO — CROSSWIND

ITEM	Tag	83-XS-001A	: SHUTDOWN SEAWATER LIFT PUMP P-50001A	Dwg	123A90-DDL-IN-LIS-40089		
	S/Sys	83-00	: 400 V Switchboard & Connection Box (SG-200N1)	Module			
TASK	code	C10003825	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline	Instrumental	Form FJ01D	Digital Loop

LOOP DATA

Loop TAG	83-XS-001A			TSLD	123A90-FDL-IN-DG-40014 rev. 1_A		
IO Type	Input	No	Output Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-SIS-001	Terminal	01A/01B	Slot	05	Rack 01	Chanel 01

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	No	Alarm/trip	Yes	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control		Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No		Yes		OK	OK
7	Loop not energized	Yes		Yes		OK	OK
8	Checking of line monitoring	No		No		OK	OK
9	Checking of Maintenance Inhibition	NA		NA		NA	OK
10	Associated safety Level / bar						
11	Associated outputs						

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	
14	Any defect is recorded for punch list issuance	

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity

Comments:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ROSETTI COMM	RM COMM	CROSSWIND
Name	Alejandro Sasia	Giandonato Delmissier	PP PAUL WILLIAMSON
Date	2025-03-27	2025-04-03	2025-04-04

Digitaly signed by Alejandro Sasia 2025-03-27T15:03:46.649Z

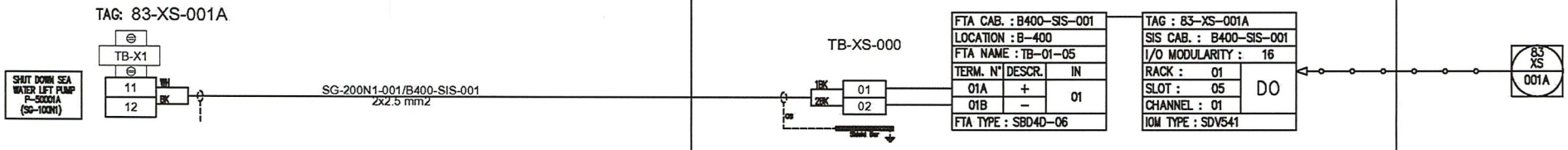
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Digitaly signed by PP PAUL WILLIAMSON 2025-04-04T12:11:54.757Z

Signature			

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 00

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



NO MARK UP
27-03-2025

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014

REV.:	DATE:	SIGNATURE:
0_A	23/10/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSRUMENT LOOP DIAGRAM
83-XS-001A
SHUTDOWN SEAWATER LIFT PUMP P-50001A

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

	DRAWING NO.	SHEET	REV.
A3	123A90-DDL-IN-DG-40014	157	00

File Name : 123A90-DDL-IN-DG-40014_REV.00

Section 4.4 Instrumentation “As-Commissioned” interconnection diagrams

NOT APPLICABLE

Section 4.5 Telecommunication functional test sheets index

NOT APPLICABLE

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

NOT APPLICABLE

Section 5 SITE / OPERATIONAL

Section 5.1 Operational Test Procedure

Section 5.2 Operational Test Certificates

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00

Miscellaneous	83-00 400 V Switchboard & Connection Box (SG-200N1)

ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03047	OTP - LV Switch Boards and LV Distribution Board Systems	ONSHORE	C10004624	5300	100	2025-04-28	-
		OFFSHORE	C10004946	5300	0	-	-

ITEM	Tag	123A90-PML-COM-PRO-03047 : OTP - LV Switch Boards and LV Distribution Board Systems				Dwg	123A90-PML-COM-PRO-03047
	S/Sys	83-00 : 400 V Switchboard & Connection Box (SG-200N1)				Module	
TASK	code	C10004624		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity OTS	Discipline	Miscellaneous Form 5300		Operational Test Procedure

OTP - OPERATIONAL TEST PROCEDURE

Attached procedure number: 123A90-PML-COM-PRO-03047

Associated subsystems: 83-00

Completion date: 22/04/2025

Comments/Remarks:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
	COMMISSIONING DISCIPLINE LEAD	RM COMMISSIONING MANAGER	CPY COMMISSIONING MANAGER
Name	Kristian Castellani	Anthony Iveson	Gerry McCann
Date	2025-04-26	2025-04-26	2025-04-28
Signature	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-26T12:38:07.657Z	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-26T12:53:50.403Z	PROVERLIS Digitaly signed by Gerry McCann 2025-04-28T07:28:03.255Z

Base Load Power Hub (BLPH)

OTP – LV Switch Boards & LV Distribution Board Systems

Document Number: 123A90-PML-COM-PRO-03047

Document Class: 2

02	19/11/2024	Accepted for Construction (AFC)	K.CASTELLANI	A.IVESON	M.BRUNELLI
01	26/09/2024	Accepted for Construction (AFC)	K.CASTELLANI	A.IVESON	M.BRUNELLI
00	23/08/2024	Issue for Review (IFR)	K.CASTELLANI	A.IVESON	M.BRUNELLI
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

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

HOLDS LIST

No.	Description
1	
2	
3	
4	

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1 INTRODUCTION

1.1 Project Overview

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

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

1.2 Project Location

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



Figure 1 - HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

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

1.3 Project Concept

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

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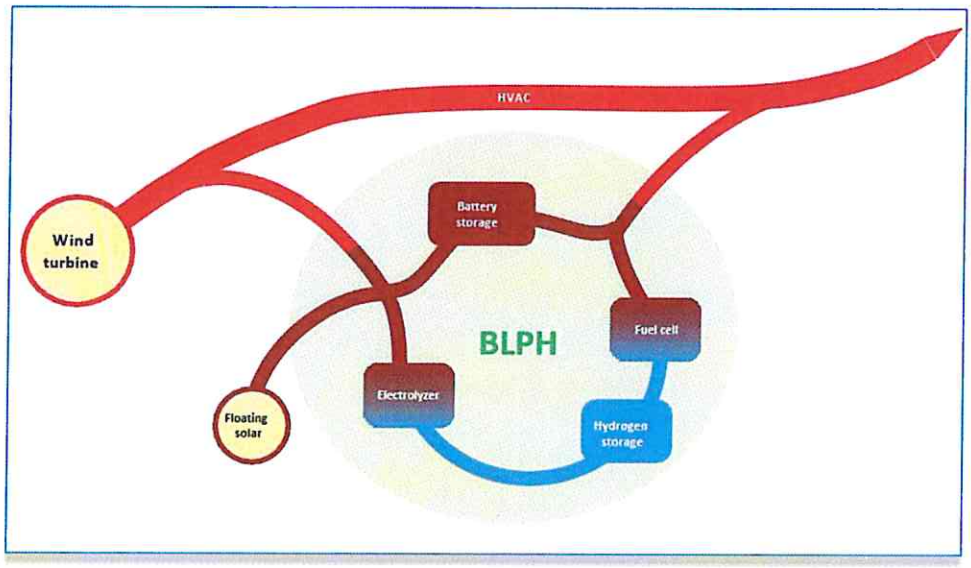


Figure 3 - BLPH Concept

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

2 DOCUMENT SCOPE

The purpose of this document is to describe the dedicated Commissioning procedure together with the detailed test steps to be implemented for the preparation and execution of the operation testing of the Low Voltage Switchboard and Low Voltage Distribution Board.

The document will cover all related test steps to be performed at both the onshore Worksite construction yard and the offshore SITE.

3 OTP SUMMARY

3.1 Test Objective

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

Aim of this document is to provide the sequence and appropriate actions to test the LV Power Distribution Switchboard SG-200N1 and LV Distribution Board DP-200N1.

Activities shall be developed as follows:

- Onshore pre-commissioning and commissioning activities at Contractor site (WORKSITE)
  - **PHASE 1**: SWBD SG-200N1 and DB DP-200N1 with power supply from temporary 400V Diesel Generator (from yard 400V supply).
  - **PHASE 2**: SWBD SG-200N1 and DB DP-200N1 Energized from TR-200DE1 and 6.6kV Switchboard SG-100D1 via 6,6 kV temporary yard facilities.
  - **PHASE 3**: SWBD SG-200N1 and DB DP-200N1 will be tested with EMCS system.
- Offshore commissioning (SITE)
  - SWBD SG-200N1 with power supply from permanent 6,6kV Switchboard SG-100D1 and 66kV GIS HNA6-AFA70.

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3.2 System Boundary Limits

See below the interested systems and subsystems on the Overall Single Line Diagram (extract from Doc. N. 123A90-PML-COM-DG-03012)

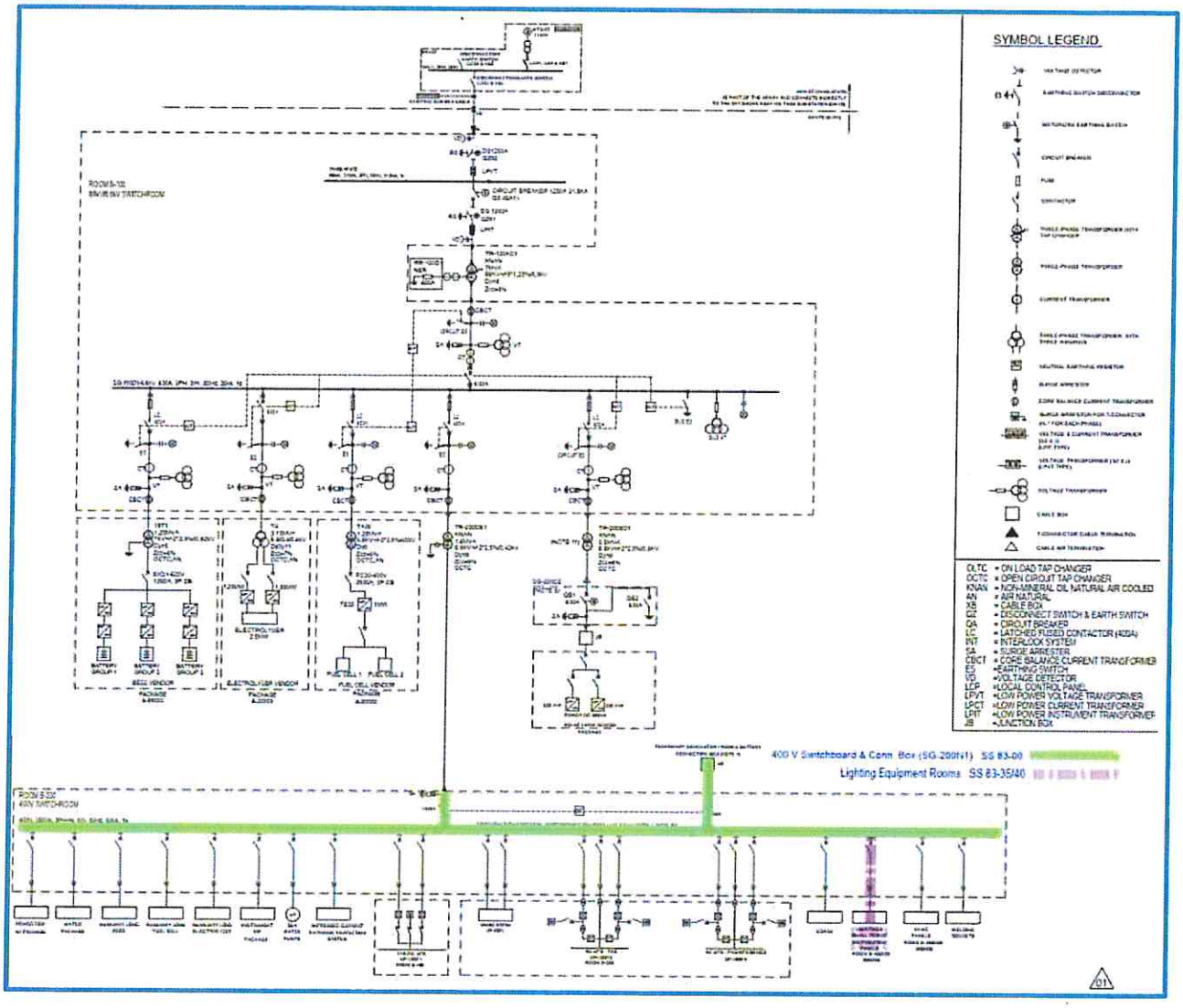


Figure 4 - OTP System Boundary Limits

3.3 Test and System Description

This document is related to the following systems/ subsystems:

- 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- 83-20: 400/230V Distribution Board (DP-200N1)

All equipment is installed inside Technical Room B-200.
System boundary limits are defined in OVERALL SINGLE LINE DIAGRAM Doc. 123A90-PML-COM-DG-03012.

These items of the system shall be tested on worksite and on site.

The LV switchboards are metal enclosed prefabricated self-supporting type, for floor installation in compliance to the requirements of IEC 61439 1&2.

The LV switchboard (SWBD) main data are the following:
GENERAL CHARACTERISTICS CLIMATIC CONDITION:
- Installation: Marine Offshore-Indoor
- Design Ambient Temperature: -8,4+40°C
- Rel. Humidity average 95%

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

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

POWER SUPPLY:
- Rated Service Voltage: 400/230V
- Rated insulation Voltage: 690V
- Rated Frequency: 50 Hz
- Switchboard Rated Current: 2500A
- Rated Short Time Withstand Current (Isc): 50kA/1s
- Internal Arc Classification: 50kA
- Arcing Class: 0,3 sec
- Neutral operation: TN-S

BUSBARS:
- Busbars: 3P+N+PE
- Material: Electrolytic Copper
- Coating: Sheathed (Insulation)
- Maximum Operating Temperature: 70°C
- Protection: Internal IP20/External IP 30
- Segregation: FORM 4b

There are three Aux power supply (230VAC, 24VDC).
- 230V From main bus bar (upstream)
  - Supply motor spring charger
  - command circuits (feeders)
- 230V from DP200N1(Q39)
  - Internal space heater/lighting
- 230V from DP-200F3
  - Protections device and protection ethernet switch (incoming CB)
  - Command circuits (incoming CB)
  - Supply 230V/24Vdc converter

The LV distribution board (DB) main data are the following:
GENERAL CHARACTERISTICS:
- Number Of Phases: 3 + N Wire System
- Service Voltage: 400/230V
- 1000V Rated Ins. Voltage for Main Busbars: 690V
- Rated Frequency: 50Hz

- Insulation Level: 2.5kV-1min (For Power Circuit)
- Insulation Level: 2kV - 1min (For Control Circuit If Existing)
- Rated Impulse Withstand Voltage: 4kV

CLIMATIC CONDITION:

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

ENCLOSURES:

- Type: MCC/F
- Cell Type: MCC/F
- Finish Colour Semi-Matt-Textured: RAL 7035

CONNECTIONS:

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

POWER SUPPLY:

- Rated Service Voltage: 400V
- Switchboard Rated Current: 63A
- Rated Short Time Withstand Current (Isc): 6kA/1S
- Neutral operation: TNS

BUSBARS:

- Busbars: 3P+N+PE
- Maximum Operating Temperature: 70°C
- Protection: External IP 30/Internal IP20
- Segregation: FORM 2b

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

3.4 Safety Devices

- Appropriate Personnel Protective Equipment (PPE) and safety equipment e.g., safety shoes, hand gloves, helmet, earplugs etc. are available and must be used in line with the site requirements.
- For Arc Flash Risk Category to be consider without maintenance switch ON, for SG-200N1 and DP-200N1 PPE Level 1 online Side Fault and for SG-200N1 PPE Level 2 and DP-200N1 PPE Level 1 on Bus Side Fault, as per Arc Flash Energy Calculation 123A90-DDL-EL-RE-20172, section 3.7 and attachment 2
- Warning safety signs are to be posted with restricted access to essential personnel only.
- Adequate firefighting equipment.

3.5 HSE Management

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

- All personnel involved in this operational test shall be competent for the tasks they will be required to undertake
- Place safety / warning signs and segregate the entire area with barrier tapes (safety barriers) of a colour distinguished (blue and white) from those used for construction activities
- Restrict access into area only to authorized personnel
- Conduct "Toolbox Talk" with all personnel prior to starting test work
- Appropriate Personnel Protective Equipment (PPE) and safety equipment e.g. safety shoes, safety glasses, hand gloves, helmet, earplugs etc. are available and must be used in line with the site requirements

- All activities carried out on the project shall be performed in accordance with the "Permit to Work" system Doc. PRO-HSE-23
- Additional reference corporate safety documentation to be observed and adhered to; PRO-HSE-30 Working with Electricity, PRO-HSE-25 Simultaneous Operations (SIMOPS) and PRO-HSE-07 HAZID.
- Electrical and mechanical isolations are to be assured as per Doc. PRO-HSE-08 and "Commissioning and start-up operation" procedure.
- Observe and enforce all international codes and regulations to safeguard personnel, plant and environment.
- Ensure that the working area is clean, tidy, well illuminated and that access and escape routes are free from obstructions.

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

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

3.6 Acceptance Criteria

- Before Power ON:

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

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

All protection relays should be set according to the "Report on Selectivity Study of Electrical Protection Relays 123A90-DDL-EL-RE-20168".

Check the protection setting on related check sheet type B (HOLD) for each protection.

Apply the padlocks on the all feeder Breakers, in the incomer breakers and on auxiliary MCB as per LoTo Procedure.

Applicable panels:

- SS83-00: 400 V Switchboard & Connection Box (SG-200N1)
- SS83-20 :400V/230V Distribution Board "DP-200N1"

Refer Overall SLD with Marked Sub-systems.

- Power ON:

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

Phase 1 will be powered through temporary feed and without limited connected systems/devices that will be available at this stage.

Phase 1 will prove correct:

- Voltage, frequency and phase sequence to the main terminals are according to specification.
- SWBD SG-200N1 energization
- DB-200N1 energization

- Output / Distribution as per specification
-

Phase 2 will be powered through 6.6kV/LV transformer TR-200DE1 as per design and with other systems connected to distribution board.
Phase 2 will prove correct:

- Test and validation of safety interlock between 6.6kV and low voltage SWBDs
- Verify phase sequence, frequency, voltage and current
- SWBD SG-200N1 Output Supply to consumers (UPSs, DB, Motors, lights, etc.)
- DB-200N1 energization
- DB-200N1 Output Supply to consumers (Lights, Heaters, Sockets)

Phase 3 Repeat Phase 2 to test sequence and will prove correct functionality of the following signals:

- Modbus communication to EMCS
- IEC61850 communication between EMCS and the protections
- Functionality interlock and commands between circuit breakers
- I/O hardwired connections

Performing the steps in this OTP as per engineering documents is crucial to ensure that the equipment is operating correctly and that it meets the desired design specifications. Observing the results will help identify any issues that may arise during the operation.

Overall, following these steps shall provide a comprehensive and effective way to verify the equipment installation and functionality. Furthermore, additional test steps will be provided within dedicated Black-Start Procedure.

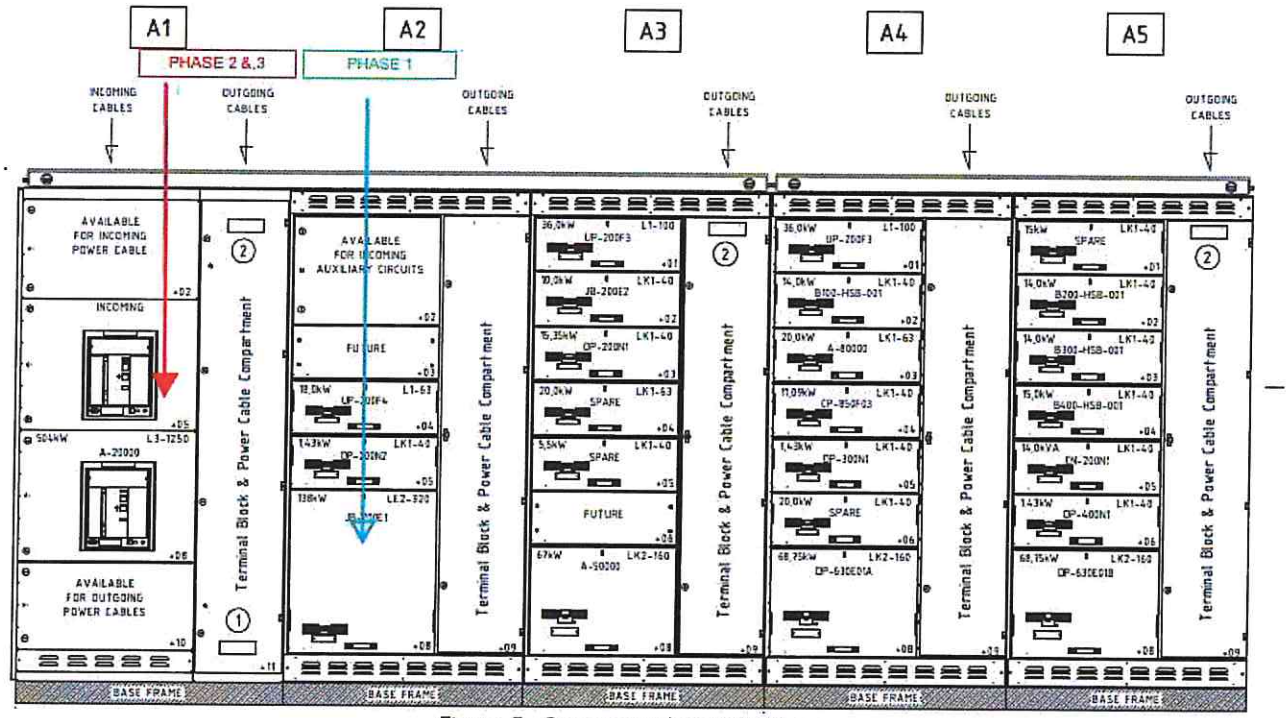


Figure 5 - Power supply in OTP Phases

4 DOCUMENTS REFERENCES AND ABBREVIATIONS

4.1 Reference Documents

4.1.1 Company Documents and Standards

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

Table 1: Company Key Reference Documentation

These documents were produced in FEED and made available to RM for info. They have subsequently been superseded by Detailed Design, similar or same deliverables.

4.1.2 Project Documents

Document ID	Document Title
[1] 123A90-PML-PM-LIS-01001	Master Document Register
[2] 123A90-PML-PM-PL-00001	Project Execution Plan
[3] 123A90-PML-QHSE-PL-00001	Project HSE Plan
[4] 123A90-PRO-HSE-23	RM Yard Permit To Work Procedure
[5] 123A90-PML-COM-PL-03002	Mechanical Completion & Commissioning Execution Plan
[6] 123A90-PML-COM-LIS-03011	System/Sub-Systems List
[7] 123A90-PML-COM-LIS-03012	System/Sub-System Boundary Limit Diagrams
[8] 123A90-PML-COM-PRO-03038	Leak Test Procedure
[9] 123A90-PML-COM-SP-03032	Pre-Commissioning Functional Test Sheet Template Collection (ITR-B)
[10]123A90-PML-COM-SP-03014	Commissioning TDS - Temporary Equipment & Facilities
[11]123A90-PML-COM-PRO-03019	OTP – Onshore Performance & Integrated Test Procedure
[12]123A90-PML-COM-LIS-03034	Inhibit-Override Register
[13]123A90-PML-COM-LIS-03035	PSV Calibration Register

Document ID	Document Title
[14]123A90-PML-COM-PRO-03036	OTP - Black Start Procedure
[15]123A90-PML-COM-LIS-03024	Commissioning Spare Parts and Consumables List
[16]123A90-PML-COM-PRO-03022	Initial offshore START-UP procedures
[17]123A90-PML-COM-SP-03057	Worksite WEF (Work Execution Flow Scheme)
[18]123A90-PML-COM-SP-03058	Site WEF (Work Execution Flow Scheme)
[19]123A90-PML-COM-RE-03001	Commissioning Final Dossier (ITR-B)
[20]123A90-PML-QHSE-PRO-00116	Flushing and Cleaning Procedures
[21]123A90-PML-QHSE-SP-00118	Mechanical Completion Check Sheet Template Collection (ITR-A)
[22]123A90-PML-QHSE-RE-00115	Mechanical Completion Final Dossier (ITR-A)
[23]123A90-PML-QHSE-PRO-00117	Punch list Management Procedure
[24]123A90- 123A90-PML-COM-PRO-03041	OTP - Hydrogen Storage & Venting Systems
[25]123A90- 123A90-PML-COM-PRO-03042	OTP - Sea Water Intake & Fresh Water Treatment Systems
[26]123A90- 123A90-PML-COM-PRO-03043	OTP - Instrument Air System
[27]123A90- 123A90-PML-COM-PRO-03055	OTP - Nitrogen Generation System
[28]123A90- 123A90-PML-COM-PRO-03044	OTP - HVAC Systems
[29]123A90- 123A90-PML-COM-PRO-03045	OTP - HV Switchgear & 66 kV Transformer Systems
[30]123A90- 123A90-PML-COM-PRO-03046	OTP - 6.6 kV Switchgear & Transformer Systems
[31]123A90- 123A90-PML-COM-PRO-03047	OTP - LV Switch Boards & LV Distribution Board Systems
[32]123A90- 123A90-PML-COM-PRO-03048	OTP - Lighting & Small Power Systems
[33]123A90- 123A90-PML-COM-PRO-03049	OTP - Electrical Heat Tracing Systems
[34]123A90- 123A90-PML-COM-PRO-03050	OTP - DC UPS System 10kVA UP-200F1
[35]123A90- 123A90-PML-COM-PRO-03051	OTP - Data Network Systems
[36]123A90- 123A90-PML-COM-PRO-03052	OTP - Telecom & Surveillance Systems
[37]123A90- 123A90-PML-COM-PRO-03053	OTP - Navaid System
[38]123A90- 123A90-PML-COM-PRO-03054	OTP - F&G and ESD C&E Logics
[39]123A90-PML-QHSE-PRO-00120	Proverlis Management Procedure
[40]123A90-PML-COM-PRO-03056	OTP – Document Template
[41]123A90-PML-COM-PRO-03059	OTP - AC UPS System 35kVA UP-200F3
[42]123A90-PML-COM-PRO-03060	OTP - AC UPS System 15kVA UP-200F4

Document ID	Document Title
[43] 123A90-PML-COM-PRO-03007	Commissioning Strategy

Table 2: Reference Project Deliverables

4.1.3 Vendor Documents

Document ID		Document Title
[1]	1723002197-COM-LIS-00052	SPARE PART INDEX REGISTER (COMMISSIONING AND OPERATION)
[2]	1723002197-EL-CAL-00049	HEAT DISSIPATION CALCULATIONS
[1]	1723002197-EL-DA-00007	SG-200N1 LV SWBD 400-230V - GENERAL ARRANGEMENTS DWG, FOUNDATION LOAD CALCULATION INCLUDING COG
[2]	1723002197-EL-DA-00009	DP-200N1 - LV SWBD 400-230V - GENERAL ARRANGEMENTS DWG, FOUNDATION LOAD CALCULATION INCLUDING COG
[3]	1723002197-EL-DG-00011	SG-200N1 LV SWBD 400-230V ELECTRICAL SLD
[4]	1723002197-EL-DG-00013	DP-200N1 LV SWBD 400-230V-ELECTRICAL SLD
[5]	1723002197-EL-DG-00030	SG-200N1 LV SWBD 400-230V FUNCTIONAL DIAGRAMS - INCOMINGS AND INTERCONNECTING AND AUX DISTRIBUTION
[6]	1723002197-EL-DG-00031	SG-200N1 LV SWBD 400-230V - FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
[7]	1723002197-EL-DG-00033	DP-200N1 LV SWBD 400-230V FUNCTIONAL DIAGRAM
[8]	1723002197-EL-DS-00035	SG-200N1 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
[9]	1723002197-EL-DS-00037	DP-200N1 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
[10]	1723002197-EL-LIS-00042	SG-200N1 IO LIST (HARDWARE - SOFTWARE)
[11]	1723002197-EL-LIS-00050	CONSUMPTION LIST
[12]	1723002197-EL-LIS-00051	DATA TABLE
[13]	1723002197-EL-LIS-00053	SPECIAL TOOLS LIST
[14]	1723002197-EL-MAN-00054	INSTALLATION OPERATING AND MAINTENANCE MANUAL
[15]	1723002197-EL-REP-00038	PROTECTION SETTING REPORT
[16]	1723002197-EL-SO-00040	SG-200N1 PROTECTION CONFIGURATION (INCLUDING IO CONFIGURATION) (CID File and PCM600)
[17]	1723002197-MAT-PRO-00004	MV-LV SWG PAINTING PROCEDURE
[18]	1723002197-MD-LIS-00001	SUPPLIER MASTER INDEX REGISTER (SMIR)
[19]	1723002197-QC-DB-00048	EQUIPMENT MANUFACTURERS RECORD BOOK â€" COMPLETE
[20]	1723002197-QC-ITP-00003	INSPECTION AND TEST PLAN - LV Switchgear
[21]	1723002197-QC-LIS-00005	EQUIPMENT MANUFACTURER RECORD BOOK (FINAL DOSSIER) - INDEX
[22]	1723002197-QC-PRO-00045	FACTORY ACCEPTANCE TEST PROCEDURE - LV Switchgear
[23]	1723002197-QC-PRO-00047	SITE ACCEPTANCE TEST PROCEDURE - LV Switchgear
[24]	1723002197-QC-PRO-00055	PACKING, SHIPPING, HANDLING AND STORAGE PROCEDURES

Table 3: Vendor Reference Documentation

4.2 Acronyms and Abbreviations

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

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

Table 4: Acronyms and Abbreviations

5 OTP AT ONSHORE WORKSITE

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

5.1 Planning and Manpower

5.1.1 Planned tasks with estimated manpower

Estimated manpower for the entire duration of the Test:

- 1 E&I commissioning superintendent
- 1 E&I commissioning supervisor from Contractor
- 2 E&I commissioning technicians from Contractor
- 1 Vendor technician
- 1 Workstation Operators (required for phase 3)

5.1.2 Test duration estimate

The test duration should be as follows:

- 12 days approx.

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

5.1.3 Vendor Assistance

Vendor IMESA S.p.A. will provide a qualified specialist to assist with the first energization of the LV SWBD and DB.

5.1.4 Items Postponed to C&E OTP (IEC61850 ETHERNET)

Not applicable

5.1.5 HOLDS

Not applicable

5.2 OTP Test Requirements – Onshore WORKSITE

5.2.1 Pre-Commissioning Achievement

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

5.2.2 Commissioning Achievement

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

- 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- 83-20: 400V Distribution Board DP-200N1

5.2.3 Status of Required Associated Subsystems

- PHASE 1

Subsystems required RFC for Commissioning of LV Power Distribution

- 83-00 400 V Switchboard & Connection Box (SG-200N1)
- 83-00 400 V Switchboard & Connection Box (SG-200N1) - Auxiliary power supply
- 83-20 400/230 V Switchboard (DP-200N1)
- 88-00: Earthing System
- 83-99: Temporary Yard 400/230V Main and auxiliary power supplies

- PHASE 2

Subsystems required RFC for Commissioning of LV Power Distribution:

- 88-00: Earthing and Lightning Protection
- 82-00 SG-100D1 6.6 kV SWBD compartment A6 & A4 6,6 kV
- 82-40 Transformer 1,6 MVA TR-200DE1
- 84-10 AC 35 kVA UPS System (UP-200F3)
- 83-99 6.6 kV power supply from temporary 6,6 kV Diesel Generator Yard facilities
- 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- 83-20: 400/230 V Switchboard (DP-200N1)
- 79-00: Emergency Shutdown Systems (SIS) (ESD)

- PHASE 3

Subsystems required RRFCC for Commissioning of LV Power Distribution:

- 88-00: Earthing and Lightning Protection
- 82-00: SG-100D1 6.6 kV SWBD compartment A6 & A4 6,6 kV
- 82-40: Transformer 1,6 MVA TR-200DE1
- 84-10: AC 35 kVA UPS System (UP-200F3) 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- 83-20: 400/230 V Switchboard (DP-200N1)
- 79-00: Emergency Shutdown Systems (SIS) (ESD)
- 87-00: Electrical Monitoring & Control System (EMCS)
- 87-10: Process Control System (PCS)
- 86-00: Data Network - IEC61850 Ethernet Communication network High and Low Voltage
- 86-00: Data Network - MODBU RTU Network Switchboard 6.6 kV and Low Voltage

5.2.4 Special Tools & Test Equipment

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

- Voltage, frequency, continuity tester (Multimeter)
- Phases sequence tester
- Extracting tool & transportation trolley
- Portable radios (3 pcs + 1 per Technical Room)
- 230V/24Vdc temporary stabilized power supply converter

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

5.2.5 Consumable List

Not applicable

5.2.6 Commissioning Spare Parts

Reference is made to IMESA document 1723002197-COM-LIS-00052 "Commissioning and operation Spare Parts Index Register" regarding the LV SWBD e DB spare parts.

5.2.7 Temporary Facilities

Phase 1: Temporary Electrical 400V Yard Power Supply to feed main switchboard SG-200N1 via drawer A2/+08 "Temporary Diesel Generator / Mobile Battery Pack" JB-200E2.
A dedicated subsystem SS 83-99 will be created and populated with relevant ITR-A and ITR-B for 400V temporary yard power supply facilities.

Phase 2: 6.6 kV temporary Yard Power Supply from Diesel Generator Yard facilities (see also doc. n. 123A90-PML-COM-SP-03014).
A dedicated subsystem SS 82-99 will be created and populated with relevant ITR-A and ITR-B for 6,6kV temporary yard power supply facilities.

5.3 OTP Description – Onshore WORKSITE

5.3.1 OTP Test Preparation

Step	Description	Result	Verified by	Date
1	System Ready for Commissioning Certificate (RFC) is issued and approved.	ok		19/02/2025
2	No Mechanical Completion or Pre-commissioning punch list 'A' items are outstanding against the system to be commissioned.	ok		
3	Factory Acceptance Test Procedure has been carried out successfully (refer to Doc. 1723002197-QC-PRO-00045)	ok		
4	All personnel involved in the implementation of this procedure are familiar with its content as well as with associated safety requirements (Toolbox Talk to be conducted before initiation of activities).	ok		
5	A final walkdown of the system has been completed, to ensure that the system and the area are ready for commissioning.	ok		
6	Check that areas are free for work and escape routes are clear of any obstructions.	ok		
7	All safety barriers and warning signs have been installed.	ok		
8	Ensure that proper communications have been established between parties involved in the implementation of the procedure.	ok		

Step	Description	Result	Verified by	Date
9	Verify availability of test equipment and consumables as per section 3.2.4.	ok		19/02/2025
10	With reference to Commissioning Temporary equipment & Facilities (refer on Doc. 123A90-PML-COM-SP-03014), check that power is available to any temporary equipment or test equipment (if any).	ok		
11	System(s) isolations as per LOTO procedure defined within HSSE Permits to Work and Commissioning procedures duly prepared and approved	ok		
12	All yard personnel have been duly notified by dedicated LUN (Livening Up Notification) that the system(s) is ready for commissioning.	ok		

5.3.2 Electrical Preparation

Step	**Description**	**Result**	**Verified by**	**Date**
13	Check related punch list 'B' items and confirm acceptability for start of commissioning activities.	ok		19/02/2025
14	Verify that all relevant associated systems / subsystems are completed.	ok		
15	Check that grounding and bonding are in accordance with applicable documents.	ok		
16	Review and confirm protection settings on up-stream LV Switchboards feeder power supply circuit breakers.	ok		
17	Verify finalization of SG-200N1 LV Switchboard Units internal power and auxiliary circuit connections in accordance with manufacturers documentation.	ok		
18	Verify and confirm completion of final connections between the 6.6 kV SWBD SG-100D1 compartment A4, Power transformer TR-200-DE1 6,6/0,4 kV and LV Switchboard SG-200-N1 (PHASE 2 and 3)	ok		

5.3.3 Mechanical Preparation

Not applicable.

5.3.4 Instrument Preparation

Step	Description	Result	Verified by	Date
19	Check related punch list 'B' items and confirm acceptability for start of commissioning activities.	OK		19/02/25
20	Verify that all relevant associated systems / subsystems are ready.	OK		
21	Check Inhibit and Override register has been prepared and validated.	OK		
22	Verify that relevant equipment/ components are available and in operation for start of commissioning activities.	OK		

5.3.5 Piping Preparation

Not applicable

5.3.6 Additional Discipline Preparation

Not applicable.

5.4 OTP Test Steps – Onshore WORKSITE - PHASE 1

The previous chapters must be successfully performed prior to commissioning of the LV Power Distribution Switchboard with temporary low voltage 400V yard power supply.

The PHASE 1 Temporary Yard Power supply will be connected and energized on SG-200N1 to Incomer "JB-200E2" position A02/+08 "Temporary Generator Mobile Battery Pack".

In the following steps the functionality of the LV Power Distribution Switchboards shall be tested:

- SS 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- SS 83-20: 400V Distribution Board "DP-200N1"

5.4.1 Test Preparation

Need to Verify:

- Auxiliary power supplies are available 230V
- Phase1 400V Temporary Yard power supply is available
- All systems and subsystems involved in this procedure must be ready for commissioning and available.

5.4.1.1 Auxiliary SG-200N1 Low voltage switchboard

The power from 400V Temporary Yard Supply will be connected to the "JB-200E2" breaker QF1 on the Column A2, Drawer +08.

Step	Description	Result	Verified by	Date
Energization of Low Voltage SWBD SG-200N1				
PHASE1: 400V Power supply via "Temporary generator mobile battery pack" circuit JB-200E2				
Verify related ITR-Bs for the DRAWER INCOMER A2/+08 is completed.				
23	Verify and confirm the INCOMING QF1 breaker of JB-200E2 is open and the drawer +08 is in extract position.	OK		19/02/2025
24	Verify the correct phase sequence L1, L2, L3, on the input power of the drawer A2/+08.	OK		19/02/2025
25	The selector QU1 Auxiliary Voltage Switch located on drawer A2/+02 must be closed on POS.1	OK		19/02/2025
26	Close protection QU3 located on drawer A2/+02 for the auxiliary voltage from temporary generator	OK		19/02/2025
27	Energized temporary yard power supply and measure presence of 230V on Incoming protection QU3 located on drawer A2/+02 for the auxiliary voltage from temporary generator	OK		19/02/2025
28	Check that MCBs QA1 and QA2 of drawer A2/+08 are closed	OK		
29	Verify on the terminal strip X1 11-12 of the drawer A2/+08 permissive to close command to main breaker QF1.	OK		
30	Verification of Interlock between: - Main Incomer QF1 (A1/+05) and - *" Temporary Generator Mobile Battery Pack"* JB-200E1 Incomer QF1 (A2/+08) With reference to Vendor Documents: - 1723002197-EL-DG-00031 sheet 051 - 1723002197-EL-DG-00030 sheet 22 **Inhibit to close Main Incomer (A1/+05)** - On drawer A2/+08 remove jumper between terminal strip Y1:44-43 - Confirm breaker QF1 (A2/+08) is closed	OK		

Step	Description	Result	Verified by	Date
	- On drawer A1/+05 verify open circuit between terminals X2:3-4 (Breaker closing circuit) - Press push button SC1 closing command and confirm that main breaker QF1 (A1/+05) does NOT closed **<u>Inhibit to close JB-200E1 Incomer (A2/+08)</u>** - On drawer A1/+05 the Breaker QF1 (A1/+05) is closed - On drawer A2/+08 confirm open circuit between terminals X1: 11-12 (QF1 undervoltage coil circuit) - Close manually Incomer breaker QF1 (A2/+08) and confirm that Breaker does NOT closed	ok		14/02/2025
31	VERIFICATION OF DRAWER FUNCTION IN TEST POSITION			
32	With reference Vendor Doc.1723002197-EL-DG-00031 sheet 51 Place the drawer in test position and verified - Green Lamp L1 open circuit breaker should be on - Red Lamp L2 circuit breaker closed must be off - Amber Lamp L3 tripped circuit breaker must be off	ok		19/02/2025
33	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 51 Close manually QF1 - Green Lamp L1 open circuit breaker should be off - Red Lamp L2 closed circuit breaker must be on - Amber Lamp L3 tripped circuit breaker must be off	ok		
34	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 51 - Extract drawer "Temporary Generator Battery Pack" in and located test button on main circuit breaker Q1, then press test button to simulate fault condition - Reinsert the drawer	OK		

Step	Description	Result	Verified by	Date
	- Green Lamp L1 open circuit breaker should be on - Red Lamp L2 closed circuit breaker must be off - Amber Lamp L3 tripped circuit breaker must be on Extract the drawer and reset main circuit breaker Q1	Ok		19/02/2025
35	Insert the drawer to service position.	Ok		
36	The INCOMING "JB-200E1" QF1 "Temporary Generator Battery Pack" must now be closed manually. It should be noted that manual closure of the circuit breaker QF1 can only be possible when the following two criteria have been achieved: - Main circuit breaker QF1 in open position - The incoming power supply must be already energized	Ok		
37	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 51, the signalling of closed Circuit Breaker Q1 Red lamp L2 is on	Ok		
38	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 51 Check the functioning of undervoltage coil "YU" QF1: manually open the MCB QA1 - Main Circuit breaker QF1 will trip and open immediately - Green Lamp L1 open circuit breaker should be on - Red Lamp L2 closed circuit breaker must be off - Amber Lamp L3 tripped circuit breaker must be on	Ok		
39	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 51, manually close the MCB QA1. Proceed to close main circuit breaker QF1 and energized low voltage distribution SWBD.	Ok		
40	The SWBD is now available to energize the respective platform consumers.	Ok		

5.4.1.2 DB Distribution Board DP-200N1

Step	Description	Result	Verified by	Date
Energization of Distribution Board DP-200N1				
Verify the system 83-20 related DP-200N1 is ready for commissioning with signed RFC certificate.				
Verify related ITR-B for the DRAWER FEEDER A3/+03 on SG-200N1 is completed				
41	With reference to Vendor Doc. 1723002197-EL-DG-00031 sheet 38 Closing the breaker QA1 the aux power supply	ok		19/12/202
42	Insert the drawer in test position -	ok		
43	With reference to Vendor Doc. 1723002197-EL-DG-00031 sheet 39 Place the selector SA1 in Local position	ok		
44	With reference the Vendor Doc. 1723002197EL-DG-00031 sheet 40 Close the Main Breaker QF1 manually - Green Lamp L1 open circuit breaker should be off - Red Lamp L2 closed circuit breaker must be on - Red Lamp L3 Contactor energized must be off - Amber Lamp L3 tripped circuit breaker must be off	ok		
45	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 39 Close the contactor K1 using the local Push Button PM1 - Red Lamp L3 Contactor energized must be on	ok		
46	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 39 Open the contactor K1 using the local Push Button PA1 - Red Lamp L3 Contactor energized must be off	ok		
47	Insert the drawer to service position.	ok		
48	With reference Vendor Doc. 1723002197-EL-DG-00031 sheet 38	ok		

Step	Description	Result	Verified by	Date
	Manually close the circuit breaker QF1 and press the Push Button PM1 to close the contactor K1 and consequently energize the power supply to DP-200N1	ok		14/02/2025
49	Verify the correct phase sequence L1, L2, L3 on the input power of the INCOMER on the terminal X1: 1-2-3.	ok		
50	With reference Vendor Doc. 1723002197-EL-DG-00033 sheet 5 Closing the general incoming Q1 of DP-200N1 manually	ok		
51	All the functionality Automatic (Unmanned) and Manual (Manned) of lighting circuits will be tested in the related OTP of light.	ok		
52	All the functionality of Heat tracing circuits will be tested on the document "OTP-Electrical Heat Tracing Systems".	ok		
53	**Cumulative Trip Signal Test** With reference Vendor Doc. 1723002197-EL-DG-00033 sheet 19 The cumulative signal is a series of **closed trip** contact of all MCB excluding: - Surge arrestor switch trip signal - MCBs of Lighting Utilities trip signals - MCBs of Trace Heating trip signals The cumulative MCBs trip signals is connected on terminals X2:82-83 verify and confirm the following trip close contacts: - Q1 ☑ - Q5 ☑ - Q6 ☑ - Q7 ☑ - Q11 ☑ - Q12 ☑ - Q23 ☑ - Q24 ☑ - Q25 ☑ - Q26 ☑ - Q27 ☑ - Q28 ☑ - Q29 ☑ - Q30 ☑ - Q31 ☑	ok		

Step	Description	Result	Verified by	Date
	- Q32 ☑ - Q33 ☑ - Q34 ☑ - Q35 ☑ - Q36 ☑ - Q37 ☑ - Q38 ☑ - Q39 ☑ - Q40 ☑ - Q41 ☑ - Q42 ☐ - Q43 ☑ - Q46 ☑ - Q47 ☑ - Q48 ☑ - Q49 ☑ - Q50 ☑ - Q51 ☑ The cumulative trip signal test will be possible when above breakers will be ready for commissioning. (PHASE 3)	OK		14/02/205

5.4.1.3 OTP Worksite Phase 1 - Tests Notes and Remarks

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

Name and Surname	Certifying Authority	Position	Signature

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

Name and Surname	Company Representative	Position	Signature
KRZYSZTOF CZAJKOWSKI	ROSETTI M.	LEAD ELE COMMISSIONING	
John Mackillop	CW	OPERATIONS ENG	

*STEP 53 STILL TO BE TESTED

5.4.2 OTP Steps WORKSITE - PHASE 2

It is foreseen that previous sections are successfully performed.

To energize Switchboard SG-200N1 from 6.6kV SG-100D1 Switchboard has been energized:
- Temporary Yard 6.6kV power supply
- 6.6kV SG-100D1 SWBD Compartment A6 and A5 (Incomer and Measuring compartment)
- 6.6kV SG-100D1 SWBD Compartment A4 – (Feeder TR-200DE1 Transformer)

The compartment A4 of 6.6 kV SG-100D1 SWBD is available, and all necessary tests are performed and accepted for that system. See OTP 123A90-PML-COM-PRO-03046 6.6 kV Switchgear & Transformer Systems PHASES 1/2/3
All Cables are pulled up, tested and yard temporary power supply is completed and available.
LV Power Distribution Switchboards and Distribution Boards is working in normal operation and no alarm pending.

In the following steps the functionality of the LV Power Distribution Switchboards and Distribution Boards shall be tested for:

- SS 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- SS 83-20: 400V Distribution Board DP-200N1
- SS 82-00: 6,6 kV 6.6 kV SG-100D1 HV SWBD UNIT A4

5.4.2.1 Energization SG-200N1 From 6.6 KV SG-100D1

Verification of system and subsystem LV Power Distribution Switchboards and Distribution Boards are completed without punch lists or pending point that limit the power up.
Verify that FEEDER A4 of 6.6 kV is available.

Auxiliary power supplies in SG-100D1 and in SG-200N1 are available:
- UPS AC/DC 110V UP-200F1
- UPS AC 230V UP-200F3
- Normal power supplies from DP-200N1
- Temporary Yard 6,6kV power supply

Step	Description	Result	Verified by	Date
Energization of LV SWBD SG-200N1 from 6.6 kV Switchboard SG-100D1 comp. A4				
54	See and refer to related steps of 6.6 kV OTP of SG-100D1 6,6 kV to supply the Low Voltage SG-200N1, Doc n. 123A90-PML-COM-PRO-03046, PHASES 1/2/3.	OK	M Patella	19/02
55	Reference is made to Logic diagram 1723002197-EL-DG-00030 sheet 22 Interlock to main breaker QF1 (A1/+05) from drawer A2/+08	OK	M Patella	19/02

Step	Description	Result	Verified by	Date
	Permissive to closing incomer QF1 (A1+05) from JB-200E1 QF1 breaker (A2/+08) Located on A2/+02 cubicle Confirm close circuit between terminals X2:3-4 (it means QF1 (A2/+08) is open or racked out)	OK		19/02
56	With reference Vendor Doc. 1723002197-EL-DG-00030 sheet 17 Verify the correct phase sequence L1, L2, L3 of the INCOMER power supply cables. Column A2/+02 SG-200N1	OK		19/02
57	The selector QU1 Auxiliary Voltage Switch located on drawer A2/+02 must be closed on POS.2	OK		19/02
58	Close protection QU2 located on drawer A2/+02 for the auxiliary voltage from main bus bar in upstream.	OK		19/02
59	With reference Vendor Doc. 1723002197-EL-DG-00030 sheet 16 Check and confirm that auxiliary circuit is available - QU2 is closed and verify the voltage on selector QU1 terminals 5-1 - Place the selector QU1 in position 2 and circuit will be supplied (see the K30A should be on)	OK		19/02
60	With reference Vendor Doc. 1723002197-EL-DG-00030 sheet 17. Verify and confirm the voltage references are available Column A02/+02: - Close protection QV1 - Close protection QV2 - Verify the voltage presence on terminals XV:1-2-3	OK		19/02
61	Verify the voltage reading on REF615 display Voltage = ... 398 V	OK		19/02

Step	Description	Result	Verified by	Date
62	With reference the Vendor Doc 173002197-EL-DG-00030 sheet 19-20 Close auxiliary breakers 230V located on drawer A2/+02 QA1 Motor Spring charger incoming CB ..... ☑ QA2 protection device incoming CB ☑ QA3 command circuits incoming CB ☑ QA4 converter 230/24 VDC..... ☑ QA5 command circuits (feeders)..... ☑ QA6 internal space heaters /lighting ☑ The protections are working, and auxiliary circuits are powered, and the permissive signals are closed ..... ☑	Ok		19/02
63	Mechanical Interlock between 6.6 KV SWBD SG-100D1 (Column A4) and LV SWBD SG-200N1 Incomer With reference Vendor 6.6 KV *SLD 1723002197 EL-DG-00010, LV SLD 1723002197 EL-DG-00030* **Interlock On SG-200N1 main incomer** Earthing switch BGE Column A4 is open, its KEY-3 **G3398** is free and its KEY-4) **G3135** is blocked on earthing switch - Key **G3398** is ringed with main incomer QF1 (A1/+05) Rack-In/Out system Key **151733** (2) of DG-200N1 SWBD - Insert the key **151733** on Rack-In/Out system of Main Incomer QF1 place the breaker in test or service position and the key **151733** will be blocked on n Rack-In/Out system **Interlock On SG-100D1 main incomer** SG-200N1 Incomer is extract position the Key **151733** is free.	Ok		19/02

Step	Description	Result	Verified by	Date
	- Insert KEY-3 **G3398** on the earth switch of column A4 (BGE), if possible close it and the **G3398** key will remain blocked on the BGE until the BGE is opened and the key is free again.	OK		19/12
64	Rack in the Main incoming breaker QG1 in test position	OK		19/12
65	With reference the Vendor Doc. 1723002197-EL-DG-00030 sheet 26 and located in column A2/+02 - Place the selector SA1 in local position. - Verify and confirm the SA2 Selector is in normal position (not in maintenance position) - Reference is made to sheets 13 and 14 Logic Diagram	Ok		19/12
66	Reference is made to Logic diagram 1723002197-EL-DG-00030 sheet 13 regarding the closing of the circuit breaker. Locate the Push Button SC1 on compartment A2/+02 - Push SC1 to close main breaker - Led-3 on the REF615 must be ON - On the REF615 display the circuit breaker symbol will change to closed	OK		19/12
67	Locate the Push Button SO1 on compartment A2/+02 - Push SO1 to open main breaker - Led-3 on the REF615 must be OFF - On the REF615 display the circuit breaker symbol will change to opened	OK		19/12
68	Rack in the Main incoming breaker QG1 in service position	OK		19/12
69	Reference is made to Logic diagram 1723002197-EL-DG-00030 sheet 13 regarding the closing of the circuit breaker. Locate the Push Button SC1 on compartment A2/+02	Ok		19/12

Step	Description	Result	Verified by	Date
	- Push SC1 to close main breaker - Led 3 on the REF615 must be ON - On the REF615 display the circuit breaker symbol will change to closed	OK		19/02
70	Locate the Push Button SO1 on compartment A2/+02 - Push SO1 to open main breaker - Led 3 on the REF615 must be OFF - On the REF615 display the circuit breaker symbol will change to opened	OK		19/02
71	Rotate selector switch SA1 to remote position. Repeat previous test to close main breaker and confirm that it's not possible with selector switched to remote.	OK		19/02

Note: All Test in remote condition (selector SA1 in logic diagram IEC61850) will be tested on PHASE 3 with EMCS.

5.4.2.2 OTP Worksite Phase 2 Tests Notes and Remarks

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

Name and Surname	Certifying Authority	Position	Signature

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

Name and Surname	Company Representative	Position	Signature
KRISTIAN CASTELLANI	ROSETTI M.	LEAD ELE COMMISSIONING	
S. MACKILLOP	CW	OPERATIONS ENG	
ANTHONY WILSON		COMM. MGR. ROSETTI M.	

5.4.3 OTP Steps WORKSITE - PHASE 3

It is foreseen that previous chapters are successfully performed.

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

In the following steps will be defined the tests of all signals from/to SG-200N1 and DP-200N1 hardwired or via Modbus TCP-IP or by network IEC61850. The functionalities provided on I/O lists vendor document **1723002197-EL-LIS-00042** of the LV Switchboards and Distribution Boards will be tested for:

- 123A90: 400V Switchboard SG-200N1 Incoming
- 123A90: 400V Distribution Board DP-200N1
-

All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets.
Verify and confirm that all check sheets have been performed successfully.

5.4.4 Test Preparation

Verification of systems and subsystems LV Switchboards and Distribution board.
All systems and subsystems involved in this procedure must be ready for commissioning and available.

To perform the signals test is mandatory that the EMCS cabinet and Network cabinet - IEC 61850 network system - and PCS Cabinet - Modbus TCP-IP network system - are already energized, available and ready to work.

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

5.4.4.1 SG-200N1 - I/O list FP1 Protection Main Incomer QF1 (A1/+05) - Network IEC61850

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

Following I/O signals groups List to be verify

Protection FP1 Signals from/to SG-200N1 Main Incomer QF1 located on cubicle **A2/+02**
Network **IEC61850** to EMCS Cabinet
This I/O list concern the protection warning and alarm, breaker feedback and command in local and in remote, measures reading on the upstream main busbar.
To test I/O list has been used **type B** pre-commissioning check sheet where it is possible find a complete information about I/O. For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042**

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/ DEVICE MODEL	UNIT	SCALE FACTOR	IEC61850 Technical Key	Note
A2/+02	FP1	CIRCUIT-BREAKER - PROTECTION TRIPPED "50"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - PROTECTION TRIPPED "51"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - FUNCTION TRIPPED "74TCS"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - FUNCTION TRIPPED "86"	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - READY TO CLOSE	SW-DI	REF615			SG200N1 FP1	1=ready
A2/+02	FP1	CIRCUIT-BREAKER - OPEN OR TEST POSITION	SW-DI	REF615			SG200N1 FP1	1=open
A2/+02	FP1	CIRCUIT-BREAKER - CLOSED AND INSERTED	SW-DI	REF615			SG200N1 FP1	1=closed
A2/+02	FP1	CIRCUIT-BREAKER - WATCHDOG	SW-DI	REF615			SG200N1 FP1	0=Failure
A2/+02	FP1	MCBs ALARM	SW-DI	REF615			SG200N1 FP1	0=alarm
A2/+02	FP1	SA1 ON "LOCAL" POSITION	SW-DI	REF615			SG200N1 FP1	1=local
A2/+02	FP1	SA1 ON "REMOTE" POSITION	SW-DI	REF615			SG200N1 FP1	1=remote
A2/+02	FP1	SA2 ON "MAINTENANCE" POSITION	SW-DI	REF615			SG200N1 FP1	1=maintenance
A2/+02	FP1	INTERTRIP TO 6.6 KV SWBD	SW-DI	REF615			SG200N1 FP1	1=tripped
A2/+02	FP1	CIRCUIT-BREAKER - CLOSE COMMAND	SW-DO	REF615			SG200N1 FP1	1=close command
A2/+02	FP1	CIRCUIT-BREAKER - OPEN COMMAND	SW-DO	REF615			SG200N1 FP1	1=open command
A2/+02	FP1	MEASURE - CURRENT "L1"	SW-AI	REF615	A	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - CURRENT "L2"	SW-AI	REF615	A	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - CURRENT "L3"	SW-AI	REF615	A	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - VOLTAGE "L1-L2"	SW-AI	REF615	V	1	SG200N1 FP1	

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DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/ DEVICE MODEL	UNIT	SCALE FACTOR	IEC61850 Technical Key	Note
A2/+02	FP1	MEASURE - VOLTAGE "L2-L3"	SW-AI	REF615	V	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - VOLTAGE "L3-L1"	SW-AI	REF615	V	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - FREQUENCY	SW-AI	REF615	Hz	1	SG200N1 FP1	
A2/+02	FP1	MEASURE - APPARENT POWER	SW-AI	REF615	kVA	1	SG200N1 FP1	

Step	Description	Result	Verified by	Date
72	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☑		29/02

5.4.4.2 SG-200N1 - I/O list Common signals from Switchboard – Network Modbus TCP-IP

Internal Common Signals from/to SG-200N1 located on cubicle **A2/+02**
Network **Modbus TCP-IP** to PCS Cabinets
This I/O list concern the common warning, alarm & feedback.
For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042**

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG / DIGITAL	RELAY / DEVICE MODEL	UNIT	SCALE FACTOR	Note
A2/+02	A4	SG-200N1 - SURGE ARRESTER FAULT	SW-DI	Module I/O			0=failure
A2/+02	A4	SG-200N1 - LOSS 230VAC AUXILIARY VOLTAGE	SW-DI	Module I/O			1=alarm
A2/+02	A4	SG-200N1 - "FP1" WATCHDOG PROTECTION	SW-DI	Module I/O			0=failure
A2/+02	A4	SG-200N1 - MOTOR FEEDER FAULT LOOP [BUS-3]	SW-DI	Module I/O			0=failure
A2/+02	A4	available	SW-DI	Module I/O			
A2/+02	A4	available	SW-DI	Module I/O			

Step	Description	Result	Verified by	Date
73	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results..... ☑		29/02

5.4.4.3 SG-200N1 - I/O list Common signal from DB DP-200N1– Network Modbus TCP-IP

Distribution Board **DP-200N1 Common** Signals from/to SG-200N1 located on cubicle **A2/+02** Network **Modbus TCP-IP** to PCS Cabinets.

This I/O list concern the common warning and alarm & feedback from DP-200N1.

For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042.**

Modbus I/O Table

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/ DEVICE MODEL	UNIT	SCALE FACTOR	Note
A2/+02	A5	DP-200N1 - SURGE ARRESTER FAULT	SW-DI	Module I/O			0=failure
A2/+02	A5	DP-200N1 - NORMAL AND EMERGENCY LIGHTING ON AUTOMATIC	SW-DI	Module I/O			1=automatic
A2/+02	A5	DP-200N1 - NORMAL AND EMERGENCY LIGHTING ACTIVATED	SW-DI	Module I/O			1=activated
A2/+02	A5	DP-200N1 - NORMAL AND EMERGENCY CIRCUIT-BREAKER CLOSED	SW-DI	Module I/O			1=close
A2/+02	A5	DP-200N1 - TRACE HEATINGS ACTIVATED	SW-DI	Module I/O			1=activated
A2/+02	A5	DP-200N1 - TRACE HEATINGS CIRCUIT-BREAKER CLOSED	SW-DI	Module I/O			1=close
A2/+02	A5	DP-200N1 - MAIN AND UTILITIES CIRCUIT-BREAKERS CLOSED	SW-DI	Module I/O			1=close
A2/+02	A5	available	SW-DI	Module I/O			

Step	Description	Result	Verified by	Date
74	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results..... ☑	M. Pakello	29/02

Hardwired signals from DP-200N1 to **Module I/O A5** of SG-200N1 located on cubicle A2/+02.
Refer to vendor document **172300219-EL-DG-00030** SG-200N1 wiring diagram.
The hardwired signals will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets
Hardwired I/O table

Signal Description	From		To		I/O reference
	Cubicle	terminals	Cubicle	Terminals	
DP-200N1 - SURGE ARRESTER FAULT	DP-200N1 Cable riser	XS-1 XS-2	SG-200N1 A2/+02	X2-70 X2-71	E1.0
DP-200N1 - NORMAL AND EMERGENCY LIGHTING ON AUTOMATIC	DP-200N1 Cable riser	XT-3 XT-4	SG-200N1 A2/+02	X2-72 X2-73	E1.1
DP-200N1 - NORMAL AND EMERGENCY LIGHTING ACTIVATED	DP-200N1 Cable riser	XT-5 XT-6	SG-200N1 A2/+02	X2-74 X2-75	E1.2
DP-200N1 - NORMAL AND EMERGENCY CIRCUIT-BREAKER CLOSED	DP-200N1 Cable riser	XT-5 XT-6	SG-200N1 A2/+02	X2-76 X2-77	E1.3

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Signal Description	From		To		I/O reference
	Cubicle	terminals	Cubicle	Terminals	
DP-200N1 - TRACE HEATINGS ACTIVATED	DP-200N1 Cable riser	XT-7 XT-8	SG-200N1 A2/+02	X2-78 X2-79	E1.4
DP-200N1 - TRACE HEATINGS CIRCUIT-BREAKER CLOSED	DP-200N1 Cable riser	XH-5 XH-6	SG-200N1 A2/+02	X2-80 X2-81	E1.5
DP-200N1 - MAIN AND UTILITIES CIRCUIT-BREAKERS CLOSED	DP-200N1 Cable riser	XP-1 XP-2	SG-200N1 A2/+02	X2-82 X2-83	E1.6
available			SG-200N1 A2/+02	X2-84 X2-85	E1.7

Step	Description	Result	Verified by	Date
75	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results..... ☑		29/02

5.4.4.4 SG-200N1 - I/O list Hardwired Signal from 6.6 KV SWBD SG-100D1 Unit A4 to Incomer Protection Relay FP1 - network IEC61850

Hardwired signals from/to 6.6 KV SWBD SG-100D1 to ABB REF615 FP1 protection relay **Input Module X120** located on cubicle SG-200N1 A2/+02.

Refer to vendor document **172300219-EL-DG-00030** SG-200N1 wiring diagram, sheets 010, 013 and 014 (logic diagram), 022, 026, 031.
All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets.

Hardwired I/O table

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG / DIGITAL	RELAY/ DEVICE MODEL	UNIT	SCALE FACTOR	Note
A2/+02	REF615	C.B. Opened or Isolated	SW-DI	X120 Module I/O			BI2
A2/+02	REF615	Lock out relay (K86)	SW-DI	X120 Module I/O			BI3
A2/+02	REF615	CB closed, inserted and Earthing switch opened	SW-DI	X120 Module I/O			BI4

Above I/O are used only in the logic diagram and they will not send any information to EMCS system

Signal Description	From		To		I/O reference
	Cubicle	terminals	Cubicle	Terminals	
C.B. Opened or Isolated	SG-100D1 Unit A4	XM-49 XM-50	SG-200N1 A2/+02	X2-15 X2-16	BI2
Lock out relay (K86)	SG-100D1 Unit A4	XM-51 XM-52	SG-200N1 A2/+02	X2-17 X2-18	BI3

Signal Description	From		To		I/O reference
	Cubicle	terminals	Cubicle	Terminals	
CB closed, inserted and Earthing switch opened	SG-100D1 Unit A4	XM-53 XM-54	SG-200N1 A2/+02	X2-19 X2-20	BI4
LOCK OUT RELAY Intertrip to SG-200N1 Incomer	SG-100D1 Unit A4	XM-69 XM-70	SG-200N1 A2/+02	X2-7 X2-8	INTERTRIP HARDWIRED ONLY

Hardwired signals from/to 6.6 KV SWBD **SG-100D1** to **SG-200N1** located on cubicle A2/+02.

Hardwired I/O table

Step	Description	Result	Verified by	Date
76	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results.....		29/10

5.4.4.5 SG-200N1 - I/O list Signal from/to JB-200E2 "TEMPORARY GENERATOR / MOBILE BATTERY PACK" (A2/+08) – Network MODBUS TCP-IP

Signals from/to the drawer A2/+08 **JB-200E2** on SG-200N1 located on cubicle **A2/+02**.
Network **Modbus TCP-IP** to PCS Cabinets.

The A2/+08 drawer was made by referring to the typical wiring diagram "**LE2-320**" see the vendor document **172300219-EL-DG-00030**.

This I/O list concern the protection warning and alarm, breaker feedback and measures reading from **ABB Ekip Touch** Electronic Protection Relay on board of Circuit breaker.

All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets.For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042.**

Modbus I/O Table

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - CURRENT "L1"	SW-AI	Ekip Hi-Touch	A	0,1	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - CURRENT "L2"	SW-AI	Ekip Hi-Touch	A	0,1	
A2/+08	U1.A	MEASURE - CURRENT "L3"	SW-AI	Ekip Hi-Touch	A	0,1	

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typ. LE2-320 WD							
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - VOLTAGE "L1-L2"	SW-AI	Ekip Hi-Touch	V	0,1	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - VOLTAGE "L2-L3"	SW-AI	Ekip Hi-Touch	V	0,1	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - VOLTAGE "L3-L1"	SW-AI	Ekip Hi-Touch	V	0,1	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - FREQUENCY	SW-AI	Ekip Hi-Touch	Hz	0,01	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - APPARENT POWER	SW-AI	Ekip Hi-Touch	kVA	0,1	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - REAL POWER	SW-AI	Ekip Hi-Touch	kW	0,1	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - REACTIVE POWER	SW-AI	Ekip Hi-Touch	kVAR	0,1	
A2/+08 Typ. LE2-320 WD	U1.A	MEASURE - POWER FACTOR	SW-AI	Ekip Hi-Touch	COSfi	0,001	
A2/+08 Typ. LE2-320 WD	U2.B	CIRCUIT-BREAKER - CLOSED AND INSERTED	SW-DI	Module I/O			1=close
A2/+08 Typ. LE2-320 WD	U2.B	CIRCUIT-BREAKER - OPEN OR DISCONNECTED	SW-DI	Module I/O			1=open
A2/+08 Typ. LE2-320 WD	U2.B	CIRCUIT-BREAKER - TRIPPED	SW-DI	Module I/O			1=tripped
A2/+08 Typ. LE2-320 WD	U2.B	FEEDER AVAILABLE	SW-DI	Module I/O			1=available
A2/+08 Typ. LE2-320 WD	U2.B	INTERNAL FAULT	SW-DI	Module I/O			0=fault
A2/+08	U2.B	available	SW-DO	Module I/O			1=closing

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DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typ. LE2-320 WD							
A2/+08 Typ. LE2-320 WD	U2.B	available	SW-DO	Module I/O			1=opening

Step	Description	Result	Verified by	Date
77	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☑		29/02

The internal intertrip hardwired signals have been tested on step 8 of the section "OTP Steps WORKSITE - PHASE 1"

5.4.4.6 SG-200N1 - I/O list Signal from/to 6.6 KV SWBD SG-200D2 – Network MODBUS TCP-IP

I/O list from/to SG-200D2 will be tested on the *Solar PV Plant System OTP,* in this LV OTP they are mentioned because there are some I/O that are connected on SG-200N1.

Switchboard **SG-200D2** Signals from/to SG-200N1 located on cubicle **A2/+02** Network **Modbus TCP-IP** to PCS Cabinets.

This I/O list concern the common warning and alarm & feedback from **SG-200D2**.

All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets. For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042.**

Modbus I/O Table

DEVICE LOCATION	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
A2/+02	A4	SG-200D2 - MCBs HEALTY	SW-DI	Module I/O			0=alarm
A2/+02	A4	available	SW-DI	Module I/O			

Hardwired I/O table

Signal Description	From		To		I/O reference
	Cubicle	terminals	Cubicle	Terminals	
SG-200D2 - MCBs Healthy	SG-200D2 CL01/+03	X2-42 X2-43	SG-200N1 A2/+02	X2-66 X2-67	E0.6
SG-200D2 - Available			SG-200N1 A2/+02	X2-68 X2-69	E0.7

Step	Description	Result	Verified by	Date
78	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☑		29/02

5.4.4.7 SG-200N1 - I/O list Signal from/to drawer with Typical WD "L1-n" and "L2-n" - Network MODBUS TCP-IP

Signals from/to the various drawers (see list below) on SG-200N1 - **Network Modbus TCP-IP** to PCS Cabinets.

The drawers were made by referring to the Typical Wiring Diagram **"L1-n" and L2-n"** see the vendor document **172300219-EL-DG-00030.**

This I/O list concern the protection warning and alarm, breaker feedback and measures reading from **I/O modules** installed inside the drawers.

All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets. For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042.**

Modbus I/O Table

DEVICE LOCATION[1]	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typical L1-n ÷ L2-n Wiring Diagram	U2.B	CIRCUIT-BREAKER - CLOSED AND INSERTED	SW-DI	Module I/O			1=close
Typical L1-n ÷ L2-n Wiring Diagram	U2.B	CIRCUIT-BREAKER - OPEN OR DISCONNECTED	SW-DI	Module I/O			1=open
Typical L1-n ÷ L2-n Wiring Diagram	U2.B	CIRCUIT-BREAKER - TRIPPED	SW-DI	Module I/O			1=tripped
Typical L1-n ÷ L2-n Wiring Diagram	U2.B	INTERNAL FAULT	SW-DI	Module I/O			0=fault
Typical L1-n ÷ L2-n Wiring Diagram	U2.B	available	SW-DI	Module I/O			
Typical L1-n ÷ L2-n Wiring Diagram	U2.B	available	SW-DO	Module I/O			
Typical L1-n ÷ L2-n Wiring Diagram	U2.B	available	SW-DO	Module I/O			

[1] See drawer list for device location

This typical WD is applied to following drawers:

Column	Position	Item TAG	Description TAG
A2	+04	UP-200F4	AC UPS F&G - 8H UP-200F4 - BYPASS
A3	+01	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 - LINE A
A4	+01	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 - LINE B
A6	+05	UP-200F4	AC UPS F&G - 8H UP-200F4 - LINE A
A6	+06	UP-200F4	AC UPS F&G - 8H UP-200F4 - LINE B
A6	+08	ESW-200N1	WELDING SOCKETS (TOP DECK)
A7	+02	UP-200F3	AC UPS PAS - 30 MIN UP-200F3 (BYPASS)
A7	+03	UP-200F1	DC BATTERY SYSTEM SWTG CONTROL - FEEDER A
A7	+04	UP-200F1	DC BATTERY SYSTEM SWTG CONTROL - FEEDER B
A7	+05	UP-200F2	NAVAID SYSTEM FEEDER A
A7	+06	UP-200F2	NAVAID SYSTEM FEEDER B
A7	+08	ESW-200N2	WELDING SOCKETS (LOWER DECK)

Step	Description	Result	Verified by	Date
79	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☑		29/01

5.4.4.8 SG-200N1 - I/O list Signal from/to drawer with Typical WD "LK1-n" and "LK2-n" – Network MODBUS TCP-IP

Signals from/to the various drawers (see list below) on SG-200N1 - **Network Modbus TCP-IP** to PCS Cabinets.

The drawers were made by referring to the Typical Wiring Diagram "**LK1-n" and "LK2-n"** see the vendor document **172300219-EL-DG-00031.**

This I/O list concern the protection warning and alarm, breaker feedback and measures reading from **I/O modules** and **Ekip Touch** installed inside the drawers.

All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets.
For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042.**
Modbus I/O Table

DEVICE LOCATION [1]	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	CIRCUIT-BREAKER - PROTECTION TRIPPED "L"	SW-DI	Ekip Hi-Touch			
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	CIRCUIT-BREAKER - PROTECTION TRIPPED "S"	SW-DI	Ekip Hi-Touch			
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	CIRCUIT-BREAKER - PROTECTION TRIPPED "I"	SW-DI	Ekip Hi-Touch			
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	CIRCUIT-BREAKER - PROTECTION TRIPPED "G"	SW-DI	Ekip Hi-Touch			
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	CIRCUIT-BREAKER - OPEN	SW-DI	Ekip Hi-Touch			
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	CIRCUIT-BREAKER - CLOSED	SW-DI	Ekip Hi-Touch			
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	CIRCUIT-BREAKER - TRIP UNIT FAILURE	SW-DI	Ekip Hi-Touch			
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - CURRENT "L1"	SW-AI	Ekip Hi-Touch	A	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - CURRENT "L2"	SW-AI	Ekip Hi-Touch	A	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - CURRENT "L3"	SW-AI	Ekip Hi-Touch	A	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - VOLTAGE "L1-L2"	SW-AI	Ekip Hi-Touch	V	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - VOLTAGE "L2-L3"	SW-AI	Ekip Hi-Touch	V	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - VOLTAGE "L3-L1"	SW-AI	Ekip Hi-Touch	V	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - FREQUENCY	SW-AI	Ekip Hi-Touch	Hz	0,01	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - APPARENT POWER	SW-AI	Ekip Hi-Touch	kVA	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - REAL POWER	SW-AI	Ekip Hi-Touch	kW	0,1	

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DEVICE LOCATION [1]	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - REACTIVE POWER	SW-AI	Ekip Hi-Touch	kVAR	0,1	
Typical LK1-n ÷ LK2-n Wiring Diagram	U1.A	MEASURE - POWER FACTOR	SW-AI	Ekip Hi-Touch	COSfi	0,001	
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.B	CIRCUIT-BREAKER - CLOSED AND INSERTED	SW-DI	Module I/O			1=close
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.B	CIRCUIT-BREAKER - OPEN OR DISCONNECTED	SW-DI	Module I/O			1=open
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.B	CIRCUIT-BREAKER - TRIPPED	SW-DI	Module I/O			1=tripped
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.B	FEEDER AVAILABLE	SW-DI	Module I/O			1=available
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.B	INTERNAL FAULT	SW-DI	Module I/O			0=fault
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.B	CONTACTOR CLOSING COMAND	SW-DO	Module I/O			1=closing
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.B	CONTACTOR OPENING COMAND	SW-DO	Module I/O			1=opening
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.C	available	SW-DI	Module I/O			
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.C	available	SW-DI	Module I/O			
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.C	SA1 ON "LOCAL" POSITION	SW-DI	Module I/O			1=local
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.C	available	SW-DI	Module I/O			
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.C	available	SW-DI	Module I/O			
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.C	available	SW-DO	Module I/O			
Typical LK1-n ÷ LK2-n Wiring Diagram	U2.C	available	SW-DO	Module I/O			

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[1] See drawer list for device location

This typical WD is applied to following drawers:

Column	Position	Item TAG	Description TAG
A2	+05	SPARE	SPARE
A3	+02	SPARE	SPARE
A3	+03	DP-200N1	DB-LIGHTING & SMALL POWER BoP
A3	+04	JB-200E3	CRANE
A3	+05	SPARE	SPARE
A3	+08	JB-500E8	WATER PACKAGE
A4	+02	B100-HSB-001	HVAC PANELS HV ROOM
A4	+03	A-80000	FUELL CELL AUXIALIRY LOAD
A4	+04	CP-850F03	BESS PCS CABINET
A4	+05	SPARE	SPARE
A4	+06	SPARE	SPARE
A4	+08	K-63001-A	INSTRUMENTS AIR PACKAGE 01A
A5	+01	SPARE	SPARE
A5	+02	B200-HSB-001	HVAC PANELS - LV ROOM
A5	+03	B300-HSB-001	HVAC PANELS - UPS ROOM
A5	+04	B400-HSB-001	HVAC PANELS - ITER
A5	+05	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM
A5	+06	SPARE	SPARE
A5	+08	K-63001-B	INSTRUMENTS AIR PACKAGE 01B
A6	+02	CP-850E1	BESS LV1 CABINAT (+DISTR 1)
A6	+03	CP-850E2	BESS LV2 CABINAT (+DISTR 2)
A6	+04	SPARE	SPARE

Step	Description	Result	Verified by	Date
80	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☑		24/02

5.4.4.9 SG-200N1 - I/O list Signal from/to drawer with Typical WD "M1-6" – Network MODBUS TCP-IP

Signals from/to the various drawers (see list below) on SG-200N1 - **Network Modbus TCP-IP** to PCS Cabinets.

The drawers were made by referring to the Typical Wiring Diagram **"M1-6"** see the vendor document **172300219-EL-DG-00031.**

This I/O list concern the protection warning and alarm, breaker feedback and measures reading from **UMC100.3 I/O modules** installed inside the drawers.

All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets. For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042.**

Modbus I/O Table

DEVICE LOCATION[1]	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typical M1-6 Wiring Diagram	MMU4	MEASURE - CURRENT (average)	SW-AI	MRP31.0	A	HOLD - n.1	
Typical M1-6 Wiring Diagram	MMU4	SA1 ON "LOCAL" POSITION	SW-DI	MRP31.0			1=local
Typical M1-6 Wiring Diagram	MMU4	MOTOR RUNNING	SW-DI	MRP31.0			1=running
Typical M1-6 Wiring Diagram	MMU4	MOTOR TRIPPED	SW-DI	MRP31.0			1=tripped
Typical M1-6 Wiring Diagram	MMU4	USER AVAILABLE	SW-DI	MRP31.0			1=available
Typical M1-6 Wiring Diagram	MMU4	ESD ACTIVETED	SW-DI	MRP31.0			0=activeted

[1] See drawer list for device location

This typical WD is applied to following drawers:

Column	Position	Item TAG	Description TAG
A6	+01	PM-50001A	SEA WATER PUMP A
A7	+01	PM-50001B	SEA WATER PUMP B

Step	Description	Result	Verified by	Date
81	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☑		29/02/24

5.4.4.10 SG-200N1 - I/O list Signal from/to drawer with Typical WD "L3-630" ELECTROLIZER AUXILIARY LOAD - Network MODBUS TCP-IP

Signals from/to the Electrolizer Auxiliary Load drawer **A1/+08** (see list below) on SG-200N1 - Network **Modbus TCP-IP** to PCS Cabinets.

The drawers were made by referring to the Typical Wiring Diagram **"L3-630"** see the vendor document **172300219-EL-DG-00031.**

This I/O list concern the protection warning and alarm, breaker feedback and measures reading from **I/O modules** and **Ekip Touch** installed inside the drawer.

All I/O list will be individually loop checked and recorded on dedicated ITR-Bs precommissioning check sheets. For specific signal tags and all information see I/O list **1723002197-EL-LIS-00042.**

Modbus I/O Table

DEVICE LOCATION[1]	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typical L 3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - PROTECTION TRIPPED "L"	SW-DI	Ekip Hi-Touch			1=tripped
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - PROTECTION TRIPPED "S"	SW-DI	Ekip Hi-Touch			1=tripped
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - PROTECTION TRIPPED "I"	SW-DI	Ekip Hi-Touch			1=tripped
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - PROTECTION TRIPPED G"	SW-DI	Ekip Hi-Touch			1=tripped
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - OPEN	SW-DI	Ekip Hi-Touch			1=open
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - CLOSED	SW-DI	Ekip Hi-Touch			1=closed
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - CONNECTED	SW-DI	Ekip Hi-Touch			1=connected
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - ISOLATED	SW-DI	Ekip Hi-Touch			0=isolated
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - TEST	SW-DI	Ekip Hi-Touch			1=test
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - TRIP UNIT FAILURE	SW-DI	Ekip Hi-Touch			1=Failure
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - CLOSE COMMAND	SW-DO	Ekip Hi-Touch			1=close command
Typical L3-630 Wiring Diagram	QF1	CIRCUIT-BREAKER - OPEN COMMAND	SW-DO	Ekip Hi-Touch			1=open command
Typical L3-630 Wiring Diagram	QF1	MEASURE - CURRENT "L1"	SW-AI	Ekip Hi-Touch	A	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - CURRENT "L2"	SW-AI	Ekip Hi-Touch	A	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - CURRENT "L3"	SW-AI	Ekip Hi-Touch	A	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - VOLTAGE "L1-L2"	SW-AI	Ekip Hi-Touch	V	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - VOLTAGE "L2-L3"	SW-AI	Ekip Hi-Touch	V	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - VOLTAGE "L3-L1"	SW-AI	Ekip Hi-Touch	V	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - FREQUENCY	SW-AI	Ekip Hi-Touch	Hz	0,01	
Typical L3-630 Wiring Diagram	QF1	MEASURE - APPARENT POWER	SW-AI	Ekip Hi-Touch	kVA	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - REAL POWER	SW-AI	Ekip Hi-Touch	kW	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - REACTIVE POWER	SW-AI	Ekip Hi-Touch	kVAR	0,1	
Typical L3-630 Wiring Diagram	QF1	MEASURE - POWER FACTOR	SW-AI	Ekip Hi-Touch	COSfi	0,001	
Typical L3-630 Wiring Diagram	U1B	CIRCUIT-BREAKER - CLOSED AND INSERTED	SW-DI	Module I/O			1=close
Typical L3-630 Wiring Diagram	U1B	CIRCUIT-BREAKER - OPEN OR DISCONNECTED	SW-DI	Module I/O			1=open
Typical L3-630 Wiring Diagram	U1B	CIRCUIT-BREAKER - TRIPPED	SW-DI	Module I/O			1=tripped

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DEVICE LOCATION[1]	DEVICE	SIGNAL_DESCRIPTION	TYPE ANALOG/ DIGITAL	RELAY/DEVICE MODEL	UNIT	SCALE FACTOR	Note
Typical L3-630 Wiring Diagram	U1B	available	SW-DI	Module I/O			
Typical L3-630 Wiring Diagram	U1B	available	SW-DI	Module I/O			
Typical L3-630 Wiring Diagram	U1C	available	SW-DI	Module I/O			
Typical L3-630 Wiring Diagram	U1C	available	SW-DI	Module I/O			
Typical L3-630 Wiring Diagram	U1C	SA1 ON "LOCAL" POSITION	SW-DI	Module I/O			1=local
Typical L3-630 Wiring Diagram	U1C	available	SW-DI	Module I/O			
Typical L3-630 Wiring Diagram	U1C	available	SW-DI	Module I/O			

[1] See drawer list for device location

This typical WD is applied to following drawers:

Column	Position	Item TAG	Description TAG
A1	+08	A-20000	ELECTROLYSER AUXILIARY LOAD

Step	Description	Result	Verified by	Date
82	Confirm correct and positive result of precommissioning Check Sheet for above signals I/O list	Correct and positive results ..... ☑	M Laddé	29/a

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5.4.4.11 OTP WORKSITE Phase 3 - Tests Notes and Remarks

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

Name and Surname	Certifying Authority	Position	Signature

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

Name and Surname	Company Representative	Position	Signature
KRISTIAN CASTELLANI	ROSETTI M.	LEAD CLE COMMIS.	
JAMIE MAILLE	CW	ORS COM ENG	

5.5 Post-test Conditions

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

5.6 Reinstatement and Preservation Tasks

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

- all inhibition done for the test shall be removed (as per Inhibit / Override List)
- all equipment/devices shall be returned in healthy functional conditions.
- all preservation routines identified and required will be included in relevant Preservation ITR within the Proverlis Completions System

6 OTP AT SITE

6.1 Planning and Manpower

6.1.1 Offshore Site overview

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

6.1.2 Planned tasks with estimated manpower

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

6.1.3 Test duration estimate

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

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

6.1.4 Vendor Assistance

- Not applicable

6.1.5 Items Postponed to C&E OTP

- Not Applicable

6.1.6 HOLDS

- Not Applicable

6.2 OTP Test Requirements – Offshore SITE

6.2.1 Pre-Commissioning Achievement

- Not applicable

6.2.2 Commissioning Achievement

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

The successful commissioning result, achieved during the WORKSITE commissioning phase for the functionality and safeguard of the LV distribution system, will allow for a smoother commissioning phase of the offshore SITE.
The systems and subsystems involved:
- 88-00: Earthing System
- 82-00: SG-100D1 6.6 kV SWBD compartment A4 6,6 kV

- 82-40: Transformer 1,6 MVA TR-200DE1
- 84-10: UPS System UP-200F3
- 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- 83-20: 400V Distribution board DP-200N1
- 79-00: SIS (ESD)
- 87-00: EMCS cabinet
- 87-10: Process Control System (PCS)
- 86-00: Data Network - IEC61850 Ethernet Communication network High and Low Voltage
- 86-00: Data Network - MODBU RTU Network Switchboard 6.6 kV and Low Voltage

6.2.3 Status of Required Associated Subsystems

The systems involved has been already energized and commissioned in WORKSITE Phase

6.2.4 Special Tools & Test Equipment

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

- Voltage, frequency, continuity tester (Multimeter)
- extracting tool & transportation trolley
- Portable radios (3 pcs + 1 per Technical Room)

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

6.2.5 Consumable List

- Not applicable

6.2.6 Commissioning Spare Parts

Reference is made to IMESA document 1723002197-COM-LIS-00052 "Commissioning and operation Spare Parts Index Register" regarding the LV SWBD e DB commissioning spare parts are indicated in the document 1723002197-COM-LIS-00052 "Commissioning and operation Spare Parts Index Register".

6.2.7 Temporary Facilities

- Temporary Diesel Generator

6.3 OTP Description - SITE

On SITE (offshore) phase the first energization of main SWBD SG-200N1 will be done feeding the drawer A2/+08 via Temporary Diesel Generator and will be performed all steps starting with first energization.

N.B.: Kindly note that this procedure does not detail any activities related to BLACK START, consequently reference is made to dedicated document n. 123A90-PML-COM-PRO-03036

6.3.1 OTP Test Preparation

Step	Description	Result	Verified by	Date
83	System Ready for Operation (RFO) from WORKSITE phases Certificate is issued and approved.			
84	No blocking punch list items are outstanding against the system to be commissioned.			
85	System(s), (de)isolations as per LOTO procedure enclosed within commissioning Work Permits procedures prepared and approved			
86	Verify and confirm that all steps performed at WORKSITE of this procedure are completed without any pending issues that would prevent from proceeding with the offshore SITE PROCEDURE			
87	All personnel involved in the implementation of this procedure are familiar with this procedure as well as with associated safety requirements (Toolbox Talk to be conducted before initiation of activities).			
88	A final walkdown after hook-up of the system has been completed, any preservation items have been removed and to ensure that the system and the area are ready for energization for following items: UP-200F3 230V AC UPS SG-200N1 Main Switchboard DP-200N1 Distribution board			
89	Check that areas are free for work and escape routes are clear of any obstructions.			
90	Ensure that proper communications have been established between parties involved in the implementation of the procedure.			
91	Verify availability of test equipment and consumables as per chapters 6.2.4.			
92	Verify and confirm that the Temporary Diesel Generator is ready to start, that the diesel fuel tank is full.			
93	All personnel have been duly notified during dedicated daily SIMOPS meetings that the system(s) is ready for commissioning.			

6.3.2 Electrical Preparation

Step	Description	Result	Verified by	Date
94	No blocking punch list items are outstanding against the system to be commissioned.			
95	Review and confirm no changes are required to be performed on existing protection settings.			
96	Verify and confirm that the Temporary Diesel Generator power cables connections have been tested with correct phase rotation before sail away. Perform walk down on Diesel Generator for a final check before energization			

6.3.3 Mechanical Preparation

Not applicable.

6.3.4 Instrument Preparation

Step	Description	Result	Verified by	Date
97	No blocking punch list items are outstanding against the system to be commissioned.			
98	Verify that all relevant associated control and protection systems / subsystems are ready.			
99	Verify as relevant Inhibit and Override list has been prepared and validated (as per JSA).			

6.3.5 Piping Preparation

Not applicable

6.3.6 Additional Discipline Preparation

Not applicable.

6.4 OTP Test Steps – Offshore SITE

The previous chapters must be successfully performed prior to commissioning of the LV Power Distribution Switchboard and Distribution Board.

In the next steps, the functionality of the LV Power Switchboard and the Distribution Board will be tested:

- SS 83-00: 400 V Switchboard & Connection Box (SG-200N1)
- SS 83-20: 400V Distribution Board "DP-200N1"

6.4.1 Test Preparation

Verification of system and subsystem LV Power Switchboard and Distribution Board.

6.4.2 Energization of Switchboard SG-200N1 and Distribution Board DP-200N1

Step	Description	Result	Verified by	Date
Auxiliary Circuits for 400V Switchboard SG-200N1				
100	Verify and confirm (cubicle A2/+02): - the selector QU1 is in position "1" - the fuse switch QU3 is closed			
101	Verify and confirm on drawer A2/+08: - Aux CB QA1 Under voltage coil is closed - Aux CB QA2 command circuits is closed			
Startup Temporary Diesel Generator and energize power supply to Switchboard SG-200N1				
102	Verify and confirm the INCOMING QF1 breaker of JB-200E2 is open and the drawer +08 is in extract position.			
103	Startup the Temporary Diesel Generator, wait for the engine to warm up, check that all parameters are correct and within range. Close the Generator main breaker			
104	Verify the correct phase sequence L1,L2,L3, on the incomer power of the drawer A2/+08.			
105	Manually close Breaker QF1 on drawer A2/+08. The switchboard main Busbar are powered from Temporary Diesel Generator			
106	Verify and confirm on drawer A3/+03 (DP-200N1): - Aux CB QA1 command circuits is closed			
107	On drawer A3/+03 close Breaker QF1 and the distribution board DP-200N1 is powered			
108	Verify and confirm 230VAC from DP-200N1: - From DP-200N1 breaker Q39 - To SG-200N1 Breaker QA6 (cubicle A2/+02)			

Step	Description	Result	Verified by	Date
Energization of LV SWBD SG-200N1 from 6.6 kV Switchboard SG-100D1 comp. A4. Switchboard 6.6kV SG-100D1 is powered from HV 66/6.6kV Transformer TR-100AD1 (see 66kV switchboard "123A90-PML-COM-PRO-03045 OTP - HV Switchgear & 66 kV Transformer Systems") .				

Step	Description	Result	Verified by	Date
109	See and refer to related steps of 6.6 kV OTP of SG-100D1 6,6 kV to supply the Low Voltage SG-200N1, Doc n. 123A90-PML-COM-PRO-03046, PHASES 1/2/3. The SG-200N1 upstream is powered from 6.6/0.4 kV transformer TR-200DE1, Main incomers QF1 (A1/+05) is open and extract			
110	Reference is made to Logic diagram 1723002197-EL-DG-00030 sheet 22 Interlock to main breaker QF1 (A1/+05) from drawer A2/+08 Permissive to closing incomer QF1 (A1+05) from JB-200E1 QF1 breaker (A2/+08) Located on A2/+02 cubicle Confirm close circuit between terminals X2:3-4 (it means QF1 (A2/+08) is open or racked out)			
111	With reference Vendor Doc. 1723002197-EL-DG-00030 sheet 17 Verify the correct phase sequence L1, L2, L3 of the INCOMER power supply cables. Column A2/+02 SG-200N1			
112	Remove power from temporary generator. - Open breaker QF1 (A2/+08) ..... ☐ - Turn OFF temporary Generator ..... ☐ Main Busbars of Switchboard SG-200N1 are OFF			
113	With reference Vendor Doc. 1723002197-EL-DG-00030 sheet 16 Check and confirm that auxiliary circuit is available - Close QU2 MCB ..... ☐ - Place the selector QU1 in position 2 and circuit will be supplied (see the K30A should be on)..... ☐			
114	With reference Vendor Doc. 1723002197-EL-DG-00030 sheet 17. Verify and confirm the voltage references are available on Column A02/+02: - Close protection QV1..... ☐ - Close protection QV2..... ☐ - Verify the voltage presence on terminals XV:1-2-3 ..... ☐			
115	Verify the voltage reading on REF615 display			

Step	Description	Result	Verified by	Date
	- Voltage = ... V			
116	With reference the Vendor Doc 173002197-EL-DG-00030 sheet 19-20 Close auxiliary breakers 230V located on drawer A2/+02 QA1 Motor Spring charger incoming CB ..... ☐ QA2 protection device incoming CB ..... ☐ QA3 command circuits incoming CB ..... ☐ QA4 converter 230/24 VDC ..... ☐ QA5 command circuits (feeders) ..... ☐ QA6 internal space heaters /lighting ..... ☐ The protections are working, and auxiliary circuits are powered, and the permissive signals are closed ..... ☐			
117	Mechanical Interlock between 6.6 KV SWBD SG-100D1 (Column A4) and LV SWBD SG-200N1 Incomer With reference Vendor 6.6 KV *SLD 1723002197 EL-DG-00010, LV SLD 1723002197 EL-DG-00030* **Interlock On SG-200N1 main incomer** Earthing switch BGE Column A4 is open, its KEY-3 **G3398** is free and its KEY-4) **G3135** is blocked on earthing switch - Key **G3398** is ringed with main incomer QF1 (A1/+05) Rack-In/Out system Key **151733** (2) of DG-200N1 SWBD - Insert the key **151733** on Rack-In/Out system of Main Incomer QF1 place the breaker in test or service position and the key **151733** will be blocked on n Rack-In/Out system **Interlock On SG-100D1 main incomer** SG-200N1 Incomer is extract position the Key **151733** is free. - Insert KEY-3 **G3398** on the earth switch of column A4 (BGE), if possible close it and the **G3398** key will remain blocked on the BGE until the BGE is opened and the key is free again.			

Step	Description	Result	Verified by	Date
118	Rack in the Main incoming breaker QF1 in test position			
119	With reference the Vendor Doc. 1723002197-EL-DG-00030 sheet 26 and located in column A2/+02 - Place the selector SA1 in local position. - Verify and confirm the SA2 Selector is in normal position (not in maintenance position) - Reference is made to sheets 13 and 14 Logic Diagram			
120	Reference is made to Logic diagram 1723002197-EL-DG-00030 sheet 13 regarding the closing of the circuit breaker. Locate the Push Button SC1 on compartment A2/+02 - Push SC1 to close main breaker - Led-3 on the REF615 must be ON - On the REF615 display the circuit breaker symbol will change to closed			
121	Locate the Push Button SO1 on compartment A2/+02 - Push SO1 to open main breaker - Led-3 on the REF615 must be OFF - On the REF615 display the circuit breaker symbol will change to opened			
122	Rack in the Main incoming breaker QG1 in service position			
123	Reference is made to Logic diagram 1723002197-EL-DG-00030 sheet 13 regarding the closing of the circuit breaker. Locate the Push Button SC1 on compartment A2/+02 - Push SC1 to close main breaker - Led 3 on the REF615 must be ON - On the REF615 display the circuit breaker symbol will change to closed			
124	Locate the Push Button SO1 on compartment A2/+02 - Push SO1 to open main breaker - Led 3 on the REF615 must be OFF - On the REF615 display the circuit breaker symbol will change to opened			
125	Rotate selector switch SA1 to remote position. Repeat previous test to close main breaker and confirm that it's not possible with selector switched to remote.			

OTP SITE Tests Notes and Remarks

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6.4.3 OTP SITE Tests Certifying Authority Table of Attendances

Name and Surename	Certifying Authority	Position	Signature

6.4.4 OTP SITE - Tests Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature
Name and Surename	**Certifying Authority**	**Position**	**Signature**

6.5 Post-test Conditions

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

6.6 Reinstatement tasks

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

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

7 APPENDICES

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7.1 Vendor SAT Procedure

Base Load Power Hub (BLPH)

SITE ACCEPTANCE TEST PROCEDURE
LV Switchgear
Document Number: 1723002197-QC-PRO-00047

Document Class: 2

02	30/01/25	Accepted for Construction (AFC)	Flamminio	Martizzi	Chiappa
01	19/12/24	Issue for Review (IFR)	Flamminio	Martizzi	Chiappa
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Rev.	Date	Description	Prepared	Reviewed	Approved

IMESA ELECTRICAL ENGINEERING Doc. n. 231298/SD/047

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
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1	
2	
3	
4	

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.
Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

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



Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

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

1.1.2 Project Concept

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

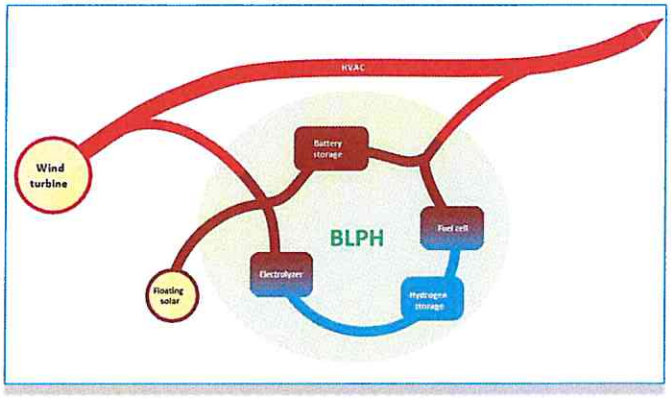


Figure 3 - BLPH Concept

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

2 SCOPE AND APPLICABILITY

This document provides the commissioning and start-up methods, as well as the testing procedures at site, applicable to L.V. Electrical Switchboards, manufactured by IMESA in compliance to Standard IEC 61439-1 and 61439-2.

The procedure is applicable to the following switchgear tag: SG-200N1, SG-200D2, DP-200N1.

3 APPLICABLE STANDARDS AND DOCUMENTS

The tester will make reference to Standards IEC 61439-1 and IEC 61439-2 and to the engineering documents listed here below.

Ref.	Imesa Doc No.	Description
A1	1723002197-EL-DA-00007	SG-200N1 GENERAL ARRANGEMENTS DWG AND FOUNDATION LOAD CALCULATION INCLUDING COG
A2	1723002197-EL-DA-00008	SG-200D2 GENERAL ARRANGEMENTS DWG AND FOUNDATION LOAD CALCULATION INCLUDING COG
A3	1723002197-EL-DA-00009	DP-200N1 GENERAL ARRANGEMENTS DWG AND FOUNDATION LOAD CALCULATION INCLUDING COG
A4	1723002197-EL-DG-00011	SG-200N1 ELECTRICAL SINGLE LINE DIAGRAM
A5	1723002197-EL-DG-00012	SG-200D2 ELECTRICAL SINGLE LINE DIAGRAM
A6	1723002197-EL-DG-00013	DP-200N1 ELECTRICAL SINGLE LINE DIAGRAM
A7	1723002197-EL-DG-00030	SG-200N1 LV SWG FUNCTIONAL DIAGRAMS - INCOMINGS, INTERCONNECTING AND AUX DISTRIBUTION
A8	1723002197-EL-DG-00031	SG-200N1 LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
A9	1723002197-EL-DG-00032	SG-200D2 FUNCTIONAL DIAGRAM
A10	1723002197-EL-DG-00033	DP-200N1 FUNCTIONAL DIAGRAM
A11	1723002197-EL-DS-00035	SG-200N1 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
A12	1723002197-EL-DS-00036	SG-200D2 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
A13	1723002197-EL-DS-00037	DP-200N1 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
A14	1723002197-EL-CAL 00054 t.b.d.	INSTALLATION OPERATING AND MAINTENACE MANUAL

Hard copy of the a.m. IMESA documents, properly stamped and signed as "AS BUILT", will be available for the needed testing activities and verifications.

4 SAFETY RECOMMENDATIONS

WARNING



- **All the operations of electric maintenance and installation must be performed by qualified technicians**
- **All the standard electric safety procedures must be respected**
- **Never touch inside the switchboard; only after making sure it is out of voltage and grounded**
- **Always wear personal protective equipment (insulating shoes in rubber, protective glasses, safety helmet, etc...)**
- **Never work alone**
- **Never remove safety screens**
- **Always pay maximum attention when handling components or performing measurements inside the panel**
- **It shall be taken in mind that this test procedure is only for the equipment and is to be used together (not instead of) all safety procedures specified by local Laws, rules, regulations and Standards**

People attending the commissioning and testing activities must wear:

SHOES: Workers, staff of the Customer, the End User or its representatives (inspectors) present during the tests shall wear safety shoes, ever. The staff of the Customer, the End User or its representatives (inspectors) present during the tests must arrive already equipped with their own shoes. The staff of the Customer, the End User or its representatives (inspectors), present during the tests and not wearing safety shoes, may still access the Safe Area, but not the test area. They will therefore only observe the test from Safe Area and conducting the review of the results in test reports.

GLASSES: Workers must wear safety glasses when performing risky for their eyes.

HELMET: Workers must wear protective helmets when performing lifting and handling, or when there is a suspended load. When there are suspended loads or handling and lifting the staff of the Customer, the End User or its representatives (inspectors) present during the tests must remain in the Safe Area.

GLOVES: Workers must wear gloves when performing risky for the hands or vibrations.

DRESS: All workers must wear appropriate safety clothing, forever. Helmet, gloves, glasses, safety clothing are not required to staff of the Customer, the end Customer or his representatives (inspectors) present during the tests.

When testing the dielectric properties (applied voltage test), **insulated gloves** and **shoes with retractable toe caps**, as well as suitable **protection clothing covering body and arms**, to be worn.
If the test is suspended even temporarily, the test instrument must be disconnected from the mains.

Before to start any activity, to thoroughly check that the following points are confirmed:
- the lighting system in the area is suitable and in operation
- phone or radio communication system is available, even temporarily for the present activities
- the fire-fighting system is in operation and provided with valid certification (portable fire extinguishers may be also suitable for purpose)
- earthing plant in the area and earthing connections of the subsystems to be energized have been completed and tested

5 GENERAL DESCRIPTION

5.1 LIST OF ABREVIATIONS

S.A.T. Site Acceptance Test

VT Voltage Transformer

CT Current Transformer

NCR Non-Conformity Report

IED Intelligent Electronic Device (like programmable relay)

MCB Miniature Circuit Breaker

CB Circuit Braker

MCC Motor Control Center

LV Low Voltage (Circuit with voltage under 1000Vac or 1500Vdc)

I.O.M. Installation, Operation and Maintenance manual

a.m. above mentioned.

5.2 PURPOSE OF SAT

The purpose of the SAT (Site Acceptance Test) is to inspect the switchboard, after installation at site, to ensure that it is ready for energization and start-up and also that its performance requirements will be met.
Prior to performing any Site Acceptance Testing, all Punch list items have to be rectified and closed.

5.3 TESTING TASKS

After completion of the installation phase of the switchboard and in order to prepare it for SAT, pre-commissioning and commissioning are to be first carried out, as further detailed in the next paragraphs.

The overall test activities will be performed by means of the specific test equipment, under the control and responsibility of the test executor, along with some assistants.

The main steps that will be performed are the following:
- Verification of the test procedures and of the related documentation availability.
- Preparation of the test setup
- Execution of the tests according to the Test Procedure and release of the SAT Test Report
- Signing of the SAT Test Report by the test executor and the attending people.

For additional tests not included in its own scope of work, IMESA will provide technical support, as agreed in advance.

List of the tests

Item	Activity	Tool	Support Requested	Type of Test
a.	Mechanical check	Torque Wrench	Mech. Engineer Inspection/Quality Officer	Mandatory
b.	Primary Injection on current transformers	Injection current bench	Electrical Engineer Inspection/Quality Officer	Suggested (to verify that CT is not damaged)
c.	Primary Injection on voltage transformers	Apply low voltage to check the functionality of VT (400V)	Electrical Engineer Inspection/Quality Officer	Suggested (to verify that VT is not damaged)
d.	Testing of protection relays by secondary injection	Secondary injection bench (Omicron)	Electrical Engineer (Relay specialist) Inspection/Quality Officer	Mandatory
e.	Functional test of IEDs, and interlocks.	Secondary injection bench (Omicron)	Electrical Engineer (Relay specialist) Inspection/Quality Officer	Mandatory
f.	Insulating resistance measurement	Megger	Electrical Engineer Inspection/Quality Officer	Mandatory

5.4 TESTING EQUIPMENT

- Megger (e.g. : Chauvin Arnoux ca 6547)
- Tester / Multimeter
- Testing bench for primary injection (e.g. : Omicron CPC 100)
- Relay Testing System (through current / voltage secondary injection – (e.g. : Omicron CMC 353)
- Testing kit for air circuit breakers type Emax ABB (Ekip T&P)
- Torque Wrench (e.g. Dina Beta NM 20÷100)
- Hi-pot test bench (e.g. : Phenix 650-2P)

NOTES:
- it shall be advised in advance availability of the testing equipment at site or whether those are to be provided by the commissioning engineer himself;
- availability of calibration certificates of the above testing equipment, having valid date, must be ensured.

6 PRE-COMMISSIONING ACTIVITIES

Before to start Pre-Commissioning, please, read carefully the I.O.M. document (Installation, Operation and Maintenance manual).
Then proceed with the following checks and actions.

1. Switchboard's cubicles shall be in good and clean status. Make sure that switchboard is clean, free from dust, traces of humidity, installation material debris, cables pieces, tools, provisional connections, etc. , as well as any foreign object.

2. Visually check the interior and exterior of the switchboard for signs of evident damage or shocks. Protective shields, insulating sheaths, etc.. shall be correctly placed and in good order

3. Painting visual check

4. Make sure that the switchboard is correctly installed according to the General Arrangement Drawings and suitably fixed

5. Maintenance clearances shall be according to the General Arrangement Drawings

6. Make sure that any support or protection used to handle the equipment has been removed

7. Make sure that, after completion of the installation, the switchboard overall protection degree is as per General Arrangement Drawings

8. Visual inspection to check that bolted connections of the LV and earthing circuits (at busbars, CBs poles, etc.) are suitably tighten. No disalignment is expected at the marks provided over the bolt, during torque wrench tightening at the factory. In case found, to torque wrench again the connection (see par. 8.1)

9. Cable passages shall be free and unobstructed

10. Couple the auxiliary interpanel connections by the relevant plugs and socket (see schematic diagrams with control voltage distribution loop, panels interconn. wiring and communication network loop)

11. Cabling of control cables from the field in accordance with I/O list / schematics shall be completed

12. Check the incoming / outgoing power cables proper support

13. Make sure that terminals and all the connections have been properly tightened

14. Make sure that all the safety interlock keys (master and copies) have been provided and installed. Where manoeuvres not allowed (forced operations shall be avoided).

15. Remove each L.V. air circuit breaker and MCC drawer from its cubicle, by means of the provided lifting / transport trolley, for a visual check of the breaker status and cleaning; including poles of the fixed part and the terminals on the removable part.
    Make sure that the breaker and the MCC drawer is free from dust and traces of humidity and that there are no signs of evident damage.
    Check that LV withdrawable circuit brakers and MCC drawers can be racked-in and racked out properly

16. Make sure that all fuses are correctly installed
17. All necessary warning and caution signs (voltage level indication, warning for live parts, etc.) shall be installed according to the safety standards and procedures

The results of the a.m. activities shall be recorded on PRE-COMMISSIONING ACTIVITIES REPORT form (see par. 10).

7 COMMISIONIG ACTIVITIES

Carry out the following checks and actions.

1. To be verified that all LV withdrawable circuit breakers and MCC drawers are in open and racked-out position; with charged closing springs (where present).

   N.B.: it is recommended to manually rewind all the circuit breakers closing springs, before to supply the relevant spring motor chargers, with aux. supply voltage, in order to prevent concurrent start-up of many motor gears, which may result in excessive load for the supplying circuit.

   As an alternative, it can be taken care that supply to those motors is provided one by one; by separately closing the relevant MCB, provided within the LV compartment of each feeder unit.
2. Connect all external aux. supplies and check that are at correct voltage value and phase sequence.
3. Check thoroughly the Operating efficiency and the mechanical locks and key safety interlocks.
4. With CBs in test position, close and open the same by local command.
5. Make sure that the phase sequence is in accordance to the electrical diagrams and that all incoming breakers are connected with the same phase sequence.
6. Check monitoring loops (hardwired status / alarm signals / visual status indications).
7. Check protection relays loops, concerning IEDs' integrated logic functions.
8. Put in service (racked-in) position and repeat the test for opening / closing the same from local and remote commands, including control loops from / to the field (commands, status, alarm, etc.)
9. Check CBs tripping, locking-out and alarming functions.

The results of the a.m. activities shall be recorded on the COMMISSIONING ACTIVITIES REPORT form (see par. 10)

8 SAT TESTING PROCEDURE

8.1 MECHANICAL TESTS

1. Bus-bars tightening check

Torque wrench all the bolted joints of the shipping sections, which have been coupled at site, according to the values indicated here below.
After tightening, each bolt is to be marked by red paint to indicated its relative position against the fixed part (as done for the torque wrench tightening provided at the factory).

The table below shows the torque wrench settings to be used for bolted connections fixing the panels and the bus-bars, too.

Type of screw	Tightening torque (Nm)	Tolerance
M5	5	5%
M6	9	5%
M8	22	5%
M10	45	5%
M12	75	5%
M14	115	5%
M16	185	5%

The results of the a.m. activities shall be recorded on SAT REPORT FOR MECHANICAL TEST form (see par. 10)

8.2 PRIMARY INJECTION ON CURRENT AND VOLTAGE TRANSFORMER

1. Testing CTs ratio

Test the CT for correct ratio with direct current injection to CT primary circuit and reading the measured value from the instruments or protection relays LCD display, provided at the LV compartment front door.

2. Testing VTs ratio

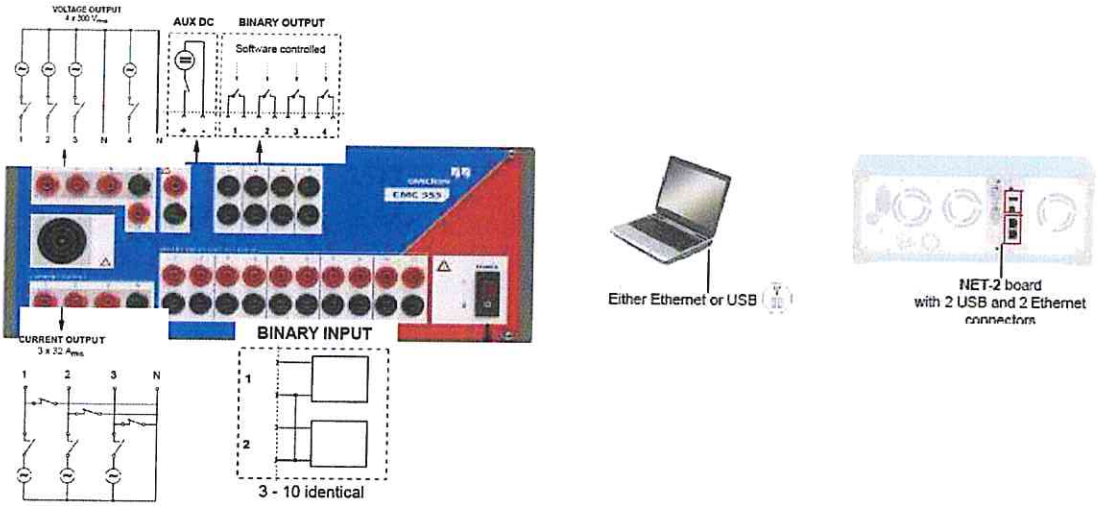
Test the VT for correct ratio with direct voltage injection to VT primary circuit (low voltage 400 V, for testing purpose) and reading the measured value from the instruments or protection relays LCD display, provided at the LV compartment front door.

The results of the a.m. activities shall be recorded on SAT REPORT FOR PRIMARY INJECTION TESTING ON CTs AND VTs form (see par. 10)

8.3 SECONDARY INJECTION TESTS ON PROTECTION RELAYS

Refer to the schematic diagrams, for connections and for checking logic functions.
Refer to the selectivity study for the protection relays' setting parameters.

Omicron secondary injection test kit – connection and interface



Example of testing instruments connection

1. Connection of the test set to the PC (USB Port) for data exchange: output of the data simulation, loading of the binary signal
2. Connection of the analogue outputs of the test set to the transformer inputs of the test object, to inject the simulated currents and voltages.
3. Connection of the binary outputs of the test set to the binary inputs of the test object, to send binary input signals to the test object.
4. Connection of the binary inputs of the test set to the binary outputs of the test object, to receive the binary output signals from the test object.

The recorded tripping values shall be in conformity with the Selectivity study

The results of the a.m. activities shall be recorded on SAT REPORT FOR PROTECTION FUNCTIONS CHECK form (see par. 10)

8.4 INSULATION RESISTANCE MEASUREMENT

The measurement of the insulation resistance is carried out to check that the installation and re-connection activities at site have been made correctly and that no damage occurred to the equipment, during shipment and installation.
All the VT's, surge arresters, insulation monitoring devices, etc. must be disconnected before the test.

1. Insulation resistance measurement of the main circuits

   It is to be carried out, applying at least 500V d.c. by means of Megger device. The measurement is to be carried out at each phase, while the other two are short-circuited and connected to ground.

   ACCEPTANCE CRITERIA: The test is considered successful if, for each tested circuit, the insulation resistance is above 1MΩ.

The values detected shall be recorded on SAT REPORT FOR INSULATION RESIST MEASUREMENT MAIN CIRCUITS form (see par. 10)

2. Insulation resistance measurement of the auxiliary circuits

   To carry out insulation resistance measurement on auxiliary circuits applying 500V d.c. by means of Megger device. The measurement is to be carried out at each pole, while the other one is connected to ground.

   ACCEPTANCE CRITERIA: The test is considered successful if, for each tested circuit, the insulation resistance is above 1MΩ.

The results of the a.m. dielectric tests shall be recorded on SAT REPORT FOR INSULATION RESIST MEASUREMENT ON AUX CIRCUITS form (see par. 10)

9 PRE-ENERGIZATION REQUIREMENTS

Before to proceed with energization of the LVSB, the following is to be verified.

- Make sure to pull off the short-circuit jumpers fitted on amperometric terminal boards, to avoid running the units with current transformer (-TA) short-circuited at secondary windings.
- Make sure to have re-closed the disconnecting terminals fitted on voltmetric terminal boards, to avoid running the units with voltage transformer (-TV) not connected at secondary windings.
- Make sure that all the miniature CBs for aux. and measuring circuits are closed.
- All system protections, controls, detectors, and monitoring devices shall be reset and ready for operation.
- All protections and control logics shall be reset and ready for operation.
- All recording equipment, where provided, shall be in operation.
- No alarm and/or trip signal shall be active.
- Voltage transformers shall be with fuses suitably placed.
- Circuit breakers shall be in service position (racked-in), open and available.
- Fuses shall be suitably placed.
- Mechanical and electrical interlocks are to be suitably in operation.
- All removable protections against direct contacts with accessible parts (panels, grids, plates, doors, etc.), shall be correctly placed and fixed.
- All the doors shall be closed and fixed panels are to be correctly positioned and bolted.

10 PRE-COMMISSIONING, COMMISSIONING AND SAT REPORT TEMPLATES

The following forms are intended for recording the results of Pre-Commissioning, Commissioning and SAT activities.

Forms provided by the customer may also be employed, on request.

- PRE-COMMISSIONING ACTIVITIES REPORT
- COMMISSIONING ACTIVITIES REPOR
- SAT REPORT FOR MECHANICAL TEST
- SAT REPORT FOR PRIMARY INJECTION TESTING ON CTs AND VT
- SAT REPORT FOR PROTECTION FUNCTIONS CHECK
- SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON MAIN CIRCUITS
- SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON AUX. CIRCUITs

IMESA ELECTRICAL ENGINEERING

PRE-COMMISSIONING ACTIVITIES REPORT

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**

Legend **OK -** N/A – not applicable × SEE NOTE

DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

NOTES:

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company: Name:	Company: Name:	Company: Name:	Company: Name:
Date:	Date:	Date:	Date:

IMESA ELECTRICAL ENGINEERING

COMMISSIONING ACTIVITIES REPORT

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**

Legend **OK -** **N/A** – not applicable **×** SEE NOTE

DESCRIPTION	1	2	3	4	5	6	7	8	9								

NOTES:

N/A

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company: Name:	Company: Name:	Company: Name:	Company: Name:
Date:	Date:	Date:	Date:

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR MECHANICAL TESTS

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**

Legend **OK** - **N/A** – not applicable × SEE NOTE

DESCRIPTION	1																	

NOTES:

TEST PERFORMER	**WITNESS**	**QUALITY OFFICER**	
EXECUTED	**ACCEPTED / VERIFIED**	**ACCEPTED / VERIFIED**	
Sign:	**Sign:**	**Sign:**	**Sign:**
Company: **Name:**	**Company:** **Name:**	**Company:** **Name:**	**Company:** **Name:**
Date:	**Date:**	**Date:**	**Date:**

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR PRIMARY INJECTION TESTING ON CTs AND VTs

SWBD: SG-200N1

CUSTOMER: ROSETTI M.	**PROJECT DESCRIPTION:** CROSSWIND 1723A90	
SITE: PIOMBONI - MARINA DI RAVENNA	**AREA:** CANTIERE	
SWITCHBOARD: SG-200N1		
DATE: 21/7/24	**DOC. N**	**REV:**

Legend OK - N/A – not applicable × SEE NOTE

DESCRIPTION	1	2
L1	OK	X
L2	OK	X
L3	OK	X

NOTES:

X L1 → PRIMARY CURRENT = 250A
READING AT PROTECTION RELAY : 251 A

X L2 → PRIMARY CURRENT: 250A
READING AT PROTECTION RELAY: 249A

X L3 → PRIMARY CURRENT: 250 A
READING AT PROTECTION RELAY: 251 A

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company:	Company: ROSETTI	Company:	Company:
Name:	Name: KRISTIAN CASADEI	Name:	Name:
Date:	Date: 24/02/2025	Date:	Date:

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR PROTECTION FUNCTIONS CHECK

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**
PROT. RELAYS' COORD. STUDY DOC. :	**PANEL UNIT:**	**RELAY SERIAL NO. :**

protection unit setting test values					*protection unit operation check values*			
Protection Function	*ANSI Code*	*Setting*			*Phase*	*Test Value*	*Operating Time*	*Result*
		Value	Time [s] or K	*CT/VT Ratio*				

Notes:

TEST PERFORMER	**WITNESS**	**QUALITY OFFICER**	
EXECUTED	**ACCEPTED / VERIFIED**	**ACCEPTED / VERIFIED**	
Sign:	**Sign:**	**Sign:**	**Sign:**
Company: **Name:**	**Company:** **Name:**	**Company:** **Name:**	**Company:** **Name:**
Date:	**Date:**	**Date:**	**Date:**

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON MAIN CIRCUIT

SWBD: SG-200N1

CUSTOMER: Rosetti	**PROJECT DESCRIPTION:** Crosswind 23128/SD		
SITE:	**AREA:**		
SWITCHBOARD: SG-200N1			
DATE: 12/9/24	**DOC. N**	**REV:**	

Legend **OK** - **N/A** – not applicable × SEE NOTE

DESCRIPTION	1												
MAIN CIRCUITS	OK												

MEASURED INSULATION RESISTANCE	
L1=	> 500 MΩ
L2=	> 500 MΩ
L3=	> 500 MΩ

NOTES:

N→S > 500 MΩ

Equipment disconnected during Hi-Pot test:

TEST PERFORMER	**WITNESS**	**QUALITY OFFICER**	
EXECUTED	**ACCEPTED / VERIFIED**	**ACCEPTED / VERIFIED**	
Sign:	**Sign:**	**Sign:**	**Sign:**
Company:	**Company:** ROSETTI M.	**Company:**	**Company:**
Name:	**Name:** [illegible]	**Name:**	**Name:**
Date:	**Date:** 29/07/2025	**Date:**	**Date:**

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON AUX. CIRCUITS

SWBD: SG-200N1

CUSTOMER: ROSETTI M.		**PROJECT DESCRIPTION:** 23/298/SD	
SITE:		**AREA:**	
SWITCHBOARD: SG-200N1			
DATE: 12/9/24		**DOC. N**	**REV:**

Legend **OK** - **N/A** – not applicable × SEE NOTE

DESCRIPTION	2												
DIELECTRIC TEST ON AUX. CIRCUITS	OK												

MEASURED INSULATION RESISTANCE	
110 V d.c. =	—
230 V a.c. =	> 500 MΩ
24 V d.c. =	—

NOTES:

Equipment disconnected during dielectric test:

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company: Name:	Company: ROSETTI M. Name: KRISTIAN CASTELLANI	Company: Name:	Company: Name:
Date:	Date: 24/07/2025	Date:	Date:

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

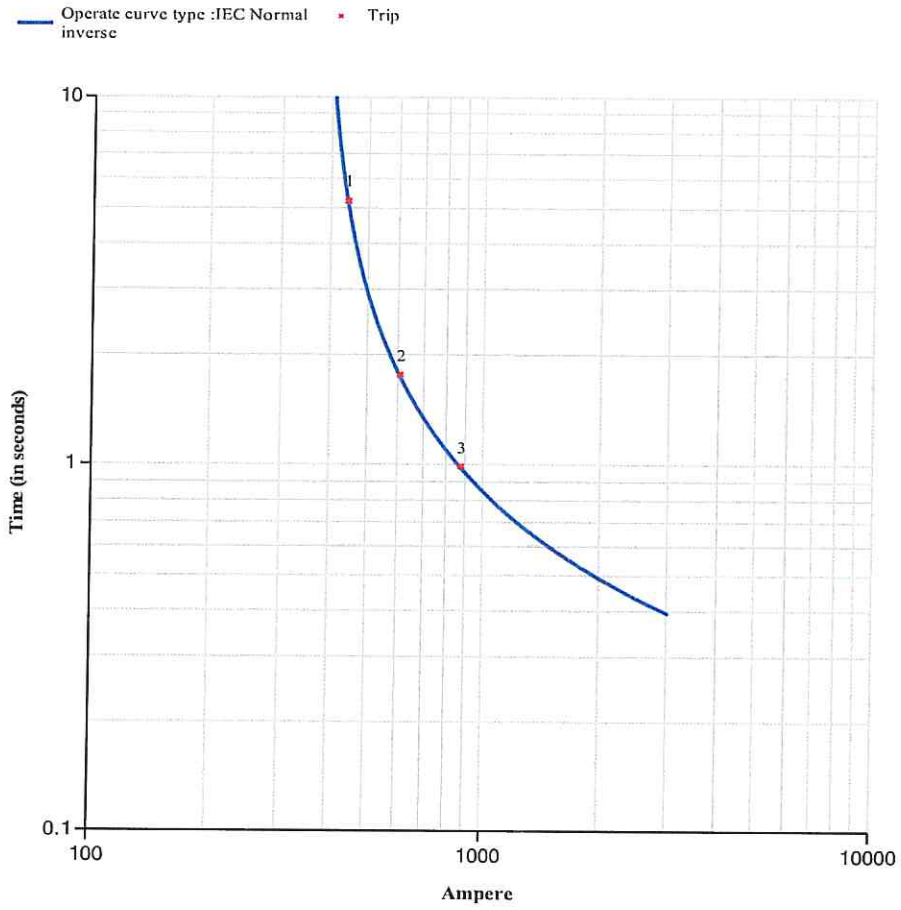
SYSTEM : SG-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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



RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : DEFLPDEF1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 100 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Pol reversal : False
Io signal Sel : Calculate Io
Uo signal Sel : Calculate Uo
Pol quantity : Zero seq. volt.
Start value : 0.150 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Time multiplier : 0.12
Operate curve type : IEC Normal inverse
Operate delay time : 100 msec
Operation mode : Phase angle
Characteristic angle : -90 deg
Max forward angle : 30 deg
Max reverse angle : 30 deg
Min forward angle : 30 deg
Min reverse angle : 30 deg
Voltage start value : 0.02 xUn
Enable voltage limit : True

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	I0	I0"(A)	I0(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	582	0.233	327.01	531	0.212	247.89	662	0.265	79.23	441.473	0.177	338.89	5138	5233	1.85
2	785	0.314	355.29	901	0.36	270.39	813	0.325	153.58	606.669	0.243	275.68	1738	1762	1.38
3	1186	0.474	357.86	1129	0.452	279.54	1046	0.418	158.82	874.623	0.35	296.97	983	994	1.12

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

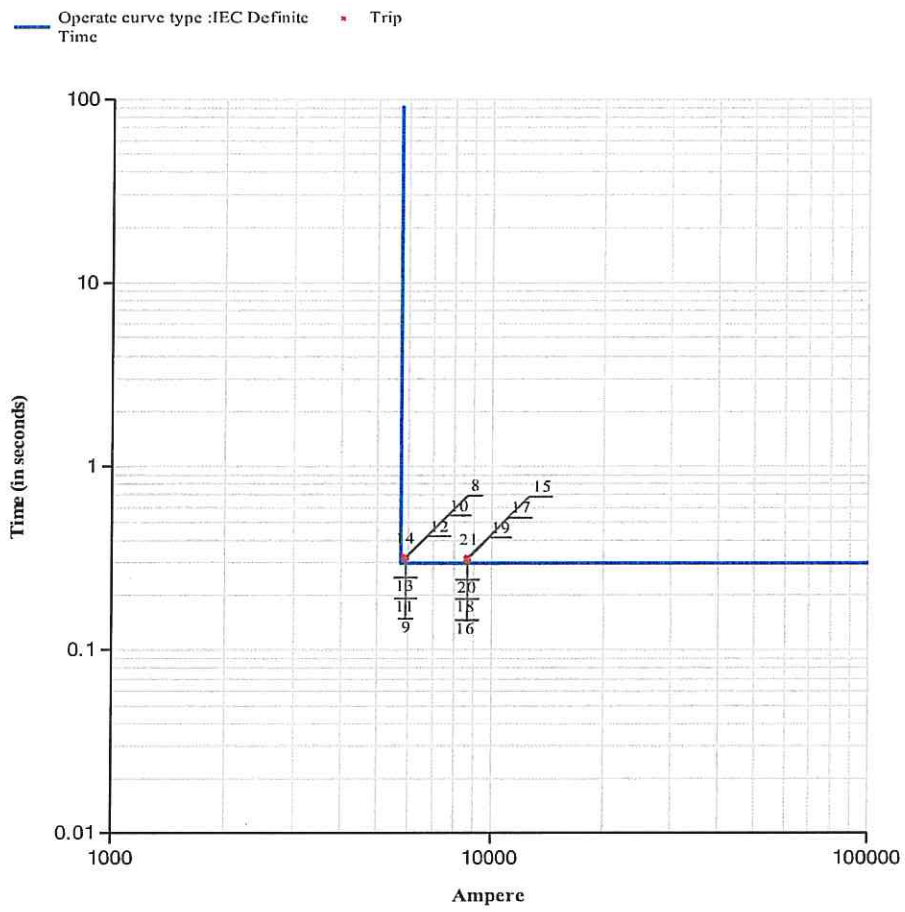
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHHPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 2.30 xIn
Start value mult. : 1.0
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	2.231	0	2.231	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
2	2.231	0	2.231	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	2.231	240	2.231	60	63.509	0	63.509	240	63.509	120	0	0	0
4	2.231	-60	0	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
5	2.231	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	2.231	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
8	2.369	0	2.369	240	2.369	120	63.509	0	63.509	240	63.509	120	300	321	7
9	2.369	0	2.369	180	0	120	63.509	0	63.509	240	63.509	120	300	323	7.67

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-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHHPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	2.369	240	2.369	60	63.509	0	63.509	240	63.509	120	300	323	7.67
11	2.369	-60	0	240	2.369	120	63.509	0	63.509	240	63.509	120	300	323	7.67
12	2.369	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	2.369	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	2.369	120	63.509	0	63.509	240	63.509	120	300	324	8
15	3.45	0	3.45	240	3.45	120	63.509	0	63.509	240	63.509	120	300	317	5.67
16	3.45	0	3.45	180	0	120	63.509	0	63.509	240	63.509	120	300	316	5.33
17	0	0	3.45	240	3.45	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	3.45	-60	0	240	3.45	120	63.509	0	63.509	240	63.509	120	300	320	6.67
19	3.45	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
20	0	0	3.45	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	3.45	120	63.509	0	63.509	240	63.509	120	300	318	6

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

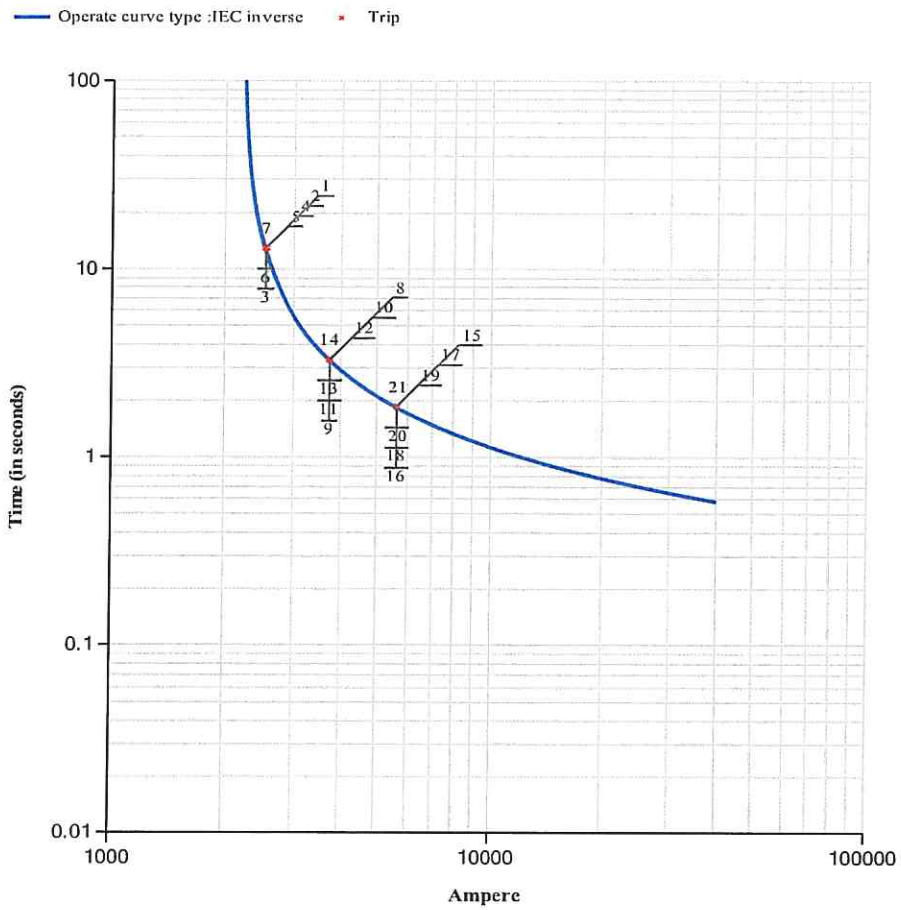
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.88 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC inverse
Time multiplier : 0.25
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	1.012	0	1.012	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
2	1.012	0	1.012	180	0	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
3	0	0	1.012	240	1.012	60	63.509	0	63.509	240	63.509	120	12504	13055	4.41
4	1.012	-60	0	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
5	1.012	0	0	0	0	0	63.509	0	63.509	240	63.509	120	12504	13054	4.4
6	0	0	1.012	240	0	0	63.509	0	63.509	240	63.509	120	12504	13056	4.41
7	0	0	0	0	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
8	1.496	0	1.496	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3329	1.46
9	1.496	0	1.496	180	0	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	1.496	240	1.496	60	63.509	0	63.509	240	63.509	120	3281	3327	1.4
11	1.496	-60	0	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49
12	1.496	0	0	0	0	0	63.509	0	63.509	240	63.509	120	3281	3334	1.62
13	0	0	1.496	240	0	0	63.509	0	63.509	240	63.509	120	3281	3330	1.49
14	0	0	0	0	1.496	120	63.509	0	63.509	240	63.509	120	3281	3332	1.55
15	2.253	0	2.253	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1868	1.3
16	2.253	0	2.253	180	0	120	63.509	0	63.509	240	63.509	120	1844	1873	1.57
17	0	0	2.253	240	2.253	60	63.509	0	63.509	240	63.509	120	1844	1870	1.41
18	2.253	-60	0	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1875	1.68
19	2.253	0	0	0	0	0	63.509	0	63.509	240	63.509	120	1844	1868	1.3
20	0	0	2.253	240	0	0	63.509	0	63.509	240	63.509	120	1844	1870	1.41
21	0	0	0	0	2.253	120	63.509	0	63.509	240	63.509	120	1844	1871	1.46

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

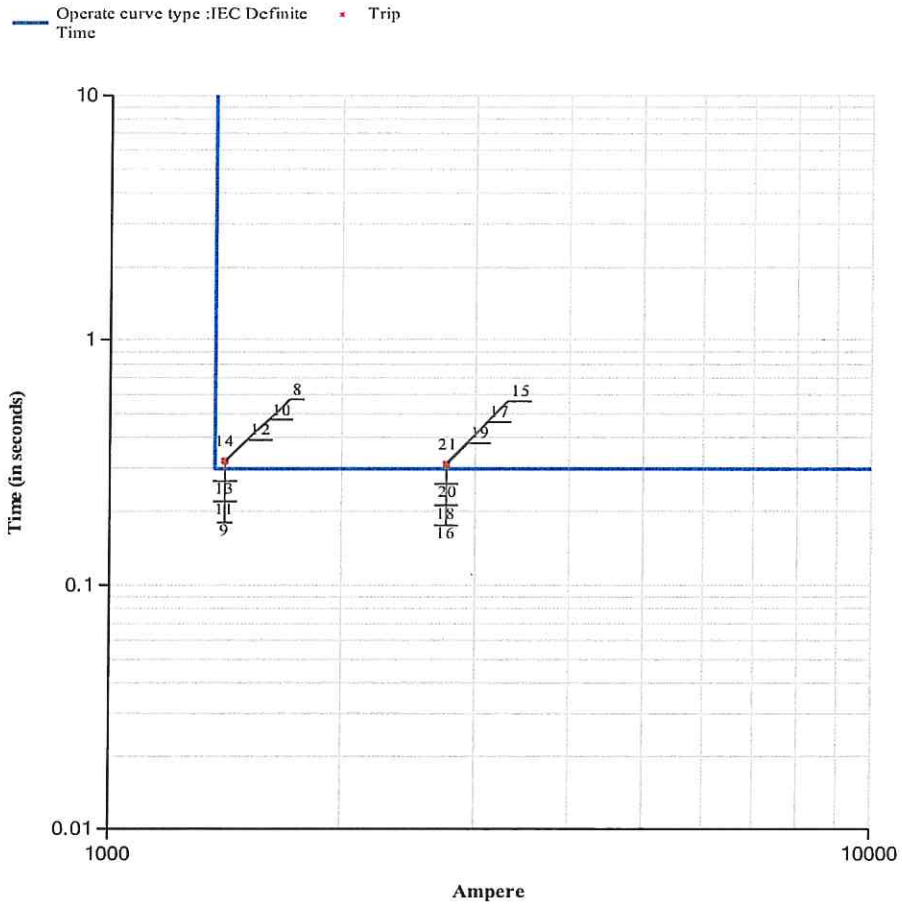
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC2
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.55 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	0.534	0	0.534	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
2	0.534	0	0.534	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	0.534	240	0.534	60	63.509	0	63.509	240	63.509	120	0	0	0
4	0.534	-60	0	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
5	0.534	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	0.534	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
8	0.567	0	0.567	240	0.567	120	63.509	0	63.509	240	63.509	120	300	322	7.33
9	0.567	0	0.567	180	0	120	63.509	0	63.509	240	63.509	120	300	322	7.33

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-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC2

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0.567	240	0.567	60	63.509	0	63.509	240	63.509	120	300	322	7.33
11	0.567	-60	0	240	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
12	0.567	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	0.567	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
15	1.1	0	1.1	240	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33
16	1.1	0	1.1	180	0	120	63.509	0	63.509	240	63.509	120	300	314	4.67
17	0	0	1.1	240	1.1	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	1.1	-60	0	240	1.1	120	63.509	0	63.509	240	63.509	120	300	313	4.33
19	1.1	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	312	4
20	0	0	1.1	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

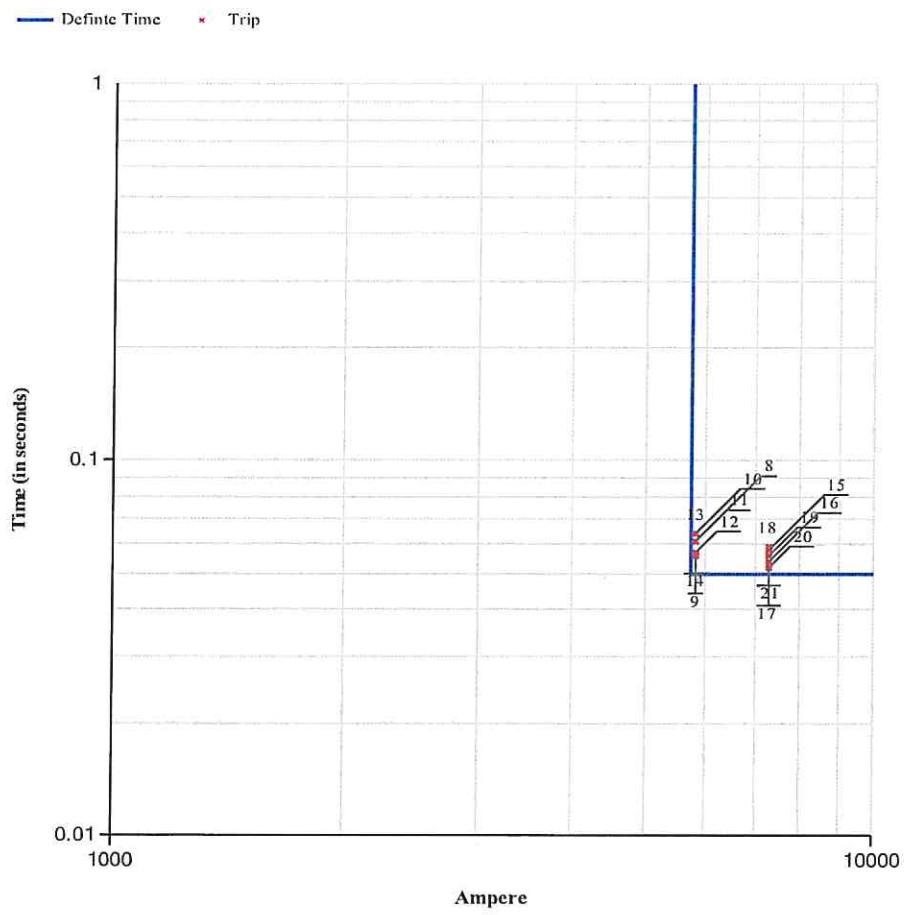
ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : PHIPTOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Num of start phases : 1 Out of 3
Reset delay time : 20 ms
Start value : 2.30 xIn
Start valure Mult : 1.0
Operate delay time : 50 ms



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	5663	2.265	0	0	0	0	0	0	0	0	0	0
2	0	0	0	5663	2.265	240	0	0	0	0	0	0
3	0	0	0	0	0	0	5663	2.265	120	0	0	0
4	5663	2.265	0	5663	2.265	180	0	0	0	0	0	0
5	0	0	0	5663	2.265	240	5663	2.265	60	0	0	0
6	5663	2.265	300	0	0	0	5663	2.265	120	0	0	0
7	5663	2.265	0	5663	2.265	240	5663	2.265	120	0	0	0
8	5833	2.333	0	0	0	0	0	0	0	50	61	22
9	0	0	0	5833	2.333	240	0	0	0	50	56	12

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-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

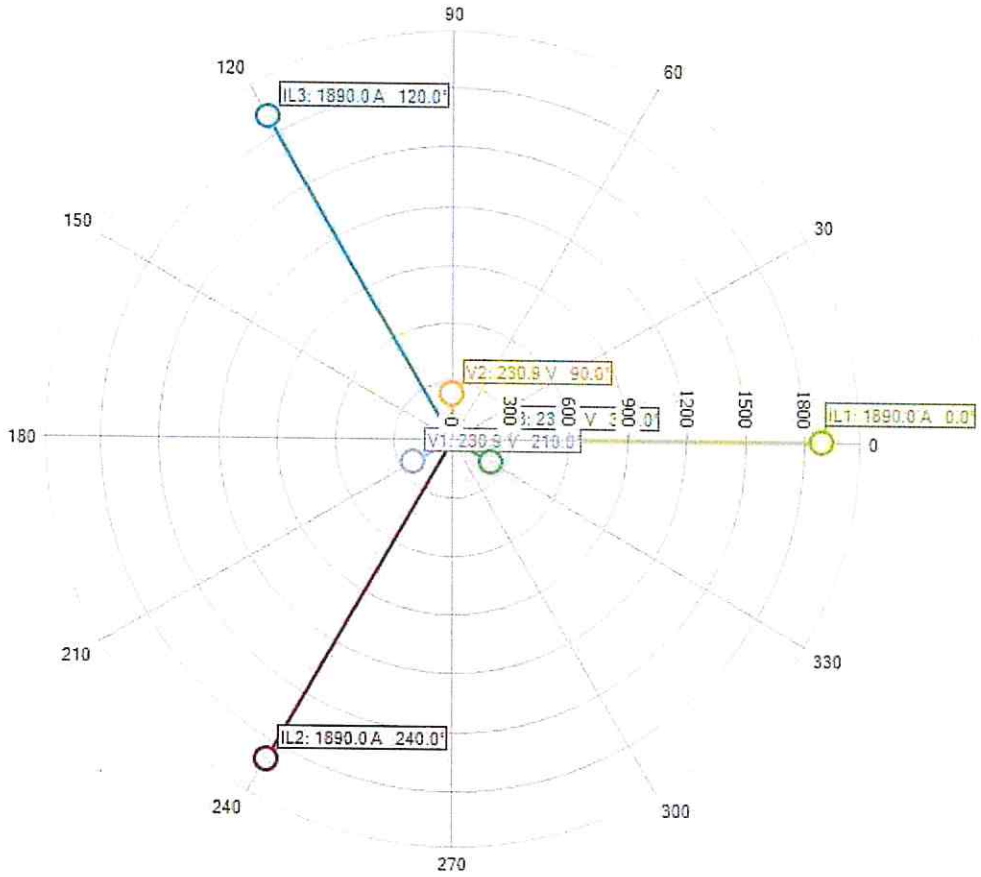
Sn. : 1VHR91822644

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

IEC61850 : PHIPTOC1

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0	0	0	0	5833	2.333	120	50	64	28
11	5833	2.333	0	5833	2.333	180	0	0	0	50	61	22
12	0	0	0	5833	2.333	240	5833	2.333	60	50	57	14
13	5833	2.333	300	0	0	0	5833	2.333	120	50	64	28
14	5833	2.333	0	5833	2.333	240	5833	2.333	120	50	57	14
15	7287	2.915	0	0	0	0	0	0	0	50	58	16
16	0	0	0	7287	2.915	240	0	0	0	50	54	8
17	0	0	0	0	0	0	7287	2.915	120	50	53	6
18	7287	2.915	0	7287	2.915	180	0	0	0	50	59	18
19	0	0	0	7287	2.915	240	7287	2.915	60	50	56	12
20	7287	2.915	300	0	0	0	7287	2.915	120	50	52	4
21	7287	2.915	0	7287	2.915	240	7287	2.915	120	50	53	6

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



Test

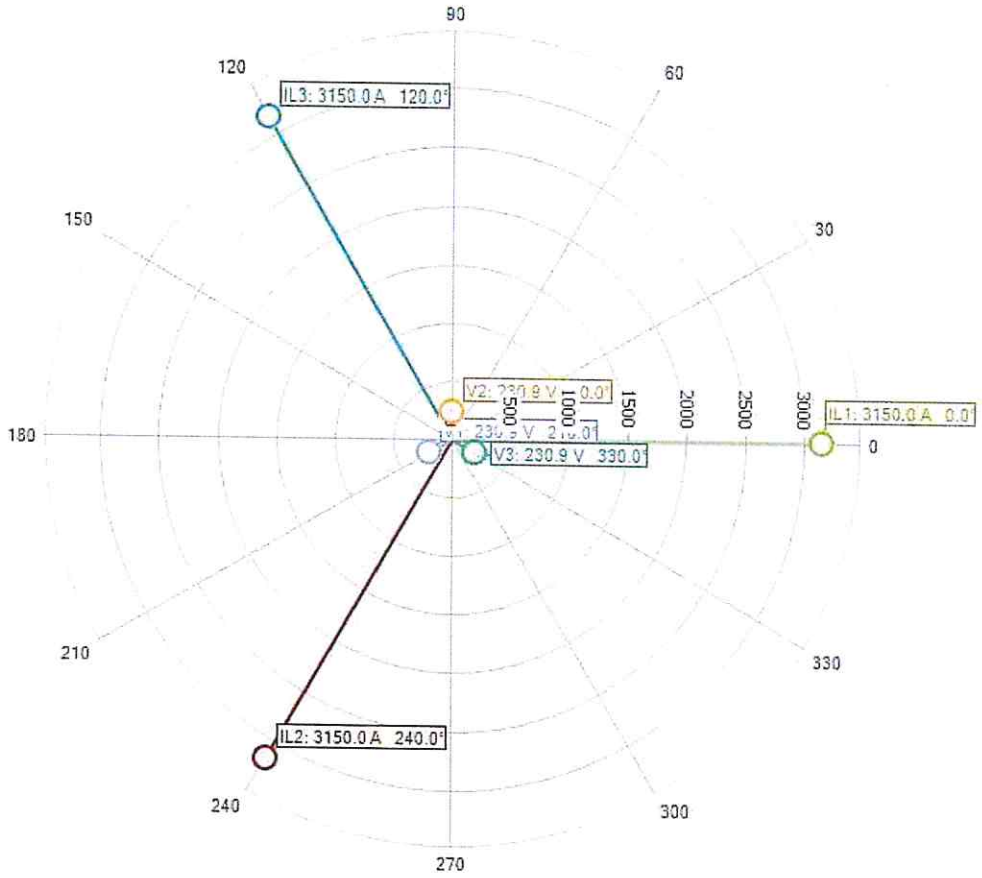
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A1/+08
Relay Serial Number	ECNA91573390X000
Circuit Breaker Serial Number	CE61019335
	Ekip Touch Black
Device settings	In = 630 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.670 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1383 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

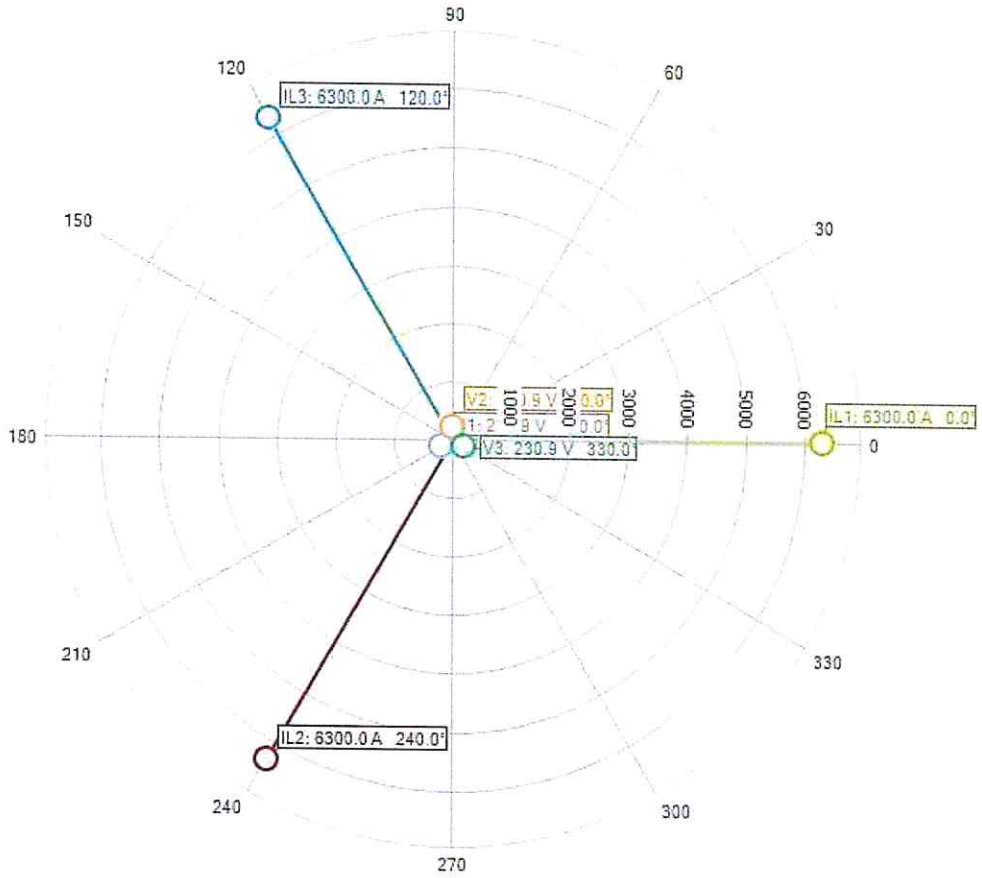
Device

Tag name	A1/+08
Relay Serial Number	ECNA91573390X000
Circuit Breaker Serial Number	CE61019335
	Ekip Touch Black
Device settings	In = 630 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.670 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s

Preconditions

Test result

Test completed with trip. Protection S tripped in 100 ms.
Trip time must be between 0 ms and 1000 ms



Test

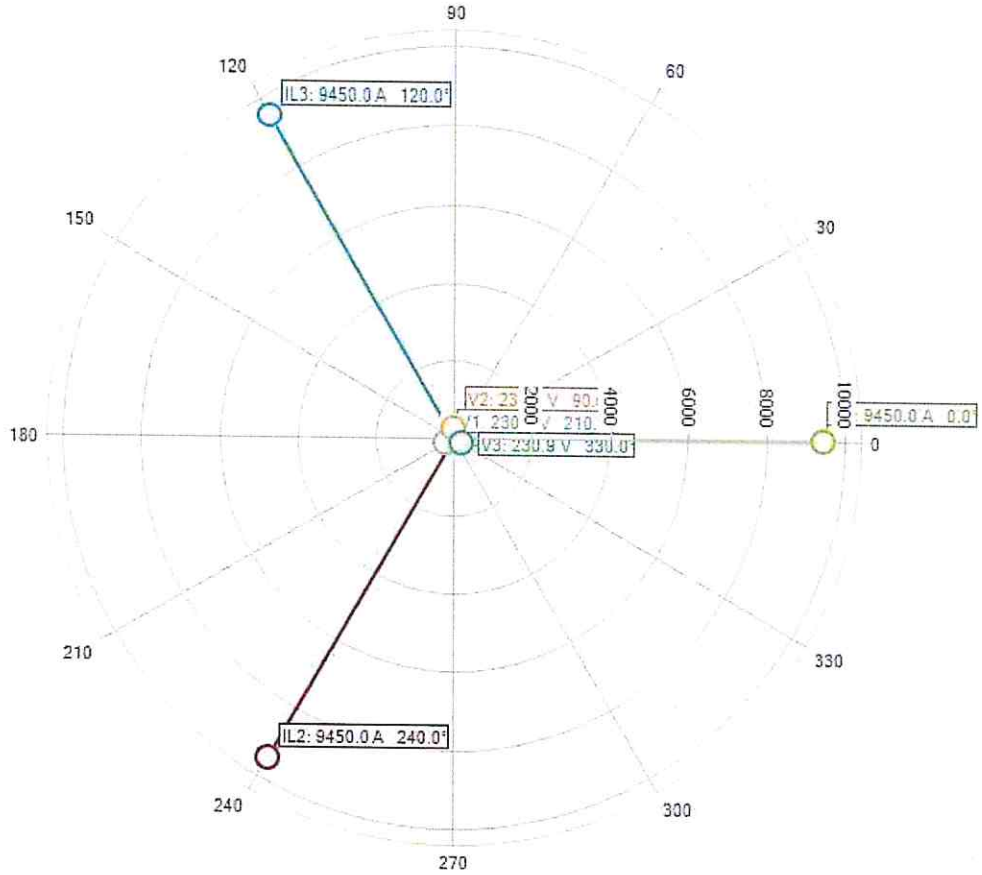
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A1/+08
Relay Serial Number	ECNA91573390X000
Circuit Breaker Serial Number	CE61019335
	Ekip Touch Black
Device settings	In = 630 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.670 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 20 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

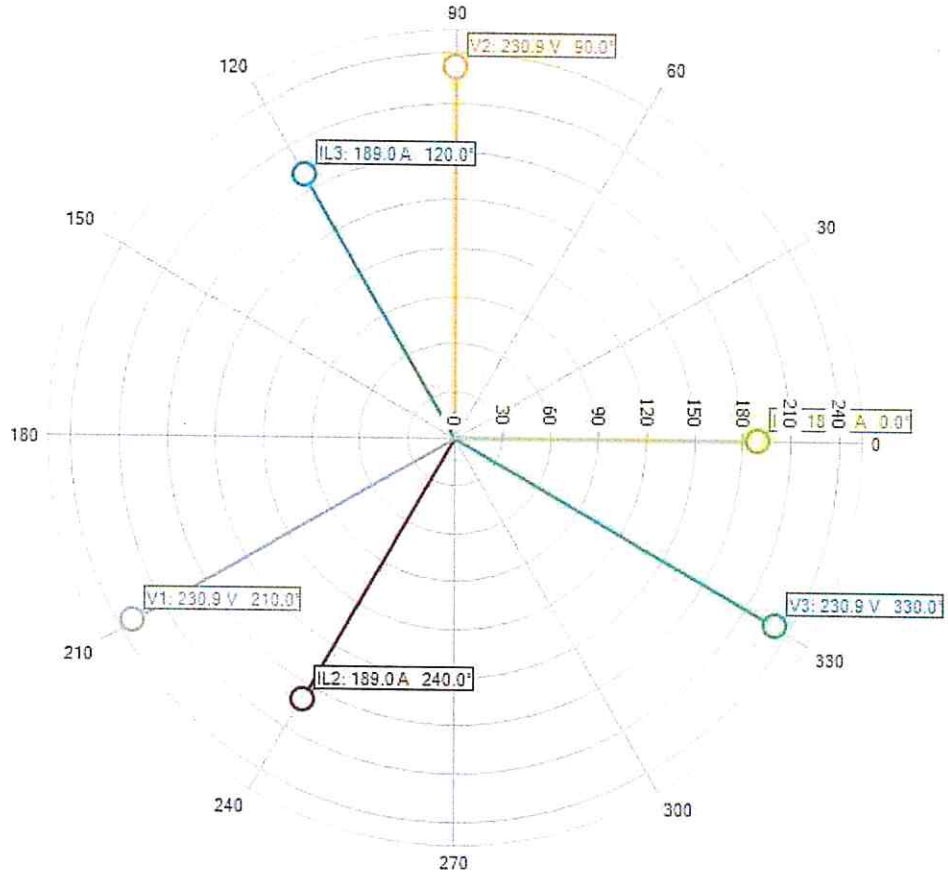
Device

Tag name	A1/+08
Relay Serial Number	ECNA91573390X000
Circuit Breaker Serial Number	CE61019335
	Ekip Touch Black
Device settings	In = 630 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.670 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s

Preconditions

Test result

Test completed with trip. Protection I tripped in 27 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

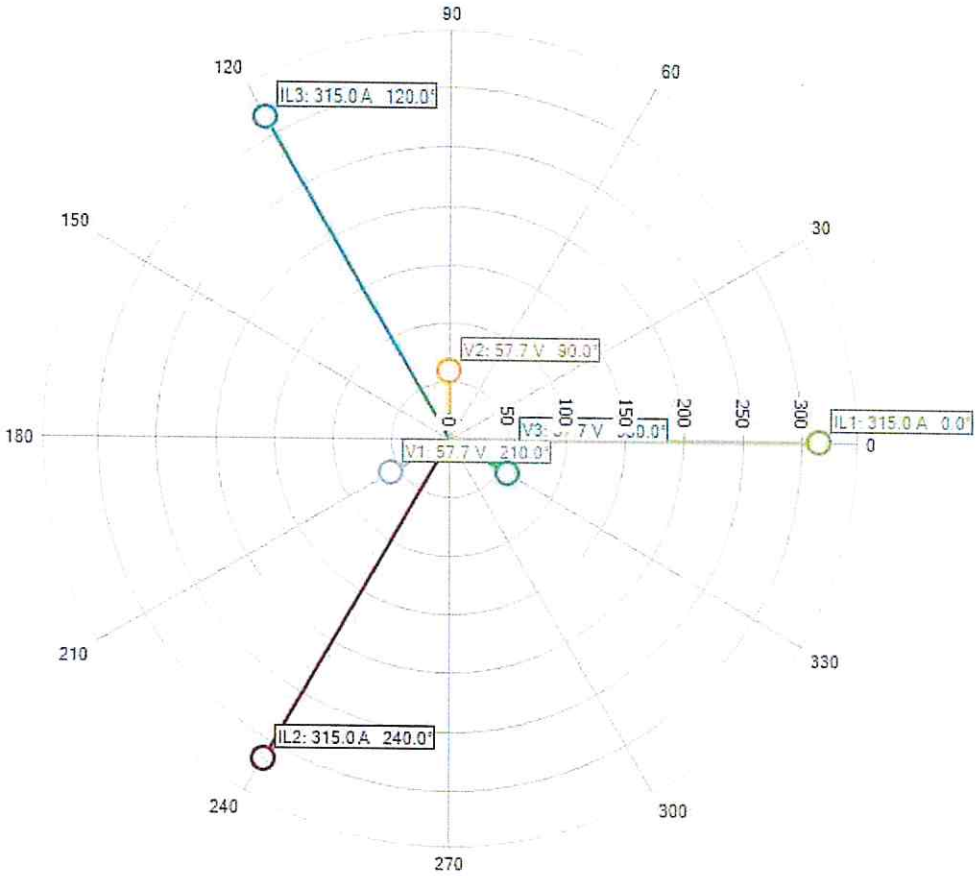
Tag name	A1/+08
Relay Serial Number	ECNA91573390X000
Circuit Breaker Serial Number	CE61019335
	Ekip Touch Black
Device settings	In = 630 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.670 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	630	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.870	In
		Time t1 std	9.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	6.00	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	1.20	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	8.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	

		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	-------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	-------	
		tripOnlyBackward	-------	
		BlockOnStartUp	-------	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	-------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

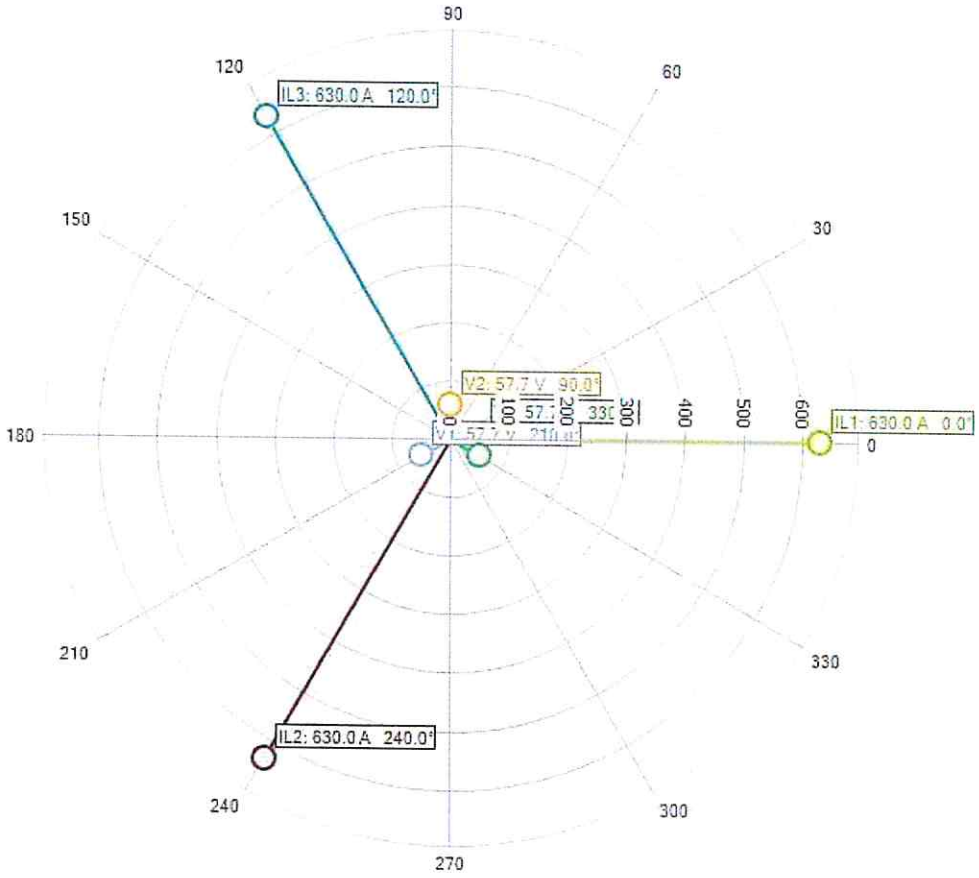
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+08
Relay Serial Number	EGA000254350N000
Circuit Breaker Serial Number	CE61036997number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms



Test

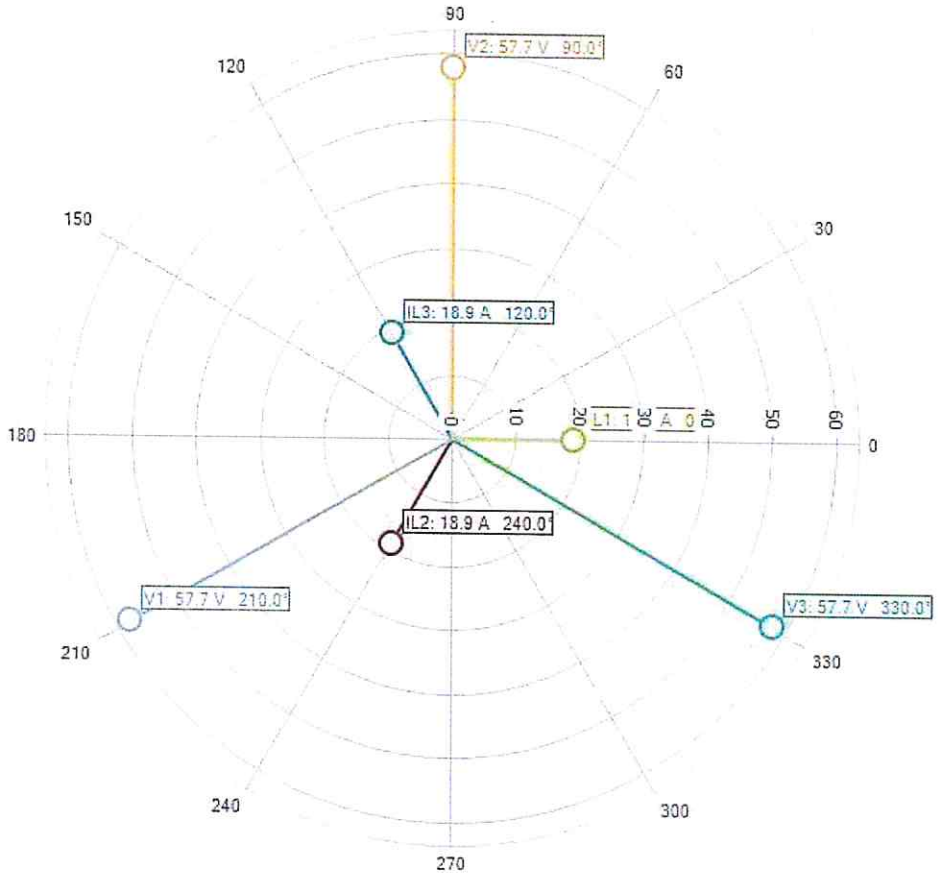
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+08
Relay Serial Number	EGA000254350N000
Circuit Breaker Serial Number	CE61036997number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

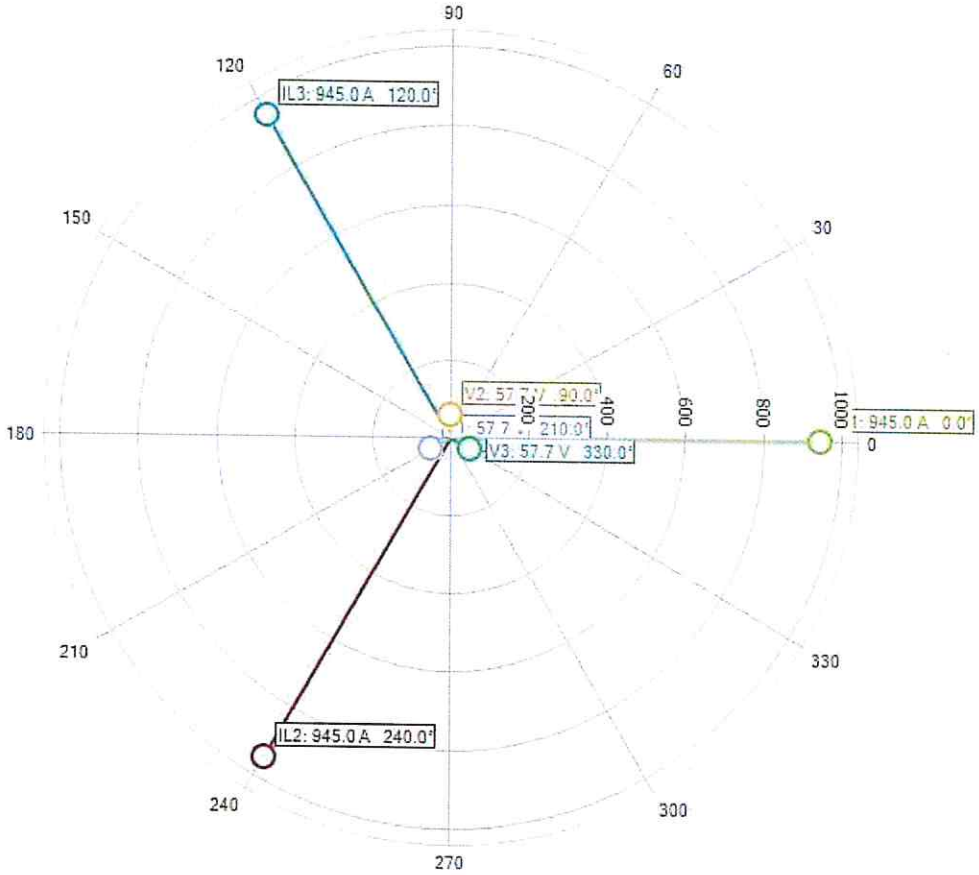
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+08
Relay Serial Number	EGA000254350N000
Circuit Breaker Serial Number	CE61036997number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

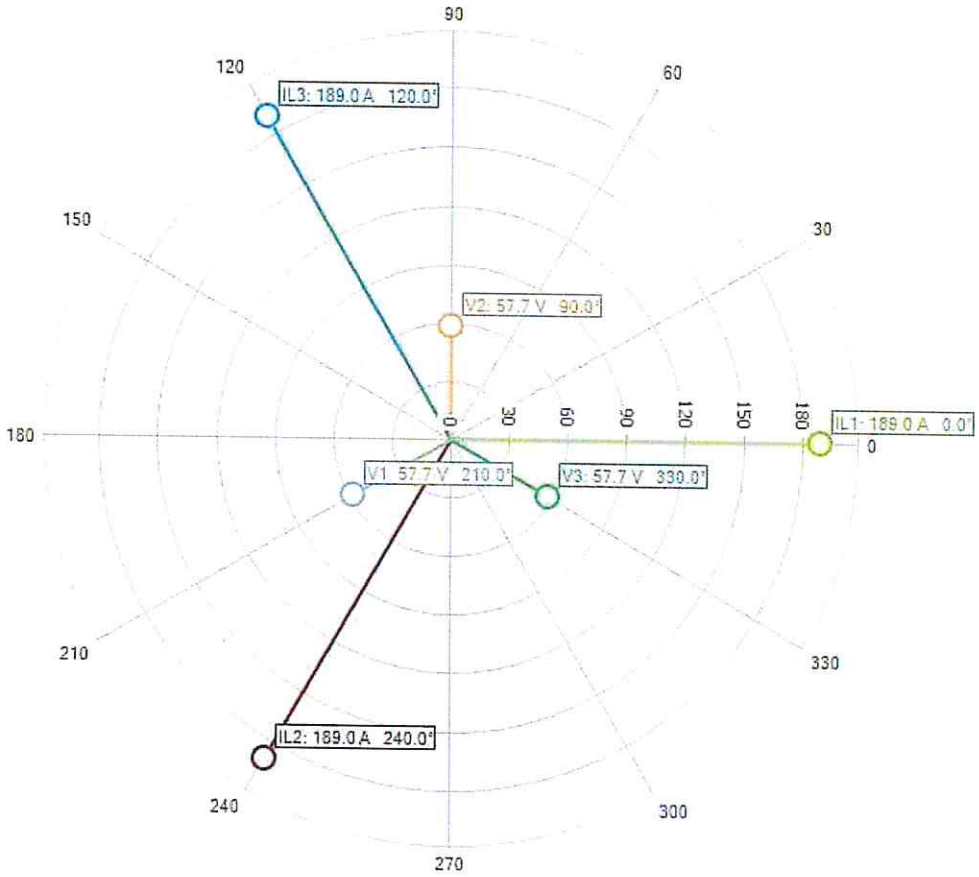
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+08
Relay Serial Number	EGA000254350N000
Circuit Breaker Serial Number	CE61036997number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 27 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

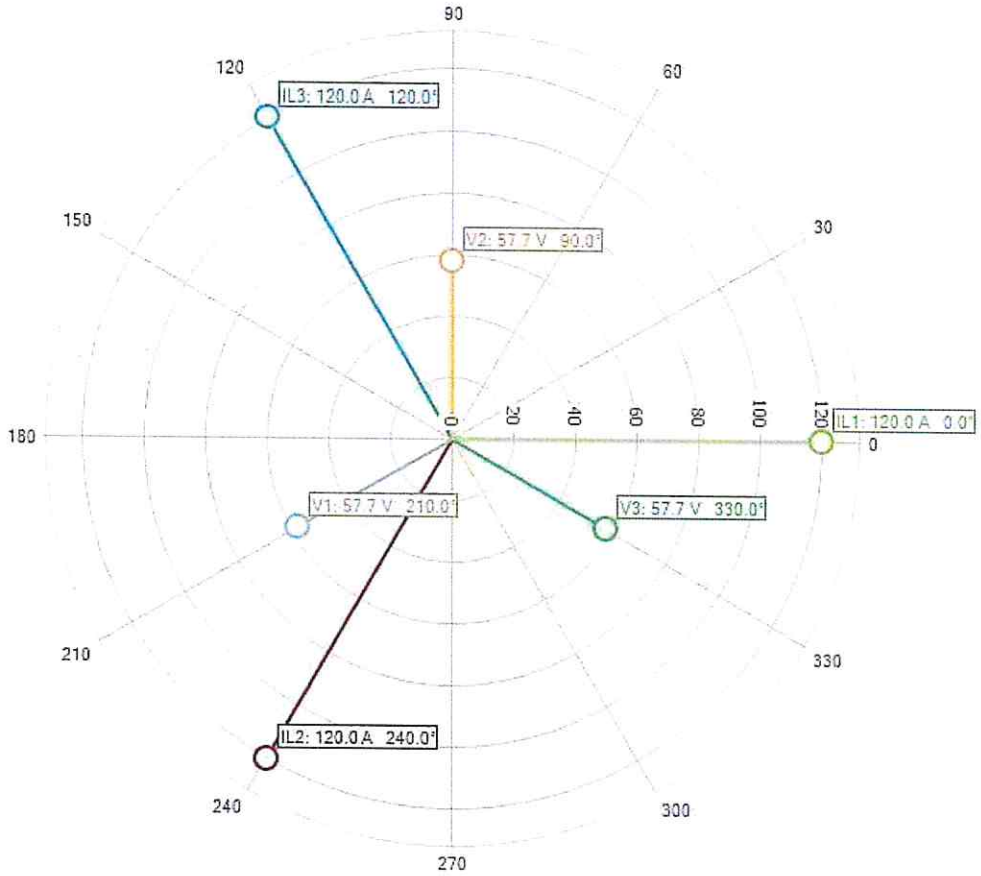
Tag name	A4/+08
Relay Serial Number	EGA000254350N000
Circuit Breaker Serial Number	CE61036997number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1586 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	160	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.720	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	7.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

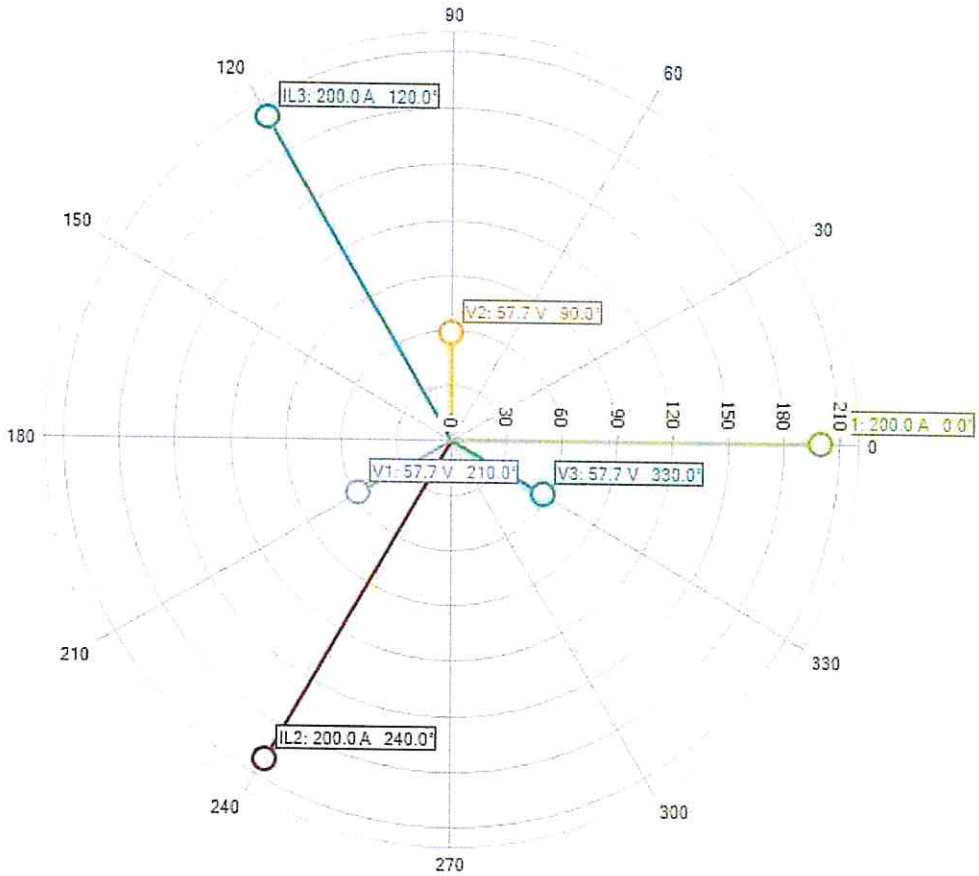
Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

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Test

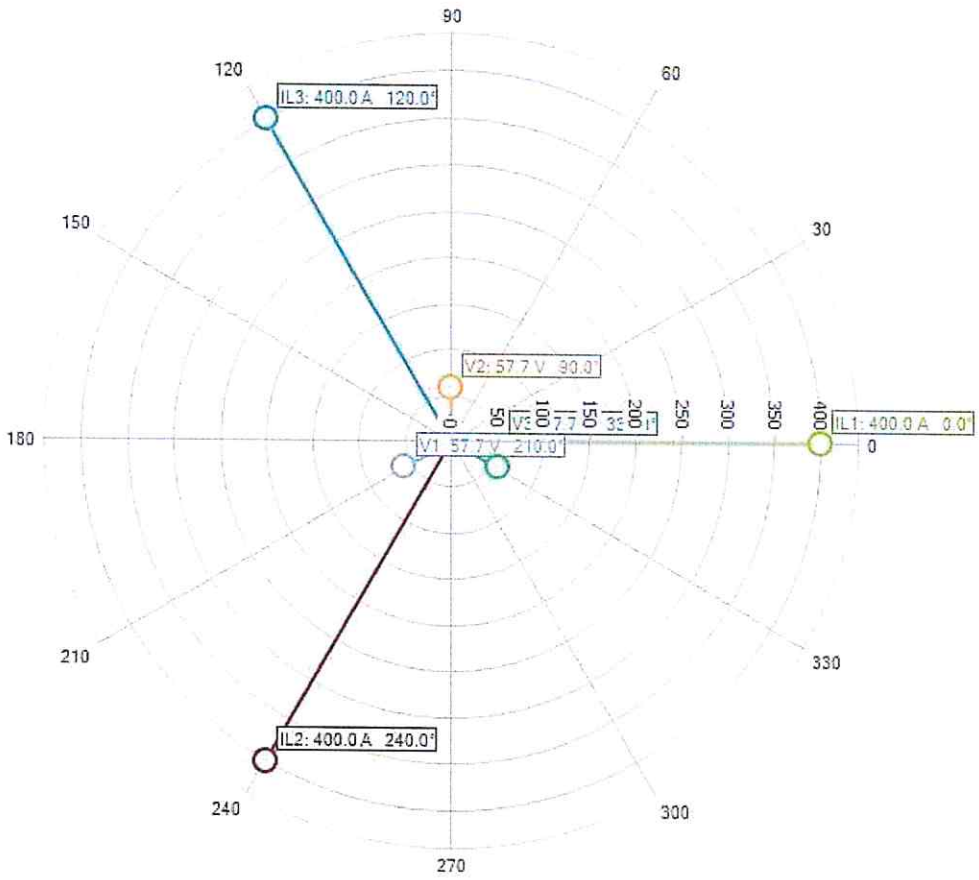
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 100 ms.
Trip time must be between 0 ms and 1000 ms



Test

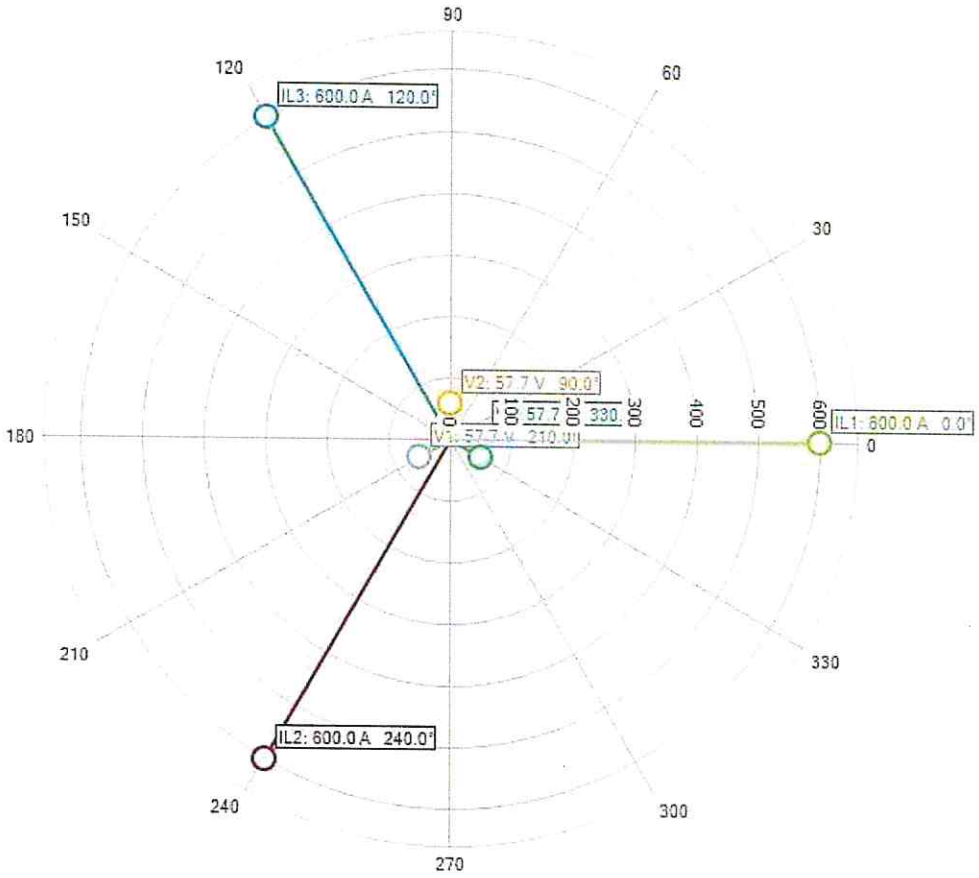
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms



Test

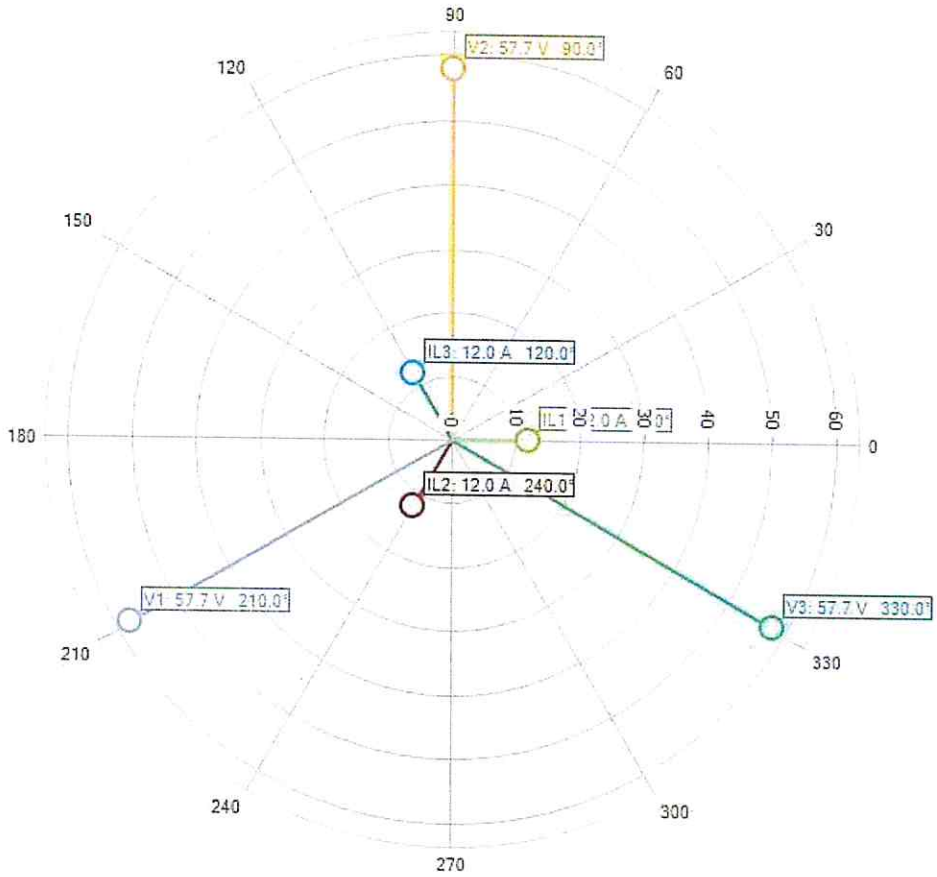
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

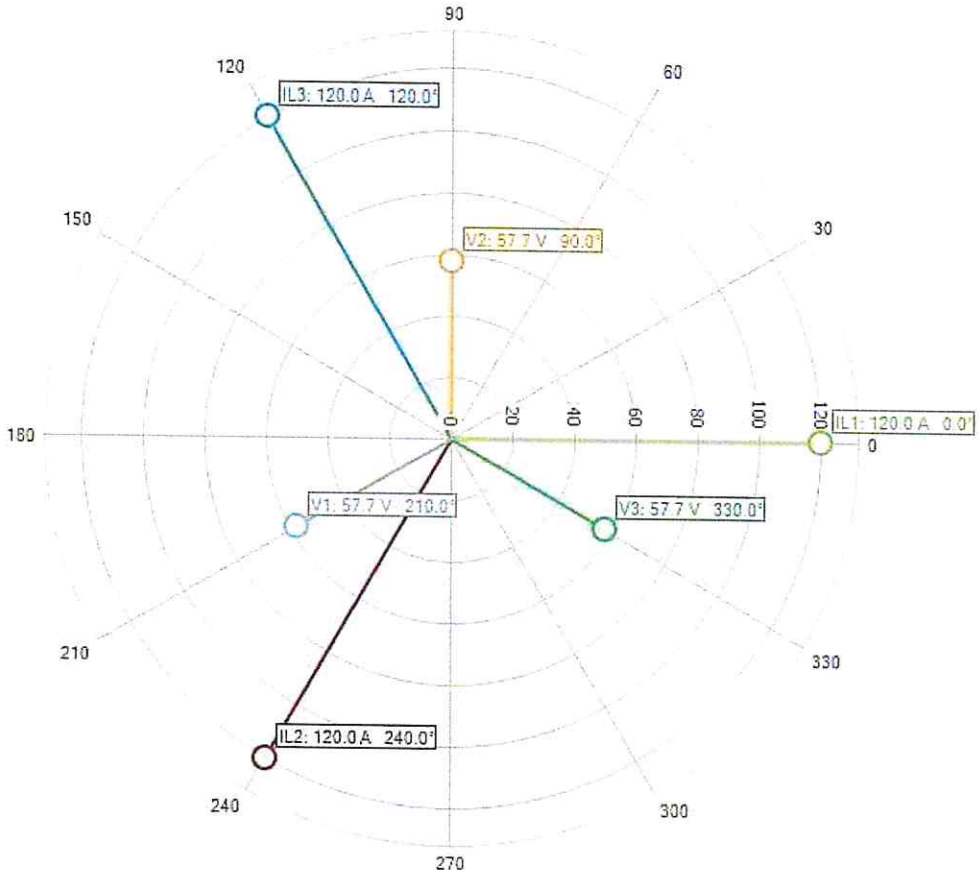
Tag name	A5/+01
Relay Serial Number	EF5000253690N000
Circuit Breaker Serial Number	CE61041913number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/I^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Disabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	-------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

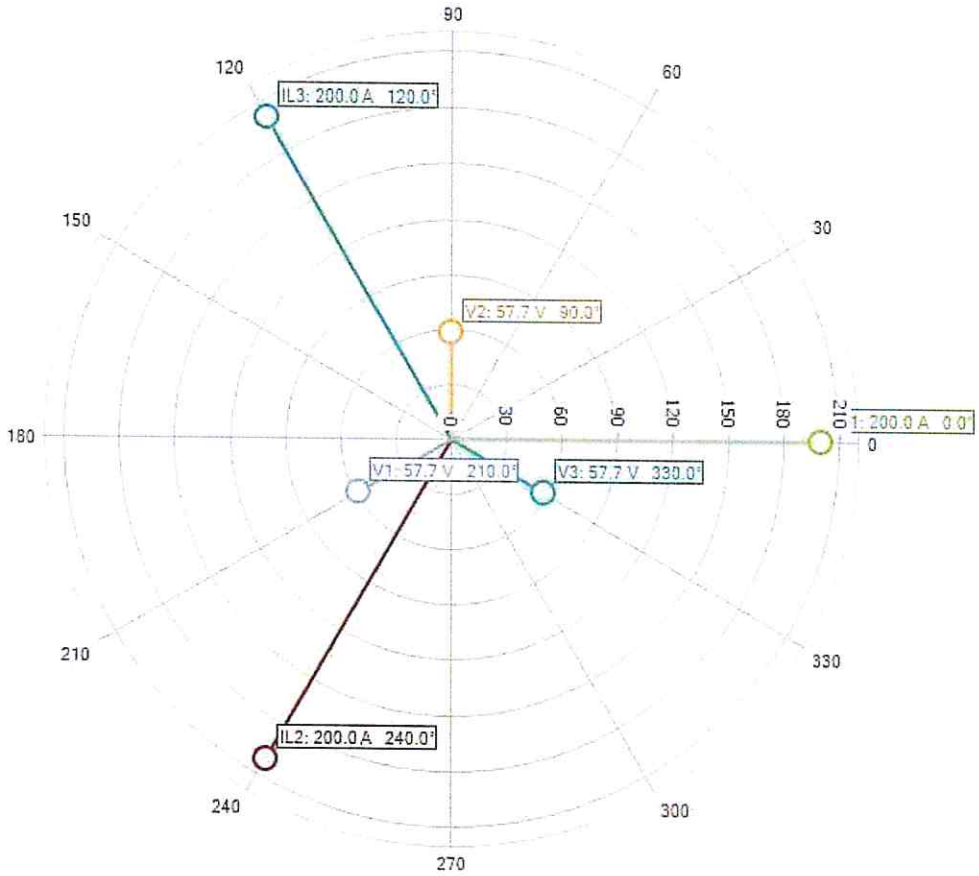
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+02
Relay Serial Number	EF5001053690N000
Circuit Breaker Serial Number	CE61041916number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1507 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

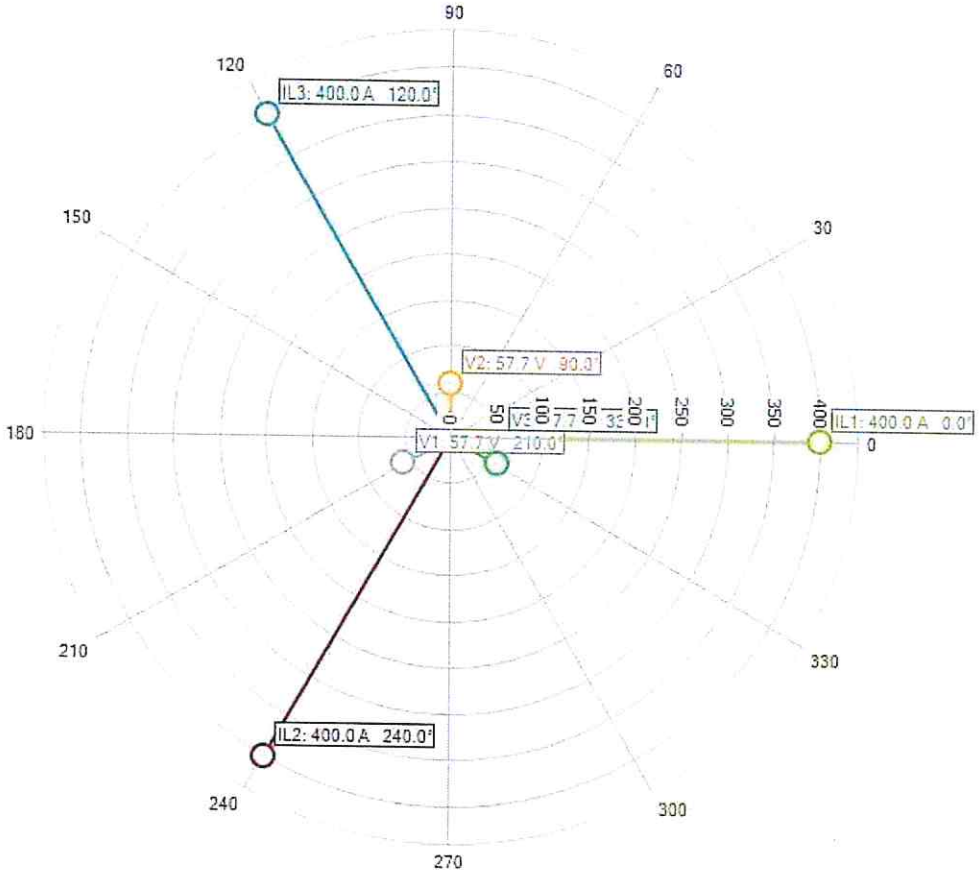
Device

Tag name	A5/+02
Relay Serial Number	EF5001053690N000
Circuit Breaker Serial Number	CE61041916number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms

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Test

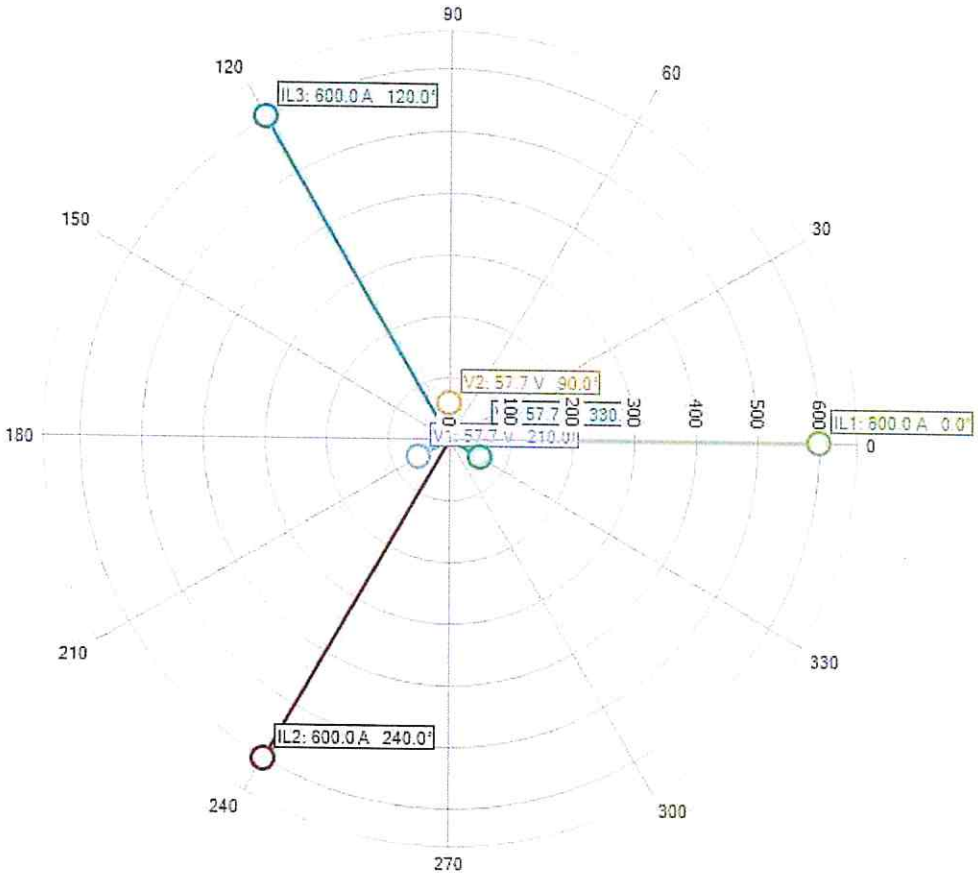
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+02
Relay Serial Number	EF5001053690N000
Circuit Breaker Serial Number	CE61041916number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 20 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

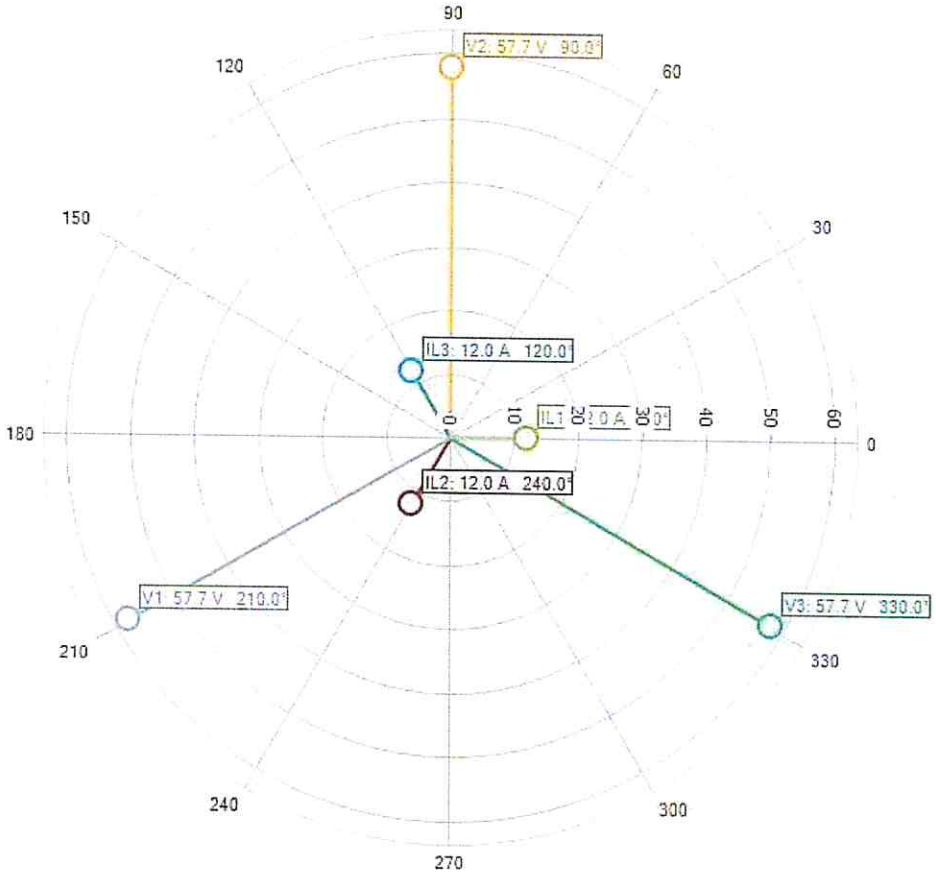
Device

Tag name	A5/+02
Relay Serial Number	EF5001053690N000
Circuit Breaker Serial Number	CE61041916number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

17 September 2024 - 09:49:01



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

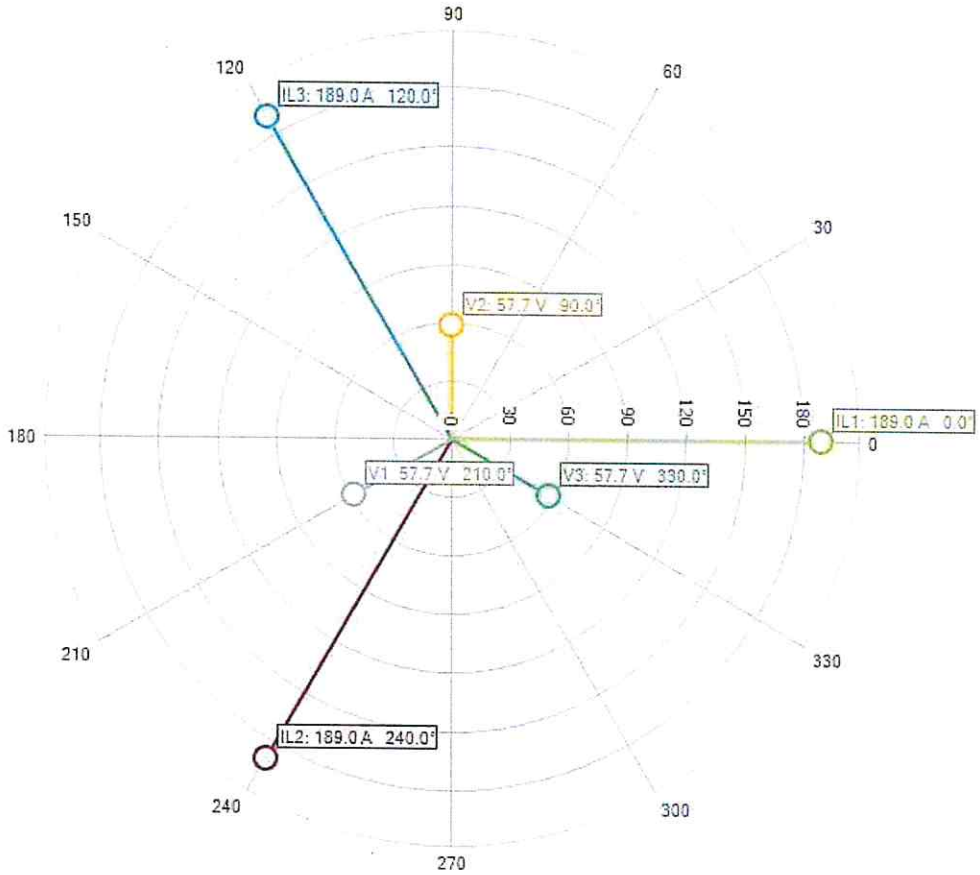
Tag name	A5/+02
Relay Serial Number	EF5001053690N000
Circuit Breaker Serial Number	CE61041916number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.700	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	7.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Disabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

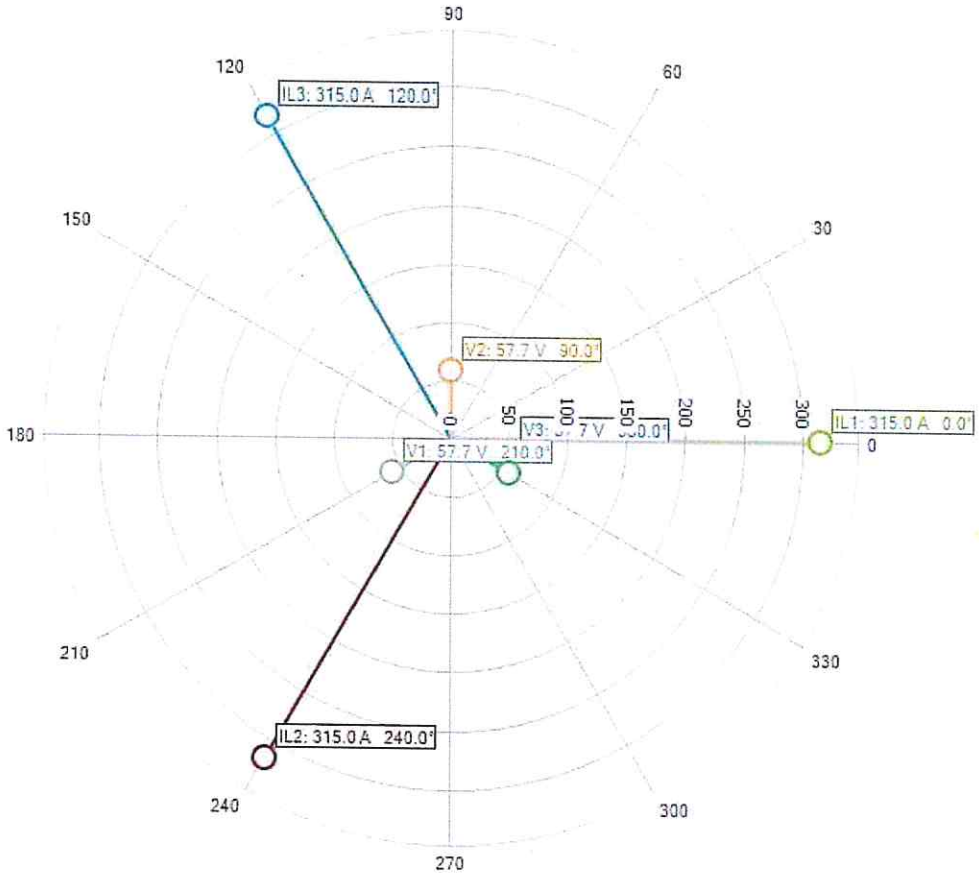
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+03
Relay Serial Number	EGA000253700N000
Circuit Breaker Serial Number	CE71079909number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 24 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

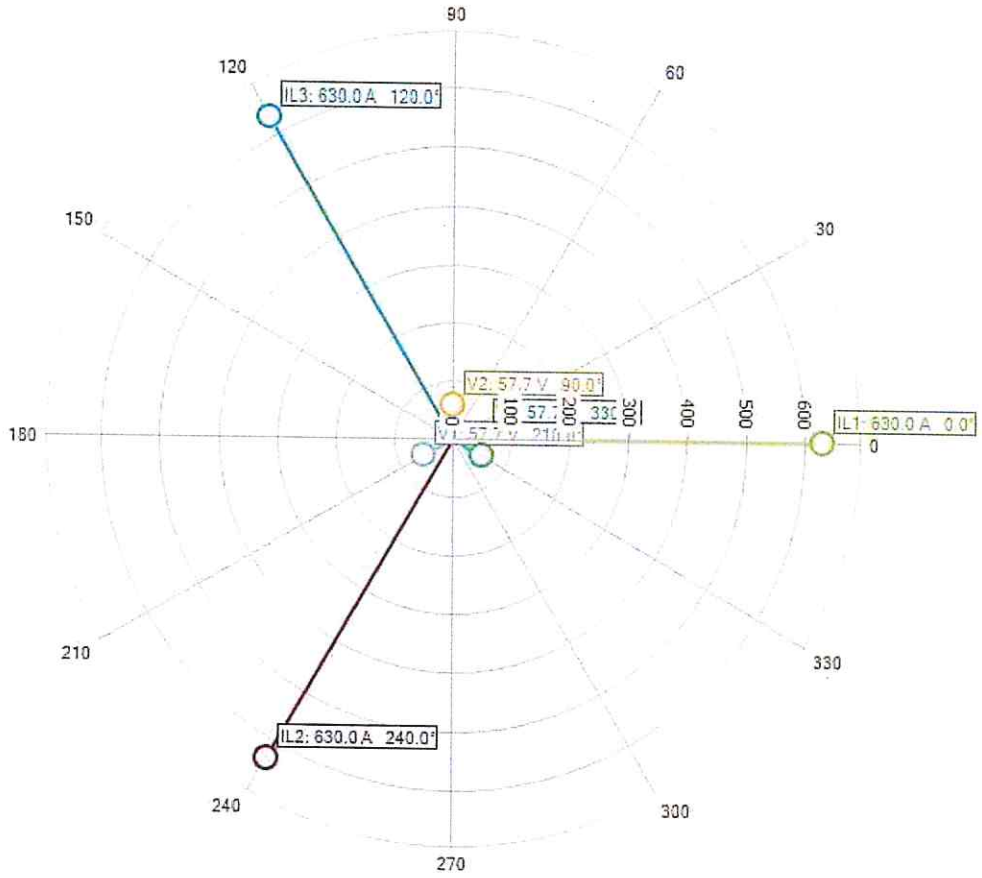
Device

Tag name	A5/+03
Relay Serial Number	EGA000253700N000
Circuit Breaker Serial Number	CE71079909number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

17 September 2024 - 14:15:21



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

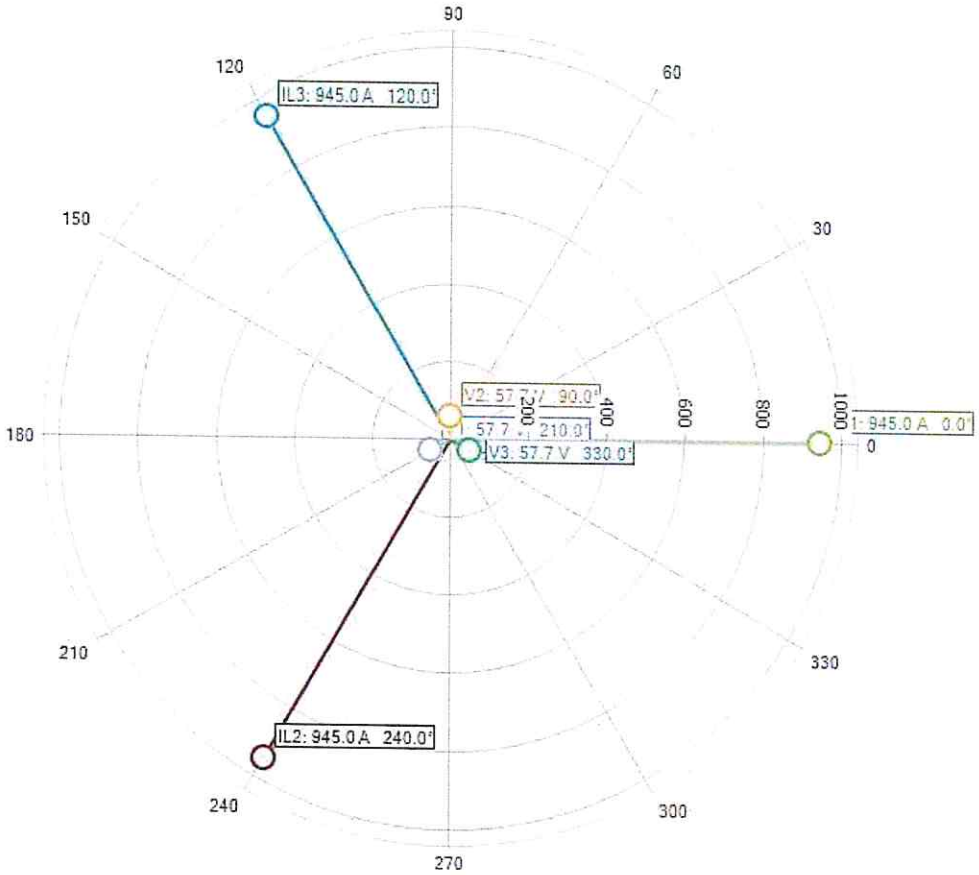
Device

Tag name	A5/+03
Relay Serial Number	EGA000253700N000
Circuit Breaker Serial Number	CE71079909number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

17 September 2024 - 14:15:51



Test

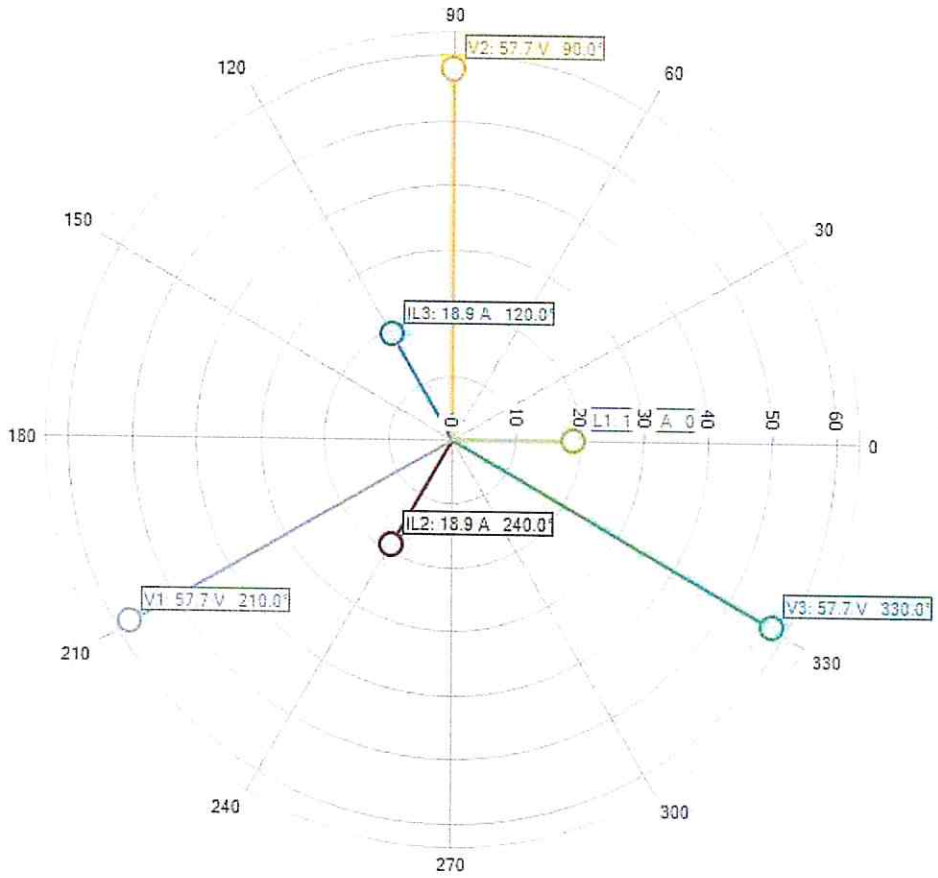
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+03
Relay Serial Number	EGA000253700N000
Circuit Breaker Serial Number	CE71079909number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

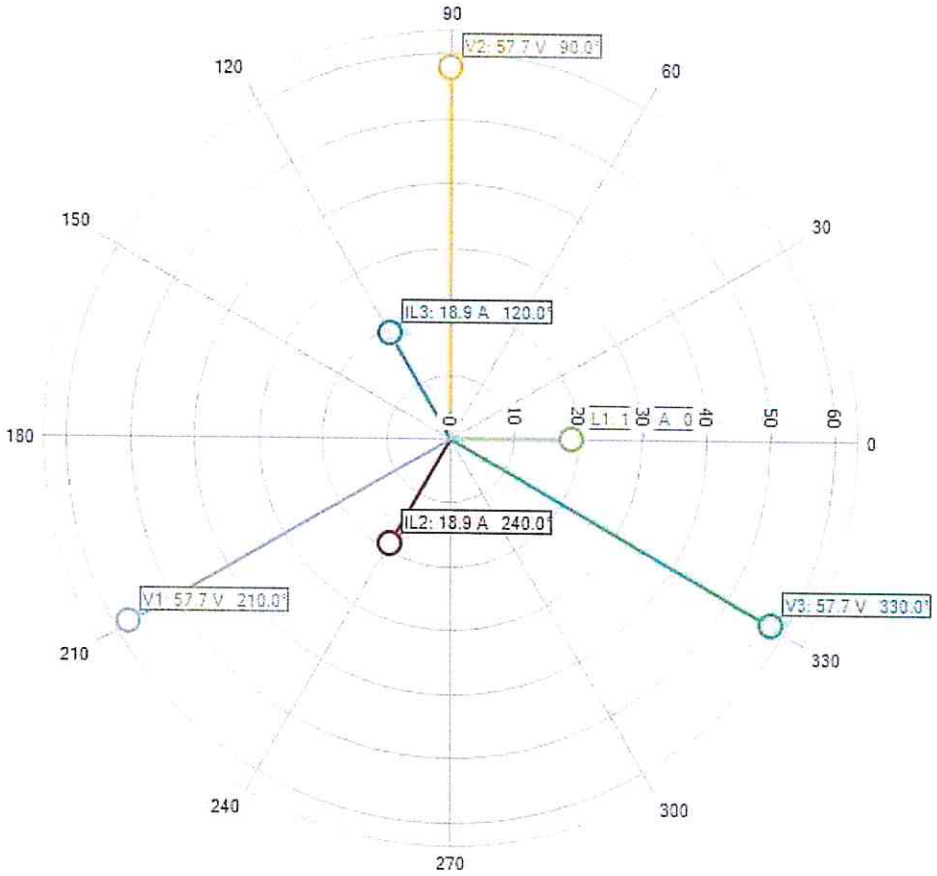
Tag name	A5/+03
Relay Serial Number	EGA000253700N000
Circuit Breaker Serial Number	CE71079909number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	63	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.400	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	1.40	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	2.80	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.127	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

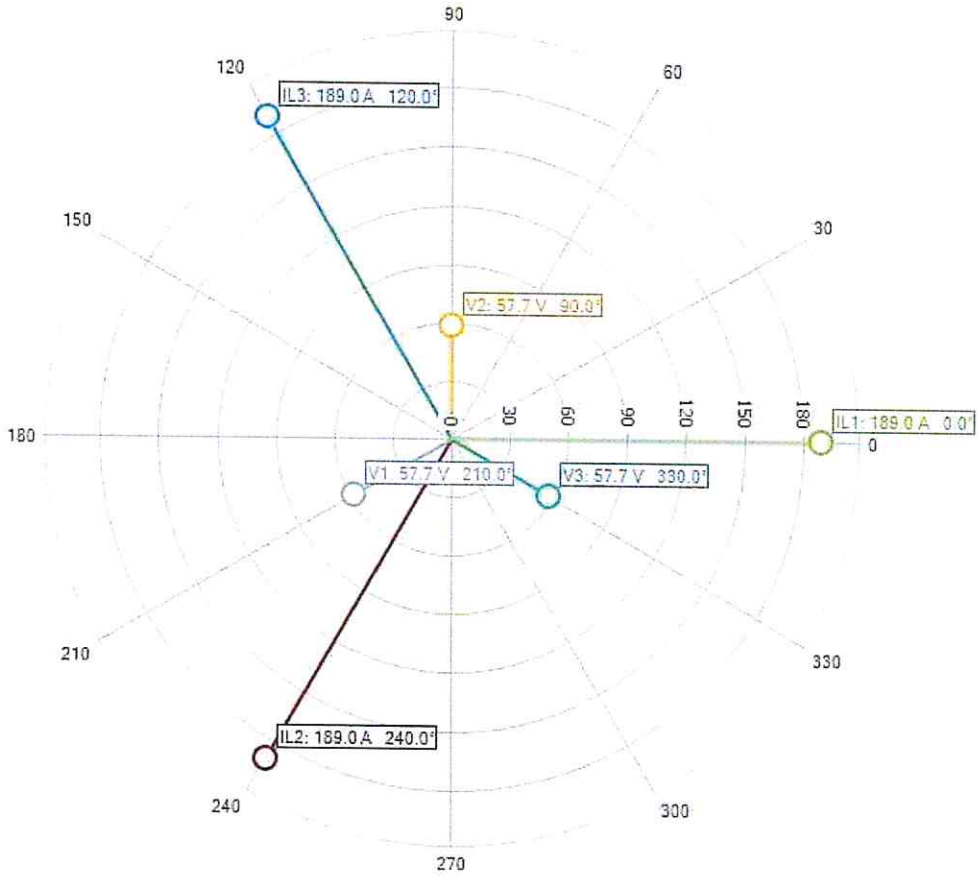
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+04
Relay Serial Number	EGA000153700N000
Circuit Breaker Serial Number	CE71079910number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

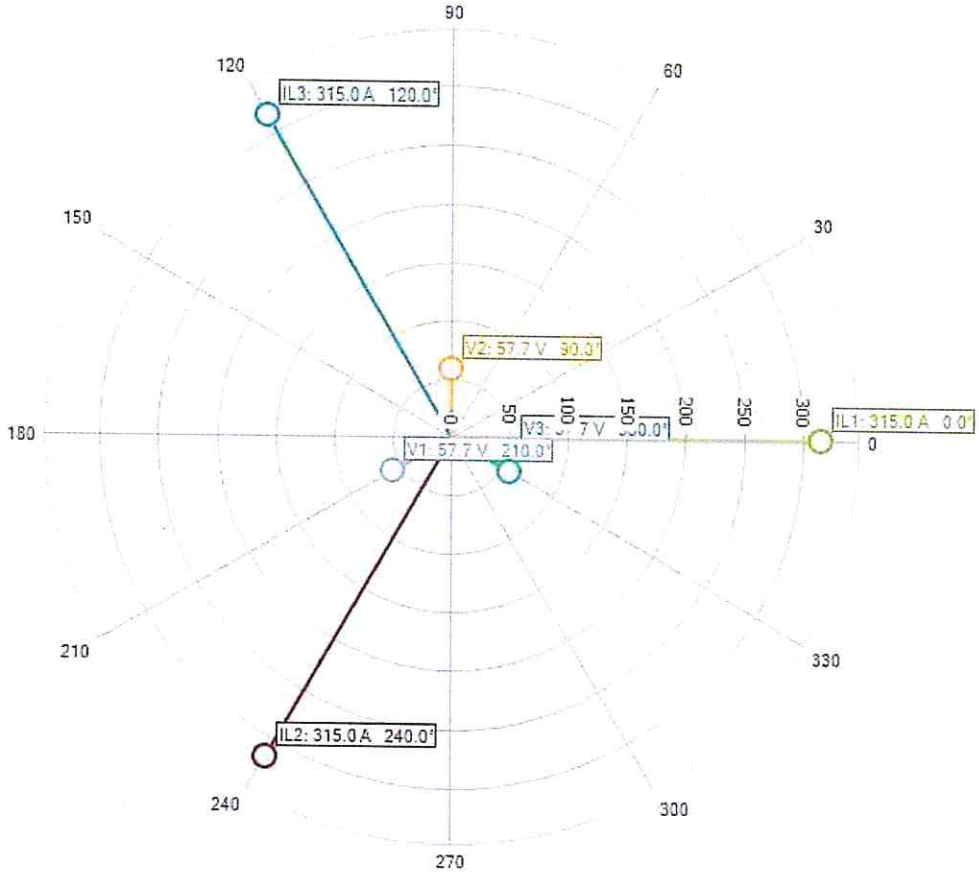
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+04
Relay Serial Number	EGA000153700N000
Circuit Breaker Serial Number	CE71079910number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

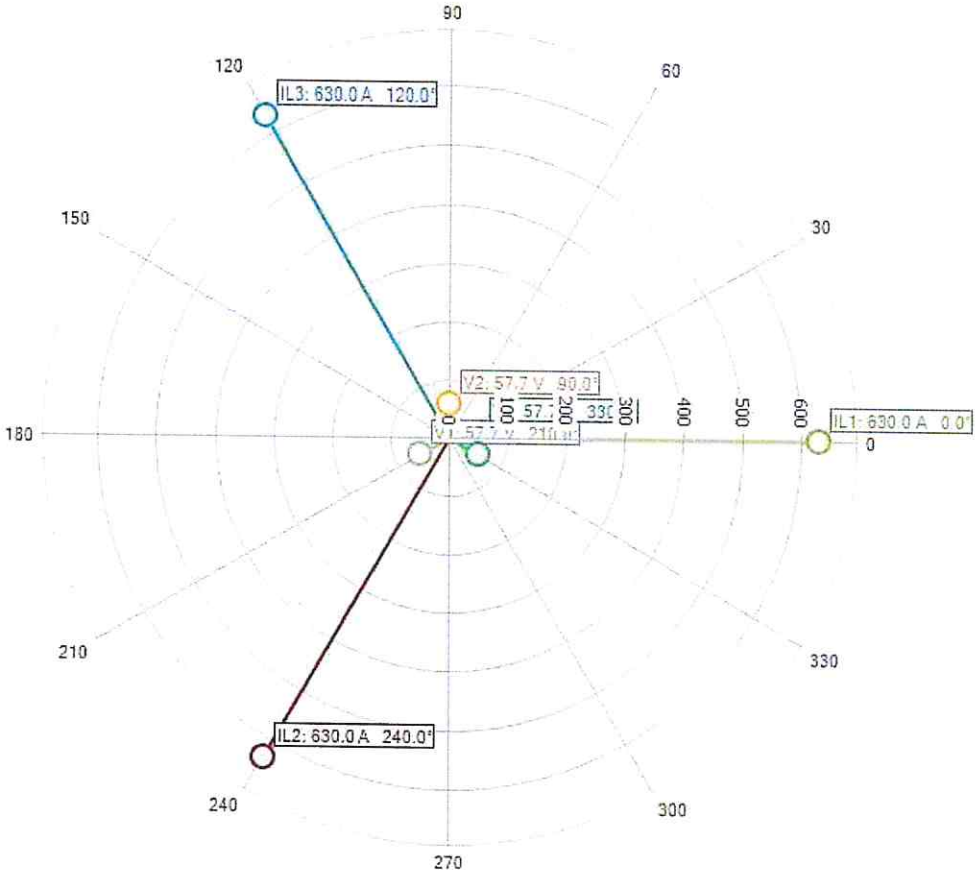
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+04
Relay Serial Number	EGA000153700N000
Circuit Breaker Serial Number	CE71079910number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

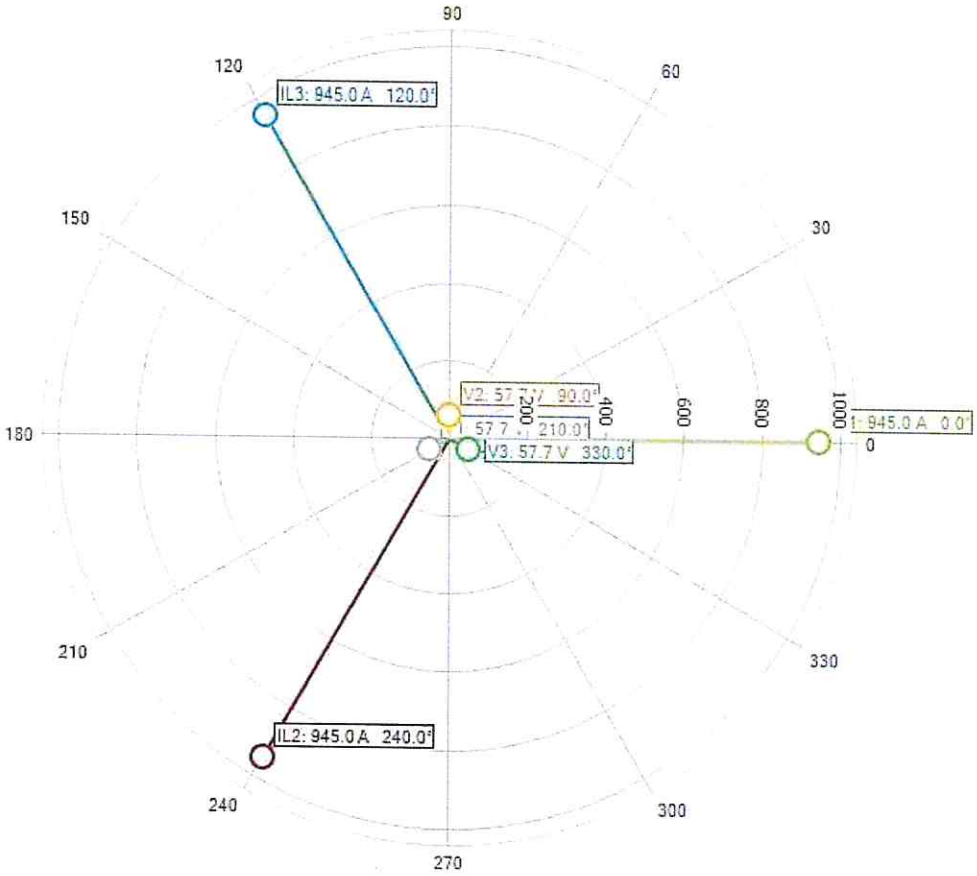
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+04
Relay Serial Number	EGA000153700N000
Circuit Breaker Serial Number	CE71079910number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

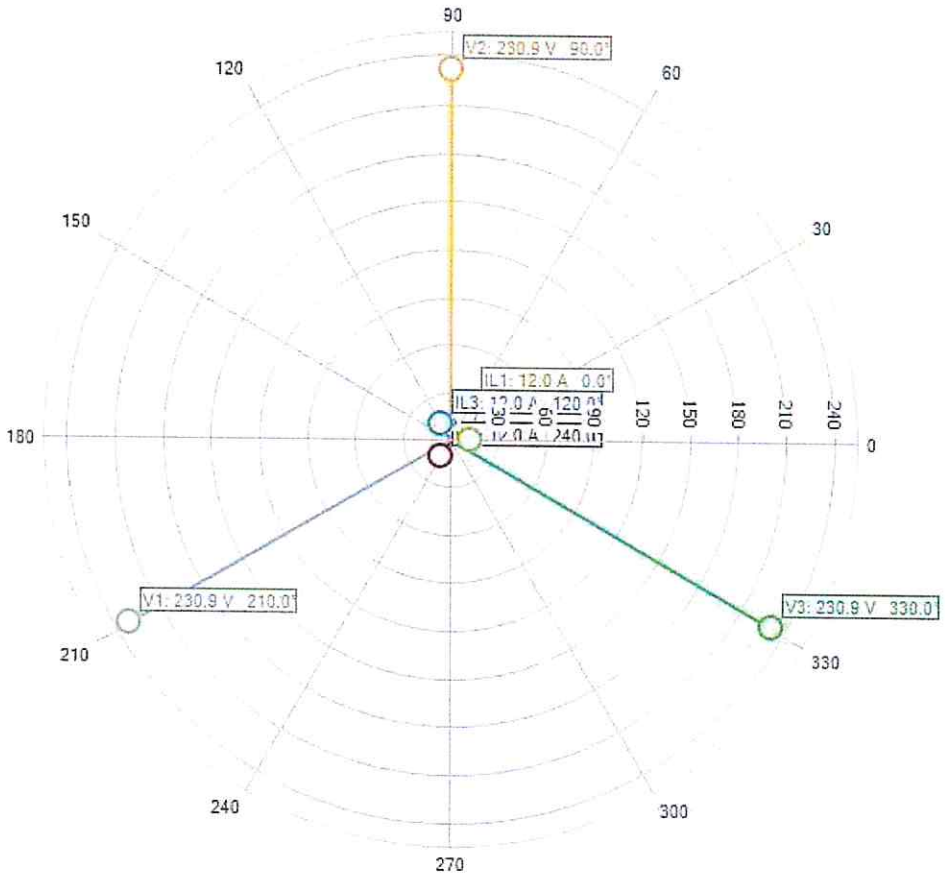
Tag name	A5/+04
Relay Serial Number	EGA000153700N000
Circuit Breaker Serial Number	CE71079910number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.400 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 1.40 In Time = 0.10 s Protection = I Threshold = 2.80 In Protection = G Curve type = t=k Threshold = 0.127 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 27 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	63	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.400	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	1.40	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	2.80	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.127	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

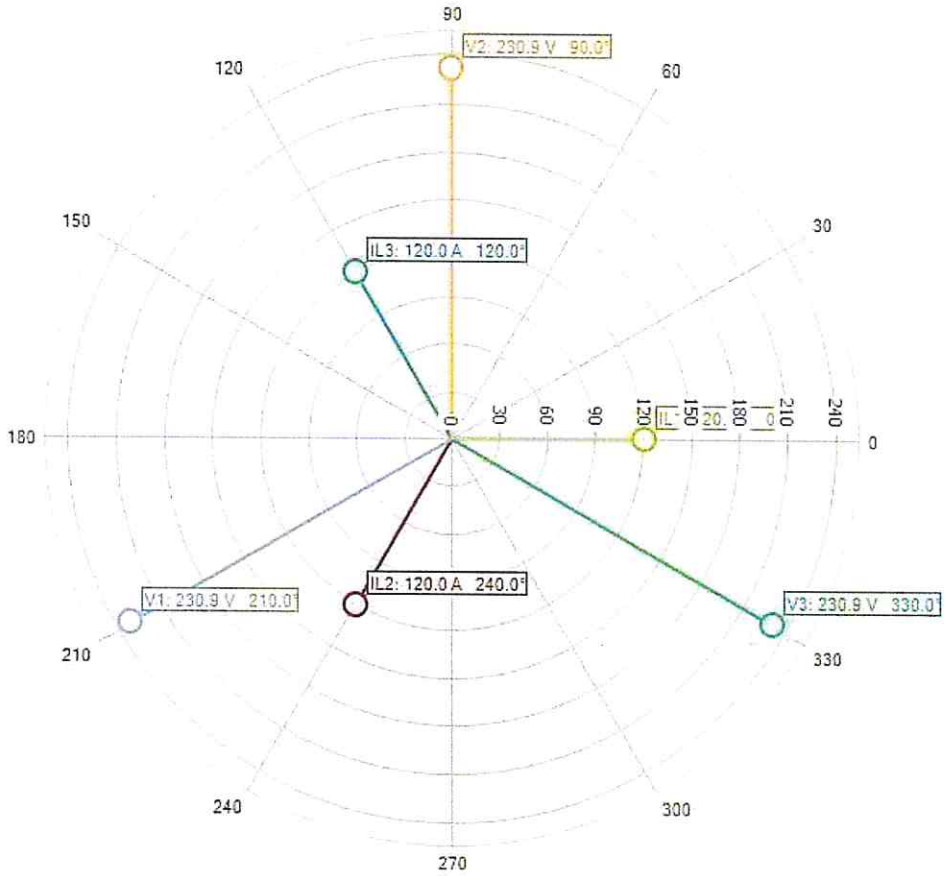
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+05
Relay Serial Number	EH7000153690N000
Circuit Breaker Serial Number	CE81021103
	XT2/4
Device settings	In = 40 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

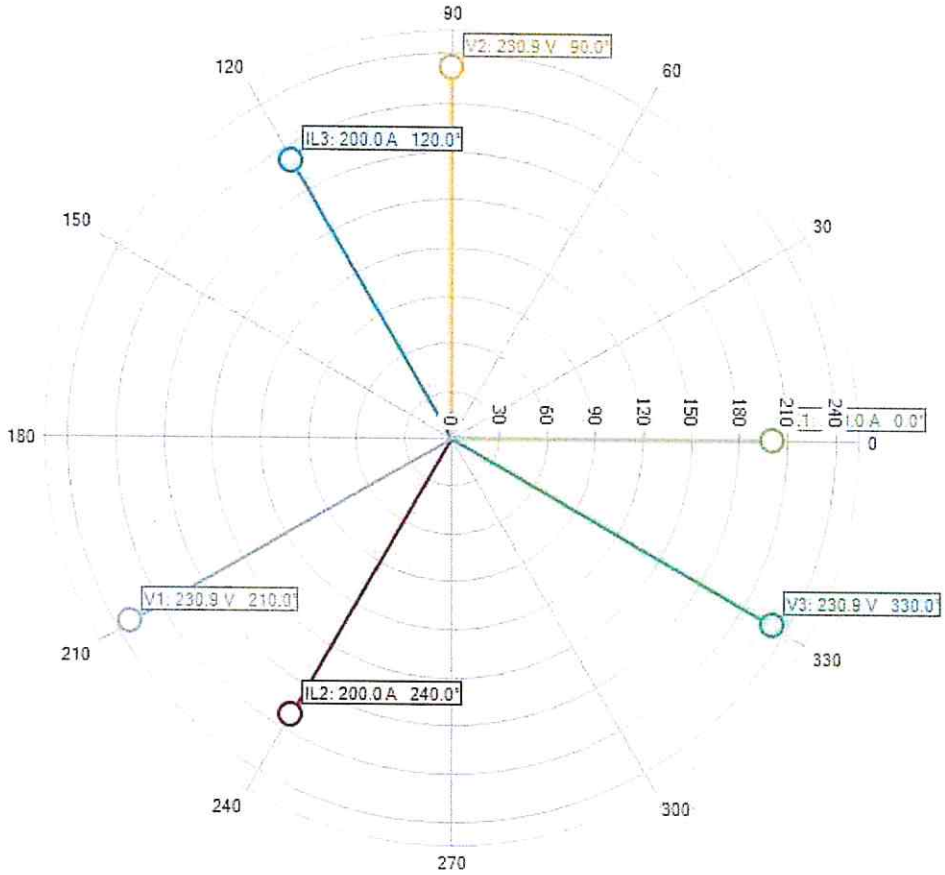
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+05
Relay Serial Number	EH7000153690N000
Circuit Breaker Serial Number	CE81021103
	XT2/4
Device settings	In = 40 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1300 ms.
Trip time must be between 0 ms and 1000 ms



Test

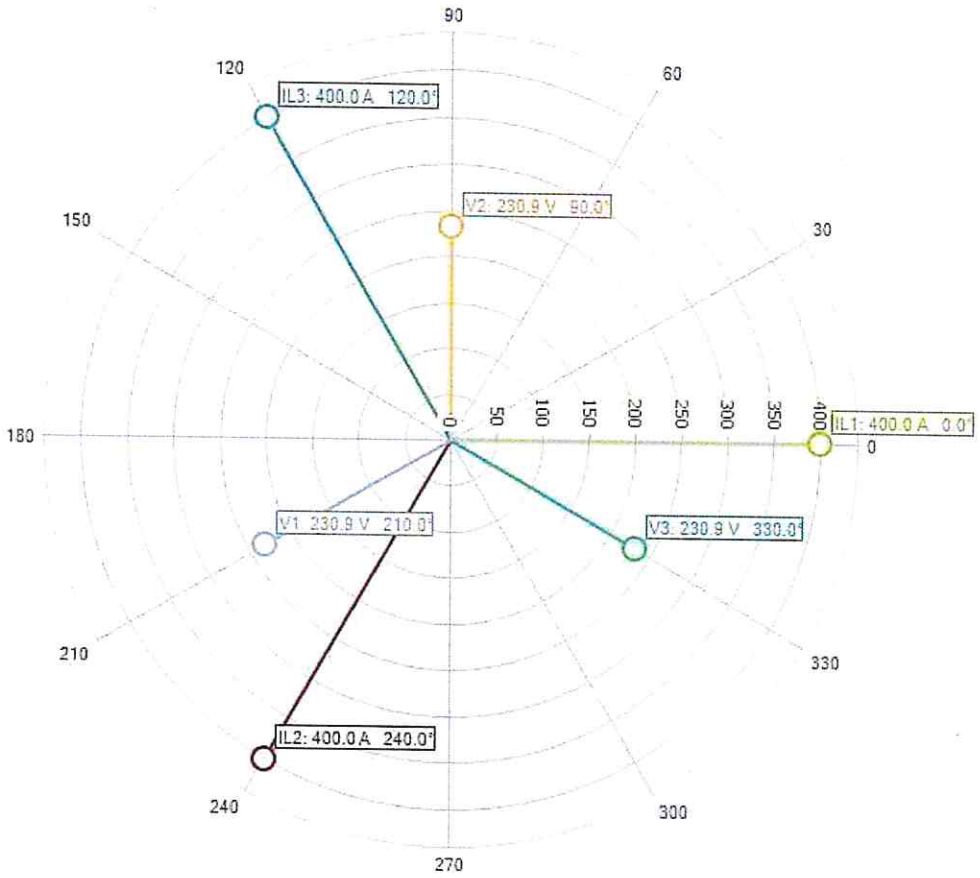
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+05
Relay Serial Number	EH7000153690N000
Circuit Breaker Serial Number	CE81021103
	XT2/4
Device settings	In = 40 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

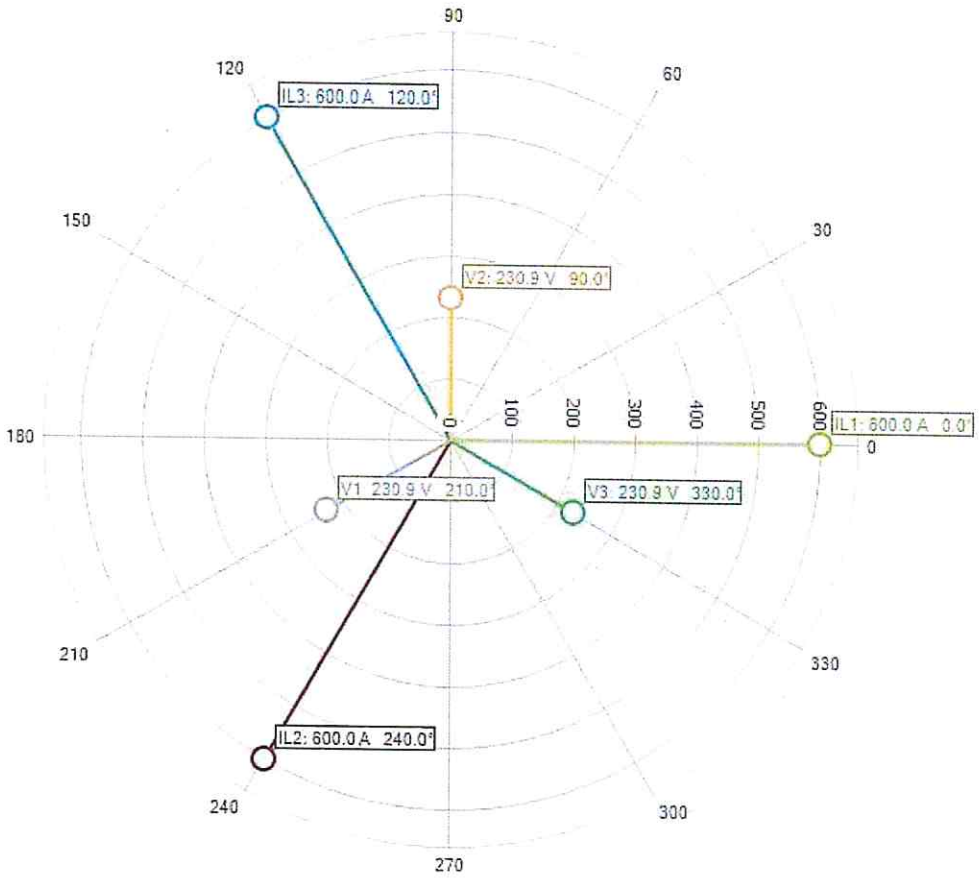
Device

Tag name	A5/+05
Relay Serial Number	EH7000153690N000
Circuit Breaker Serial Number	CE81021103
	XT2/4
Device settings	In = 40 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s

Preconditions

Test result

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



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+05
Relay Serial Number	EH7000153690N000
Circuit Breaker Serial Number	CE81021103
	XT2/4
Device settings	In = 40 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s

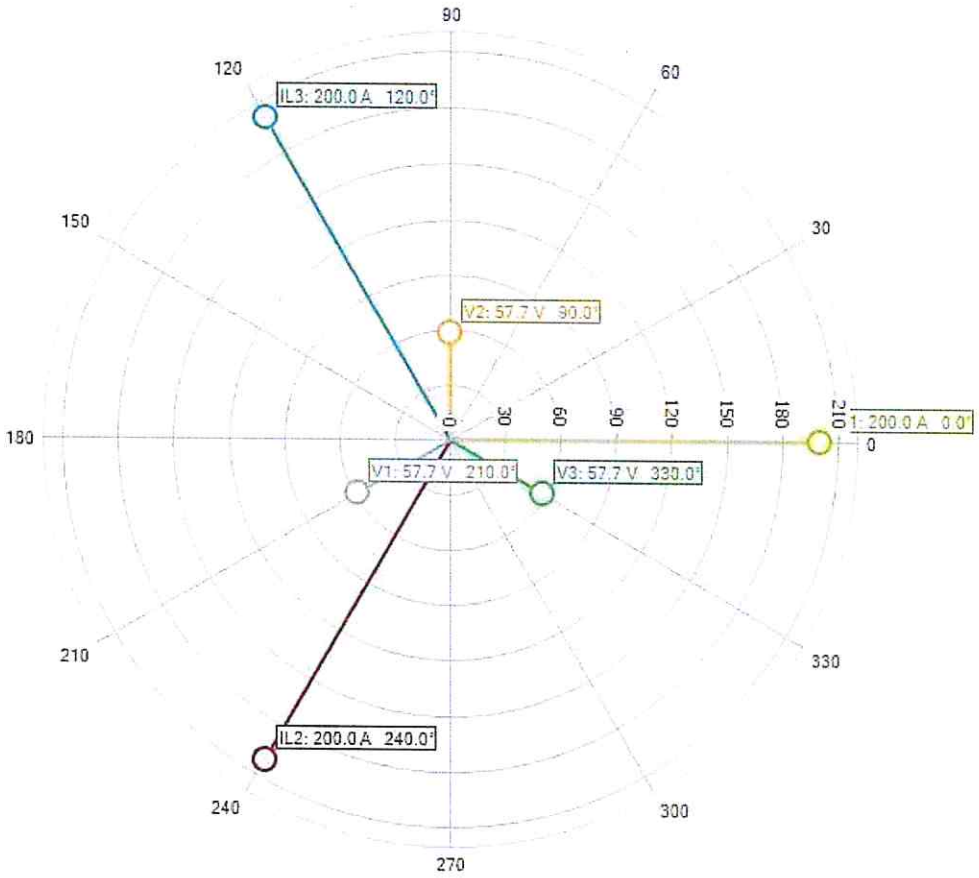
Preconditions

Test result

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

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.650	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.00	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	6.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

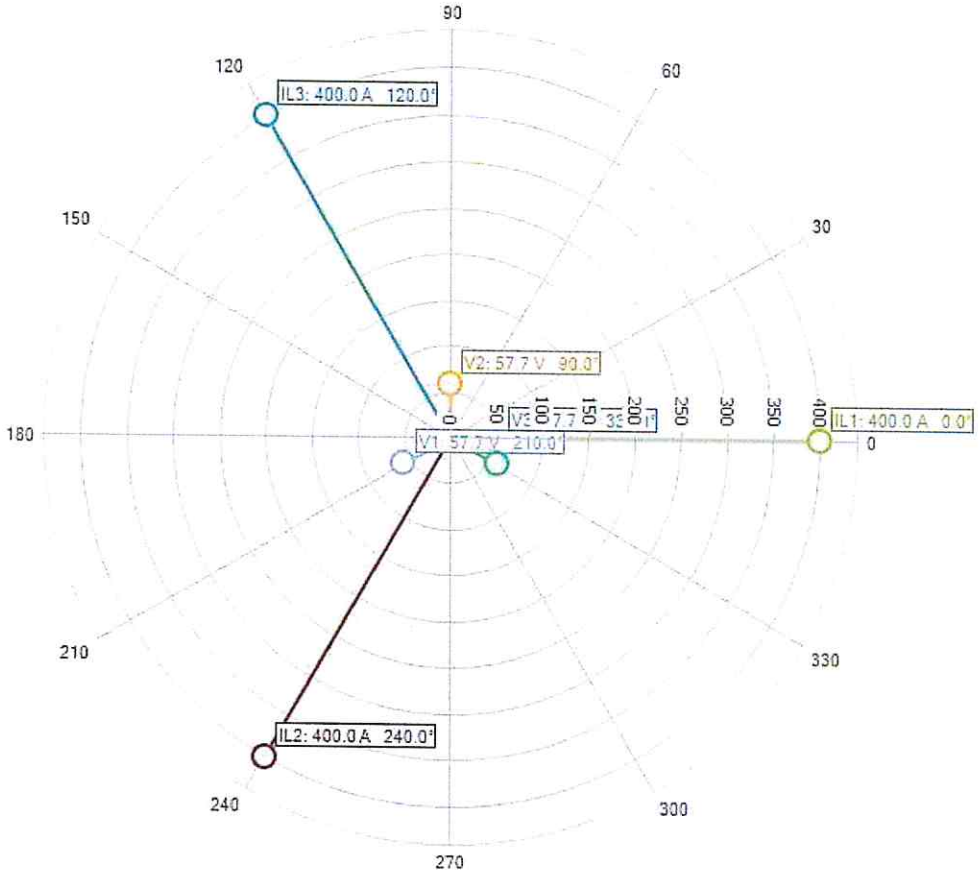
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 100 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

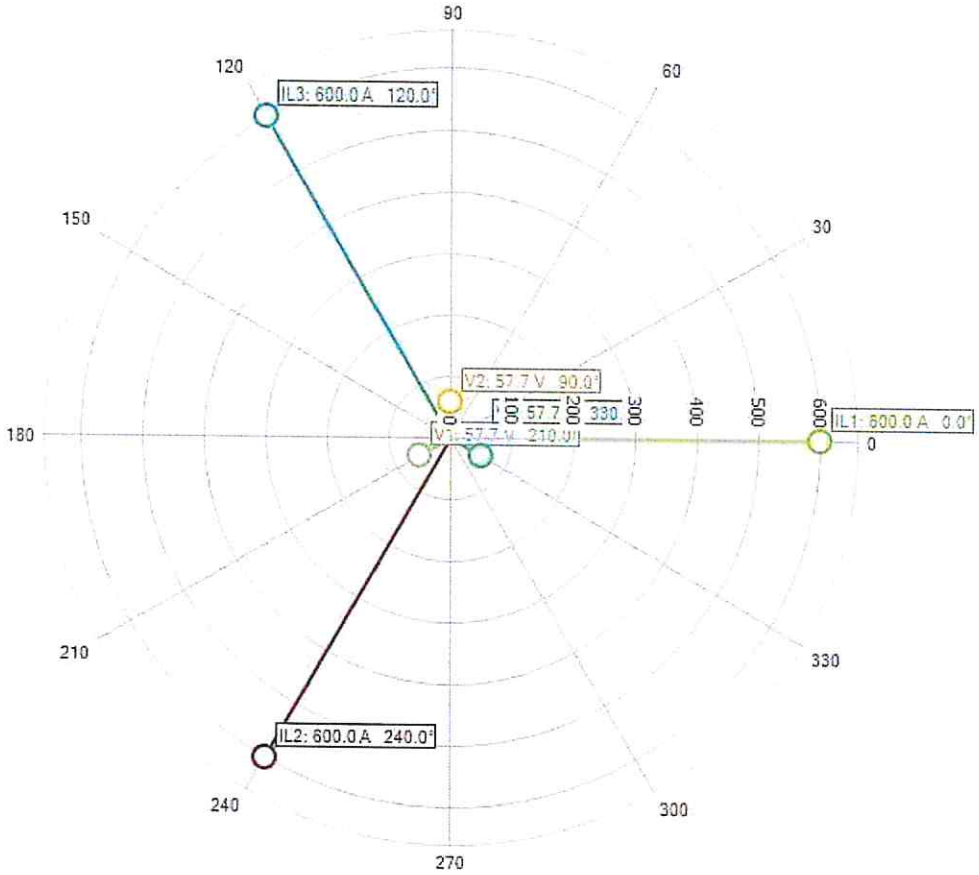
Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

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Test

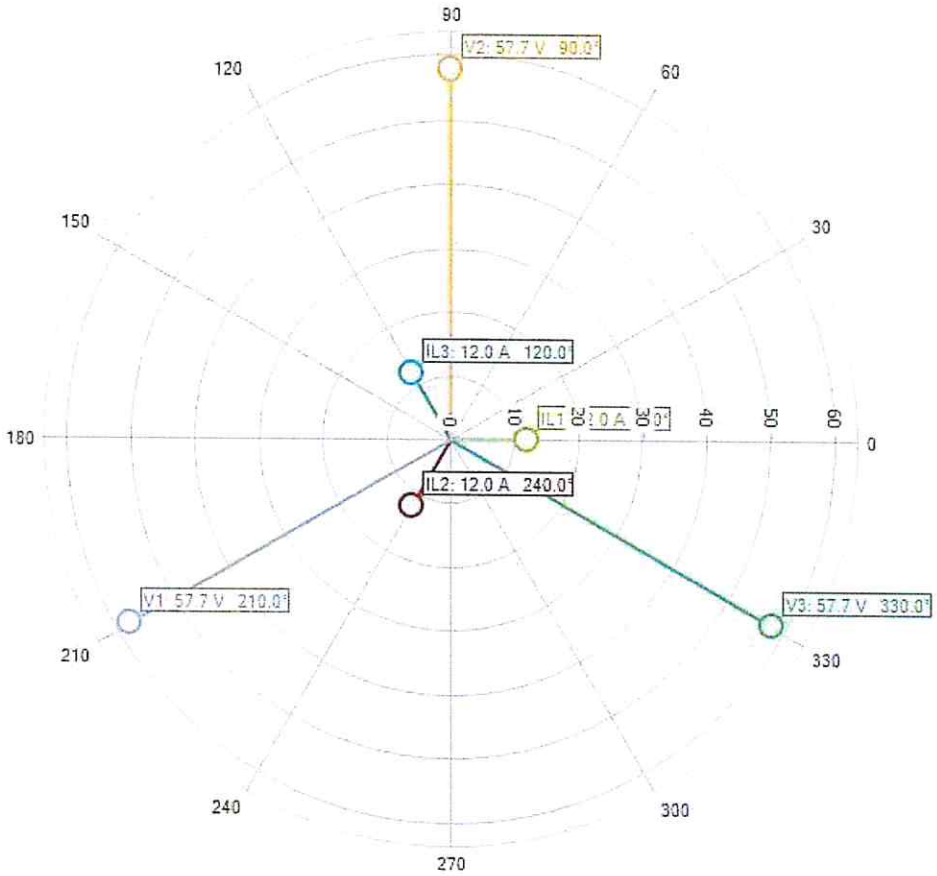
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

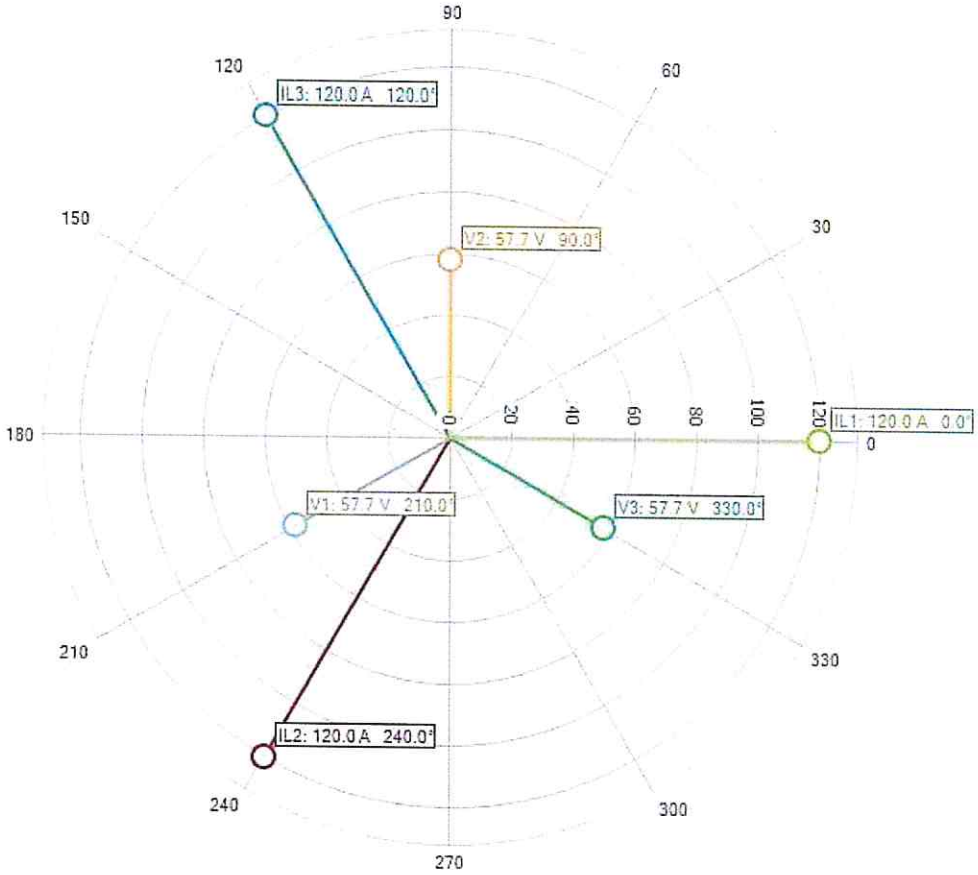
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A5/+06
Relay Serial Number	EF5001553690N000
Circuit Breaker Serial Number	CE61041908number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

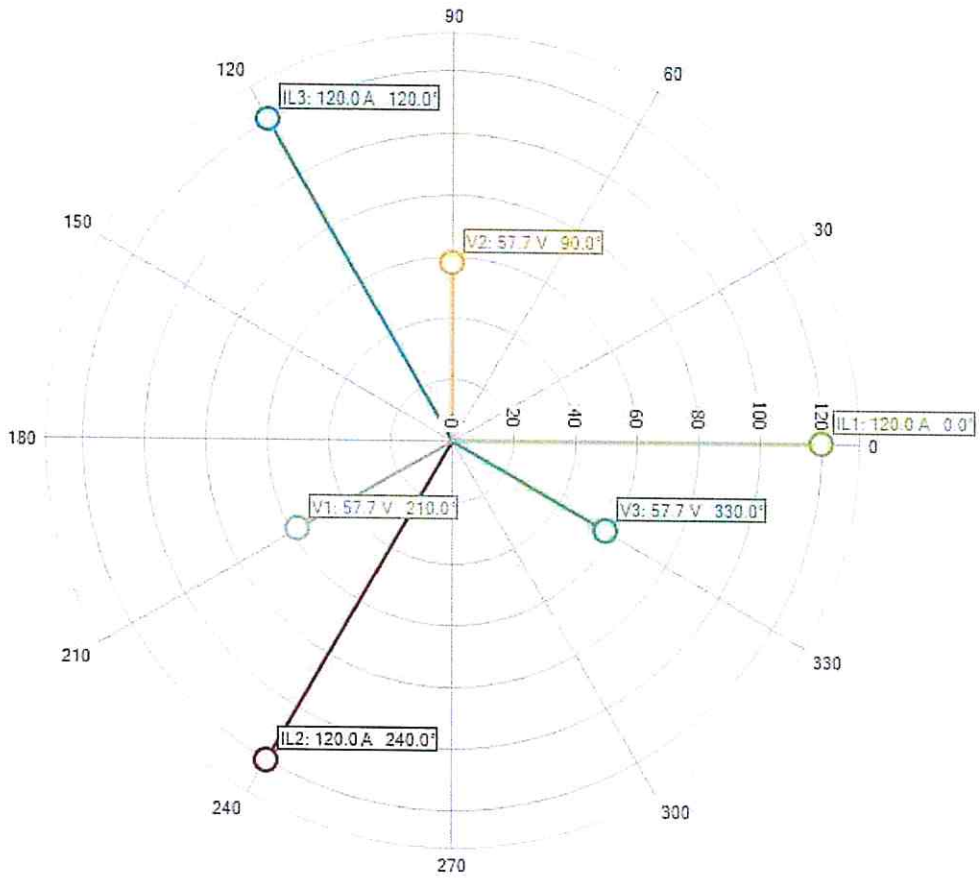
Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	

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Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

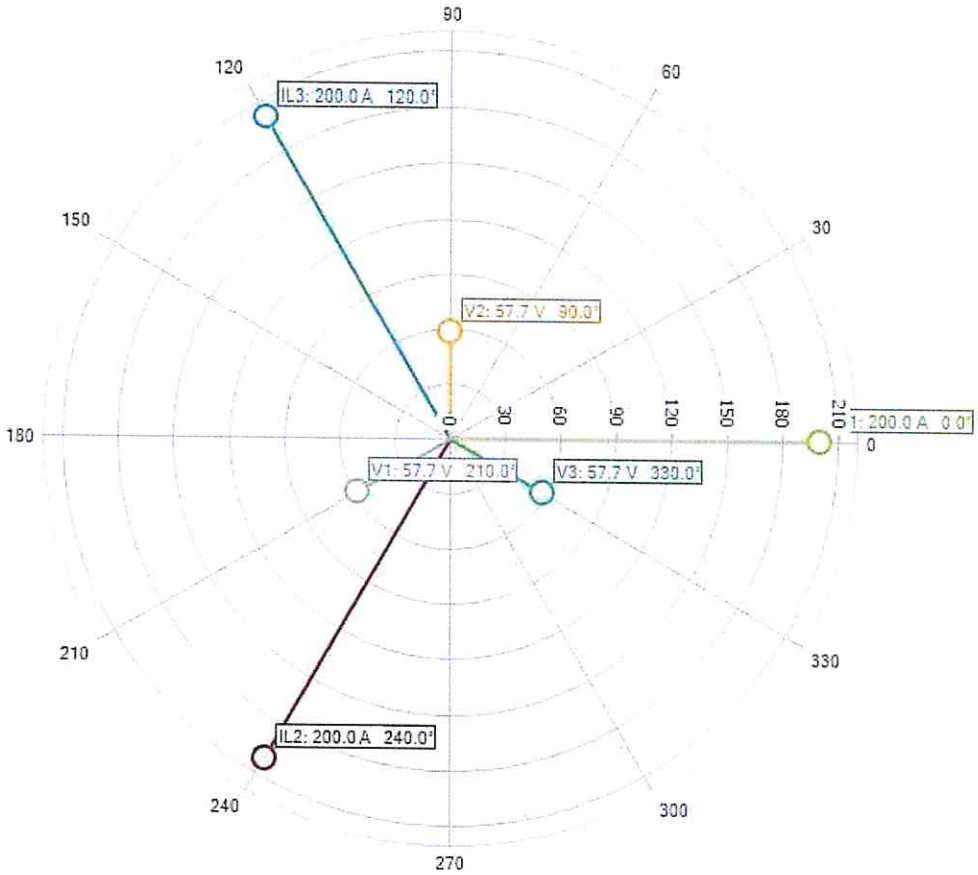
Device

Tag name	A6/+02
Relay Serial Number	EF5001353690N000
Circuit Breaker Serial Number	CE61041921number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 10:26:11



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

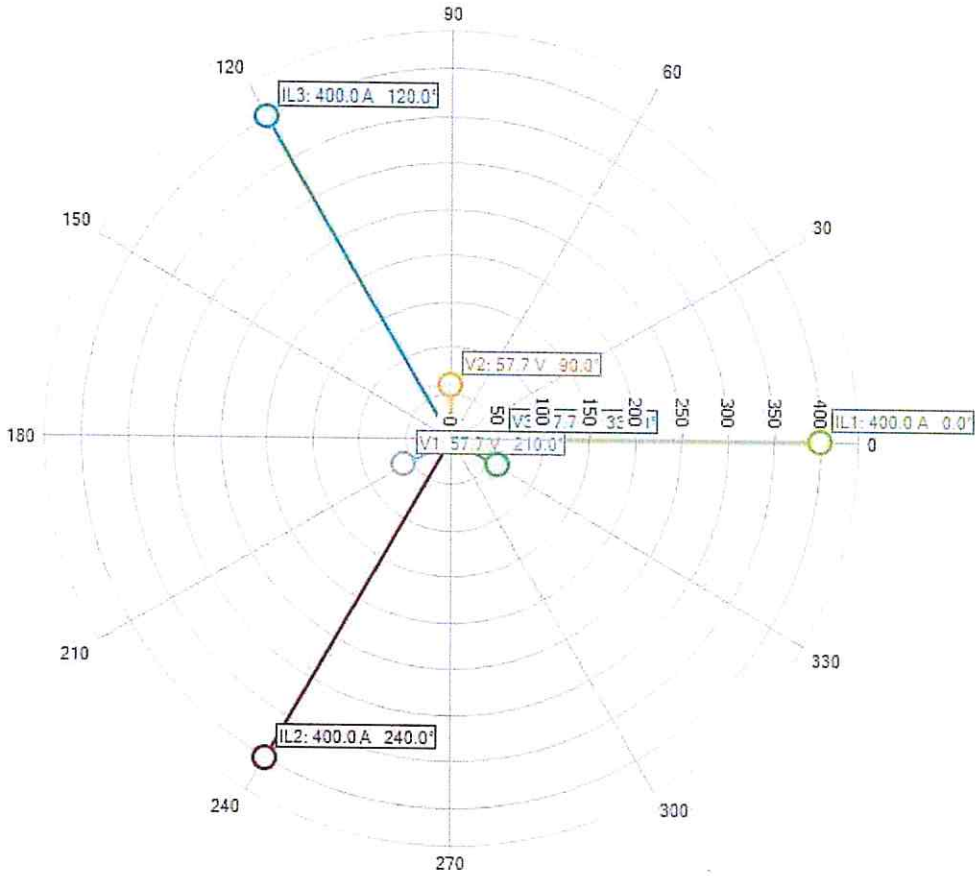
Device

Tag name	A6/+02
Relay Serial Number	EF5001353690N000
Circuit Breaker Serial Number	CE61041921number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 10:26:57



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

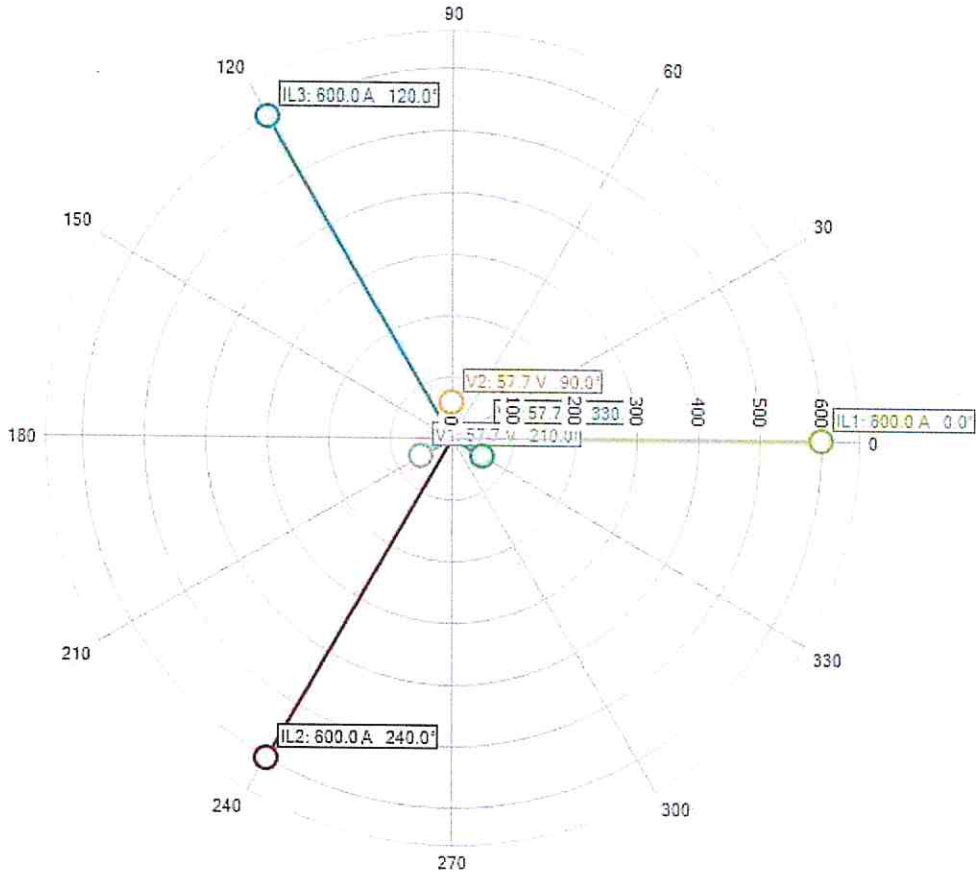
Device

Tag name	A6/+02
Relay Serial Number	EF5001353690N000
Circuit Breaker Serial Number	CE61041921number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 10:27:42



Test

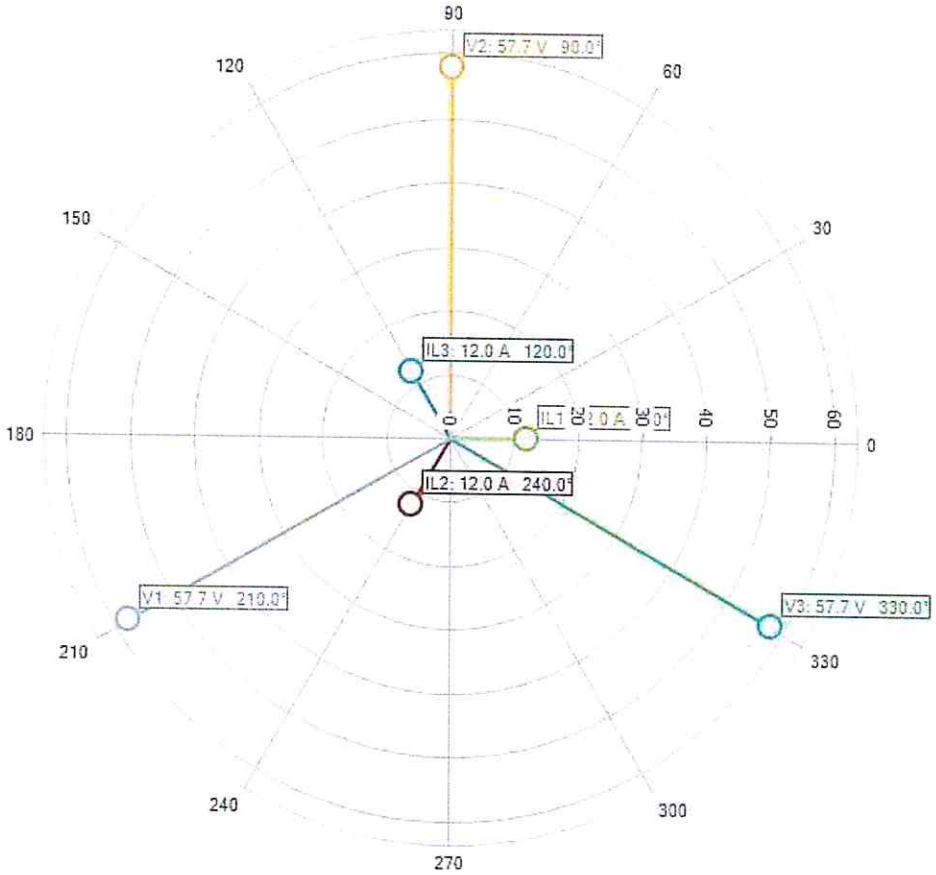
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/+02
Relay Serial Number	EF5001353690N000
Circuit Breaker Serial Number	CE61041921number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/+02
Relay Serial Number	EF5001353690N000
Circuit Breaker Serial Number	CE61041921number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

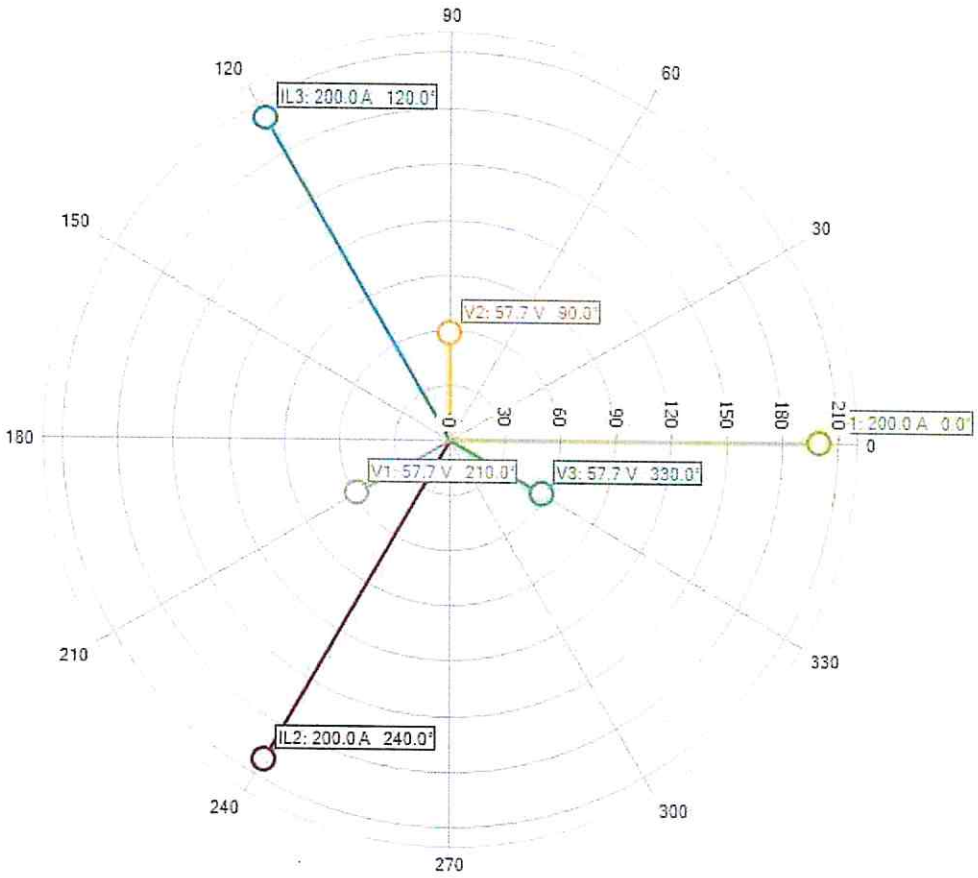
Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	160	
		Status	Enabled	
		Function	t=kI^2t	
		Prealarm I1	90	% I1
		Threshold I1	0.950	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	-------	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Function	t=k	
		Threshold I2 (t=k)	3.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	-------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	-------	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	-------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	7.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	-------	
		BlockOnStartUp	-------	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	-------	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	-------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	-------	
		tripOnlyBackward	-------	
		BlockOnStartUp	-------	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	-------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	-------	
		BlockOnProgStatusA	-------	
		BlockOnProgStatusB	-------	
		BlockOnProgStatusC	-------	
		BlockOnProgStatusD	-------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/I^2	
		Prealarm I1	90	% I1
		Threshold I1	0.470	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	——	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	——	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	——	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	—	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	——	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	——	
		tripOnlyBackward	——	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	——	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	

16 September 2024 - 10:16:41



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

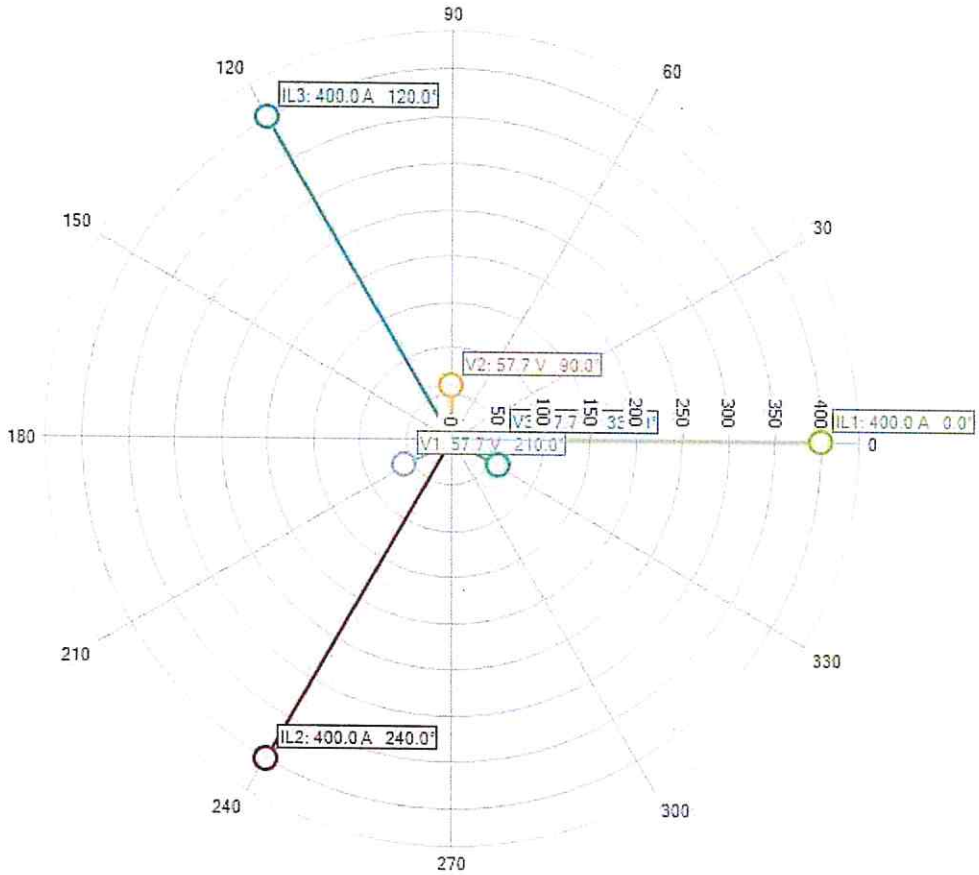
Device

Tag name	A6/+03
Relay Serial Number	EF5000753690N000
Circuit Breaker Serial Number	CE61041914number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 10:17:33



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

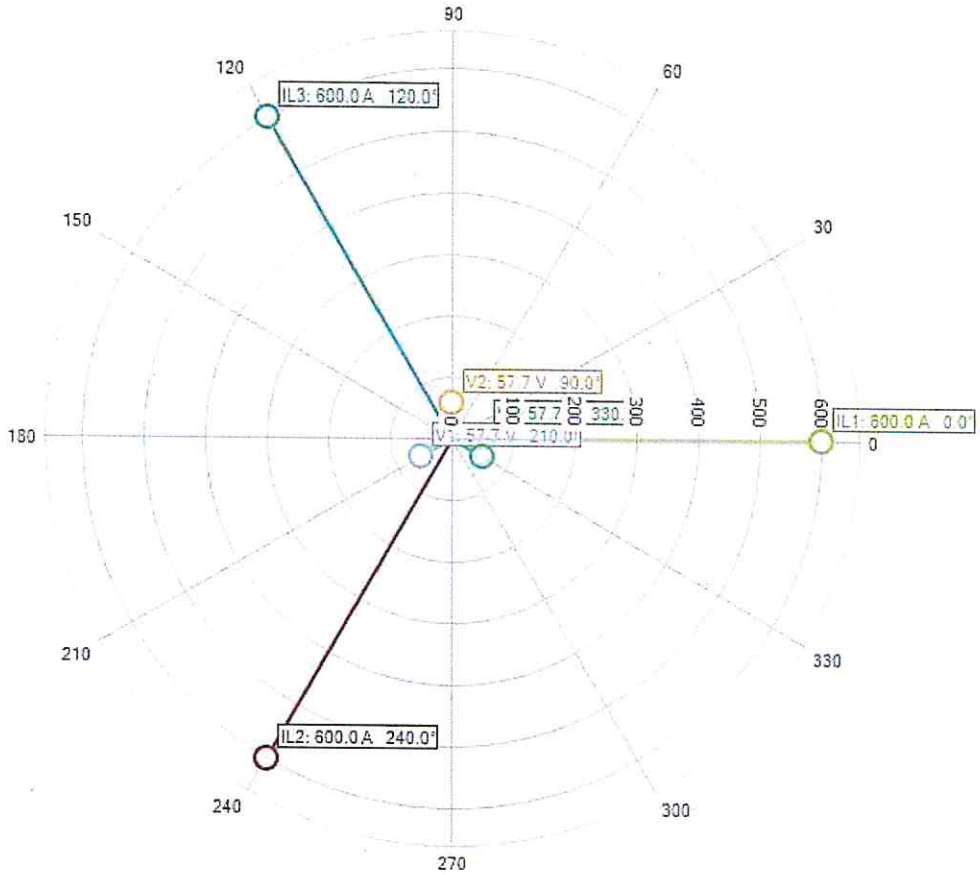
Device

Tag name	A6/+03
Relay Serial Number	EF5000753690N000
Circuit Breaker Serial Number	CE61041914number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

16 September 2024 - 10:18:25



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

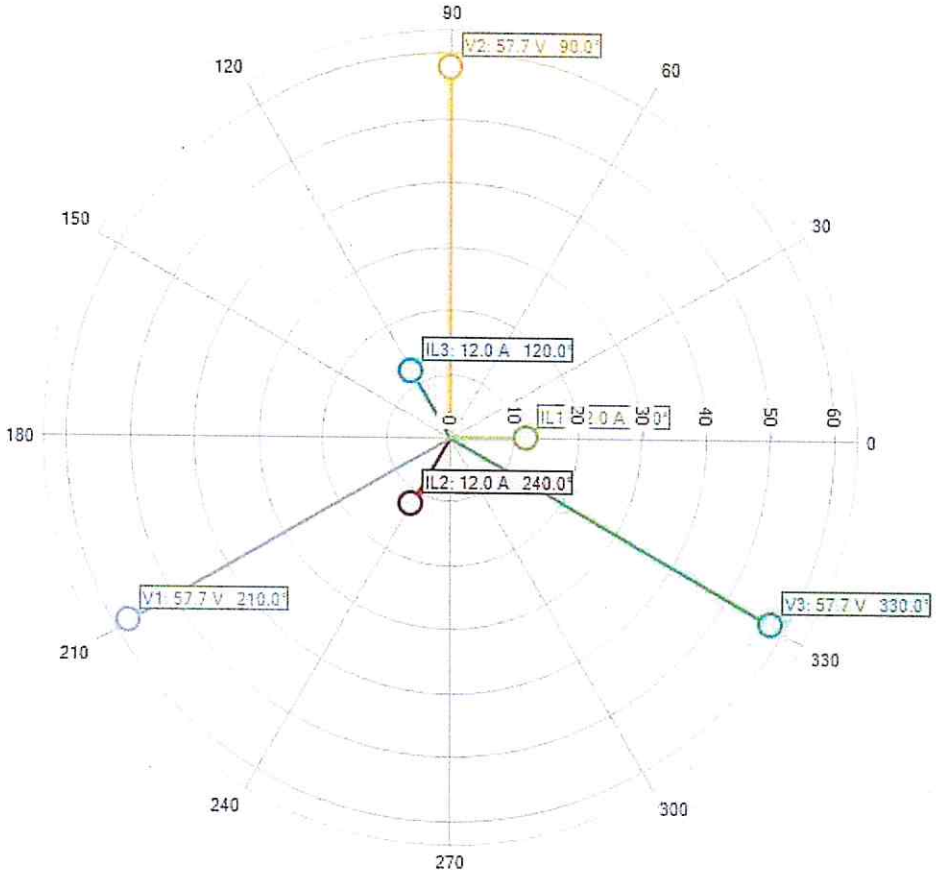
Device

Tag name	A6/+03
Relay Serial Number	EF5000753690N000
Circuit Breaker Serial Number	CE61041914number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 10:15:11



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

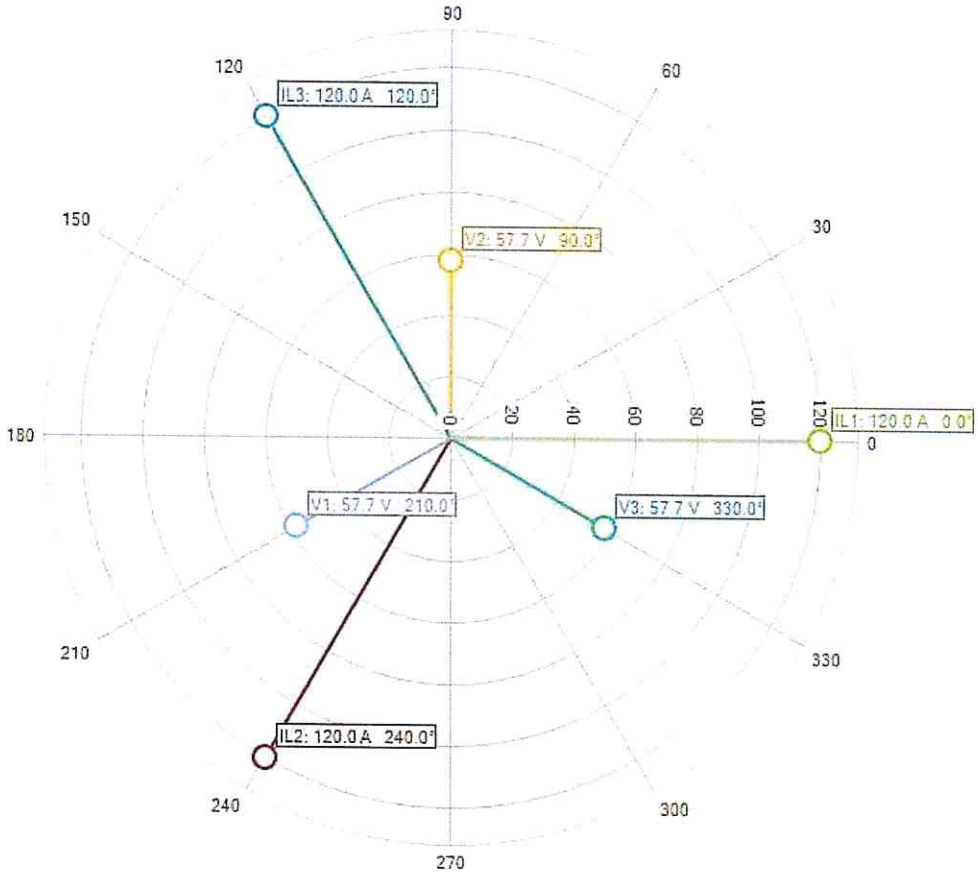
Device

Tag name	A6/+03
Relay Serial Number	EF5000753690N000
Circuit Breaker Serial Number	CE61041914number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/I^2	
		Prealarm I1	90	% I1
		Threshold I1	0.470	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	——	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	——	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	——	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	—	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	——	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	——	
		tripOnlyBackward	——	
		BlockOnStartUp	——	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	——	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	——	
		BlockOnProgStatusA	——	
		BlockOnProgStatusB	——	
		BlockOnProgStatusC	——	
		BlockOnProgStatusD	——	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

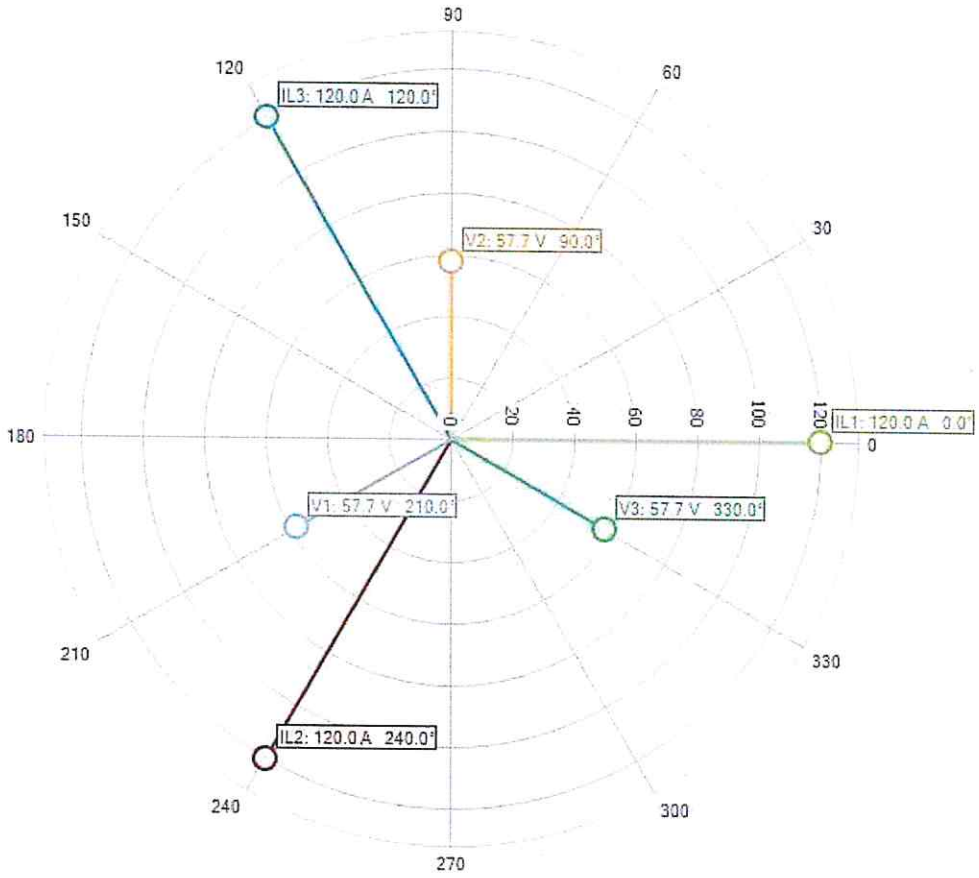
Device

Tag name	A6/+03
Relay Serial Number	EF5000753690N000
Circuit Breaker Serial Number	CE61041914number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 14:22:20



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

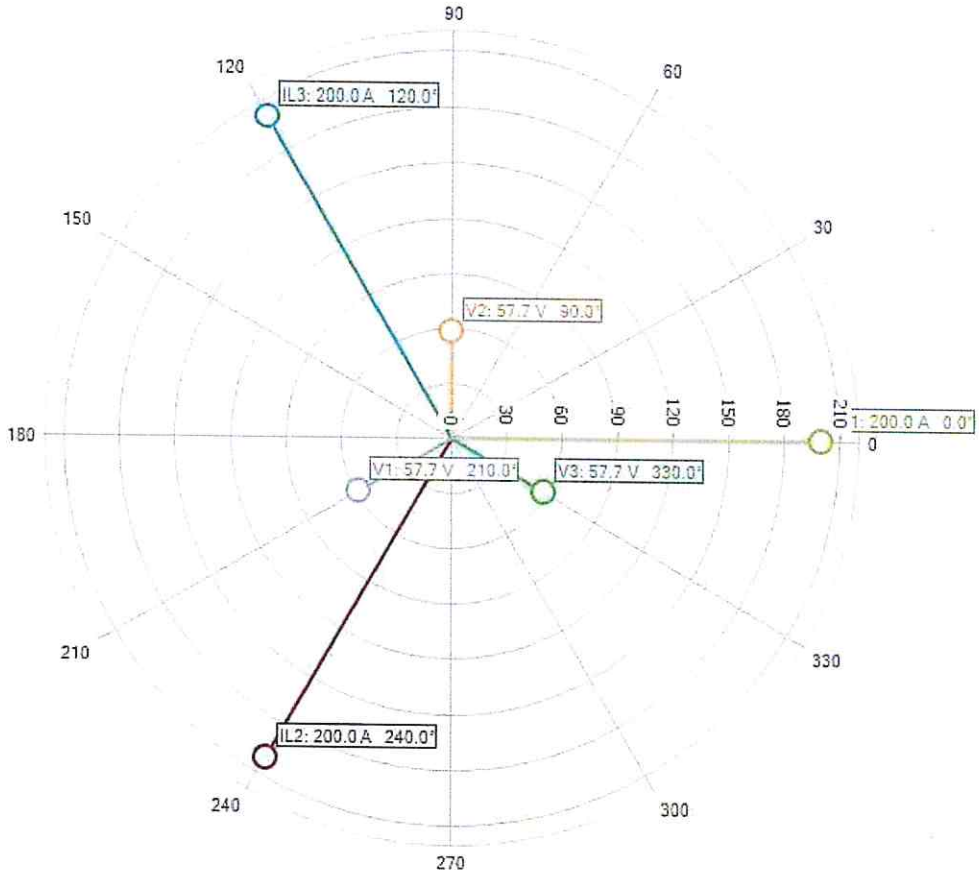
Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 14:22:56



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

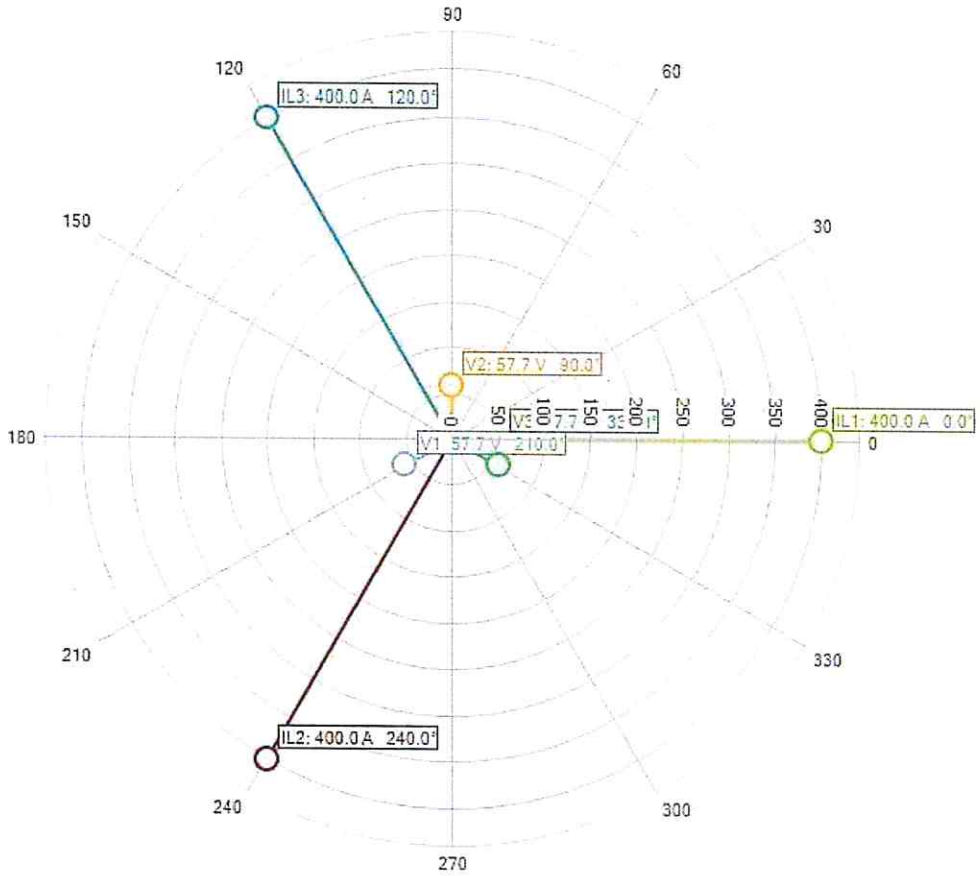
Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 14:23:32



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

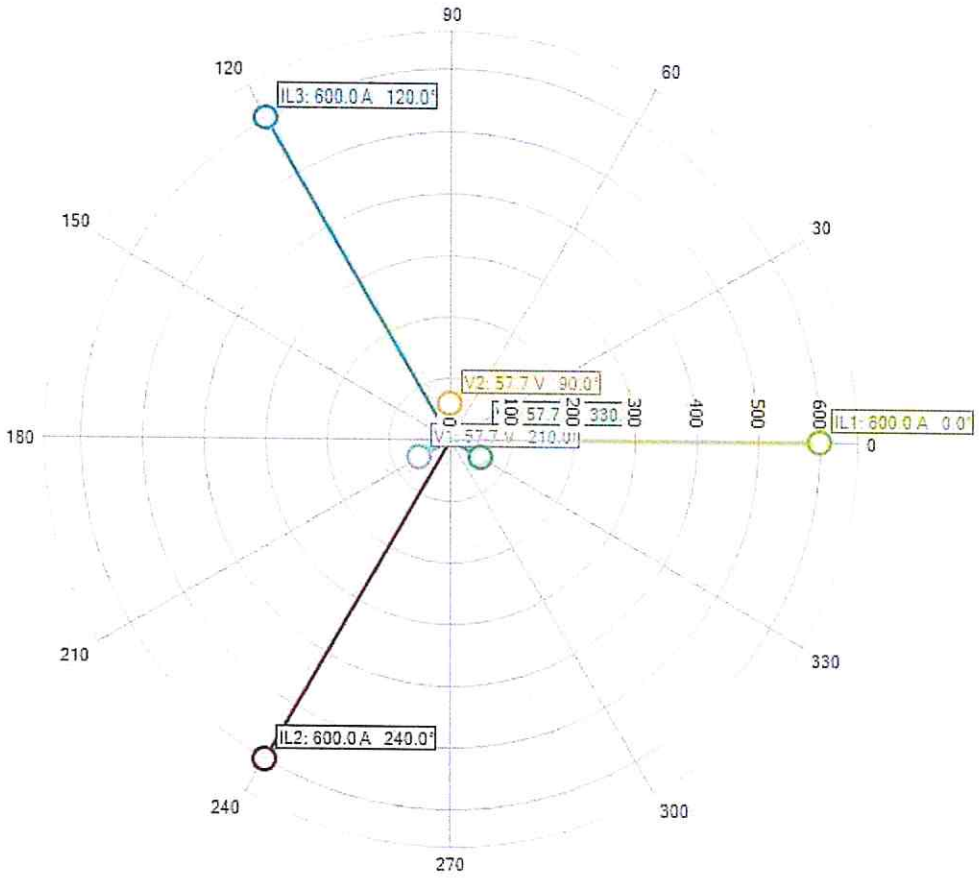
Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

16 September 2024 - 14:24:10



Test

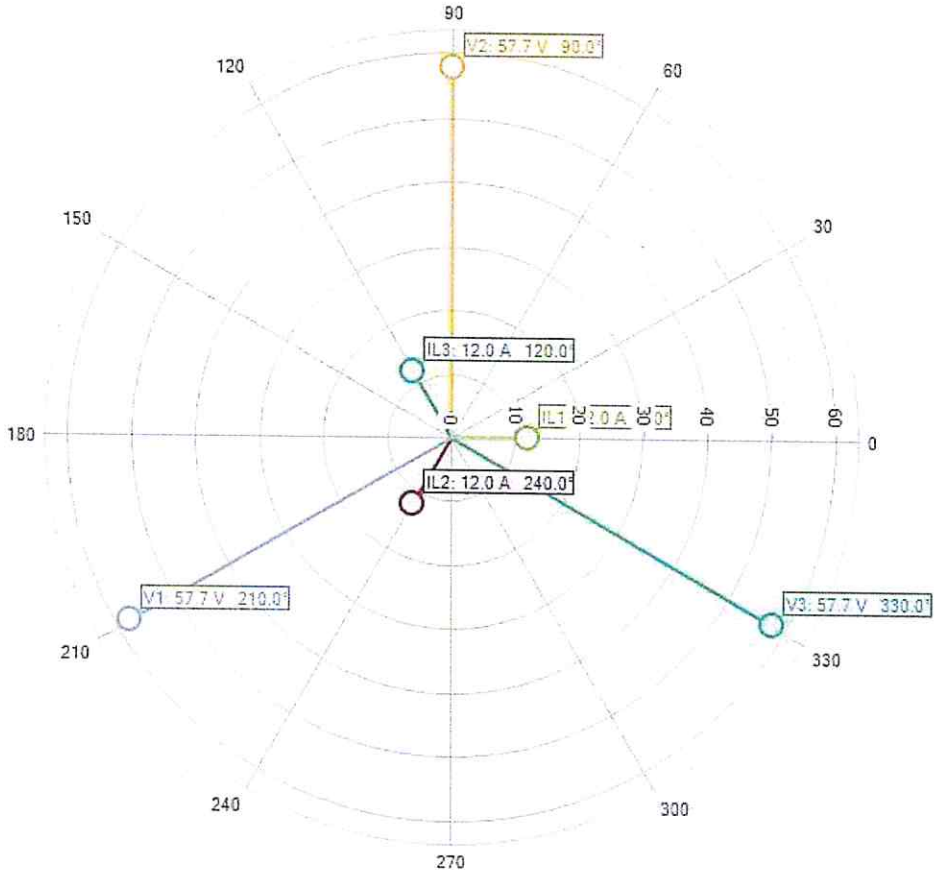
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

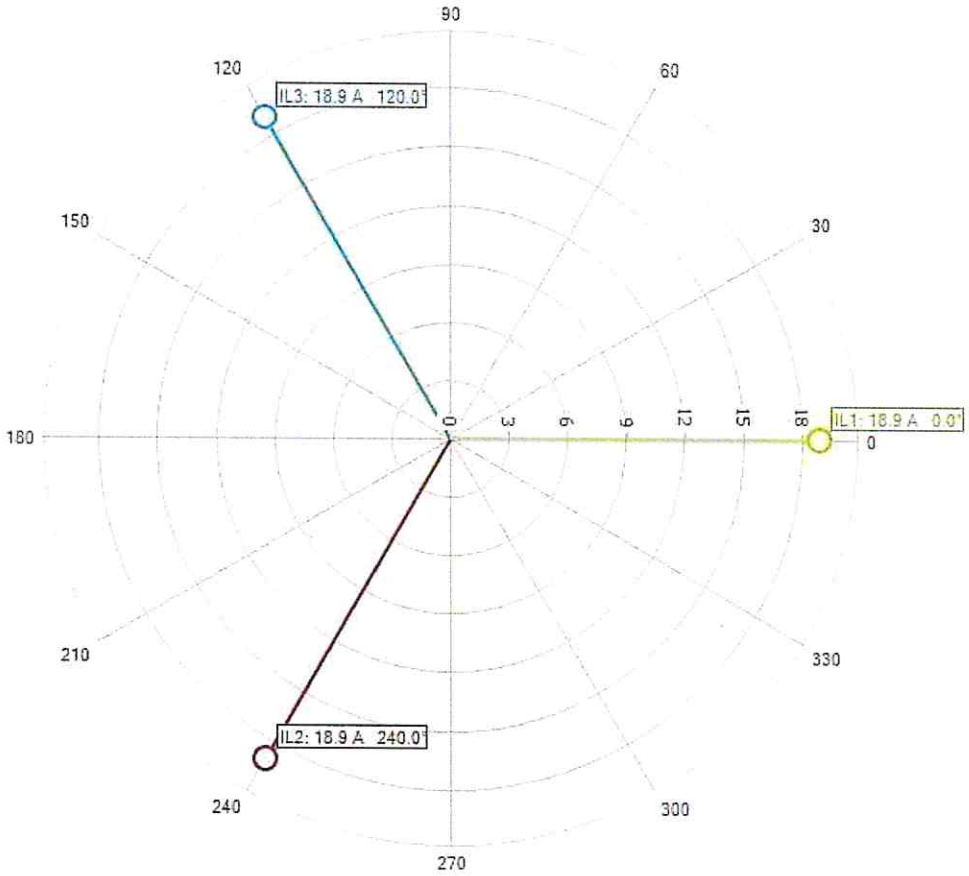
Tag name	A6/+04
Relay Serial Number	EF5001453690N000
Circuit Breaker Serial Number	CE61041911number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.470 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.470	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

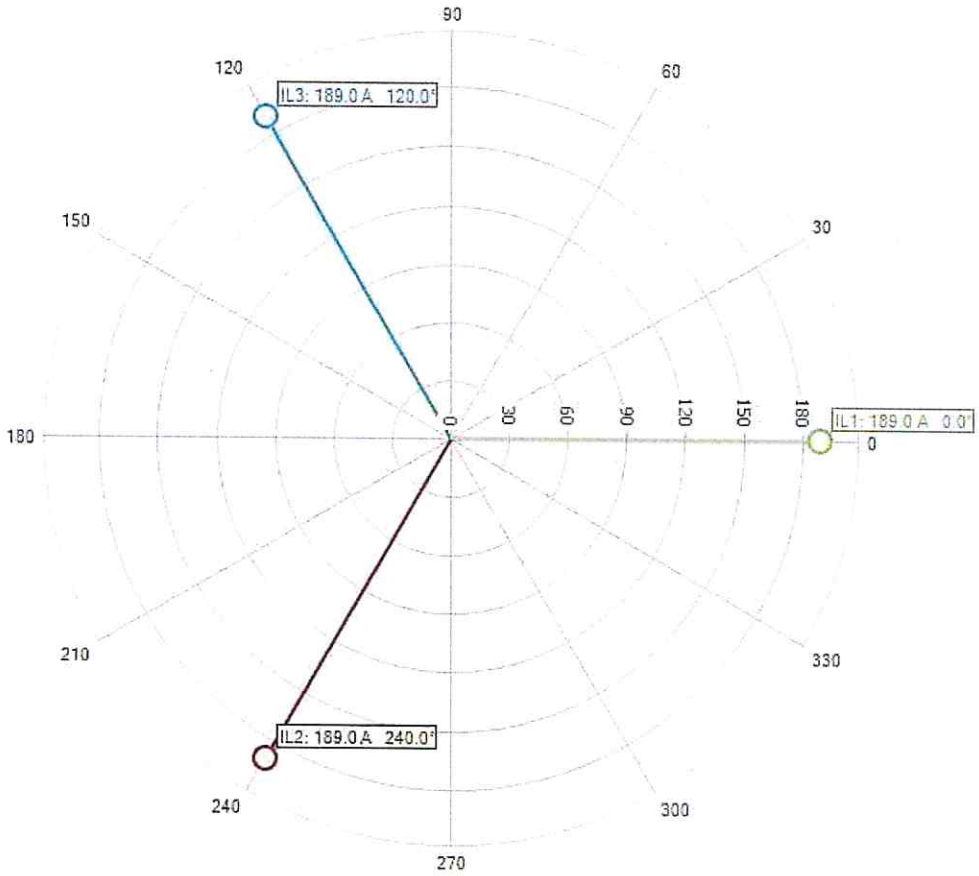
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	DP-200N1
Relay Serial Number	E237899002521070
Circuit Breaker Serial Number	EFV0791061700000
	Ekip LSI
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.65 In Time = 36.00 s Protection = S Curve type = t=k/i^2 Threshold = 9.90 In Time = 0.10 s Protection = I Threshold = 10.00 In
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

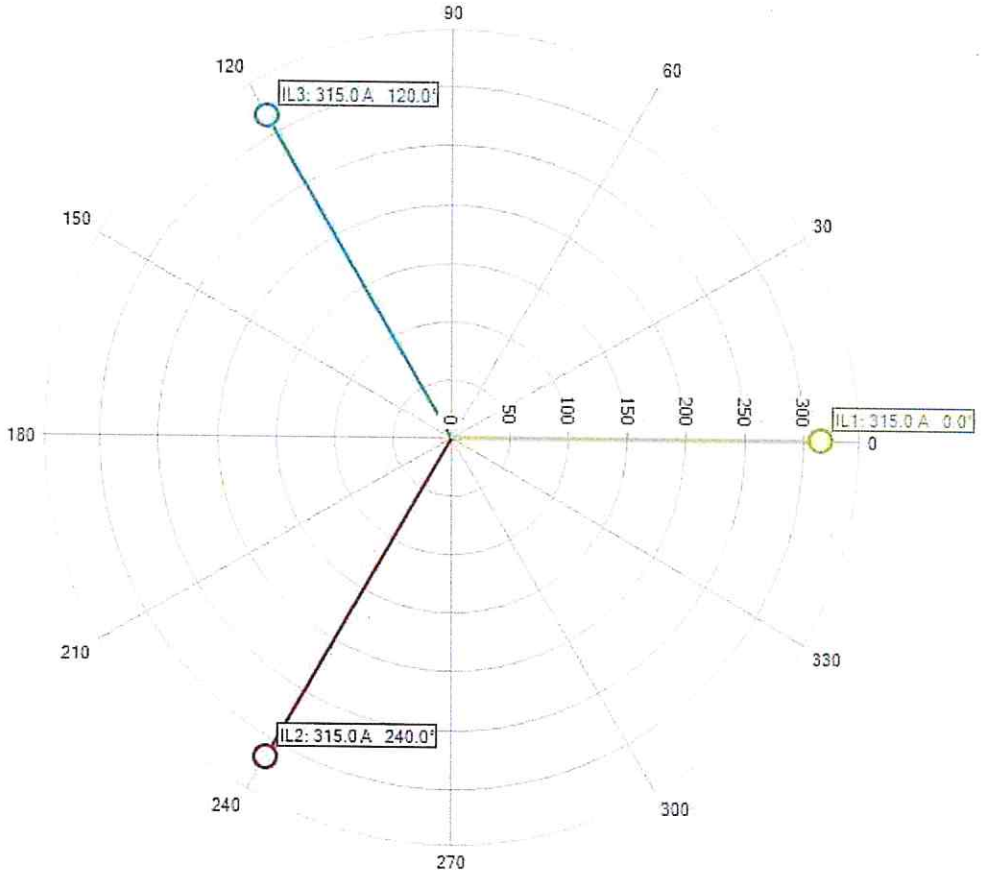
Device

Tag name	DP-200N1
Relay Serial Number	E237899002521070
Circuit Breaker Serial Number	EFV0791061700000
	Ekip LSI
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.65 In Time = 36.00 s Protection = S Curve type = t=k/i^2 Threshold = 9.90 In Time = 0.10 s Protection = I Threshold = 10.00 In

Preconditions

Test result

⚠ Test completed without any trip in 3000 ms.



Test

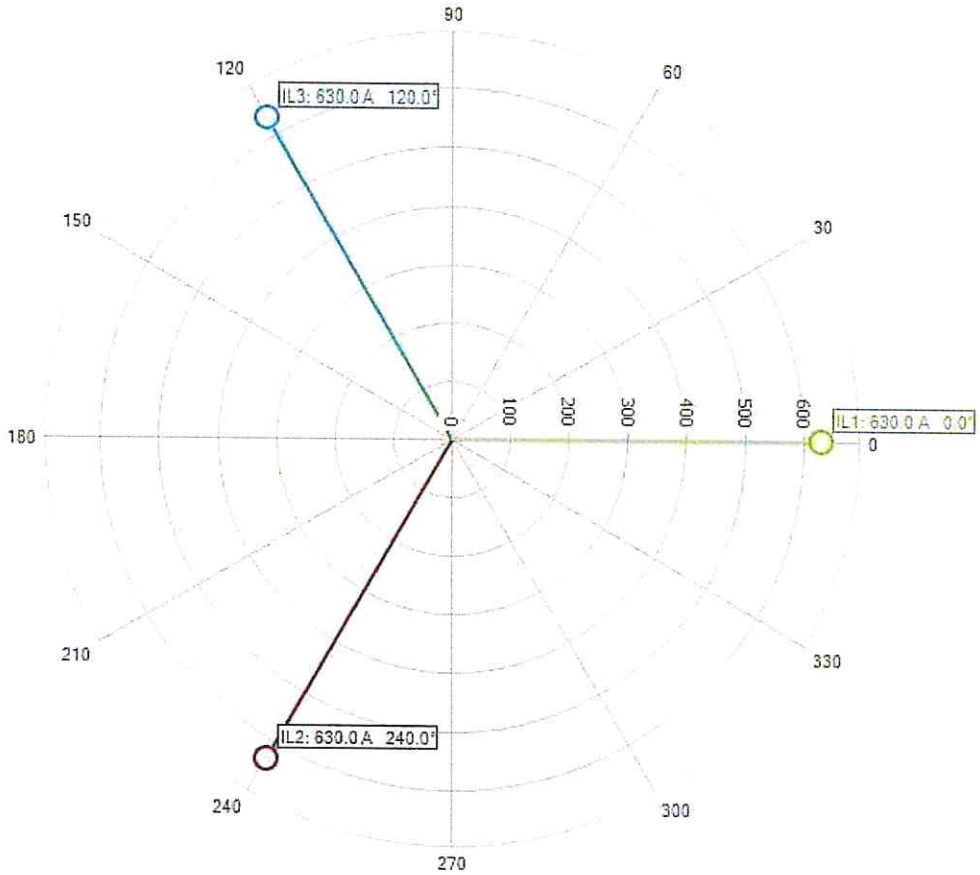
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	DP-200N1
Relay Serial Number	E237899002521070
Circuit Breaker Serial Number	EFV0791061700000
	Ekip LSI
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.65 In Time = 36.00 s Protection = S Curve type = t=k/i^2 Threshold = 9.90 In Time = 0.10 s Protection = I Threshold = 10.00 In
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

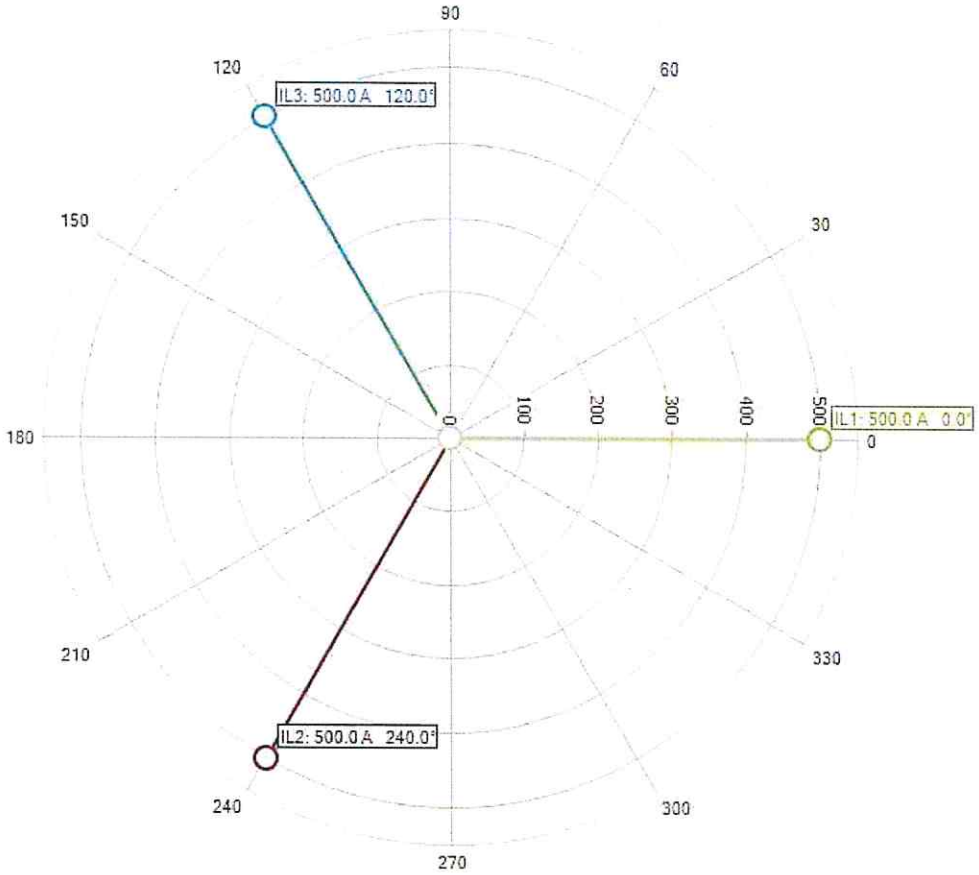
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	DP-200N1
Relay Serial Number	E237899002521070
Circuit Breaker Serial Number	EFV0791061700000
	Ekip LSI
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.65 In Time = 36.00 s Protection = S Curve type = t=k/i^2 Threshold = 9.90 In Time = 0.10 s Protection = I Threshold = 10.00 In
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	TEST5
Session	Default session
Customer	
Location	
Operator	

Device

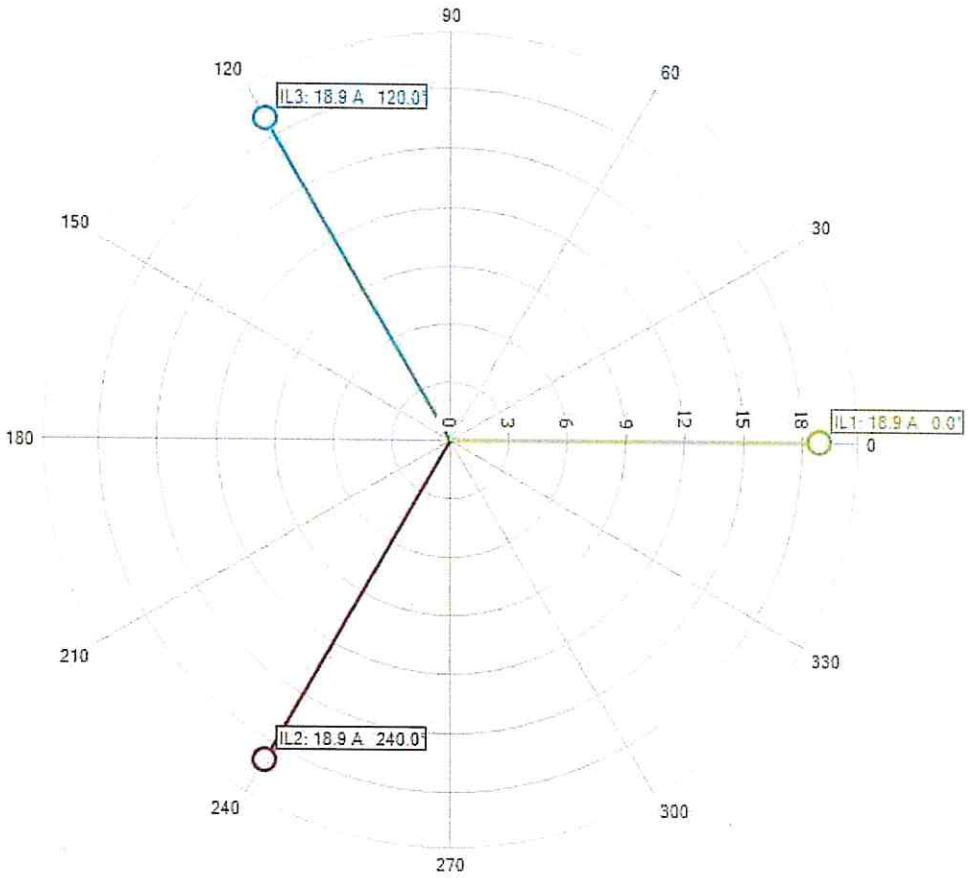
Tag name	DP-200N1
Relay Serial Number	E237899002521070
Circuit Breaker Serial Number	EFV0791061700000
	Ekip LSI
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.65 In Time = 36.00 s Protection = S Curve type = t=k/i^2 Threshold = 9.90 In Time = 0.10 s Protection = I Threshold = 10.00 In
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection L tripped in 2192 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	1.00	In
		L time	36.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	9.90	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	10.00	In
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1

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Test

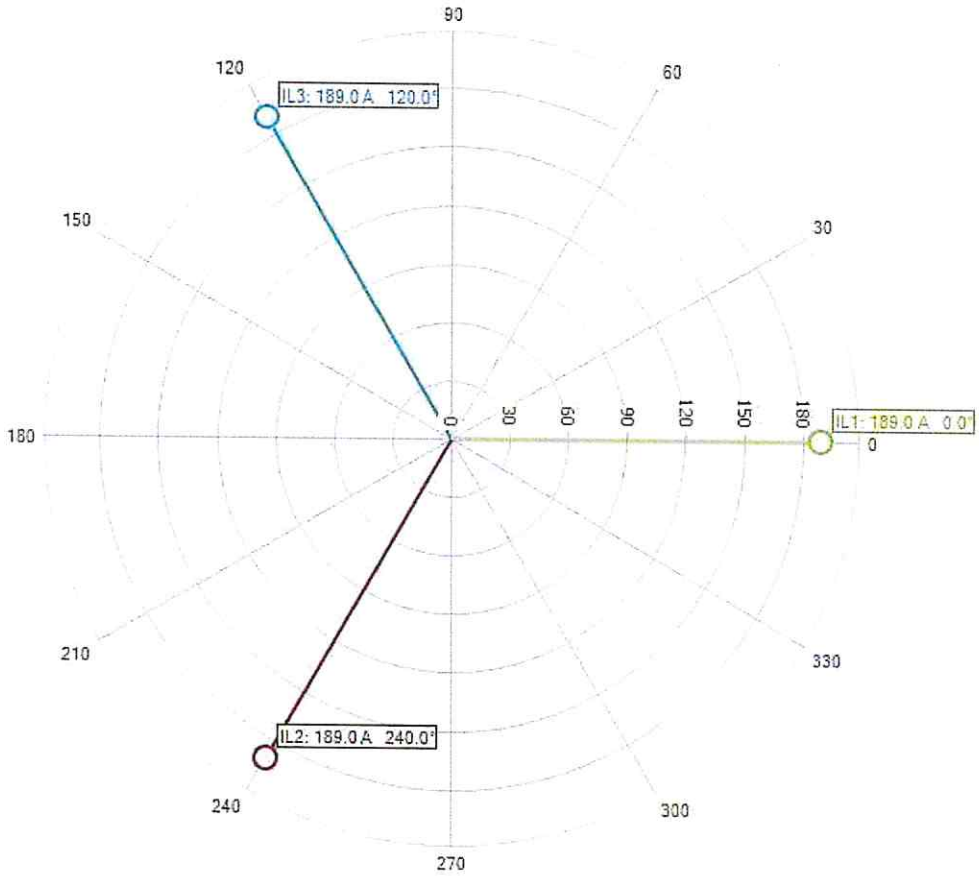
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

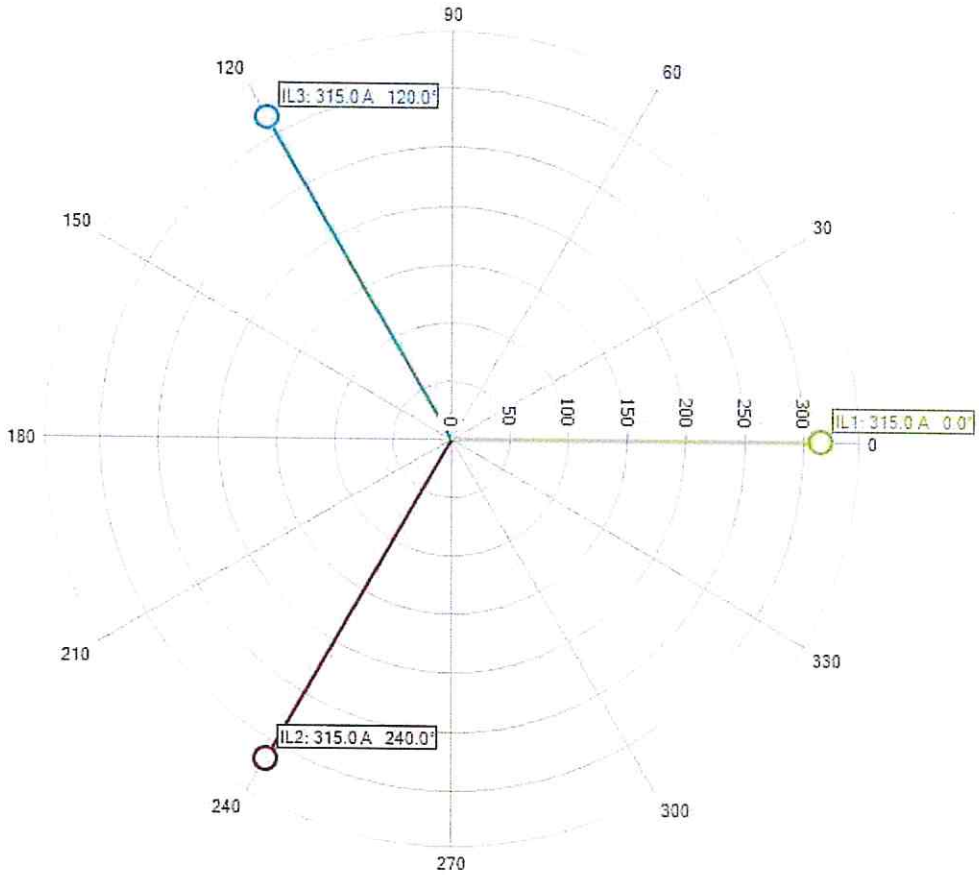
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection L tripped in 795 ms.
Trip time must be between 0 ms and 1000 ms.



Test

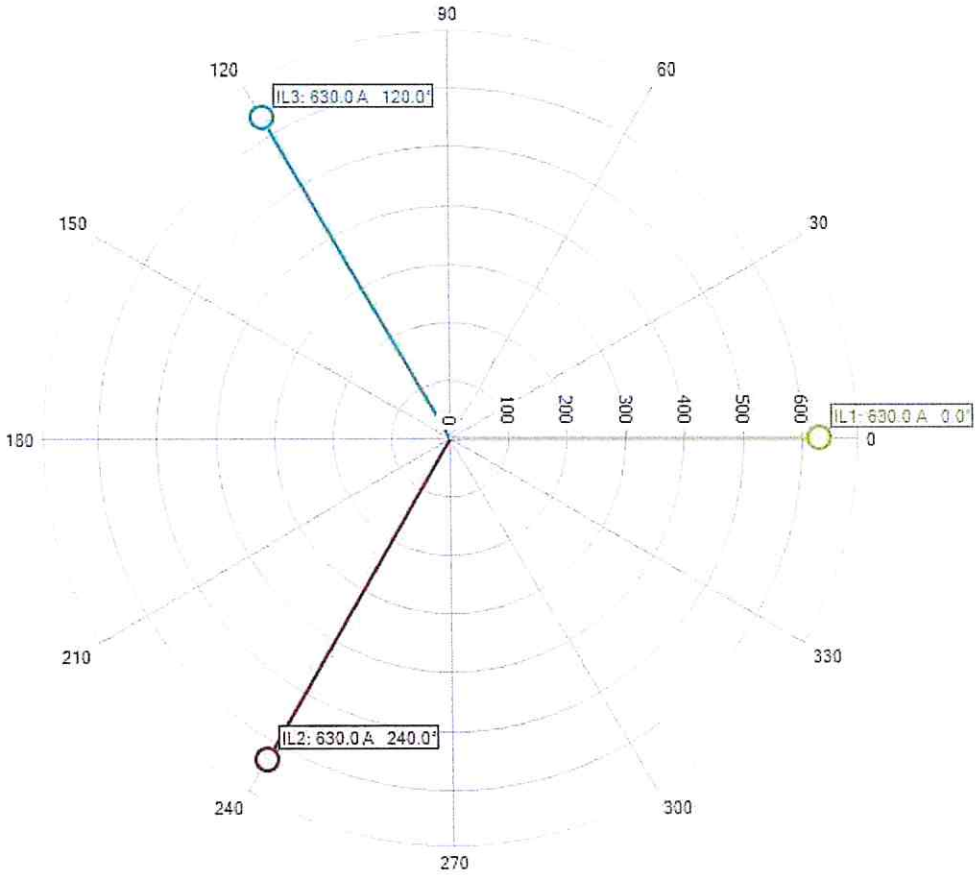
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

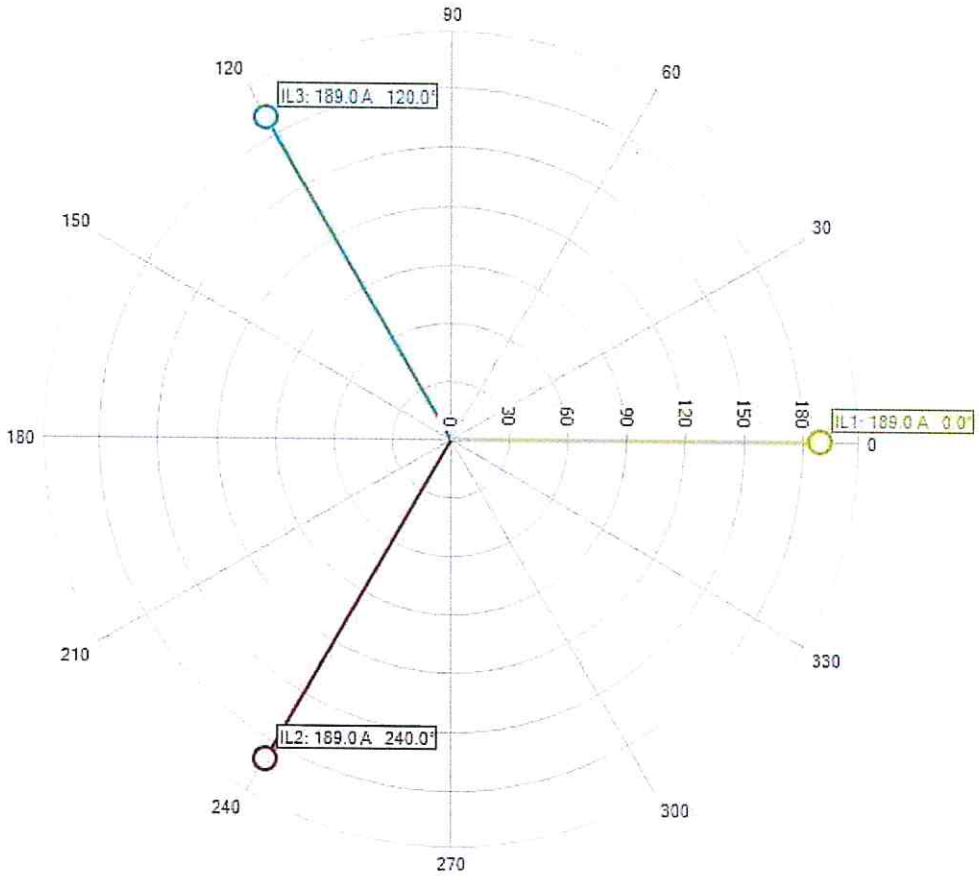
Tag name	A6/05
Relay Serial Number	E198130002521070
Circuit Breaker Serial Number	EFA0722060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	0.50	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	2.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	5.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1

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Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

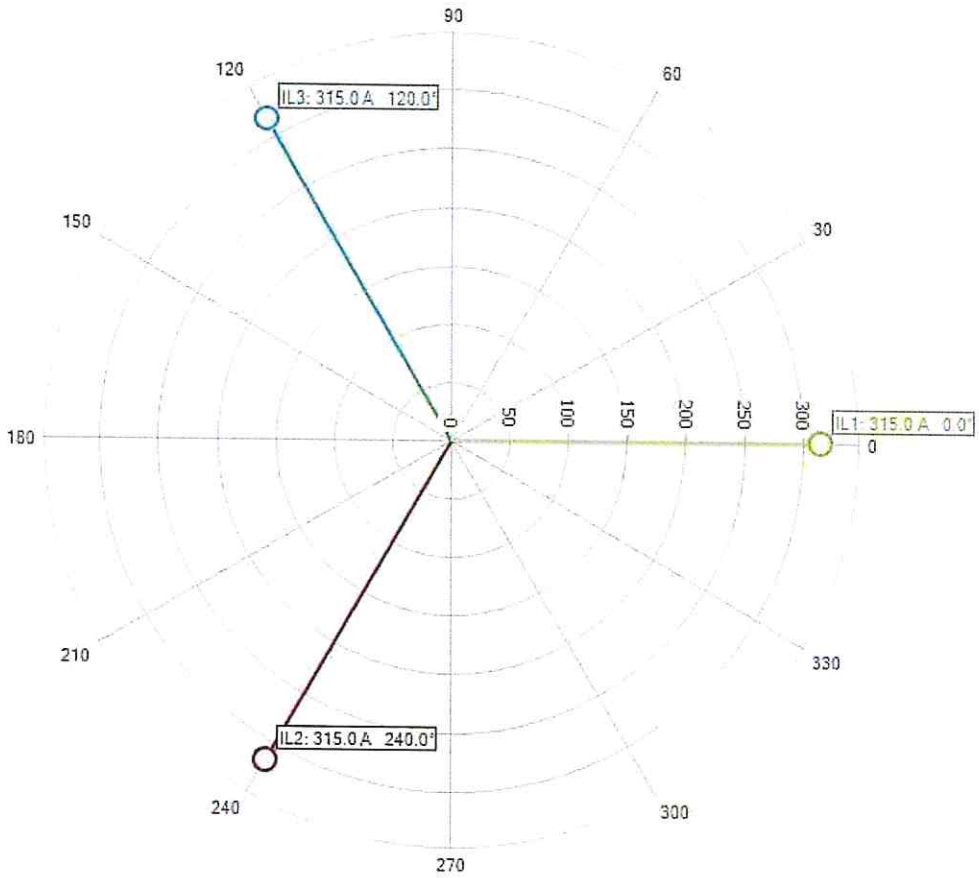
Device

Tag name	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection L tripped in 788 ms.
Trip time must be between 0 ms and 1000 ms.

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Test

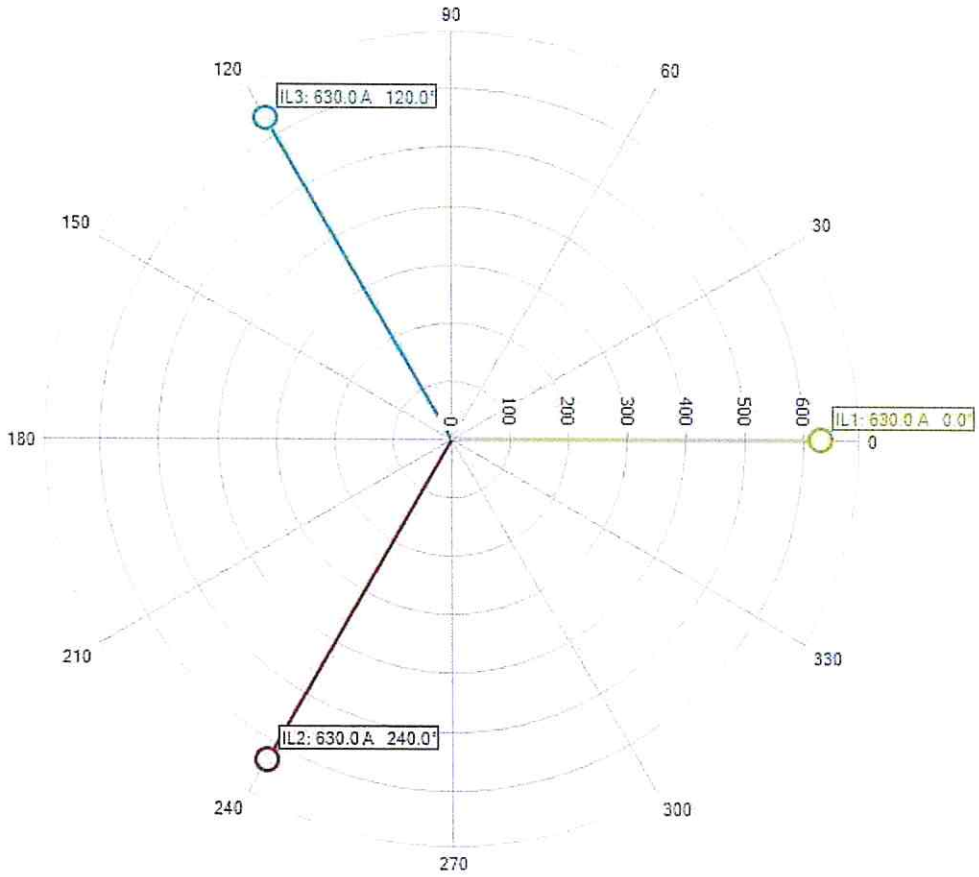
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 38 ms.
Trip time must be between 0 ms and 1000 ms.



Test

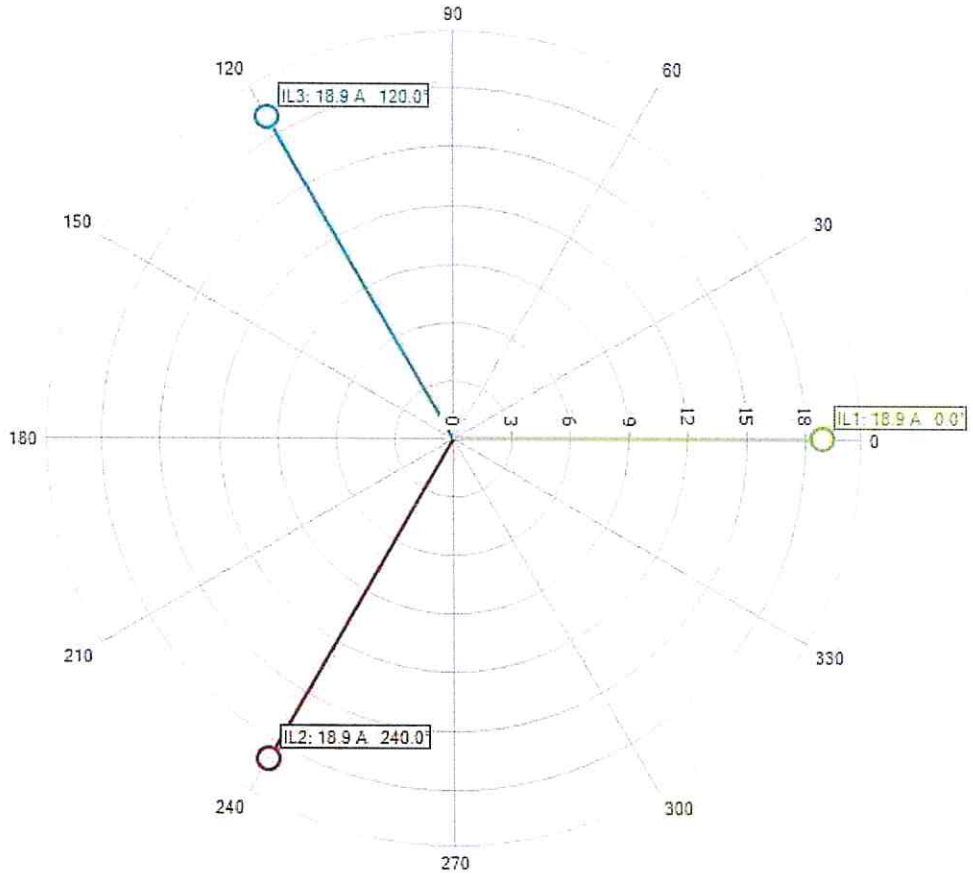
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

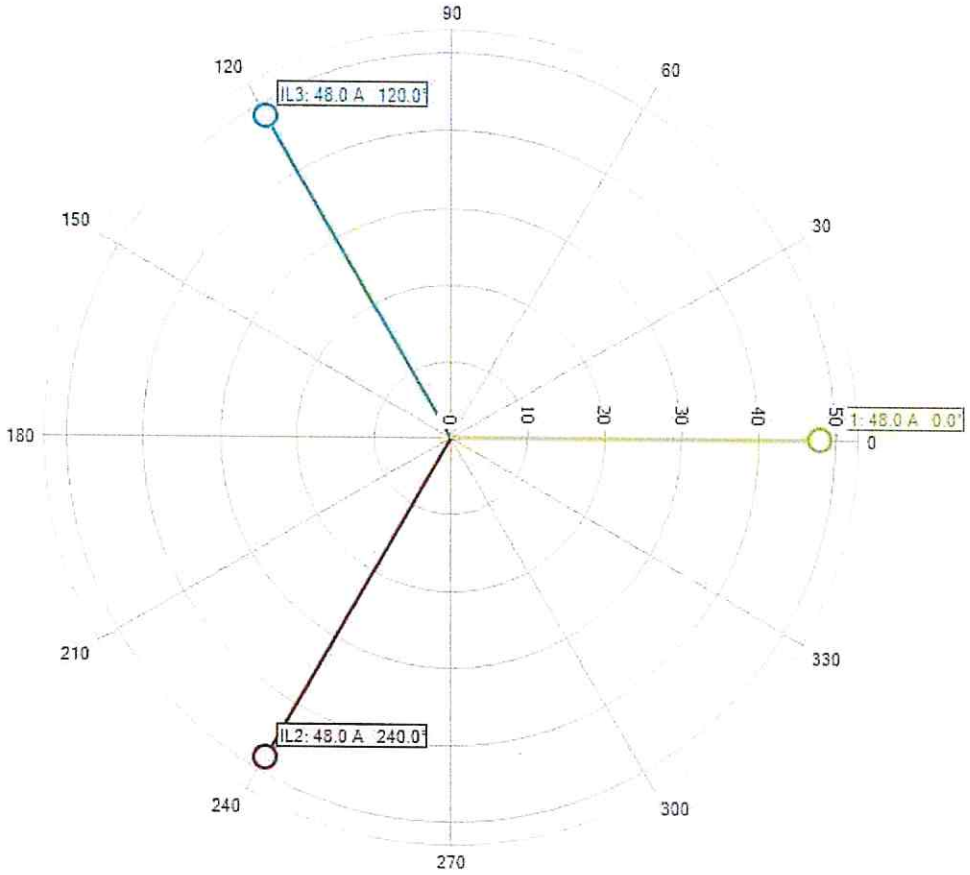
Device

Tag name	A6/06
Relay Serial Number	E198128002521070
Circuit Breaker Serial Number	EFA0720060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	0.50	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	2.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	5.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

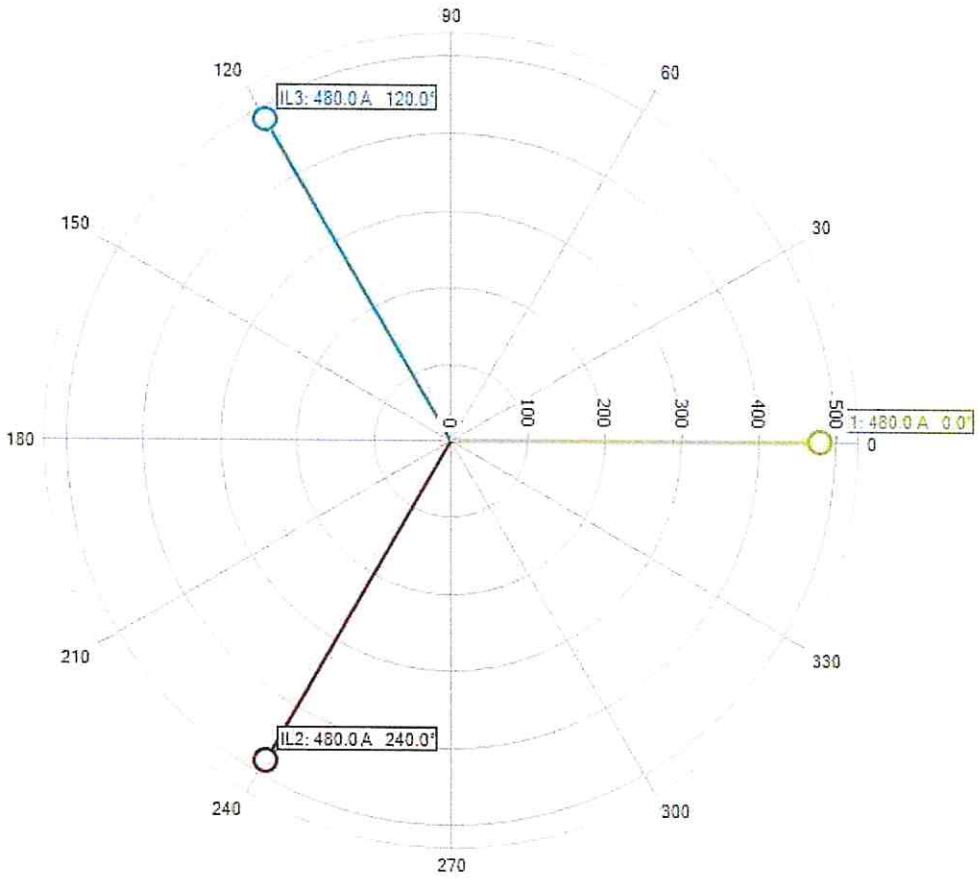
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/08
Relay Serial Number	E198551002521070
Circuit Breaker Serial Number	EF60642061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

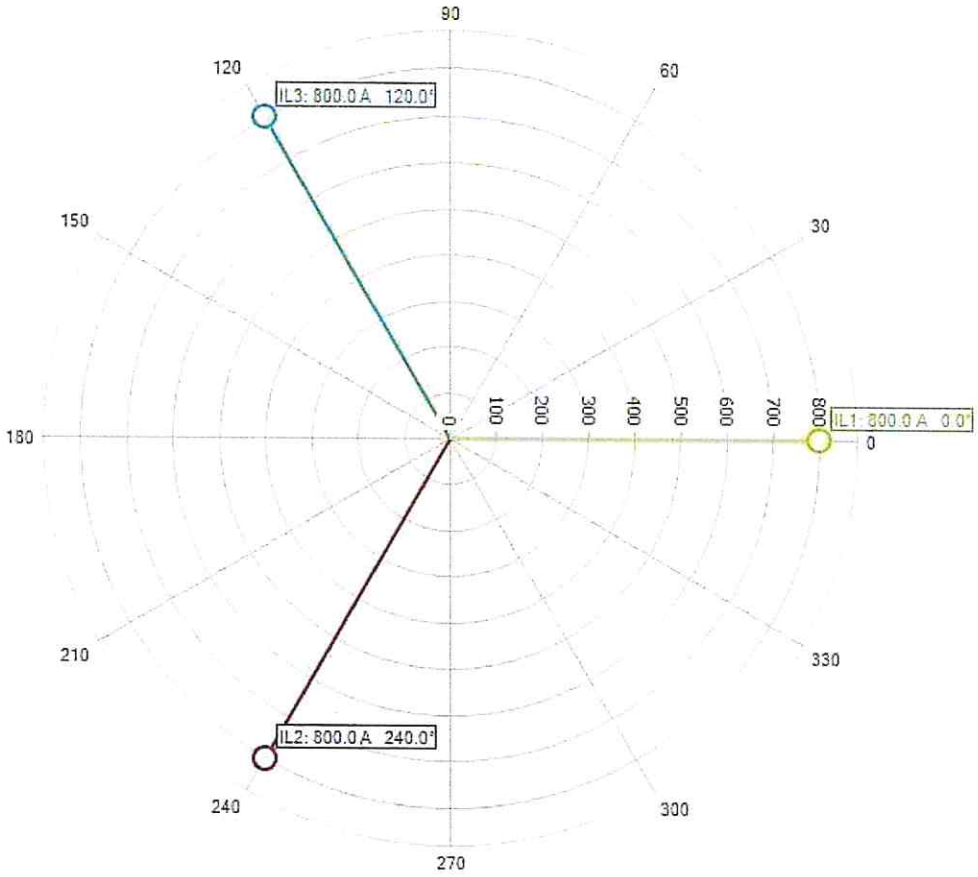
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/08
Relay Serial Number	E198551002521070
Circuit Breaker Serial Number	EF60642061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1948 ms.
Trip time must be between 0 ms and 1000 ms.



Test

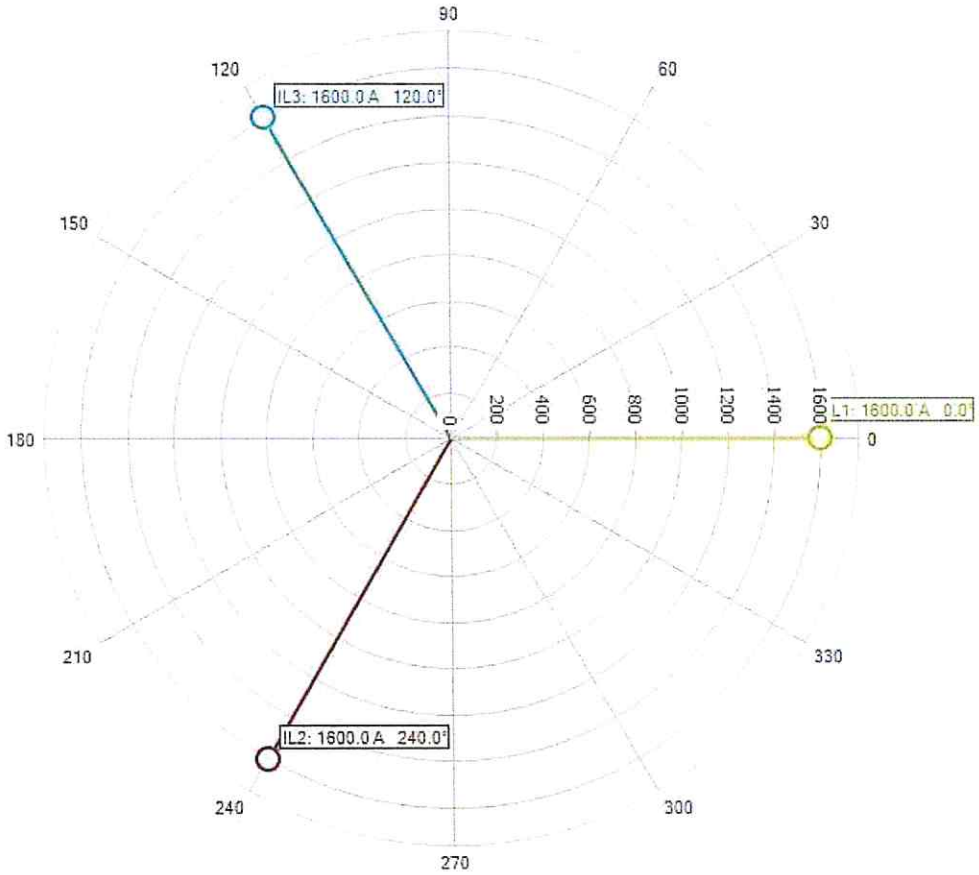
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A6/08
Relay Serial Number	E198551002521070
Circuit Breaker Serial Number	EF60642061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 413 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

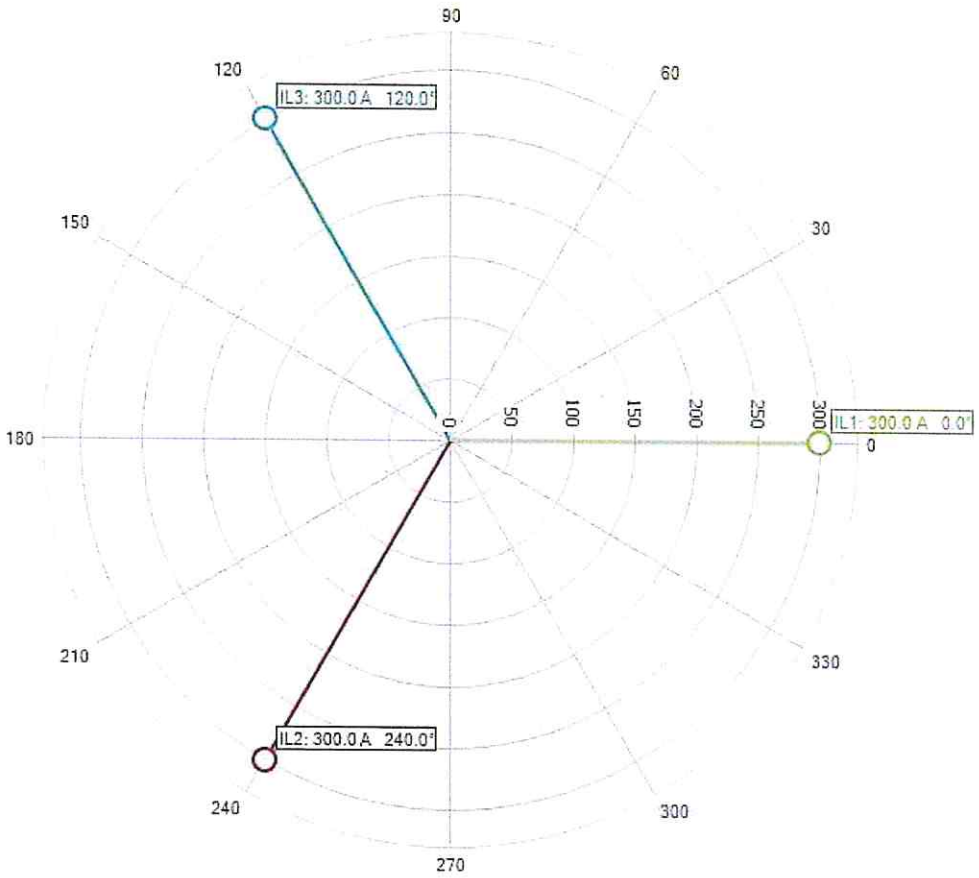
Device

Tag name	A6/08
Relay Serial Number	E198551002521070
Circuit Breaker Serial Number	EF60642061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 40 ms.
Trip time must be between 0 ms and 1000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	160	
		L threshold	0.80	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	4.00	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	8.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

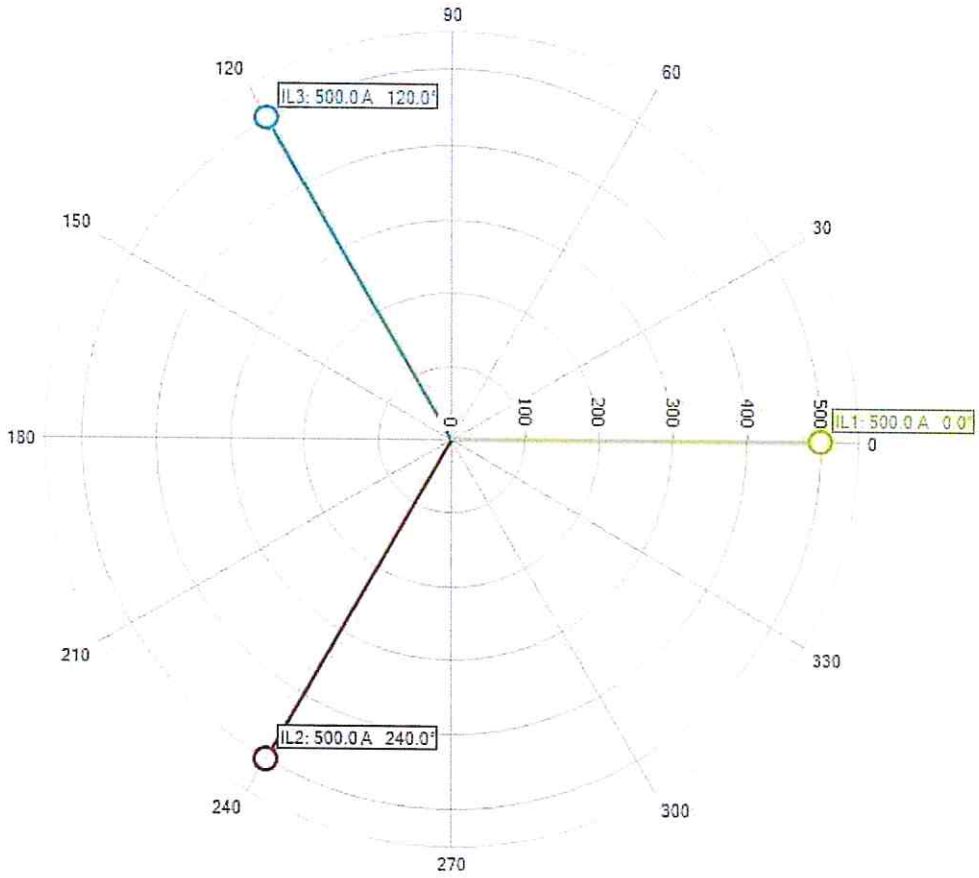
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/02
Relay Serial Number	E155615002521070
Circuit Breaker Serial Number	EF70167060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1195 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

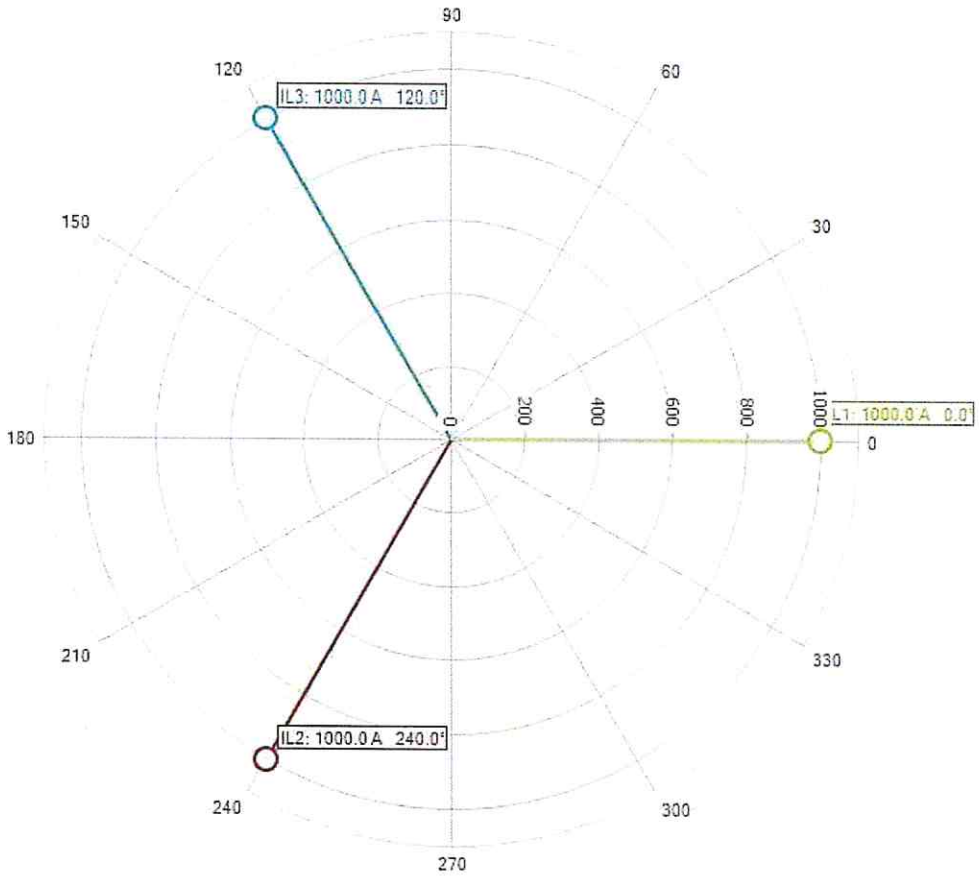
Device

Tag name	A7/02
Relay Serial Number	E155615002521070
Circuit Breaker Serial Number	EF70167060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 394 ms.
Trip time must be between 0 ms and 1000 ms.

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Test

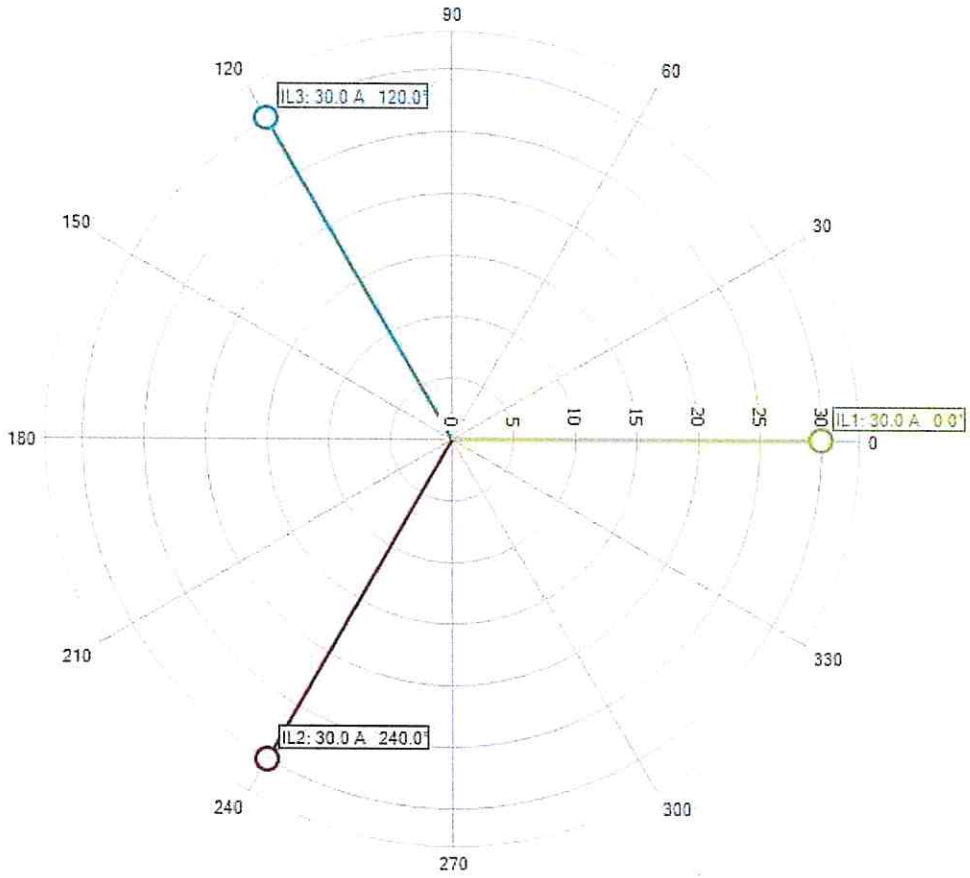
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/02
Relay Serial Number	E155615002521070
Circuit Breaker Serial Number	EF70167060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 27 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

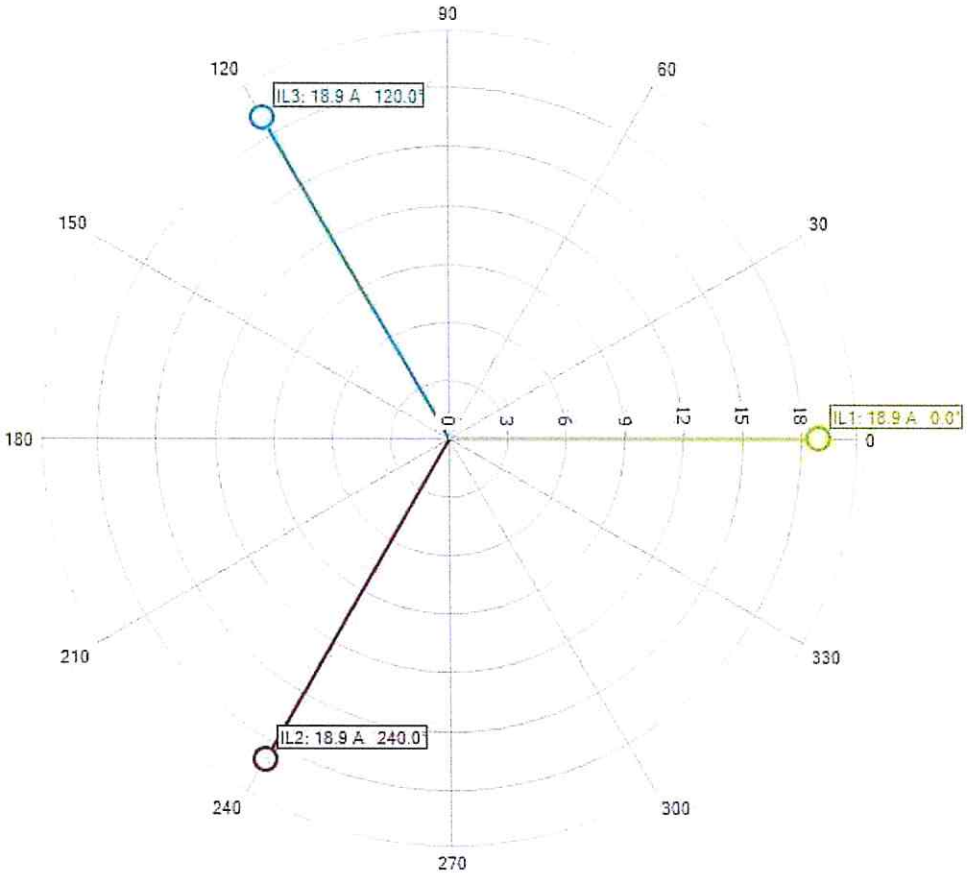
Device

Tag name	A7/02
Relay Serial Number	E155615002521070
Circuit Breaker Serial Number	EF70167060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	100	
		L threshold	0.70	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	3.00	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	6.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

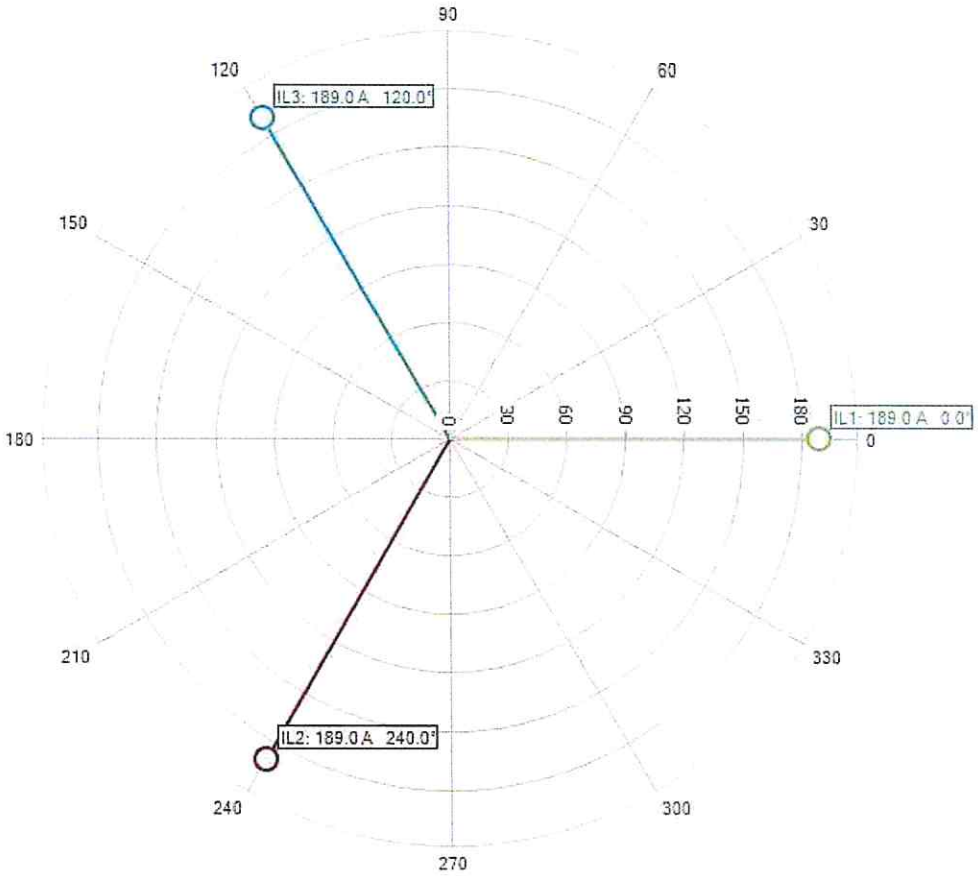
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

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

Test result

⚠ Test completed without any trip in 3000 ms.



Test

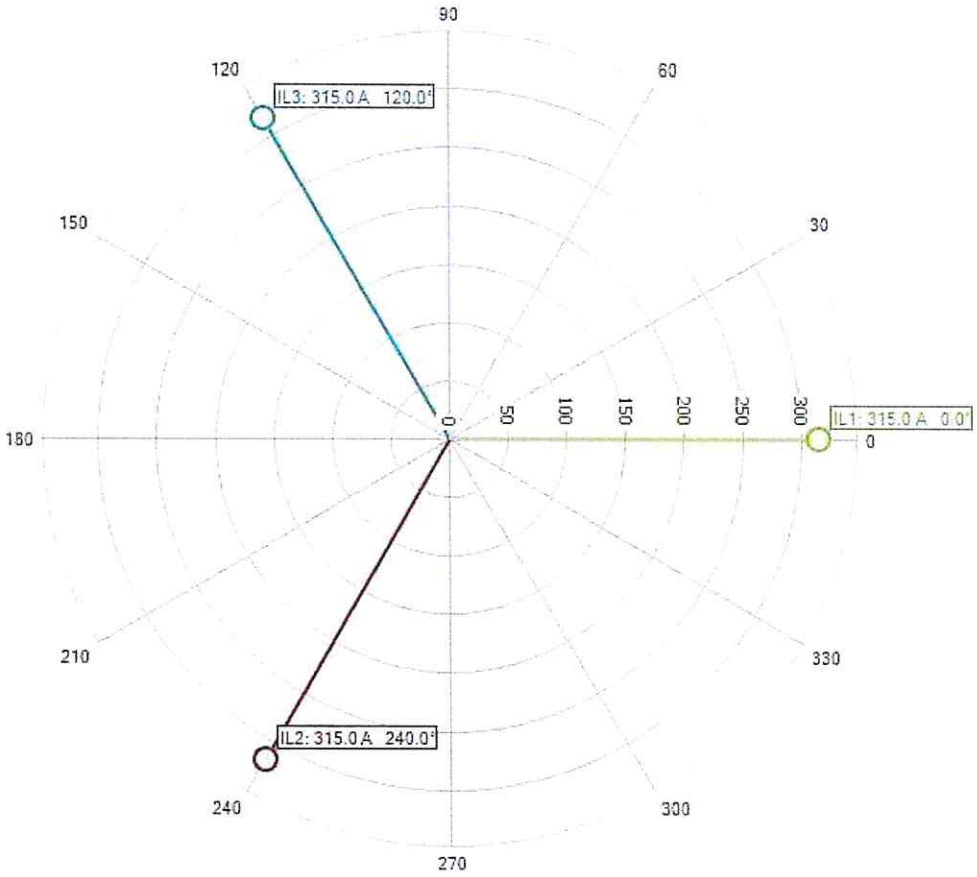
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

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

Test result

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



Test

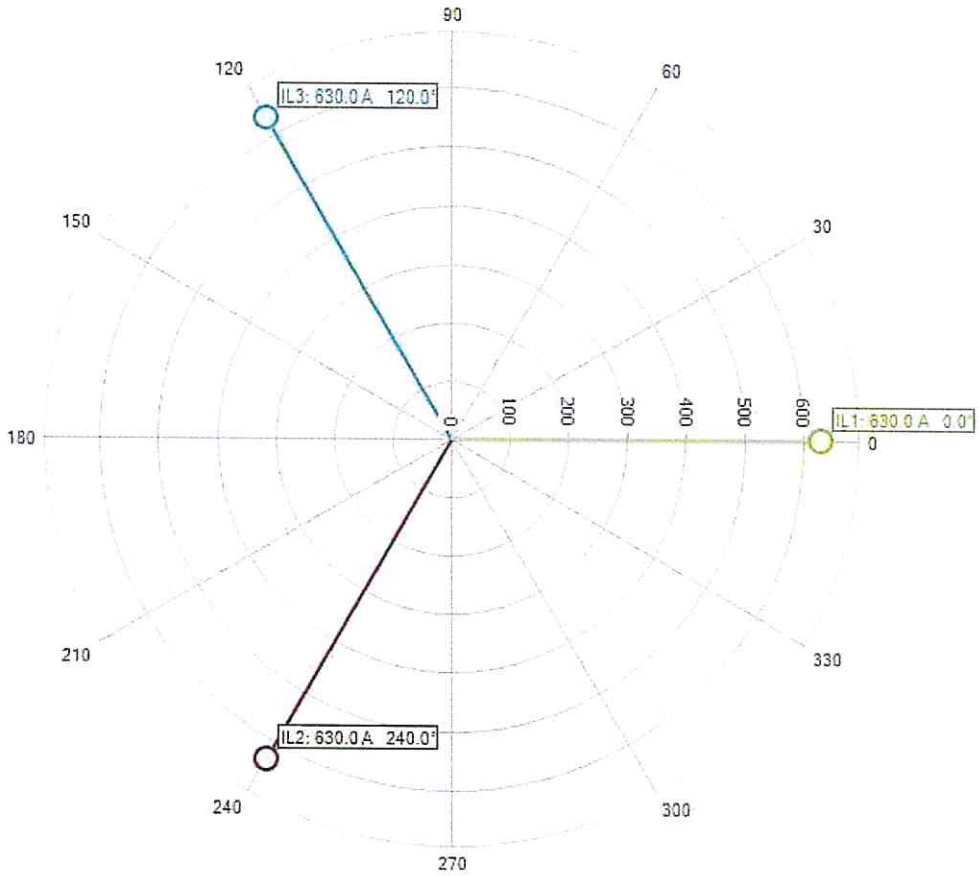
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

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

Test result

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



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

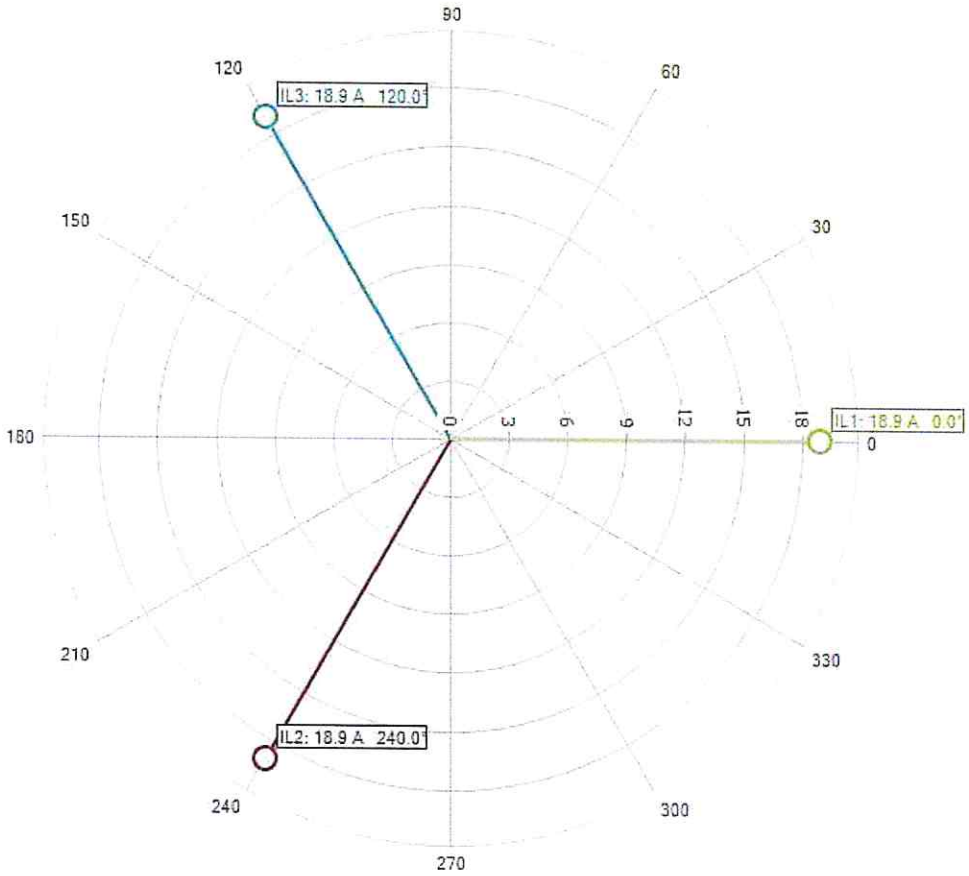
Device

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

Test result

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

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



Test

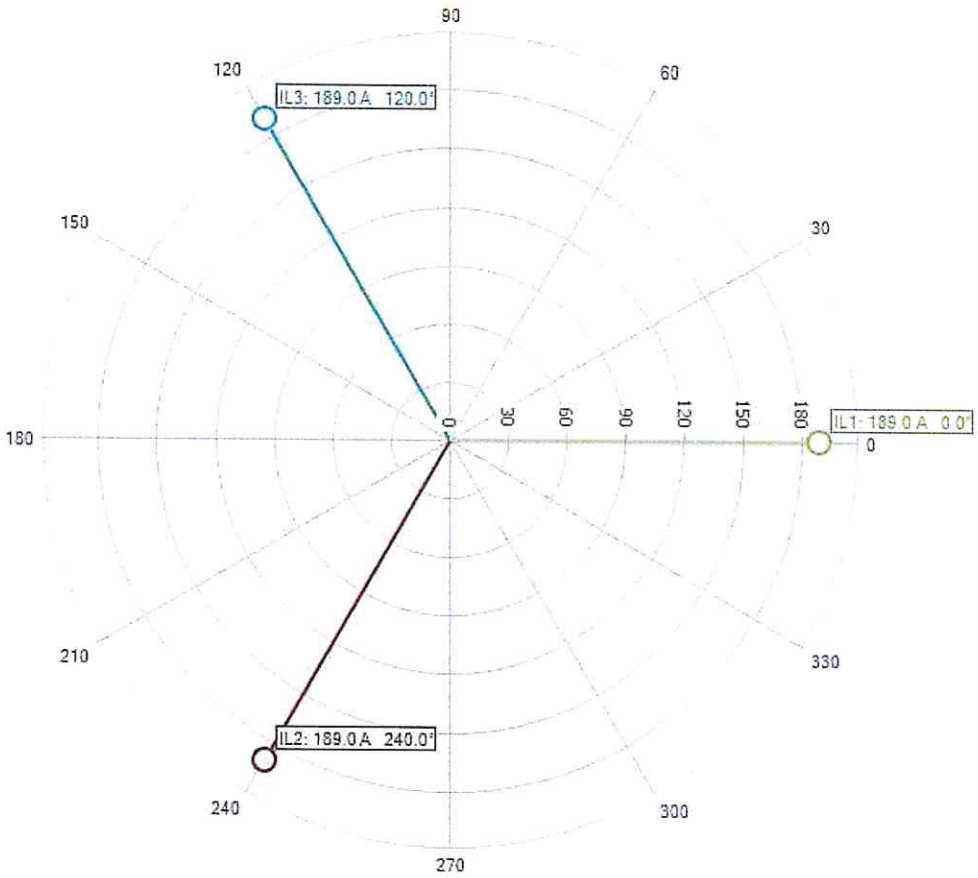
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

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

Test result

⚠ Test completed without any trip in 3000 ms.



Test

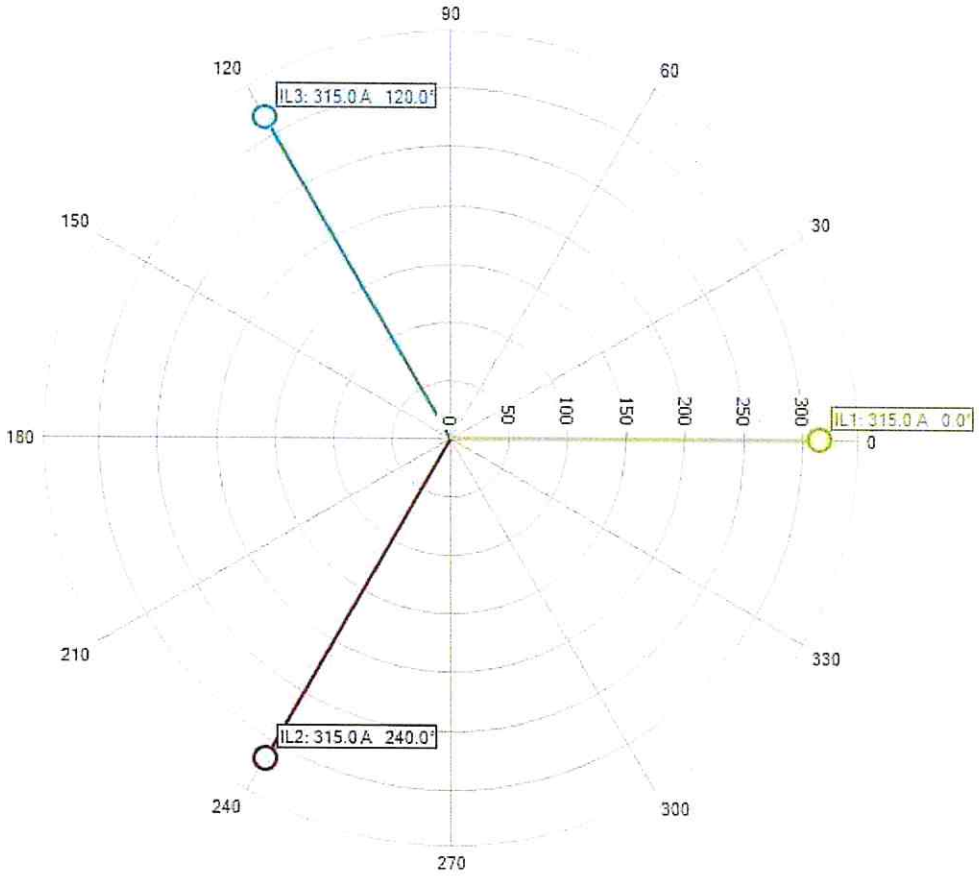
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

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

Test result

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



Test

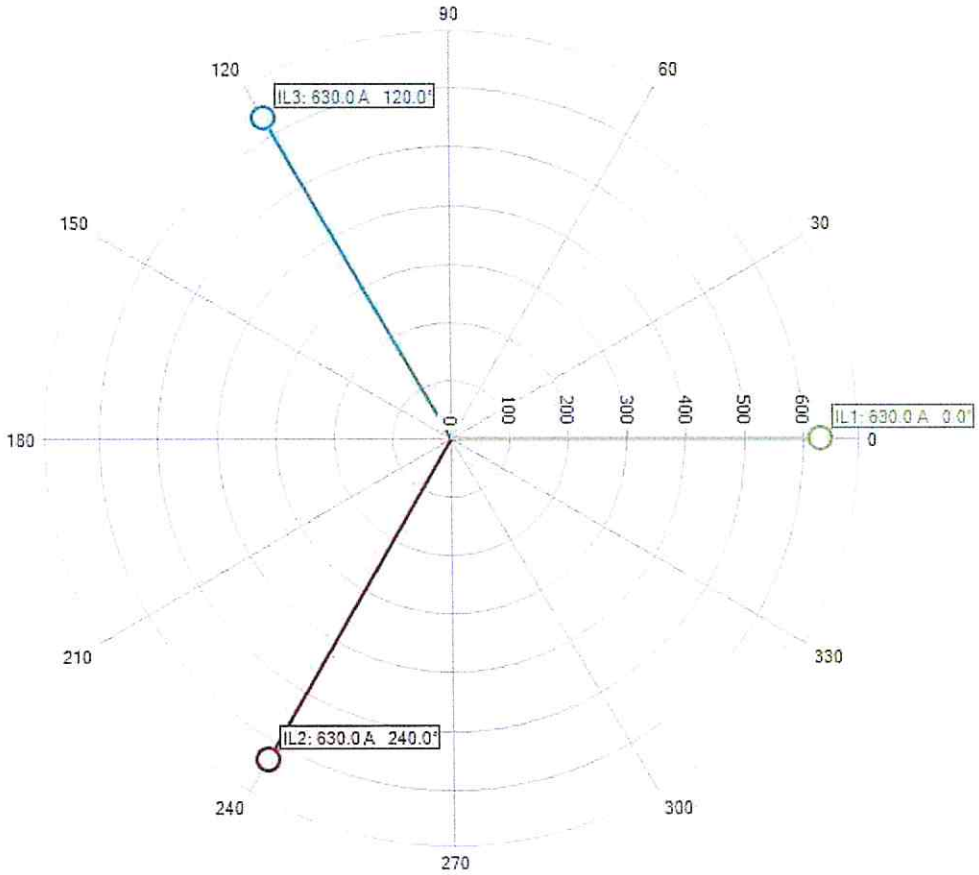
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

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

Test result

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



Test

Name	Automatic test 4
Session	Default session

Customer

Location	
Operator	

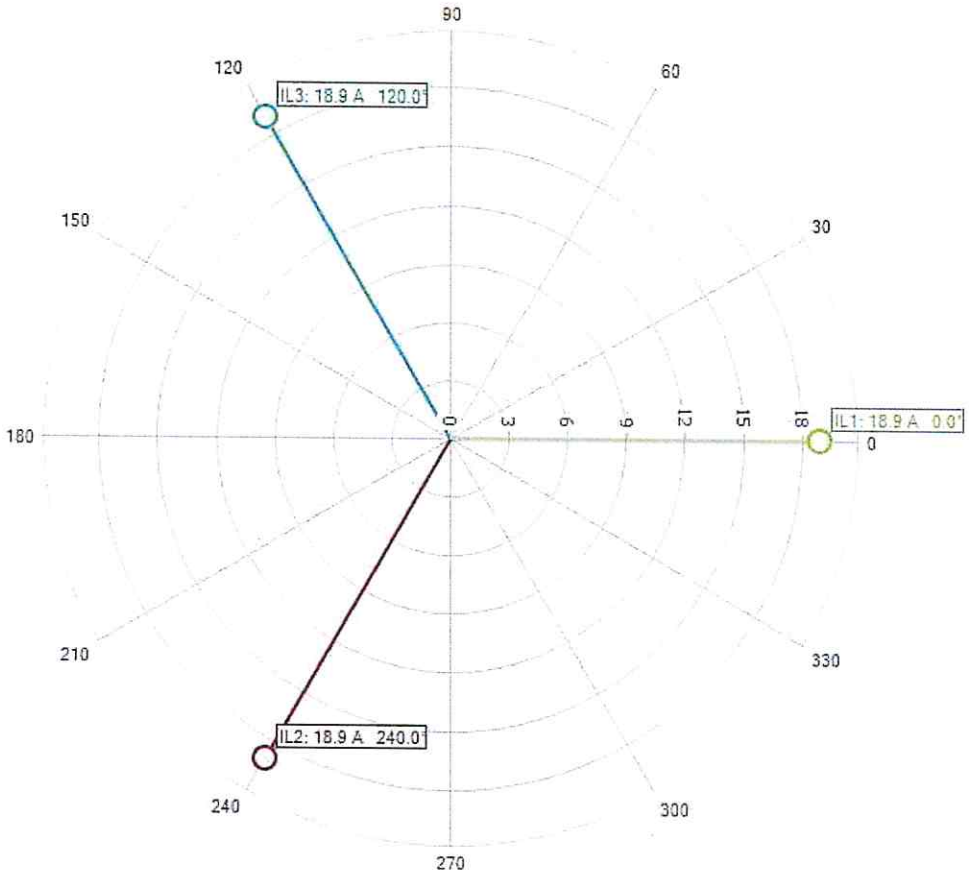
Device

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

Test result

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

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



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

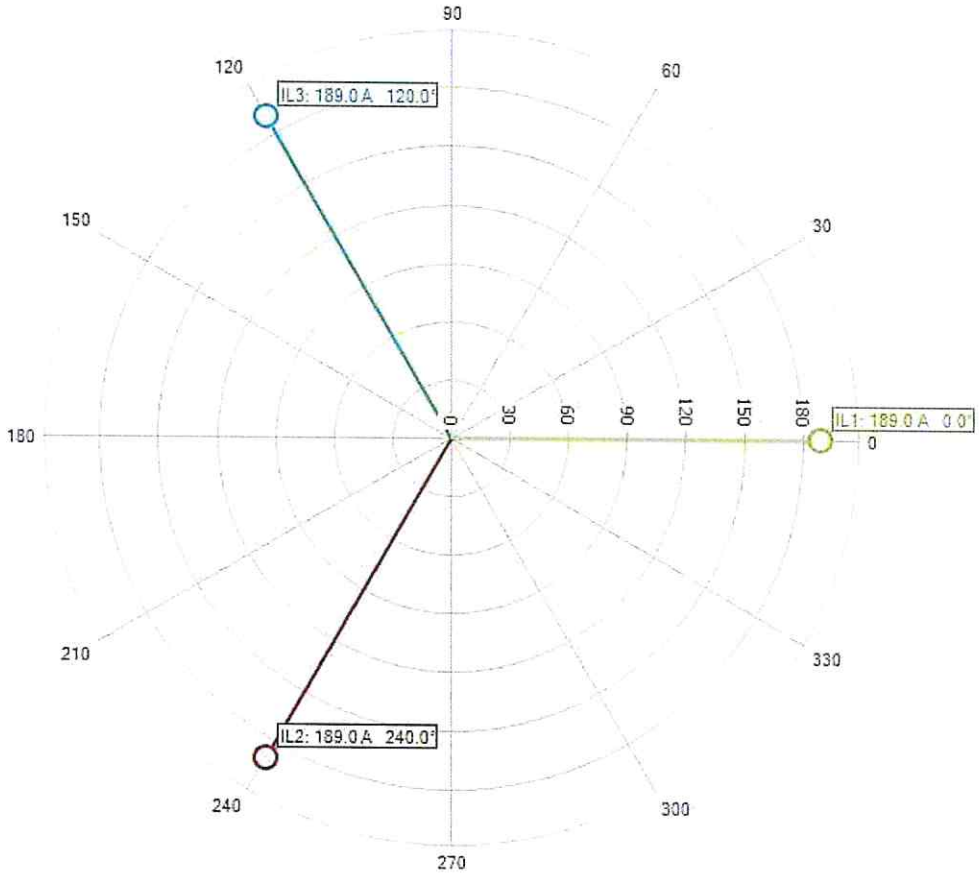
Device

Tag name	A7/05
Relay Serial Number	E201256002521070
Circuit Breaker Serial Number	EGH0520060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

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Test

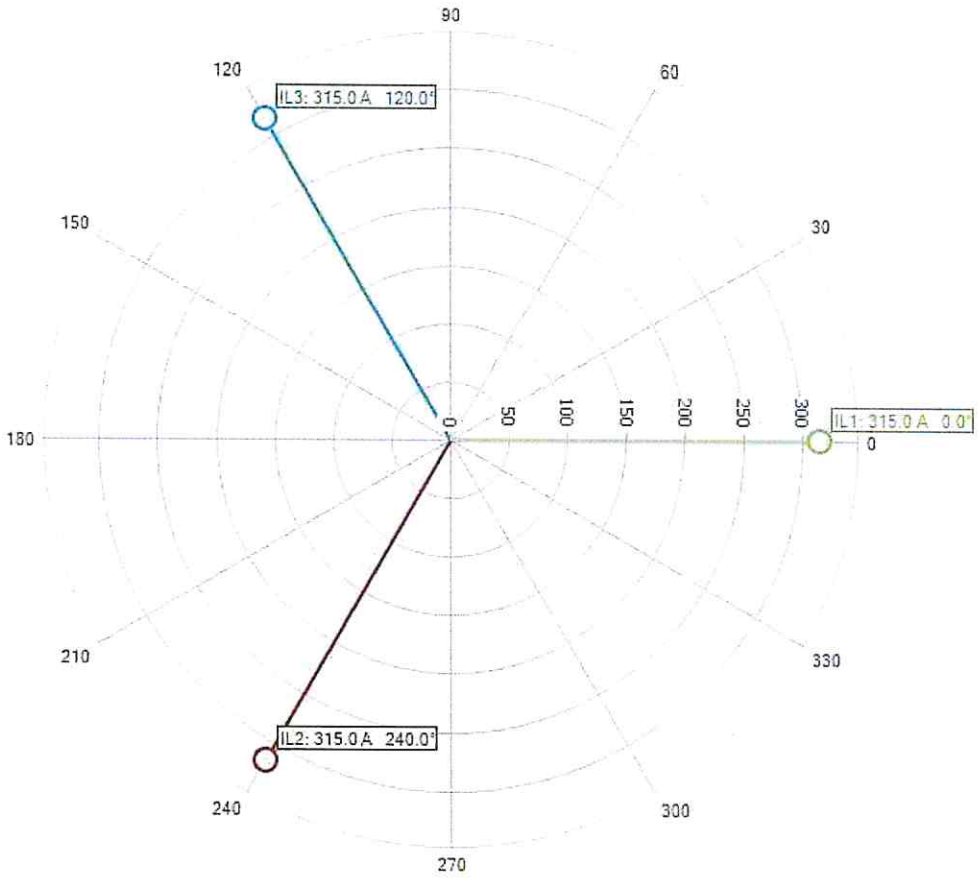
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/05
Relay Serial Number	E201256002521070
Circuit Breaker Serial Number	EGH0520060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1724 ms.
Trip time must be between 0 ms and 1000 ms.



Test

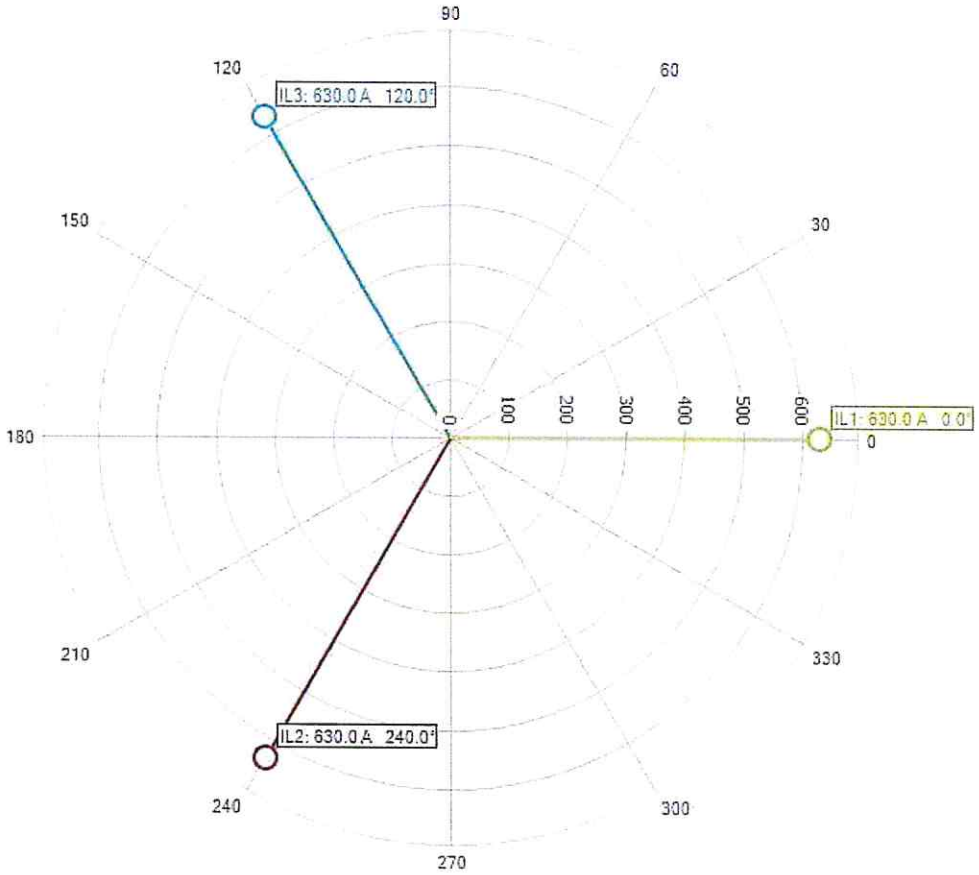
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/05
Relay Serial Number	E201256002521070
Circuit Breaker Serial Number	EGH0520060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 396 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

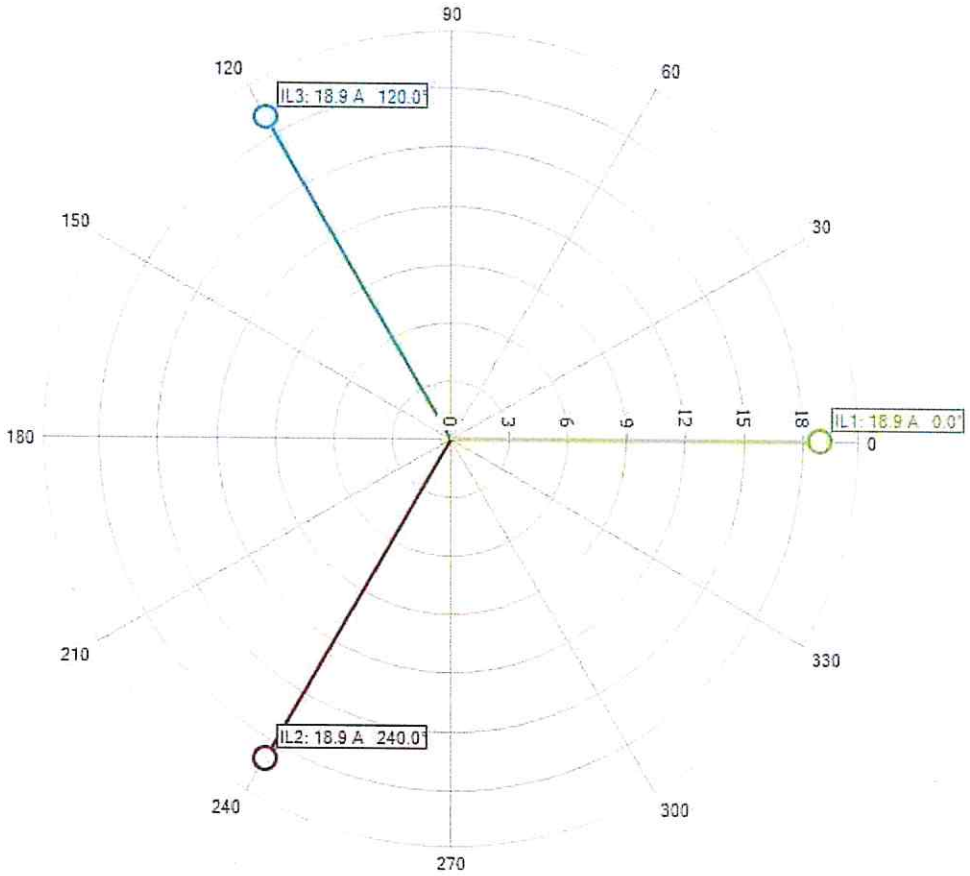
Device

Tag name	A7/05
Relay Serial Number	E201256002521070
Circuit Breaker Serial Number	EGH0520060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	0.75	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	3.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	7.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

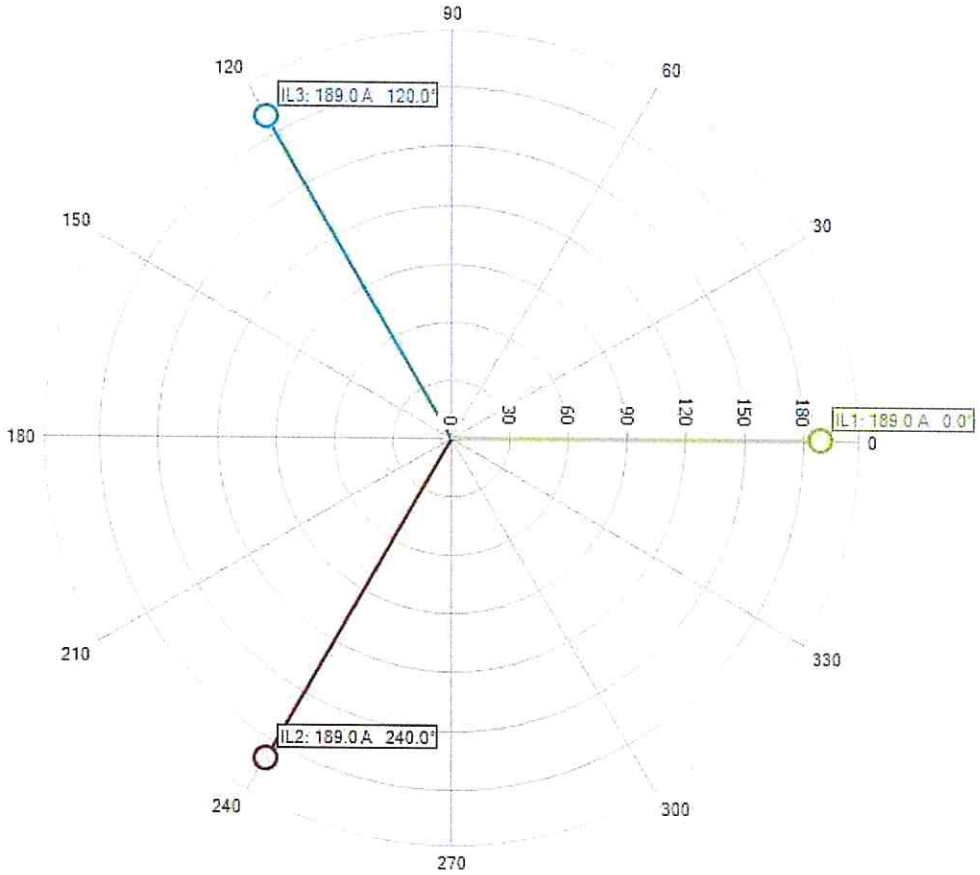
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/06
Relay Serial Number	E200623002521070
Circuit Breaker Serial Number	EGH0521060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

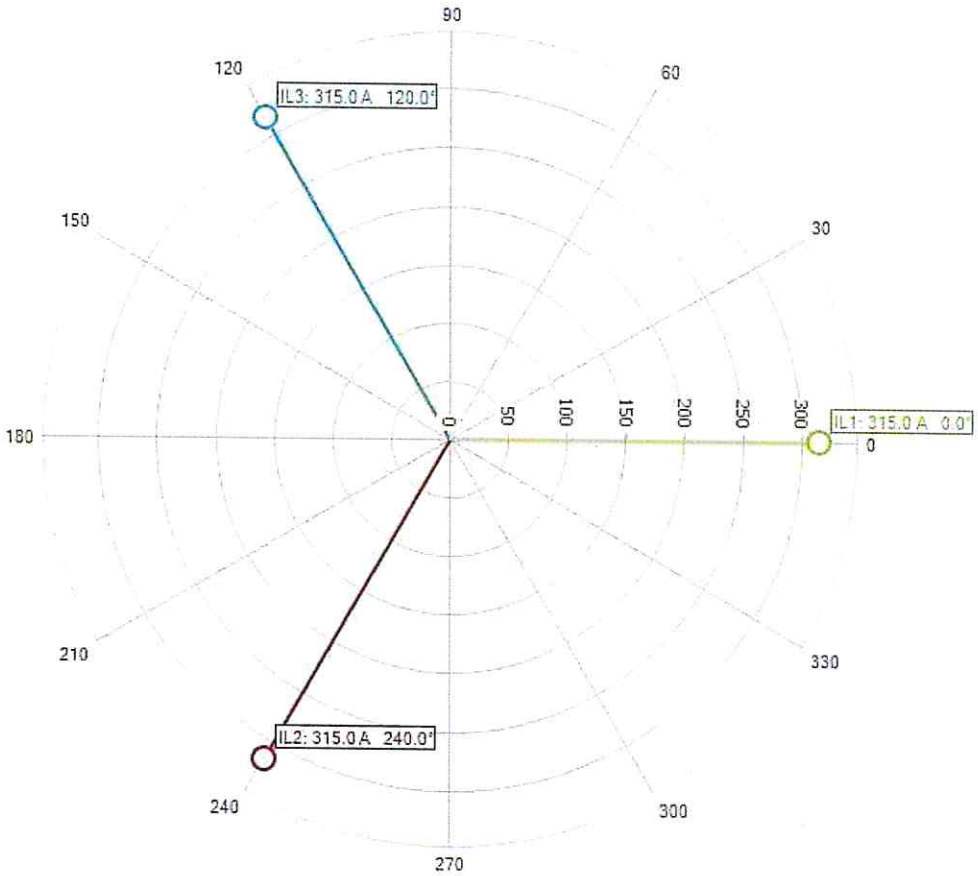
Device

Tag name	A7/06
Relay Serial Number	E200623002521070
Circuit Breaker Serial Number	EGH0521060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1721 ms.
Trip time must be between 0 ms and 1000 ms.

30 September 2024 - 14:37:15



Test

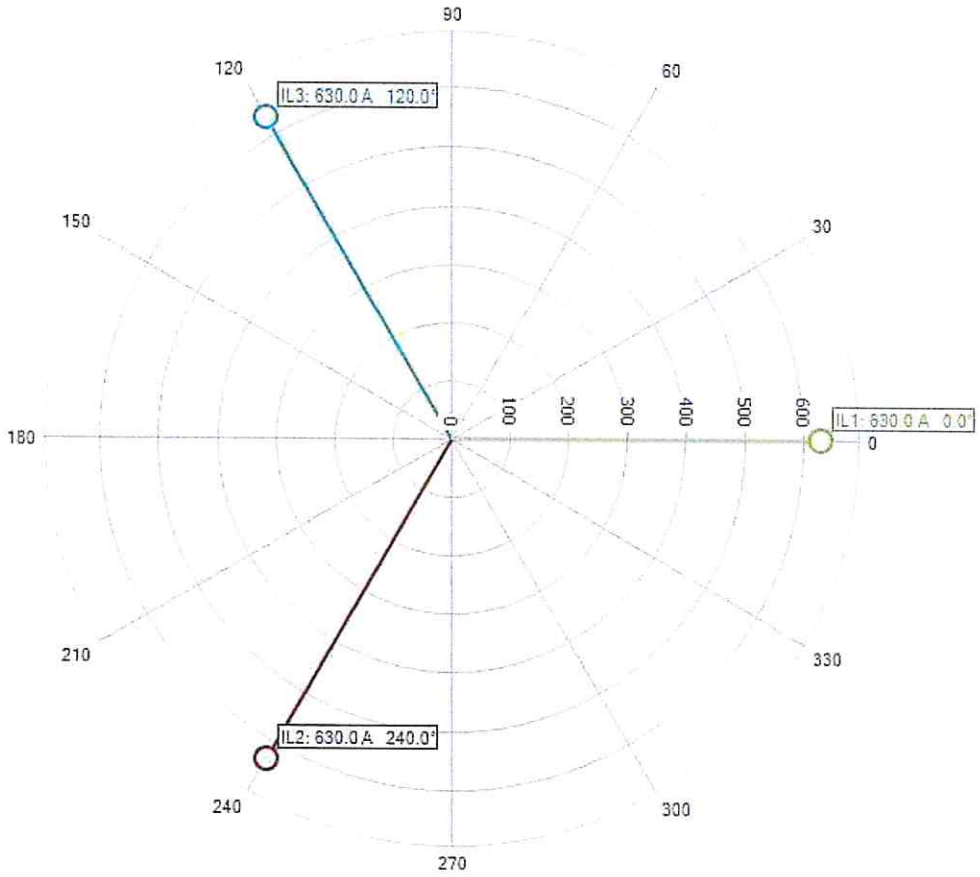
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/06
Relay Serial Number	E200623002521070
Circuit Breaker Serial Number	EGH0521060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 400 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

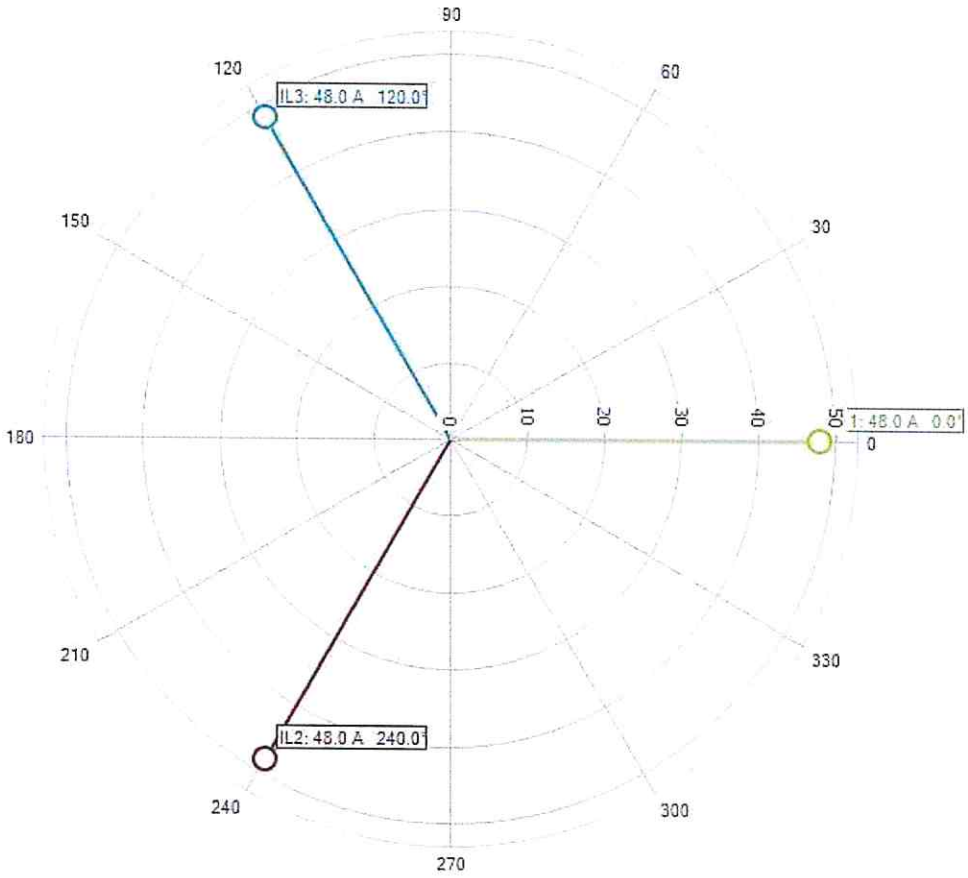
Device

Tag name	A7/06
Relay Serial Number	E200623002521070
Circuit Breaker Serial Number	EGH0521060300010
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.75 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 22 ms.
Trip time must be between 0 ms and 1000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	0.75	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	3.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	7.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

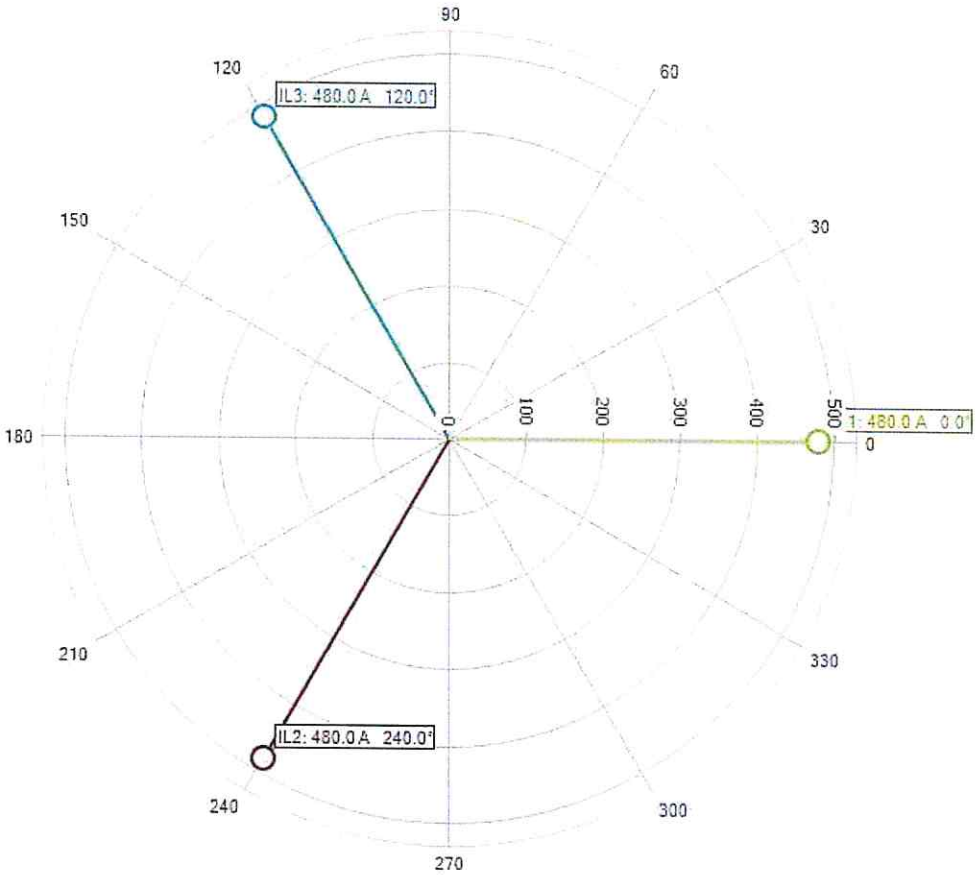
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/08
Relay Serial Number	E200451002521070
Circuit Breaker Serial Number	EF60643061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

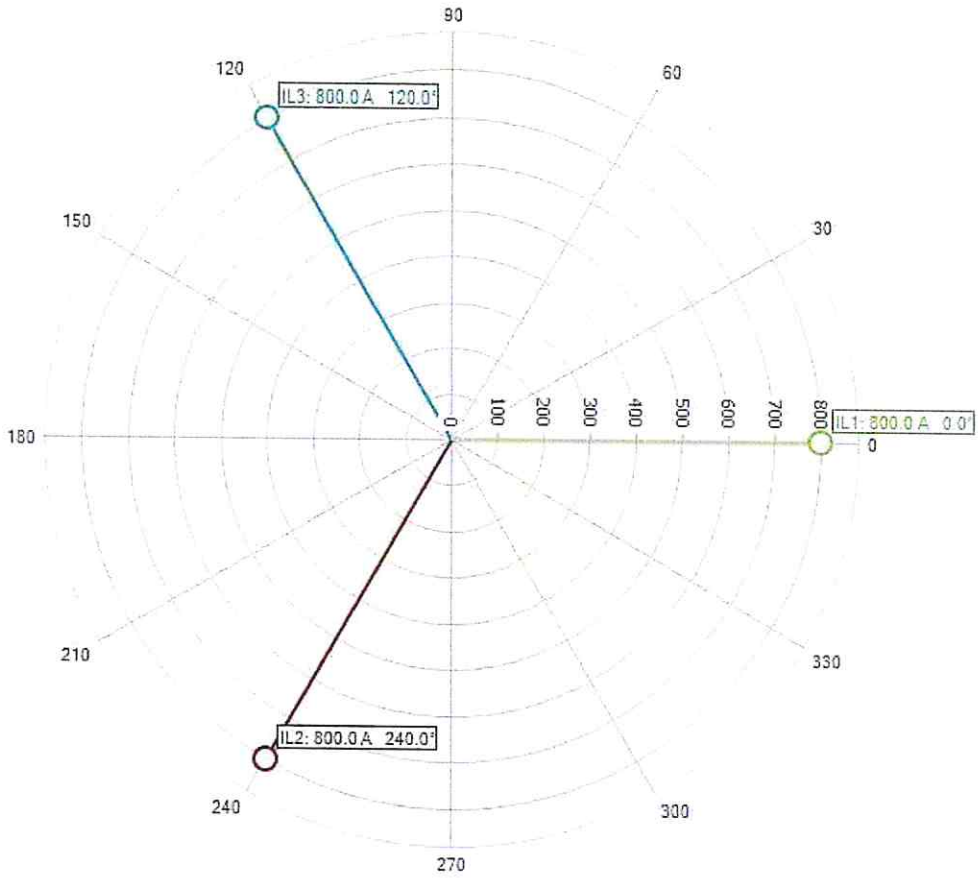
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/08
Relay Serial Number	E200451002521070
Circuit Breaker Serial Number	EF60643061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1949 ms.
Trip time must be between 0 ms and 1000 ms.



Test

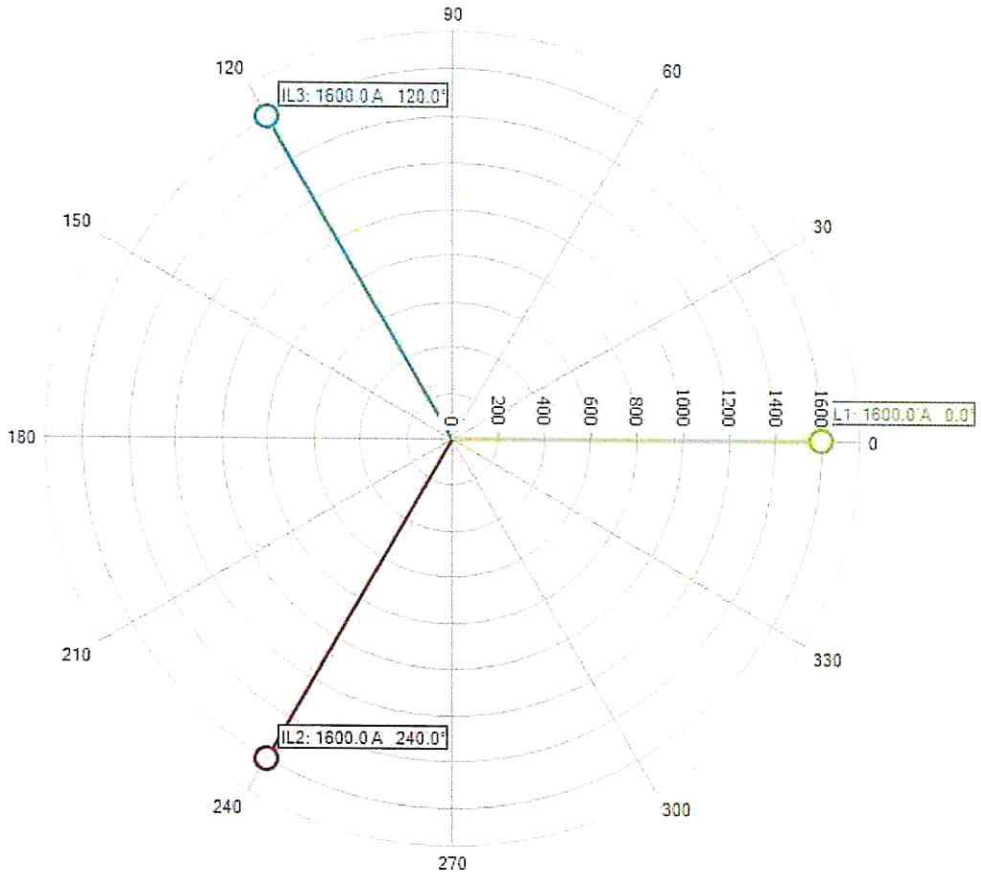
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A7/08
Relay Serial Number	E200451002521070
Circuit Breaker Serial Number	EF60643061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 403 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

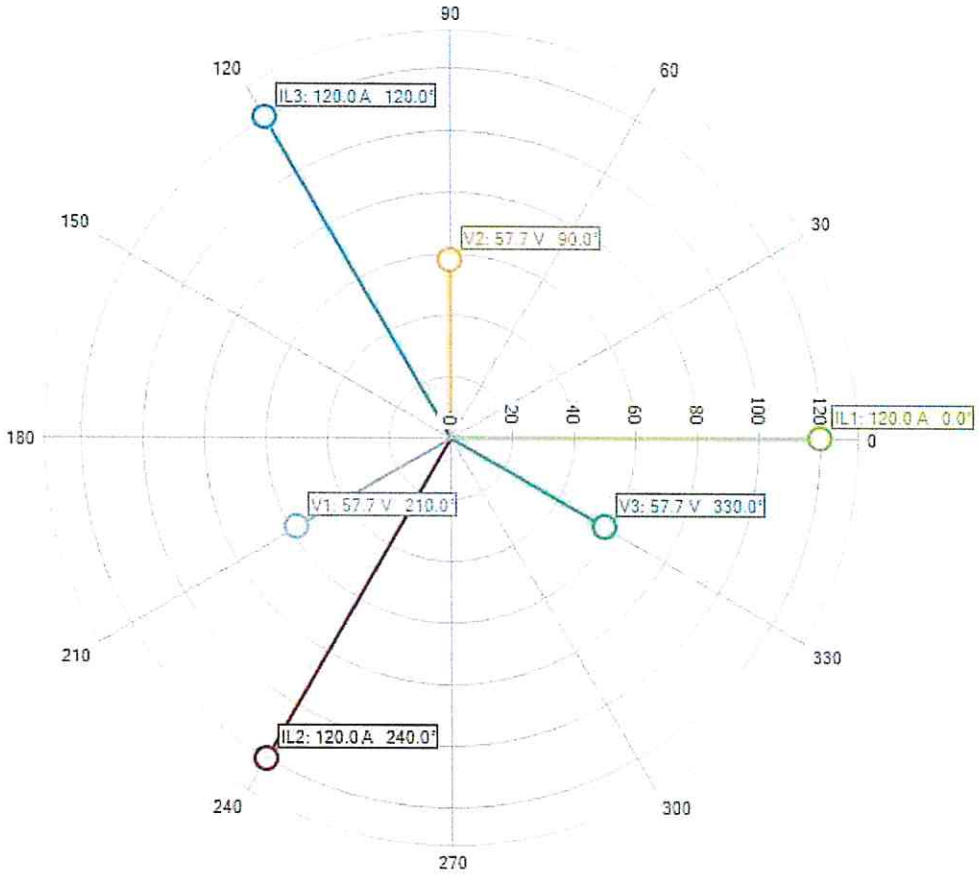
Device

Tag name	A7/08
Relay Serial Number	E200451002521070
Circuit Breaker Serial Number	EF60643061400010
	Ekip LSIG
Device settings	In = 160 A
Protection Settings	Protection = L Threshold = 0.80 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 4.00 In Time = 0.10 s Protection = I Threshold = 8.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 32 ms.
Trip time must be between 0 ms and 1000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	160	
		L threshold	0.80	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	4.00	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	8.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

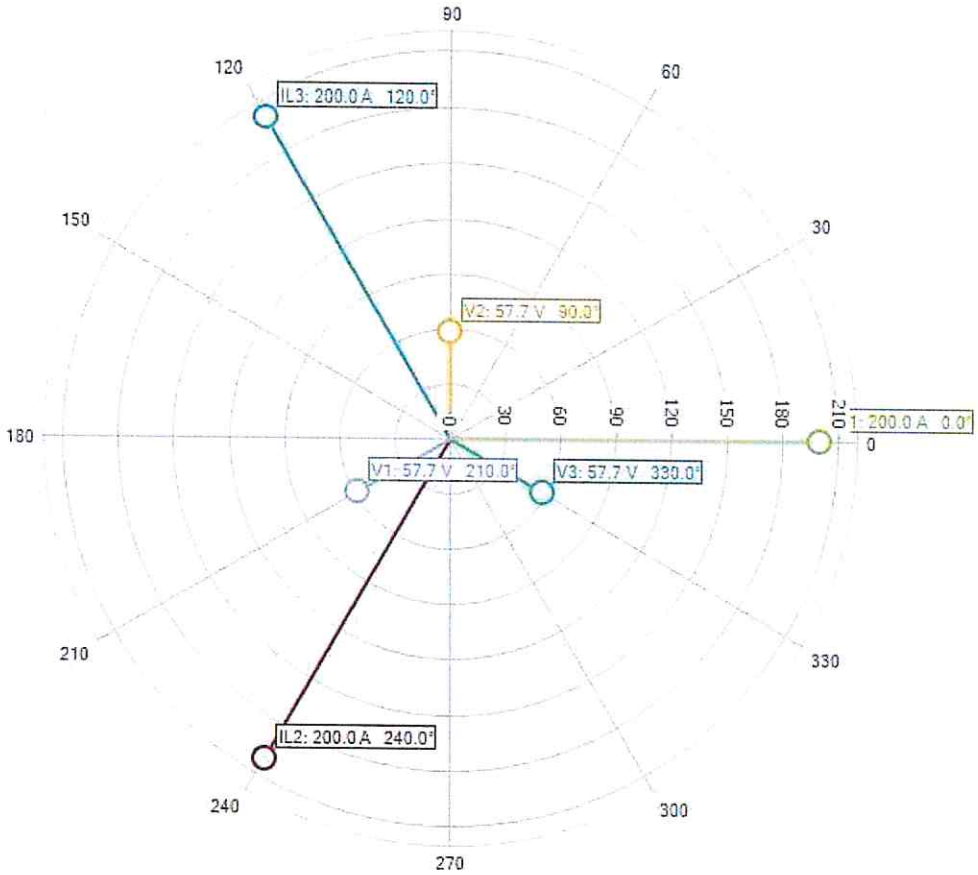
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+04
Relay Serial Number	EF5000553690N000
Circuit Breaker Serial Number	CE61041907number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms



Test

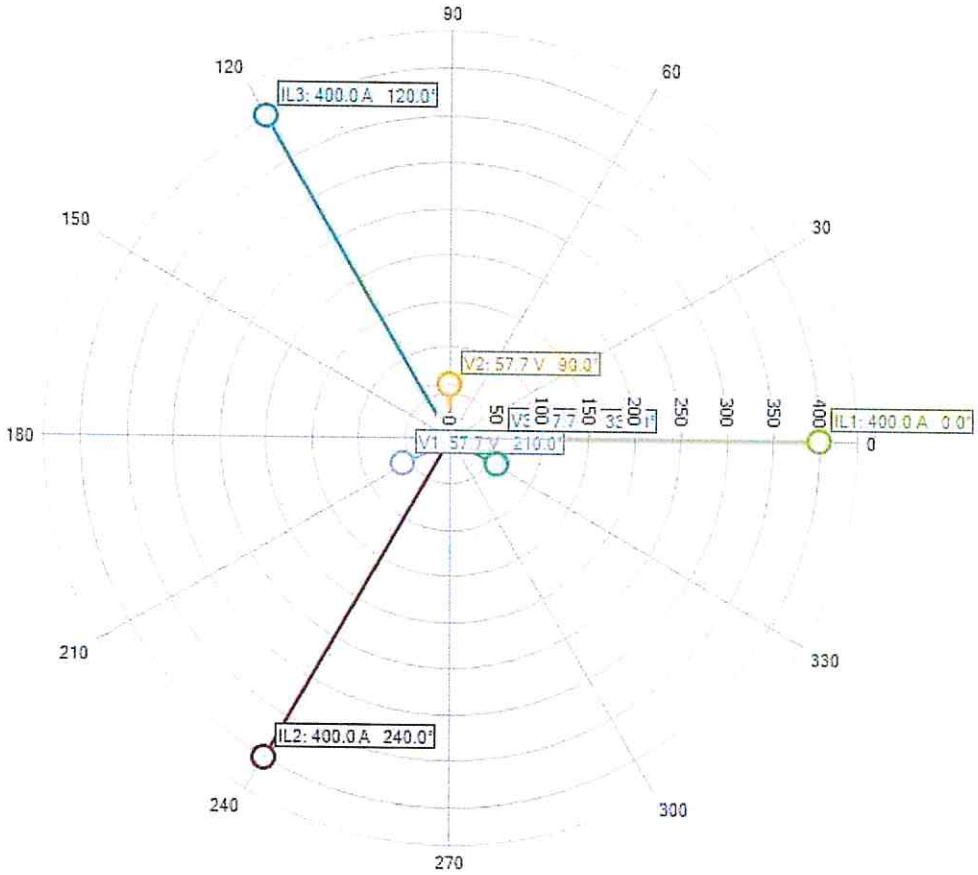
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+04
Relay Serial Number	EF5000553690N000
Circuit Breaker Serial Number	CE61041907number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

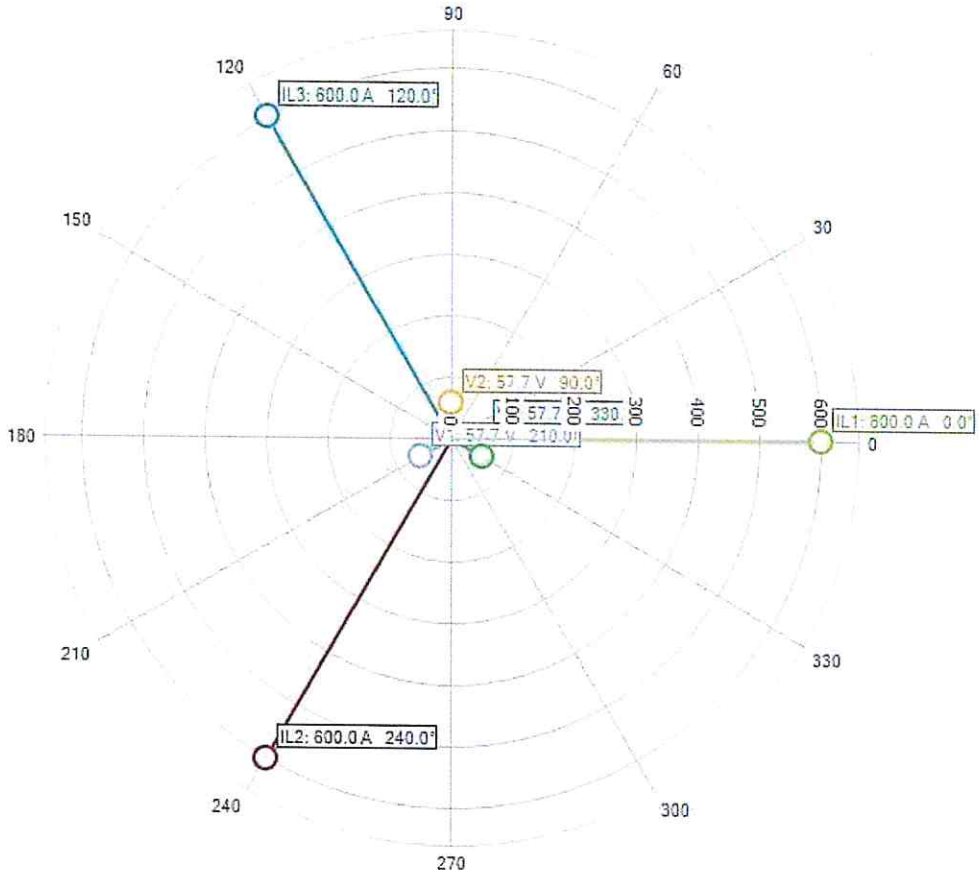
Device

Tag name	A4/+04
Relay Serial Number	EF5000553690N000
Circuit Breaker Serial Number	CE61041907number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

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Test

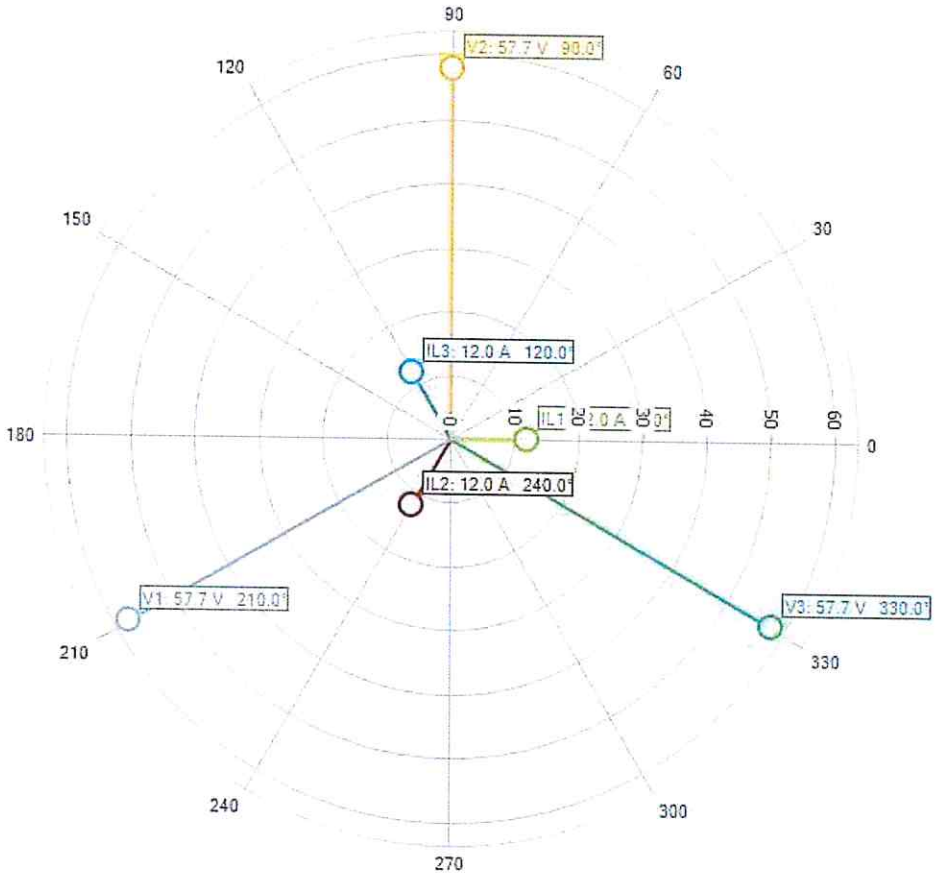
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+04
Relay Serial Number	EF5000553690N000
Circuit Breaker Serial Number	CE61041907number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

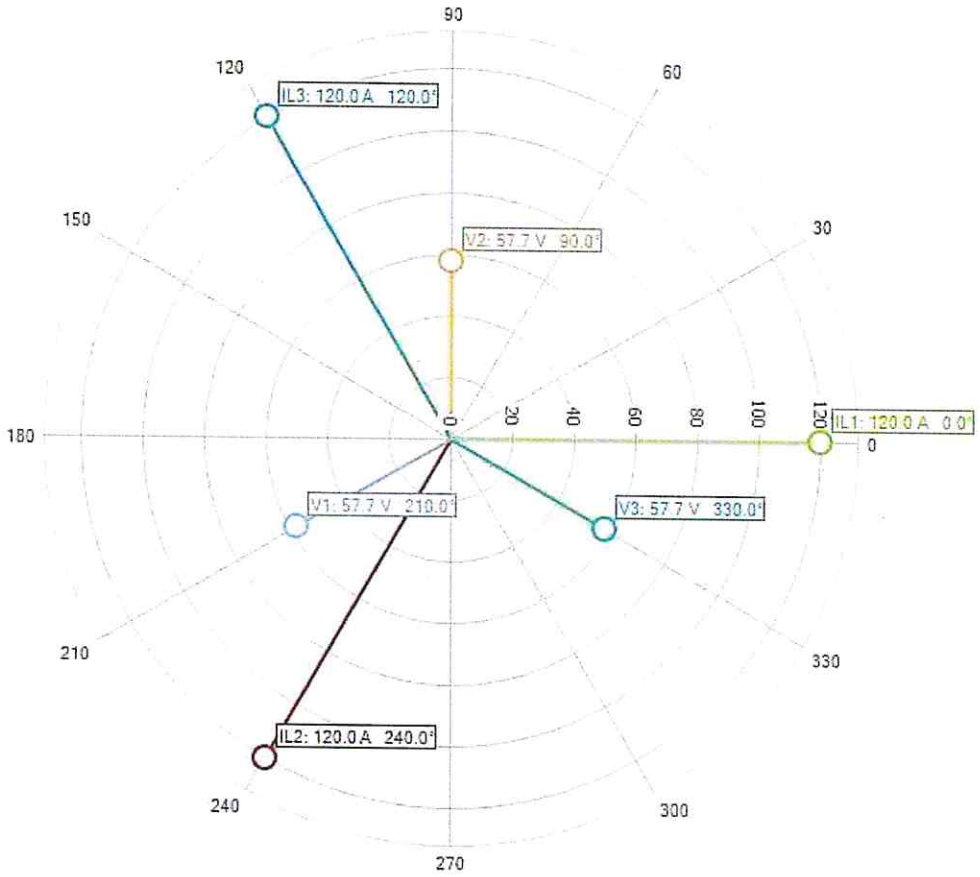
Tag name	A4/+04
Relay Serial Number	EF5000553690N000
Circuit Breaker Serial Number	CE61041907number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	0.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

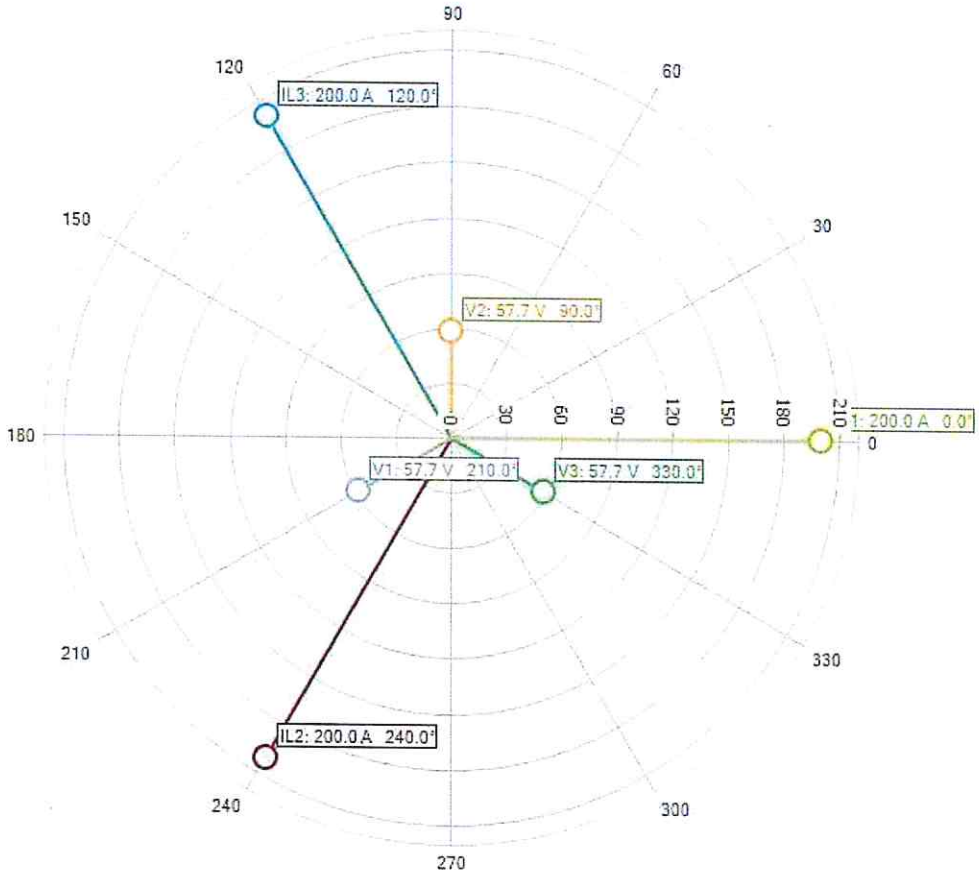
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

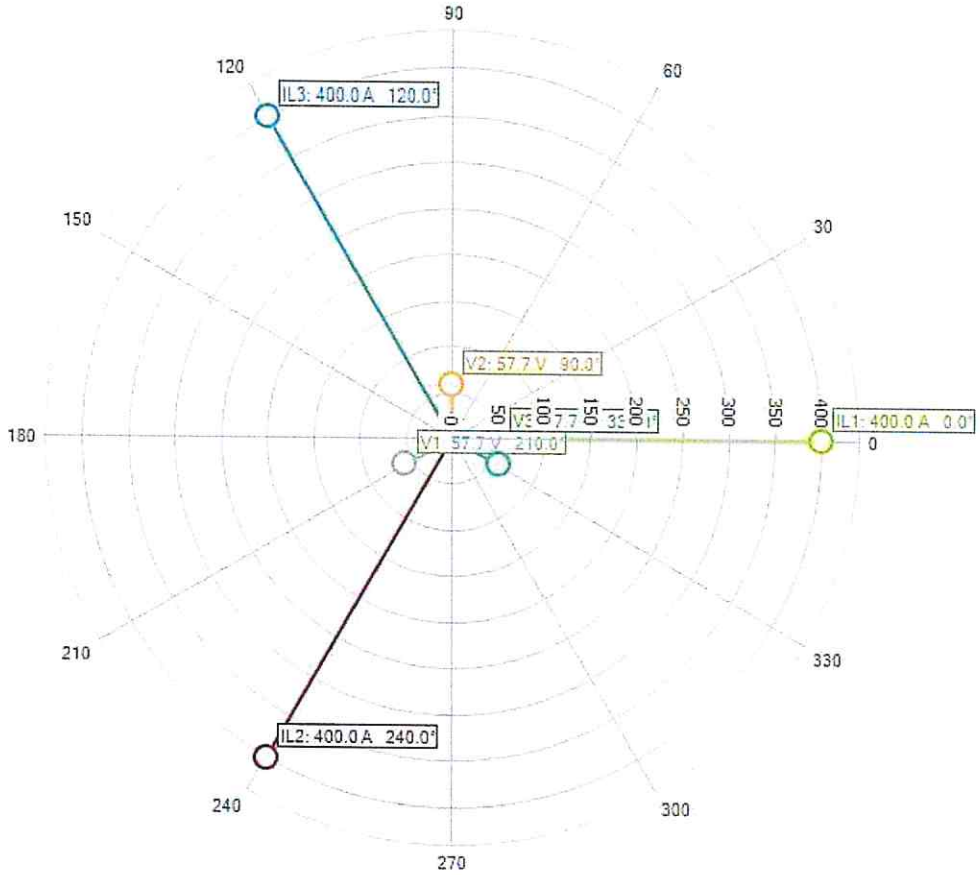
Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

18 September 2024 - 14:55:21



Test

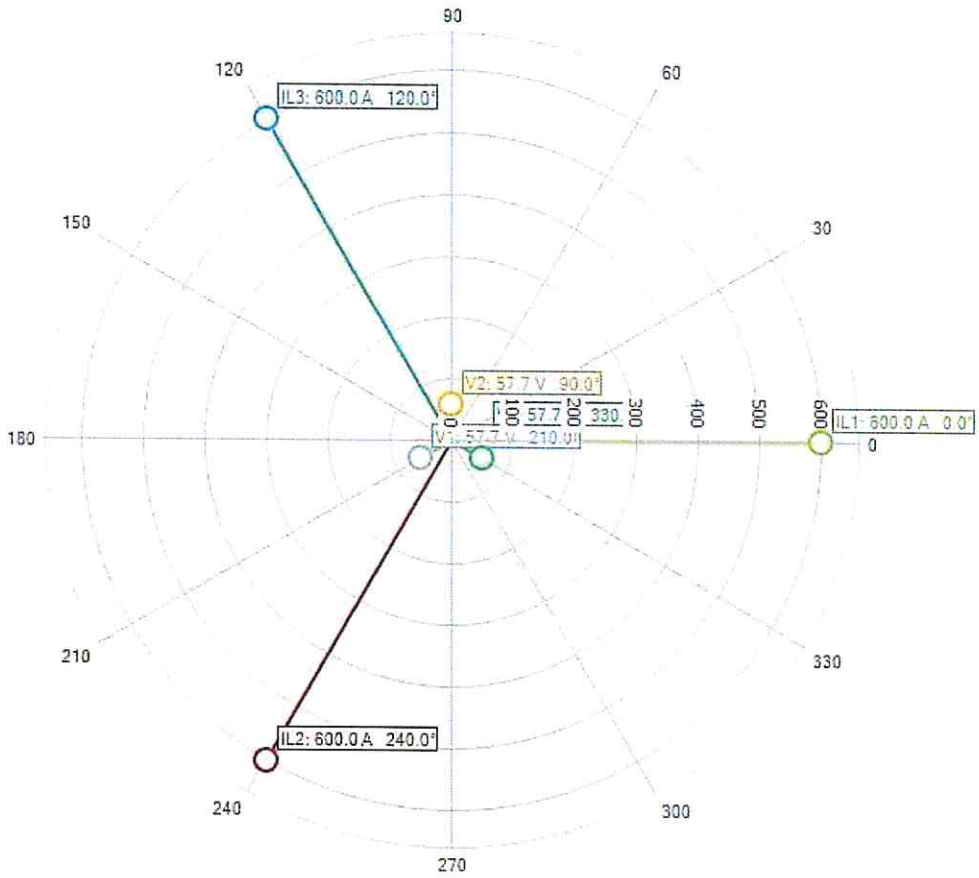
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

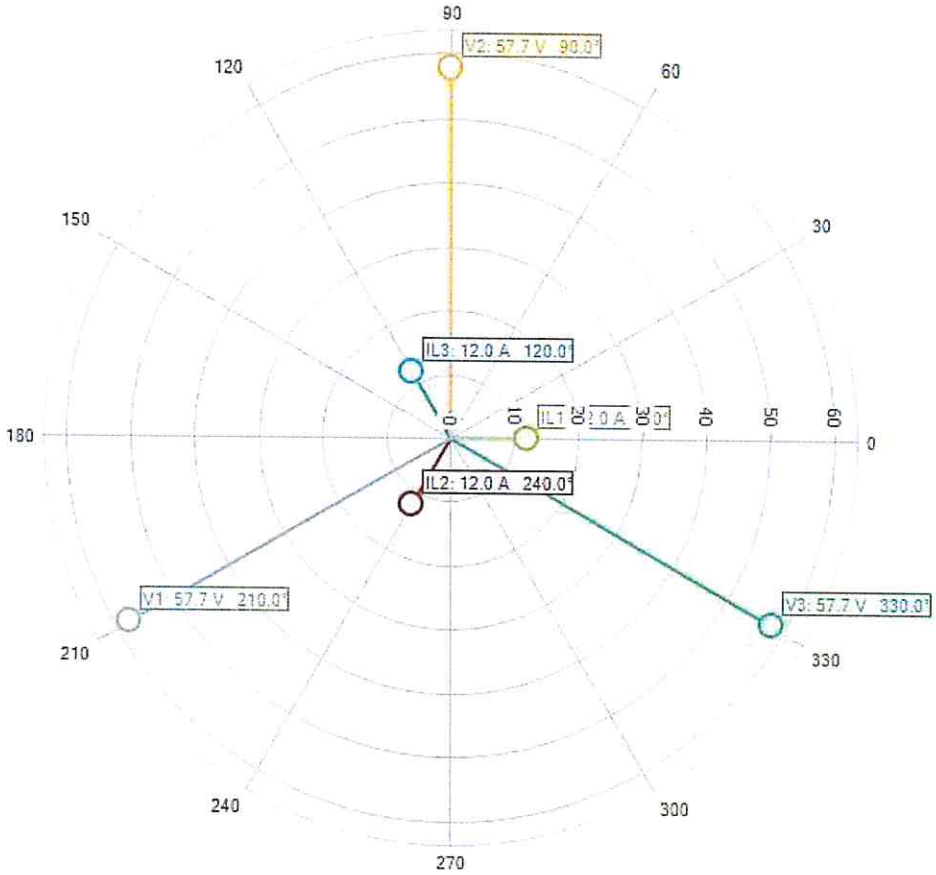
Device

Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 27 ms.
Trip time must be between 0 ms and 1000 ms

18 September 2024 - 14:50:53



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

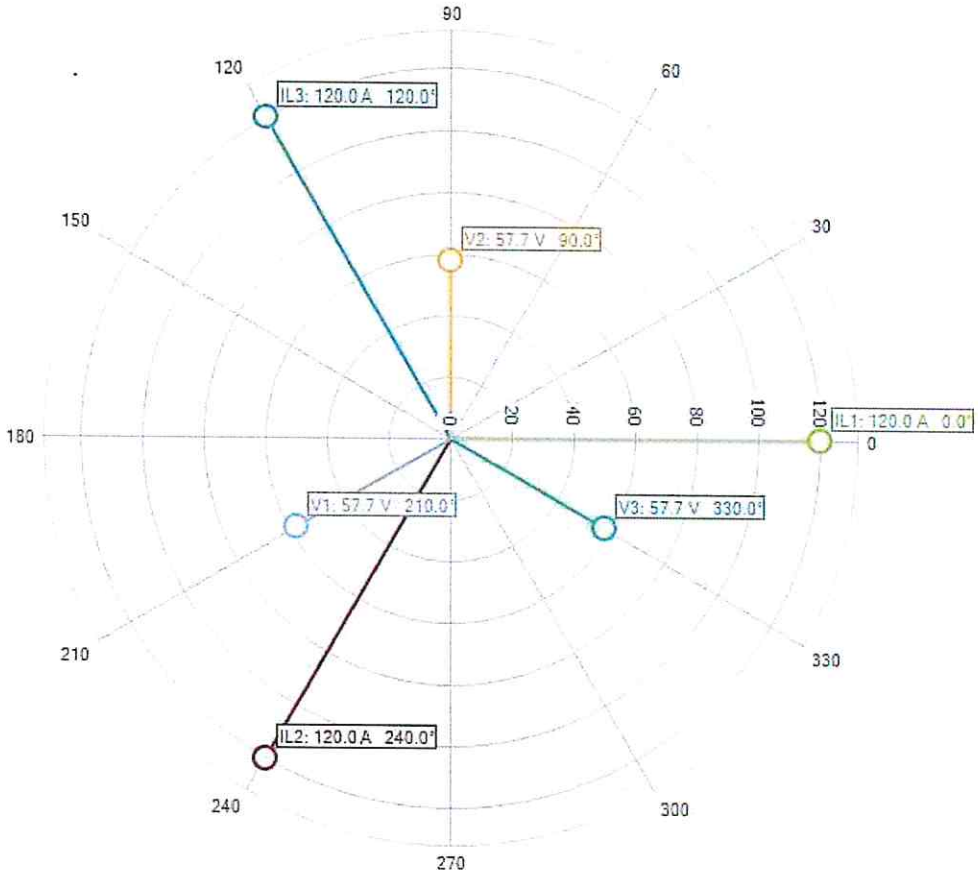
Tag name	A4/+05
Relay Serial Number	EF5000353690N000
Circuit Breaker Serial Number	CE61041918number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time I3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

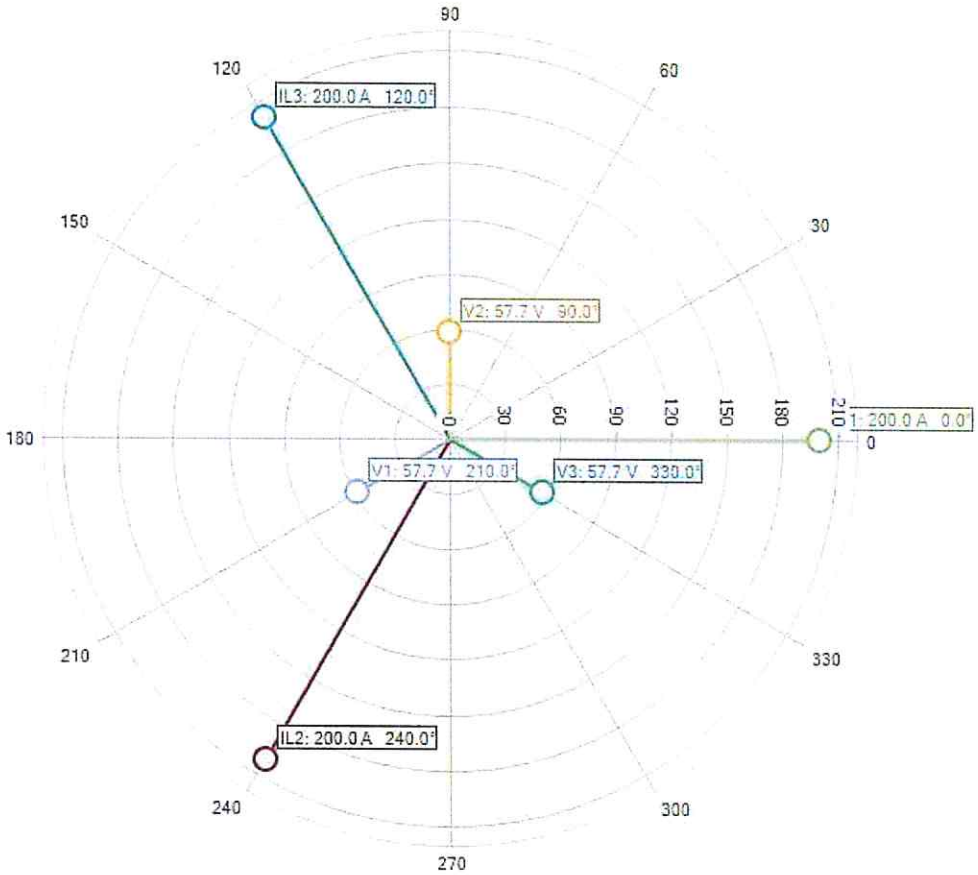
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms



Test

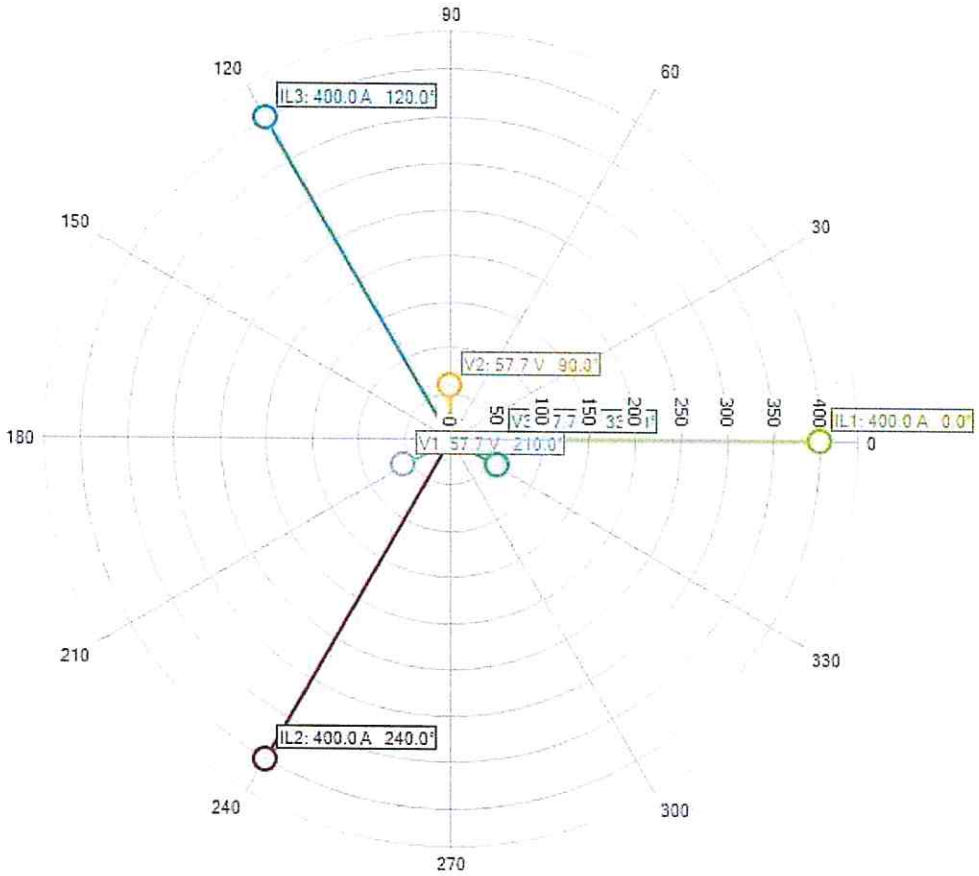
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

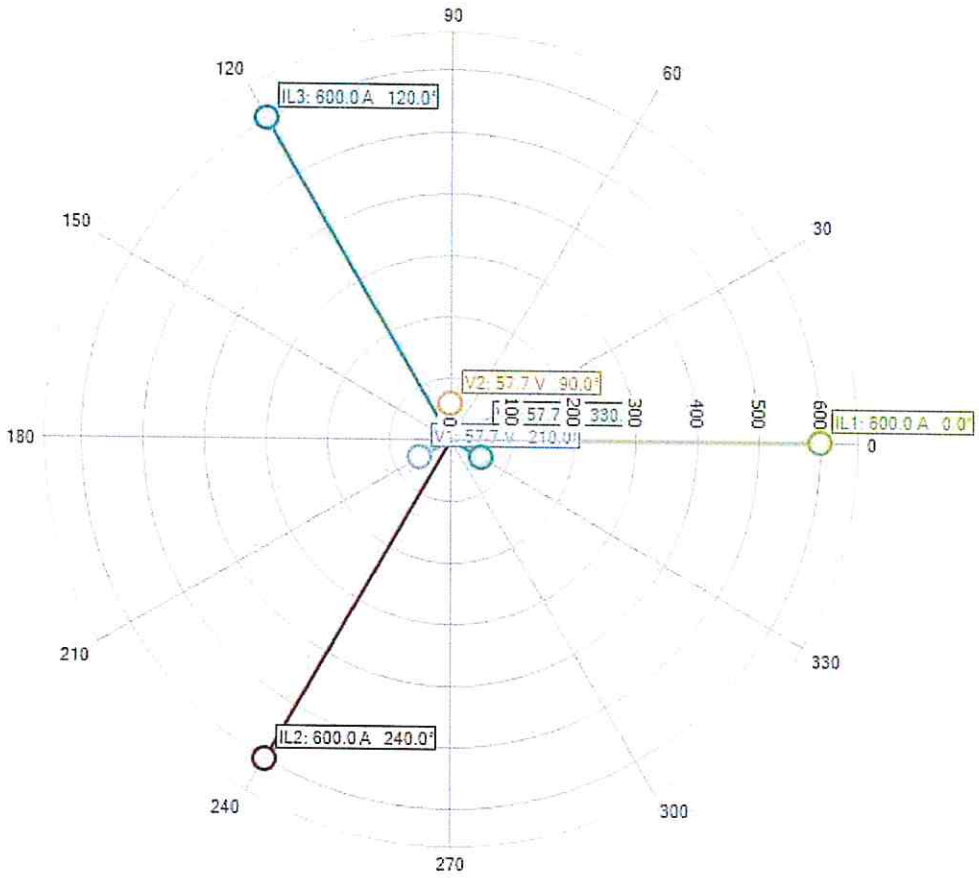
Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

18 September 2024 - 15:04:37



Test

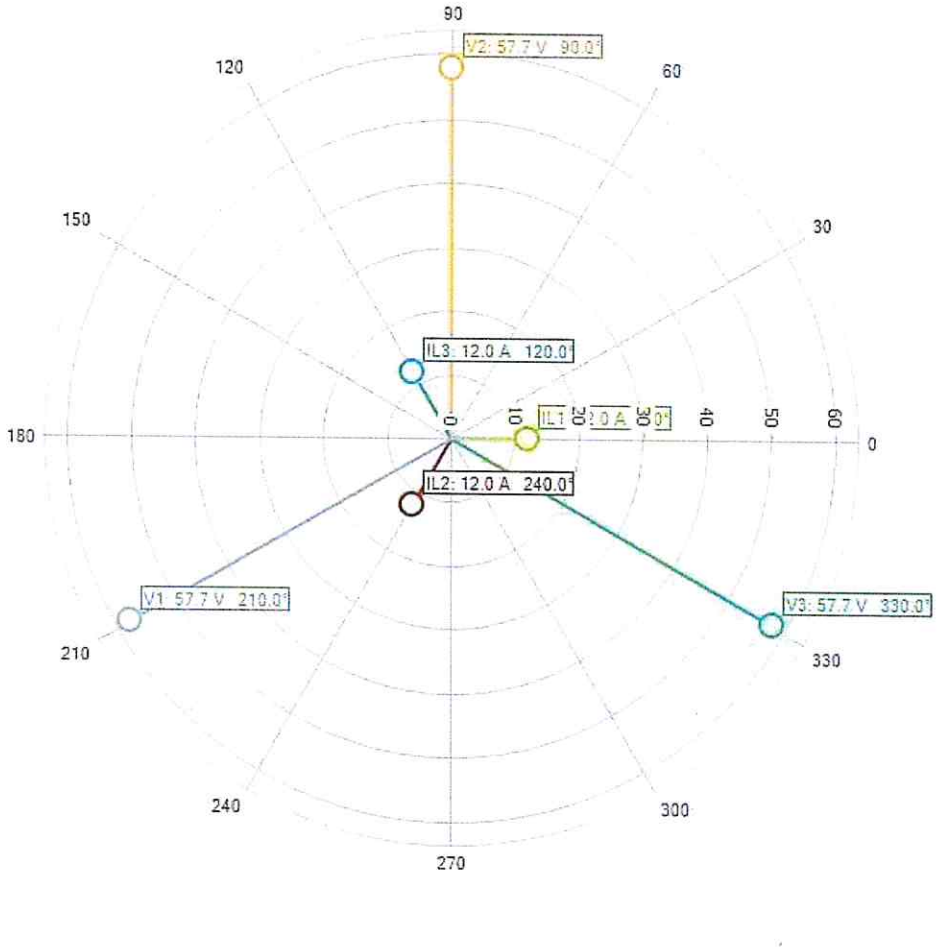
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

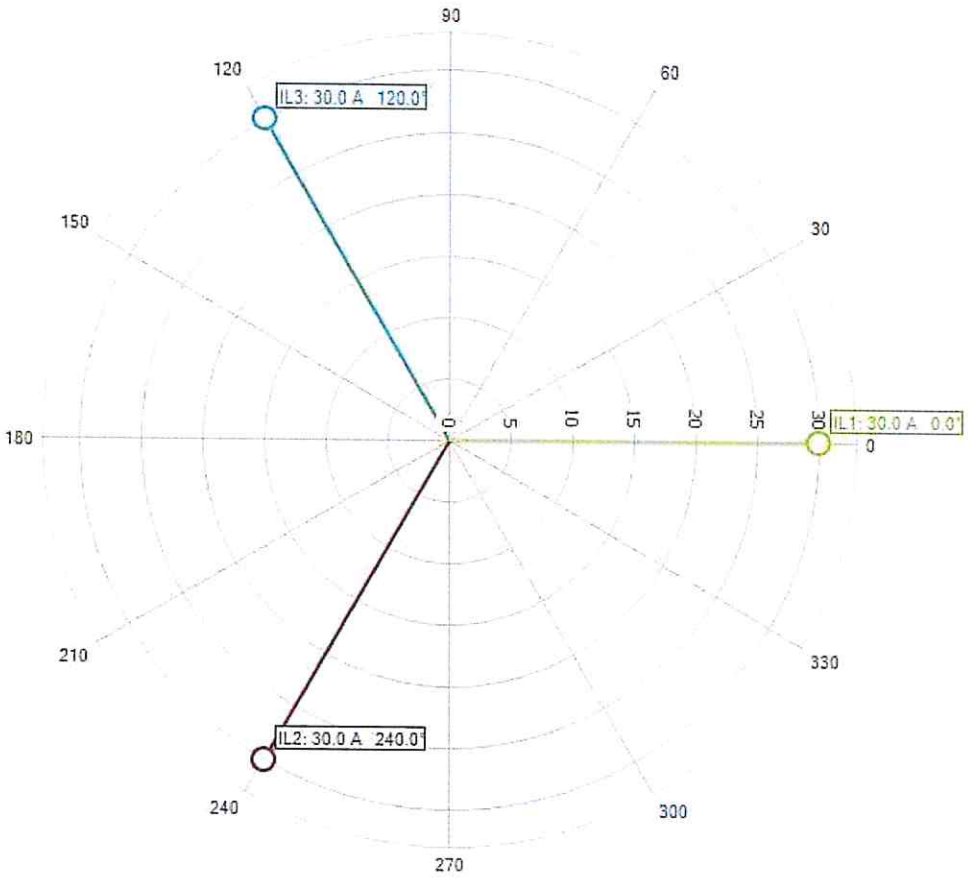
Tag name	A4/+06
Relay Serial Number	EF5000853690N000
Circuit Breaker Serial Number	CE61041917number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time I3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

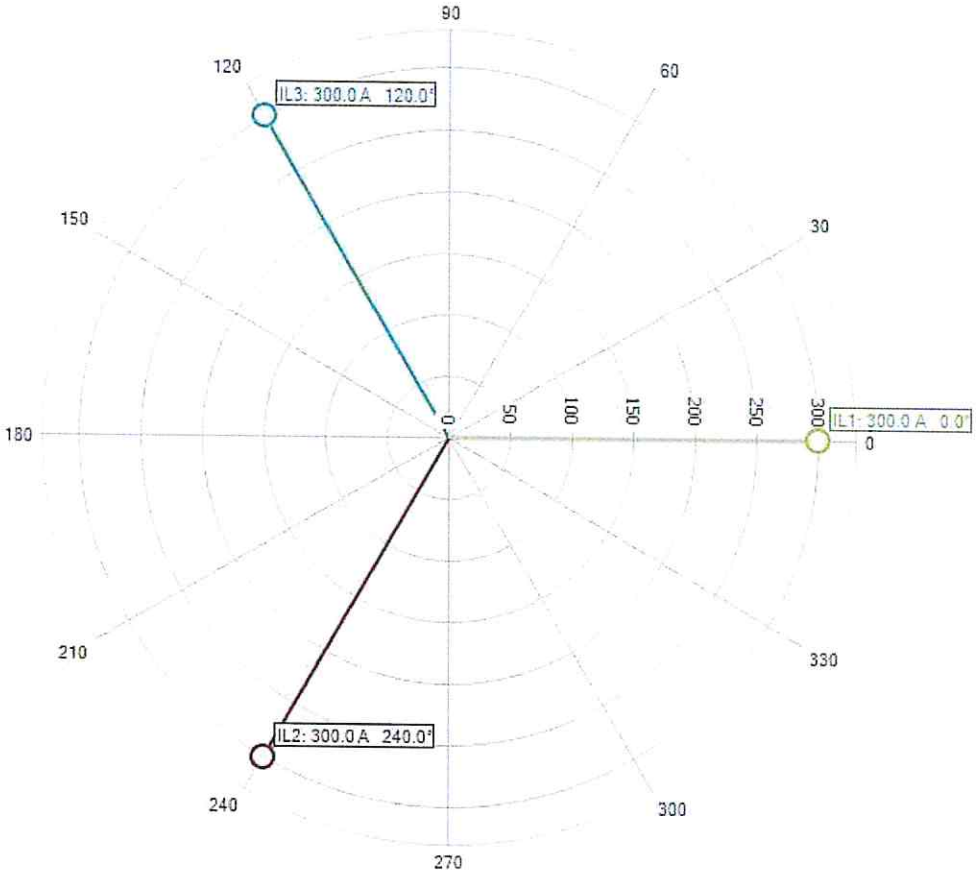
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/01
Relay Serial Number	E216918002521070
Circuit Breaker Serial Number	EF70168060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

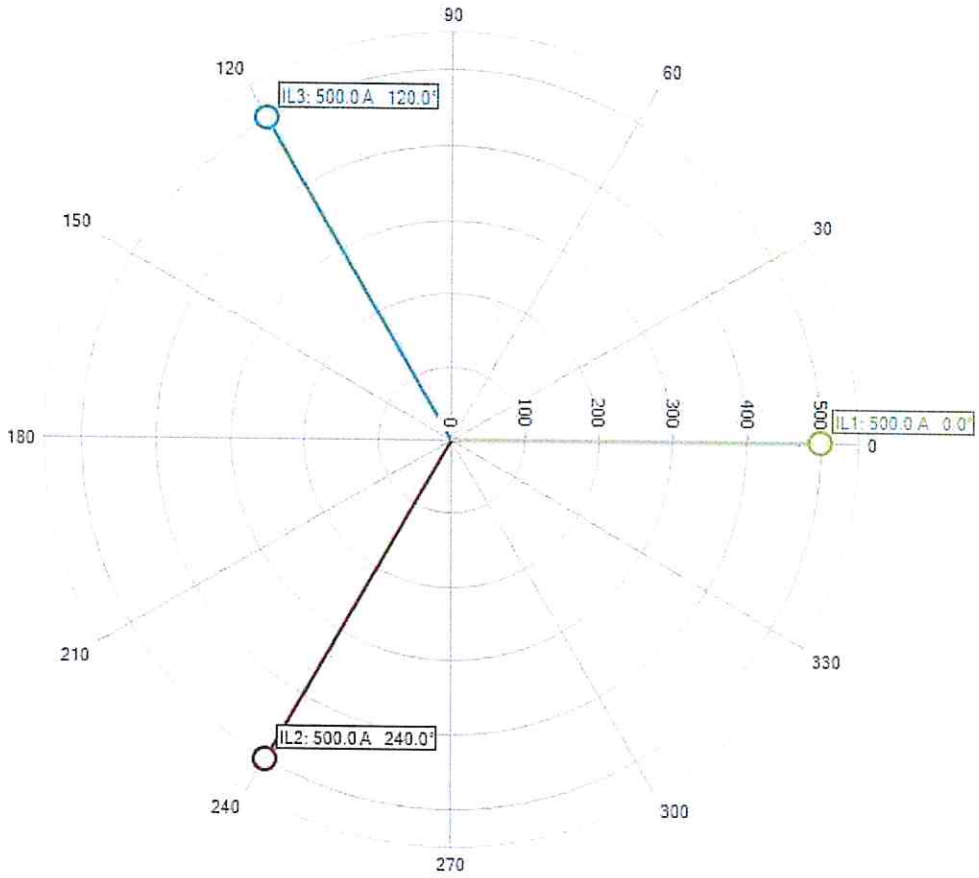
Device

Tag name	A4/01
Relay Serial Number	E216918002521070
Circuit Breaker Serial Number	EF70168060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1194 ms.
Trip time must be between 0 ms and 1000 ms.

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Test

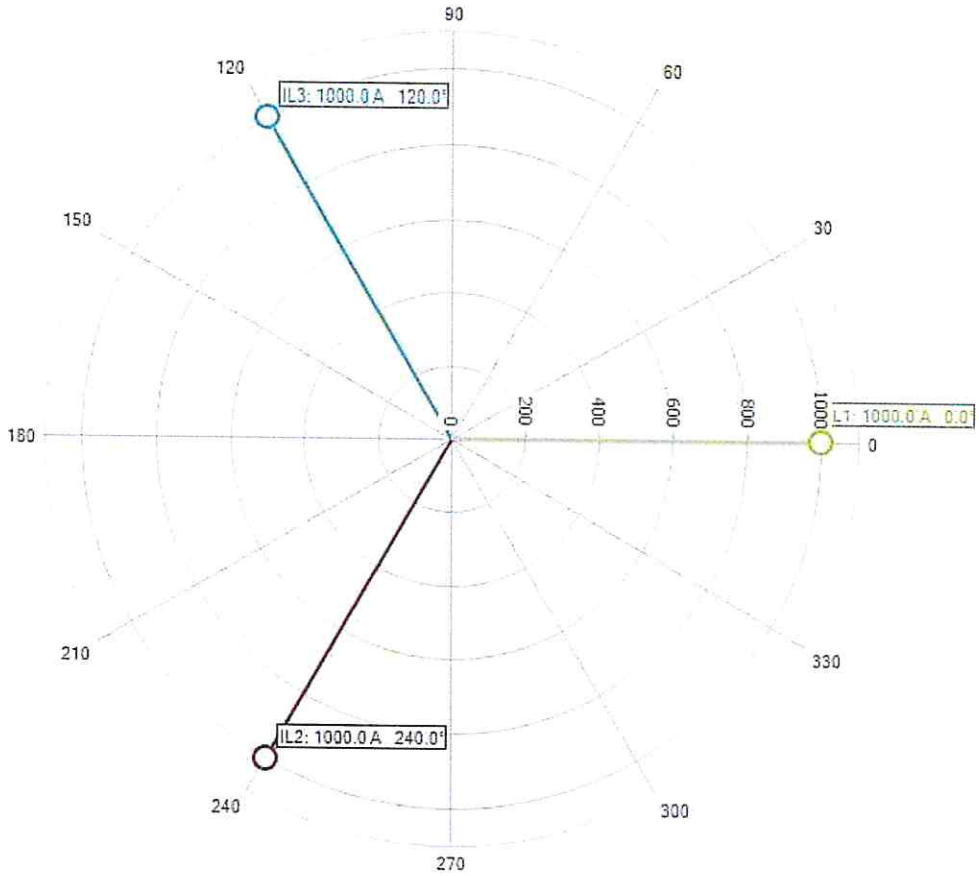
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/01
Relay Serial Number	E216918002521070
Circuit Breaker Serial Number	EF70168060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 396 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

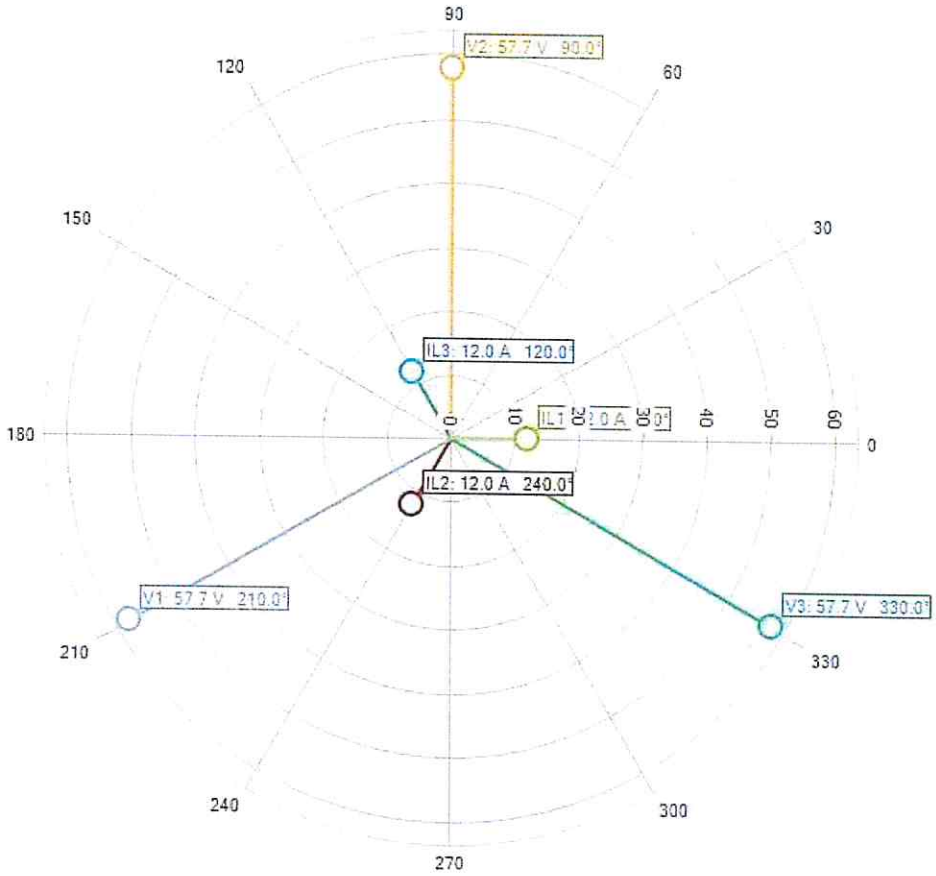
Device

Tag name	A4/01
Relay Serial Number	E216918002521070
Circuit Breaker Serial Number	EF70168060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 30 ms.
Trip time must be between 0 ms and 1000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	100	
		L threshold	0.70	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	3.00	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	6.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

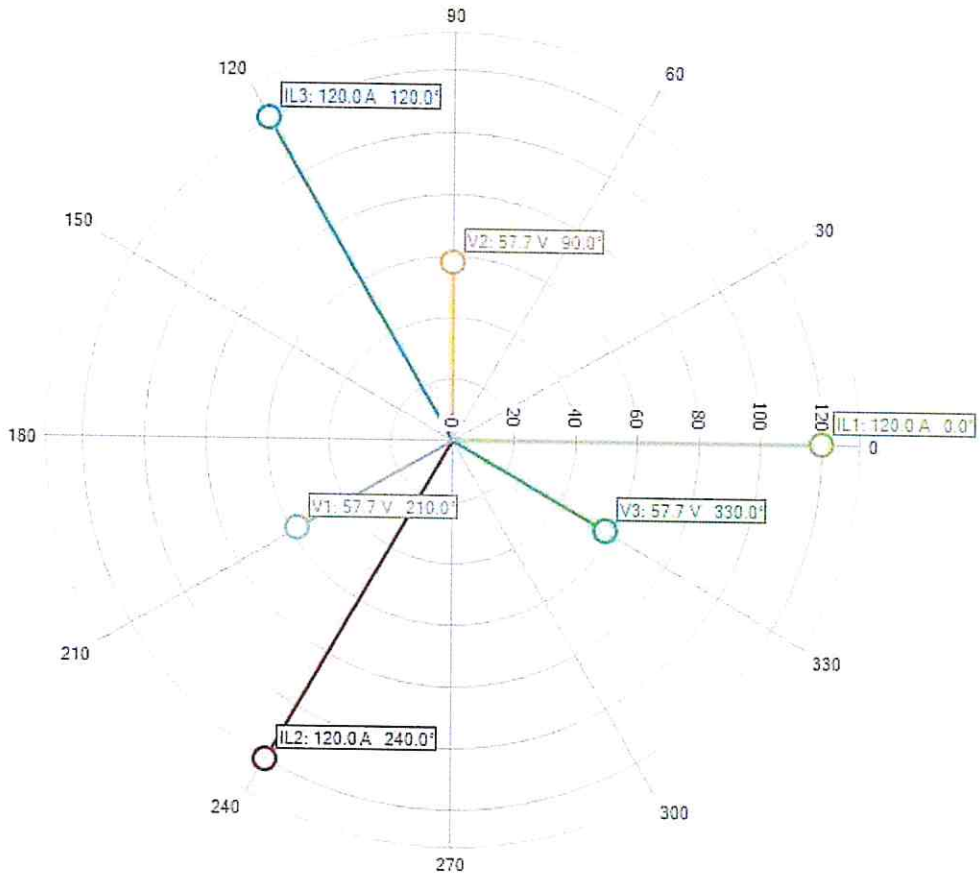
Device

Tag name	A4/+02
Relay Serial Number	EF5001653690N000
Circuit Breaker Serial Number	CE61041910number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

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Test

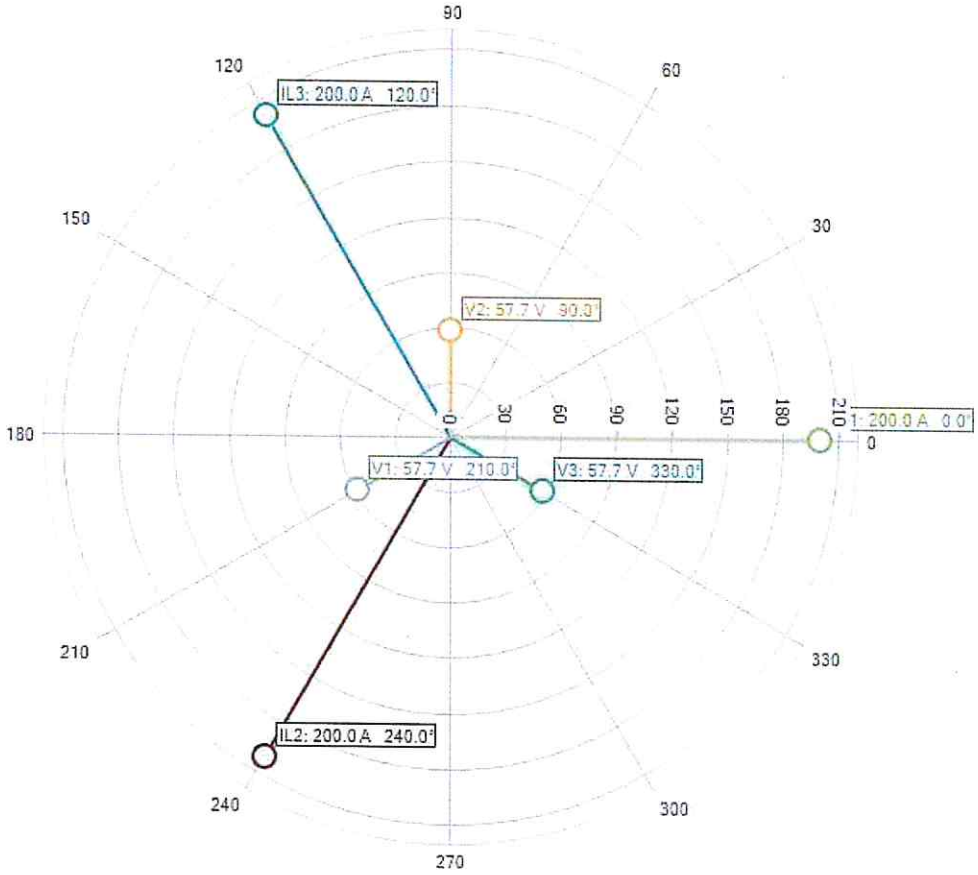
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+02
Relay Serial Number	EF5001653690N000
Circuit Breaker Serial Number	CE61041910number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1510 ms.
Trip time must be between 0 ms and 1000 ms



Test

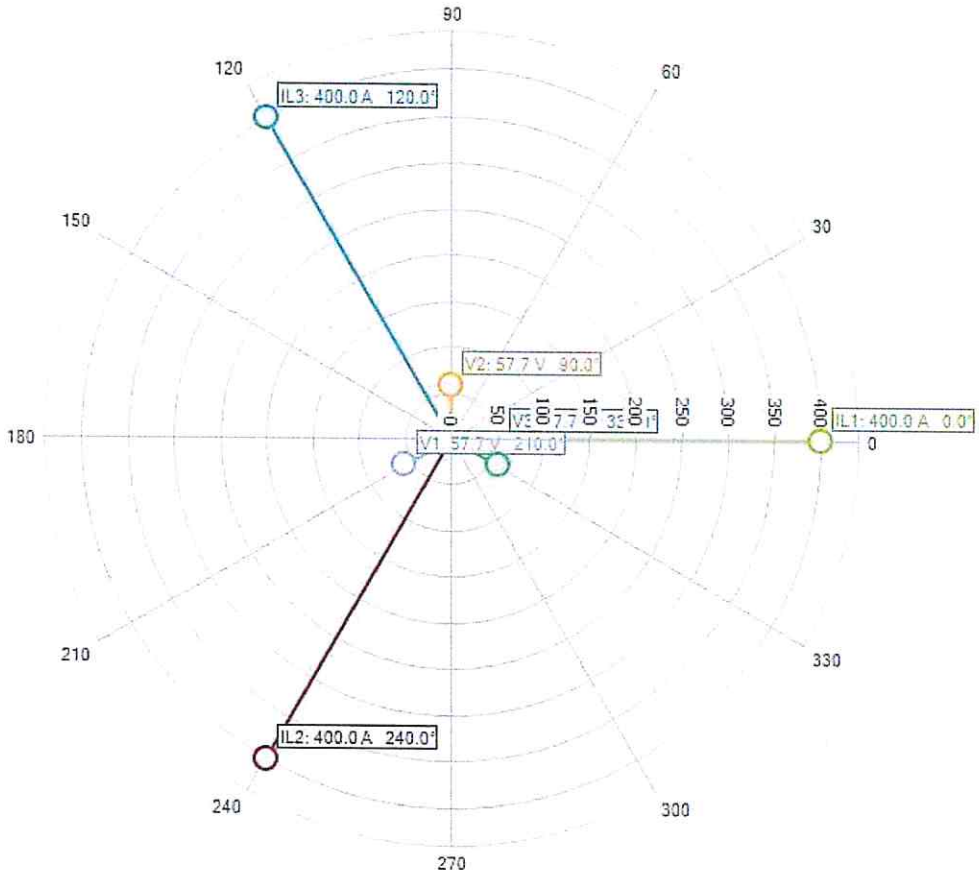
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+02
Relay Serial Number	EF5001653690N000
Circuit Breaker Serial Number	CE61041910number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

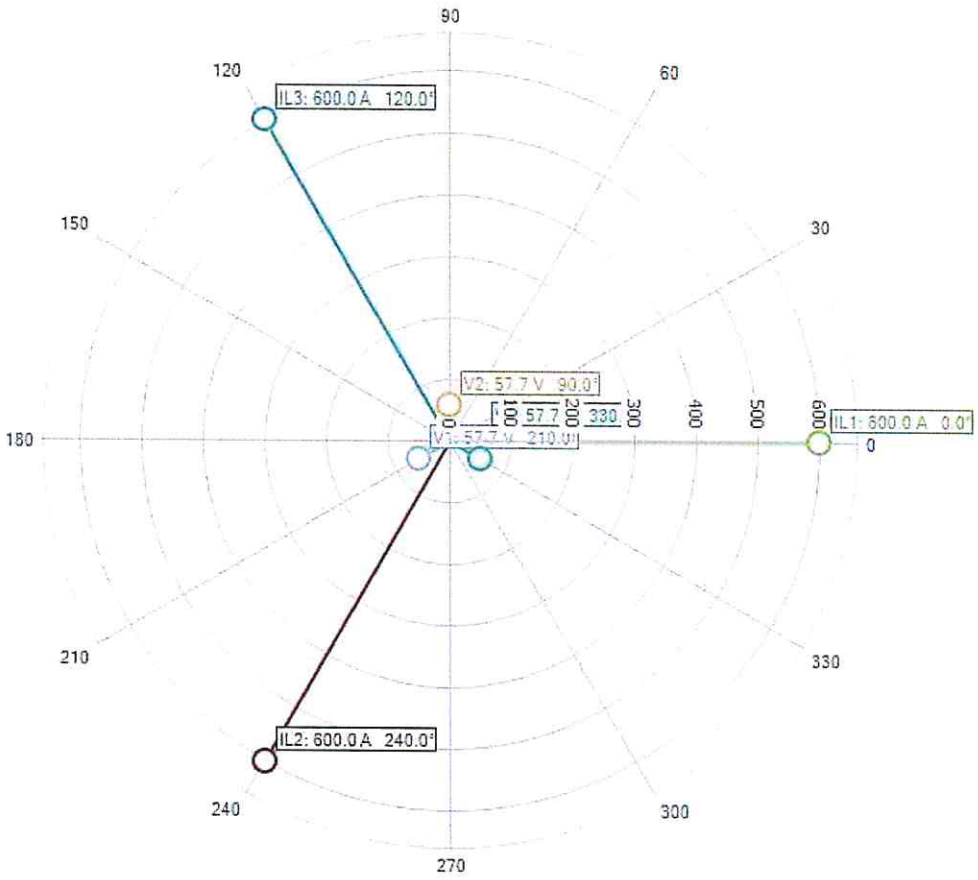
Device

Tag name	A4/+02
Relay Serial Number	EF5001653690N000
Circuit Breaker Serial Number	CE61041910number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

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Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

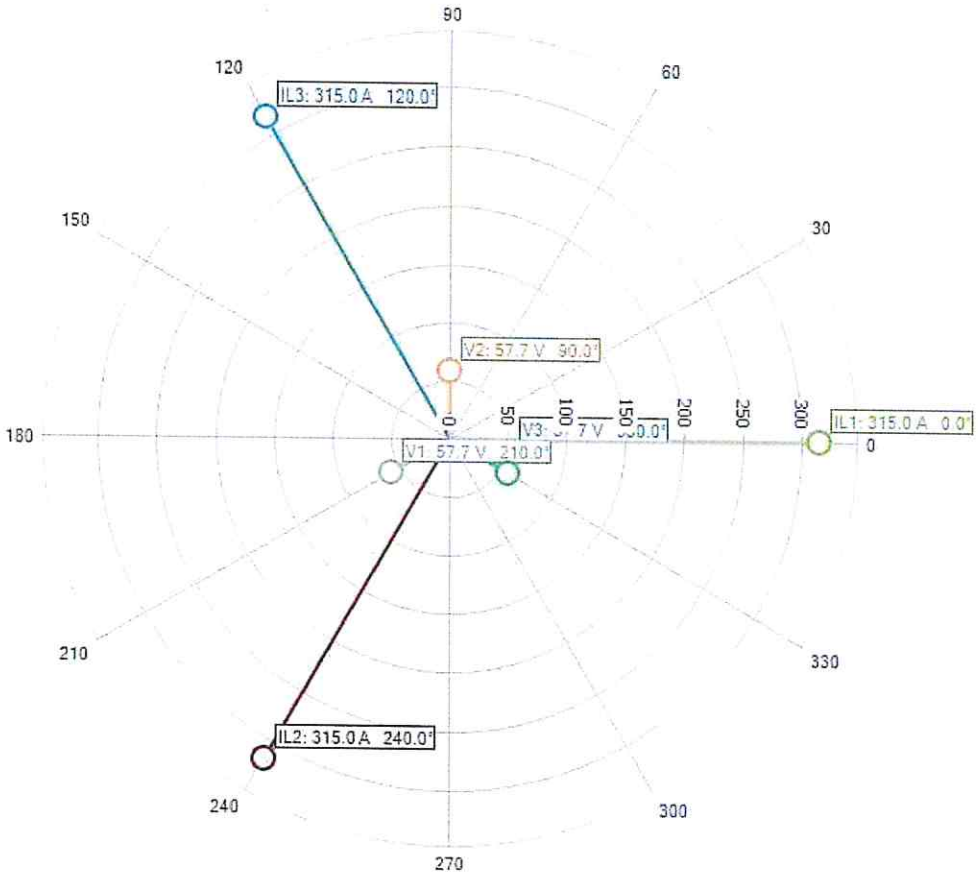
Tag name	A4/+02
Relay Serial Number	EF5001653690N000
Circuit Breaker Serial Number	CE61041910number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.700 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.700	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	7.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

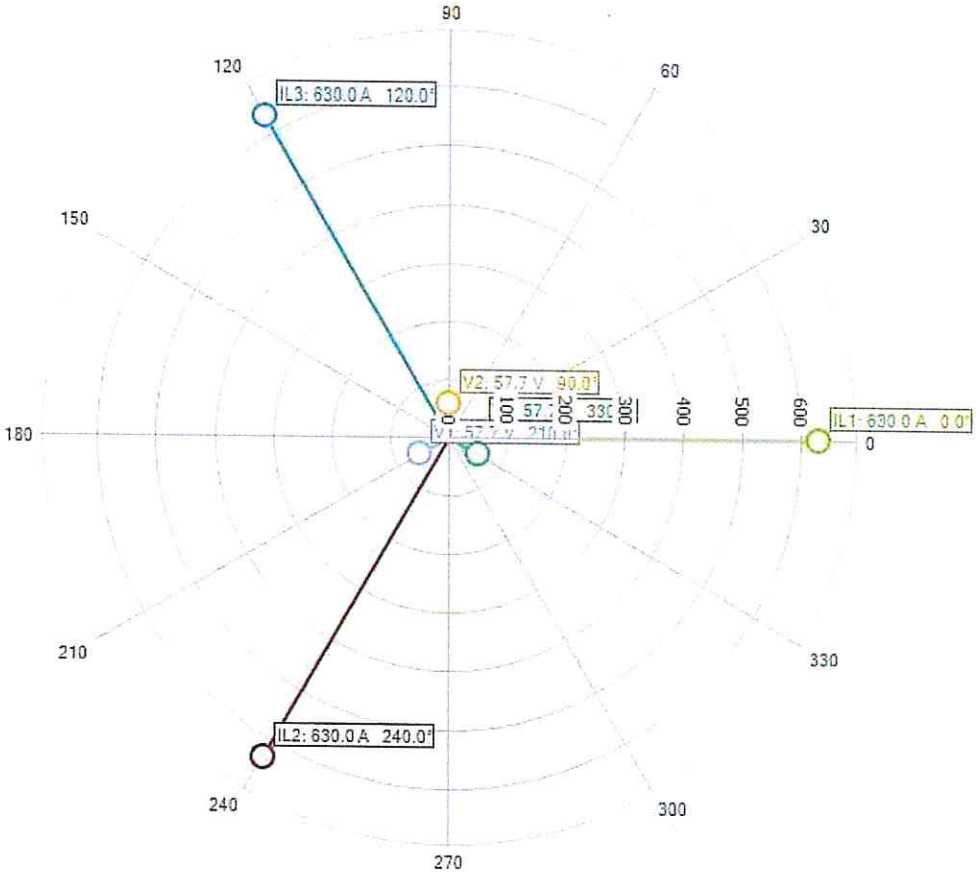
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+03
Relay Serial Number	EF8000153700N000
Circuit Breaker Serial Number	CE61066013number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.600 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms



Test

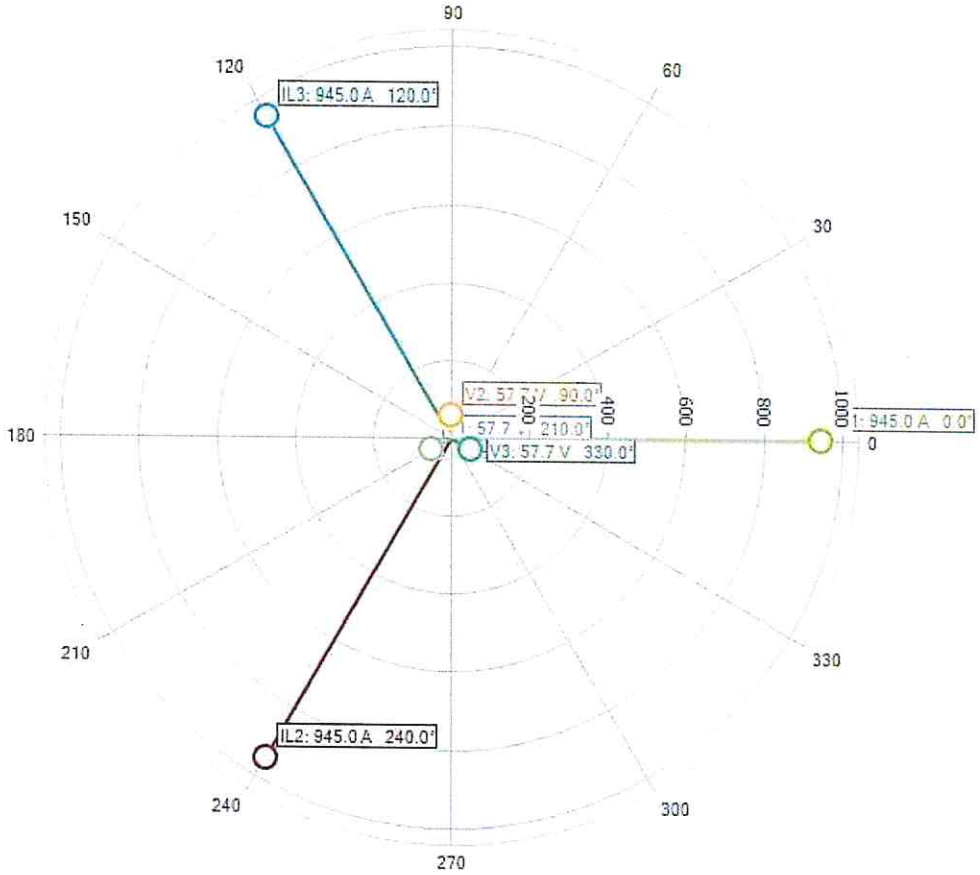
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+03
Relay Serial Number	EF8000153700N000
Circuit Breaker Serial Number	CE61066013number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.600 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms



Test

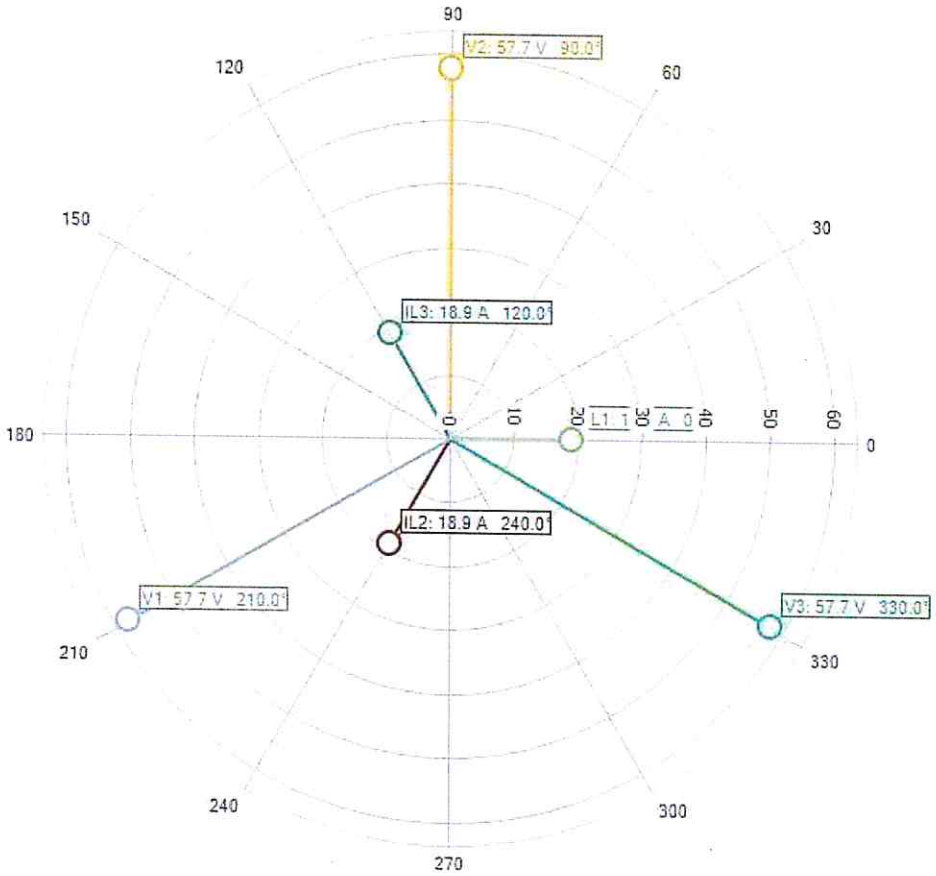
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+03
Relay Serial Number	EF8000153700N000
Circuit Breaker Serial Number	CE61066013number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.600 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

✓ Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms



Test

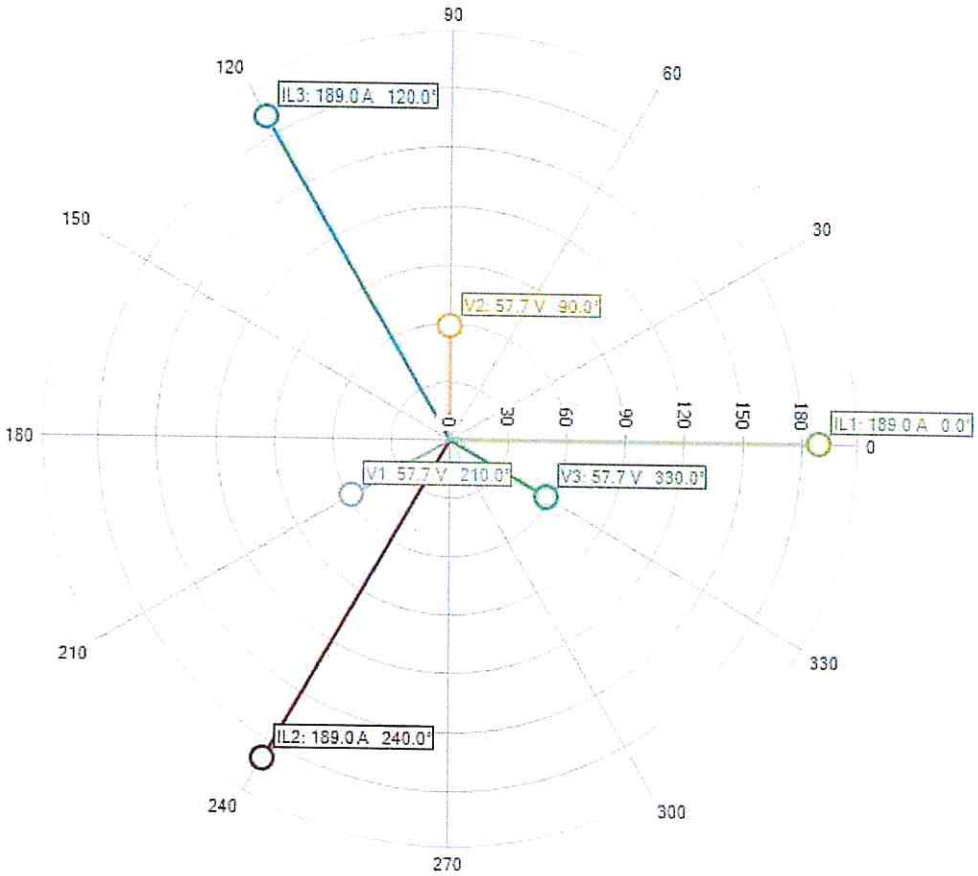
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A4/+03
Relay Serial Number	EF8000153700N000
Circuit Breaker Serial Number	CE61066013number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.600 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

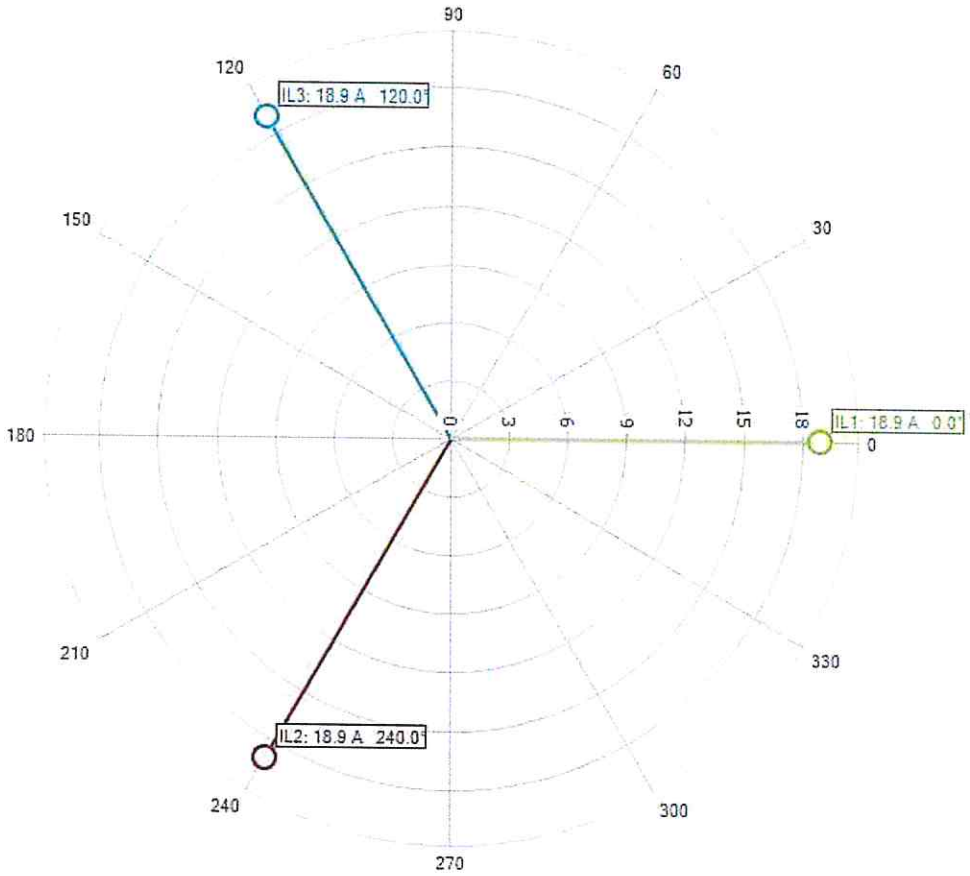
Tag name	A4/+03
Relay Serial Number	EF8000153700N000
Circuit Breaker Serial Number	CE61066013number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.600 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1106 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	63	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.600	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.00	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	6.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Ternperature (T)			
		Trip enable	Disabled	



Test

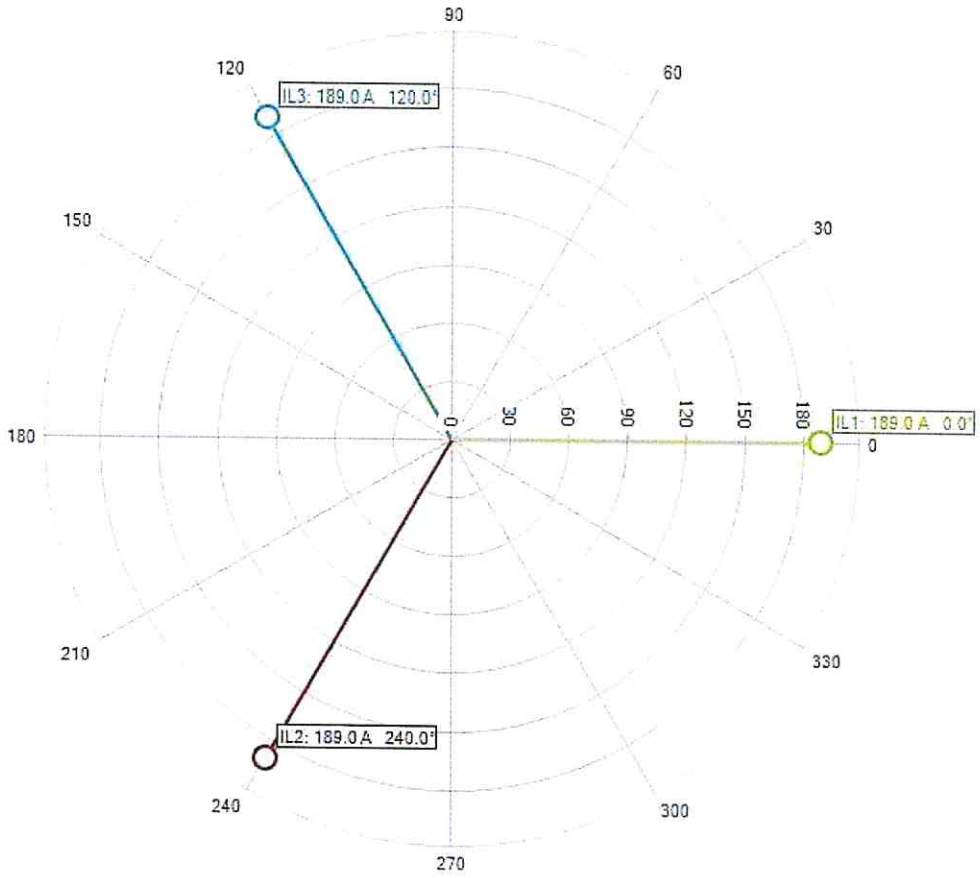
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

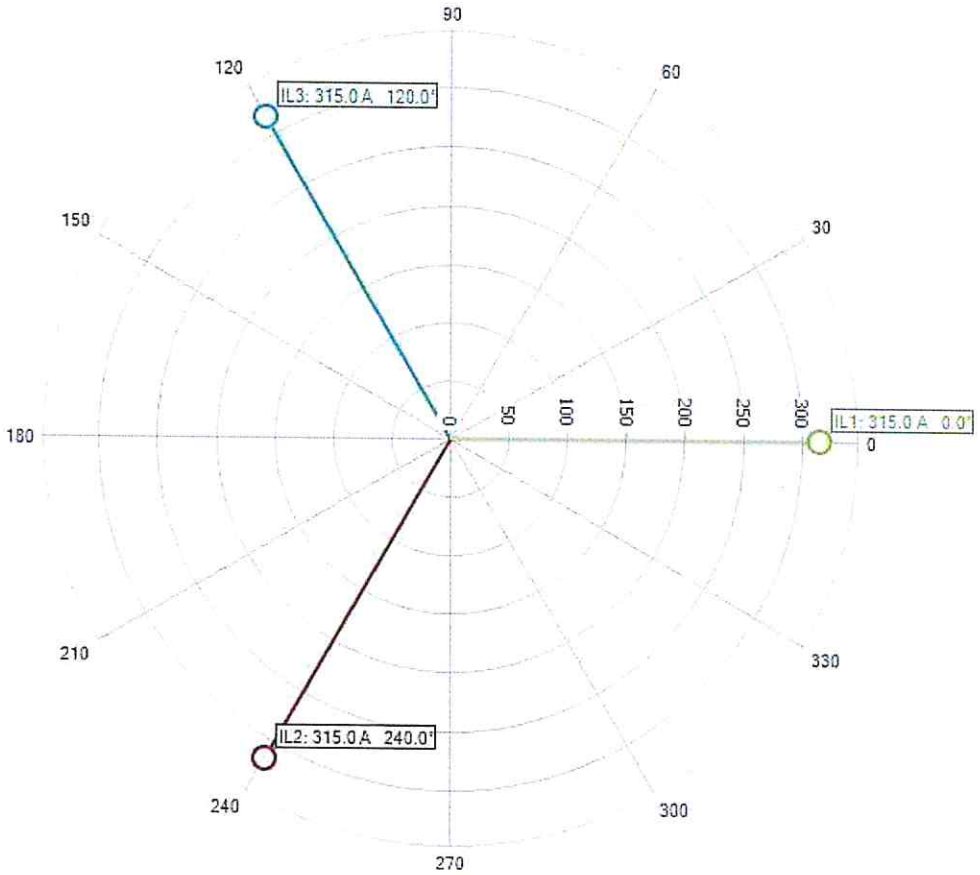
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection L tripped in 796 ms.
Trip time must be between 0 ms and 1000 ms.



Test

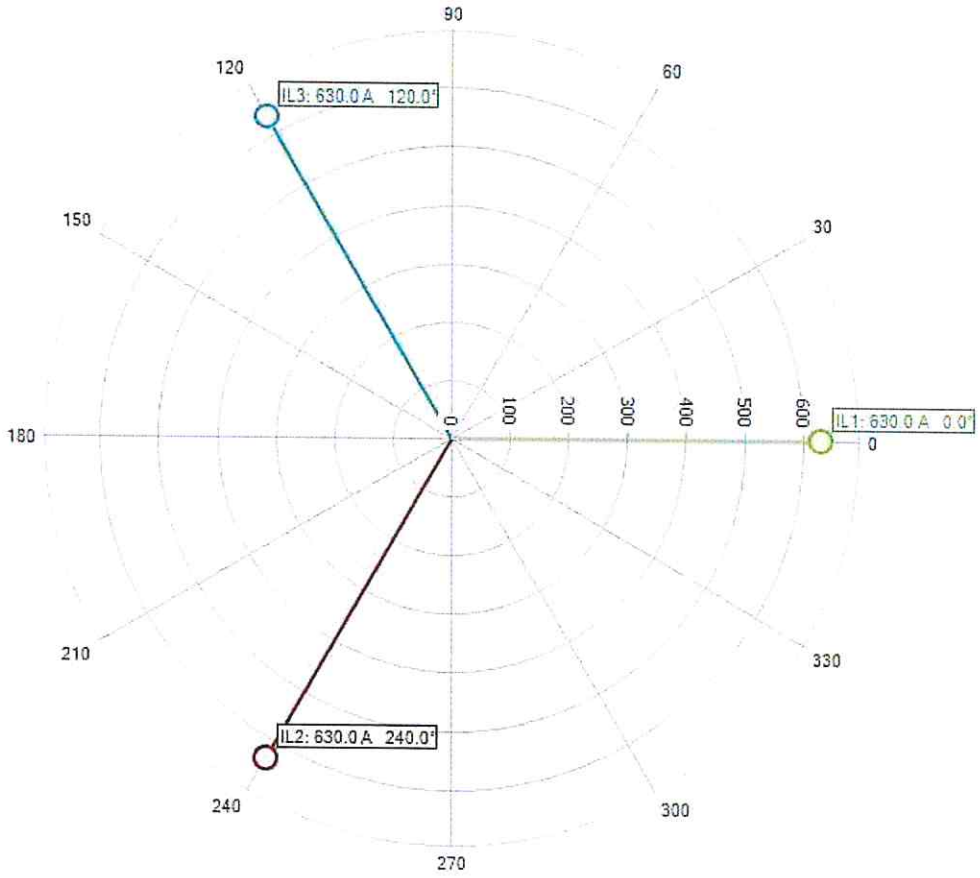
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 24 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

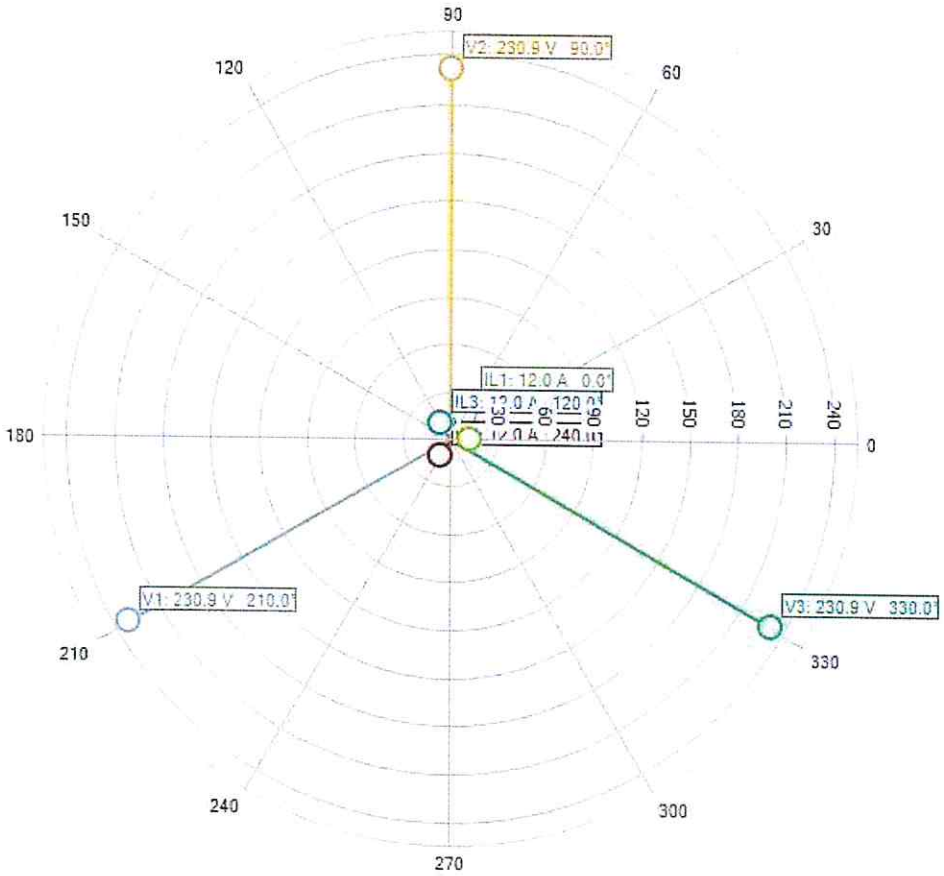
Device

Tag name	A2/04
Relay Serial Number	E218122002521070
Circuit Breaker Serial Number	EFA0721060300000
	Ekip LSIG
Device settings	In = 63 A
Protection Settings	Protection = L Threshold = 0.50 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 32 ms.
Trip time must be between 0 ms and 1000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	63	
		L threshold	0.50	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	2.50	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	5.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

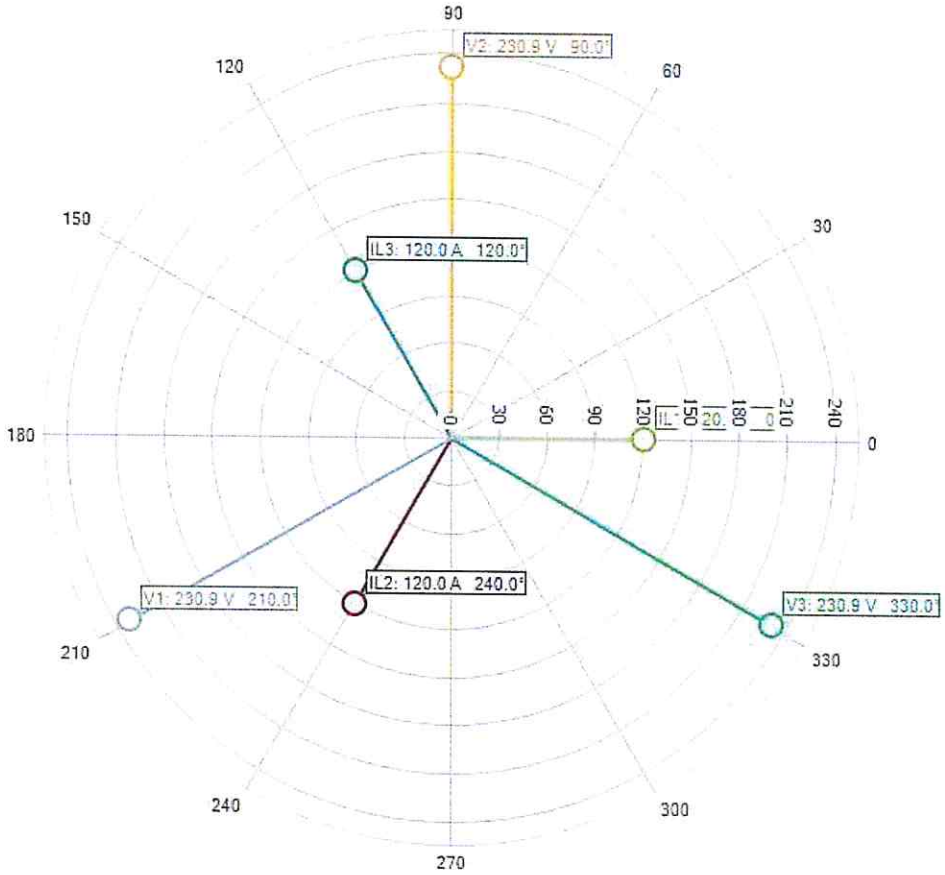
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

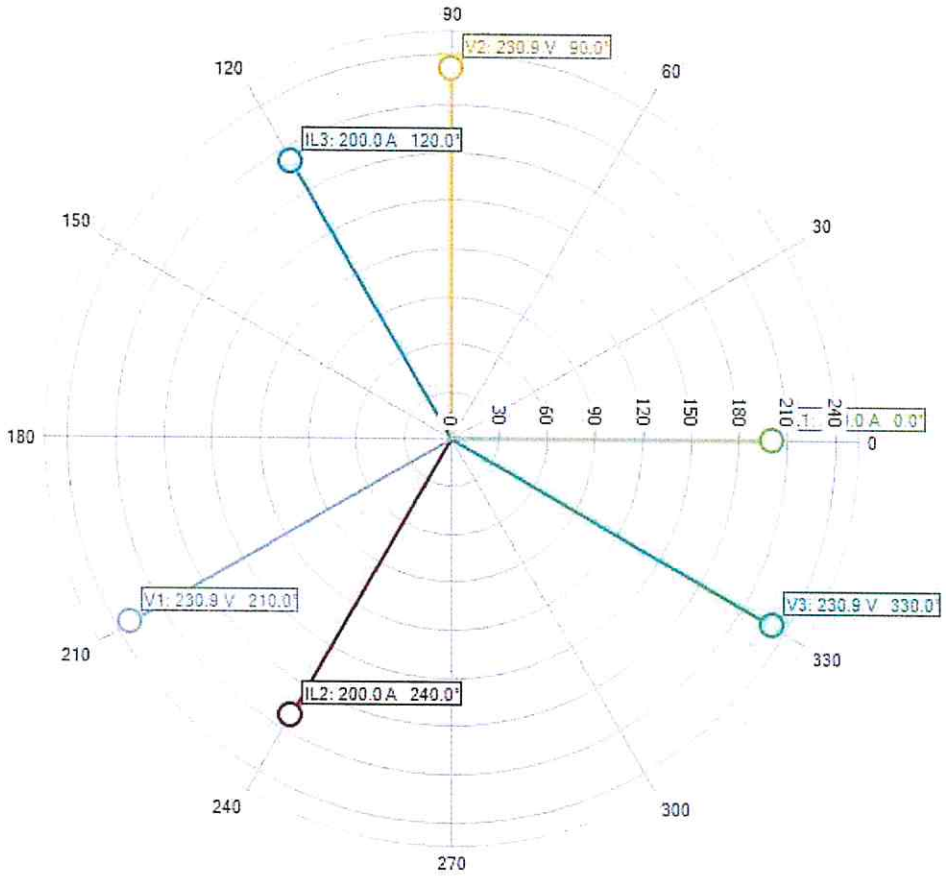
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms



Test

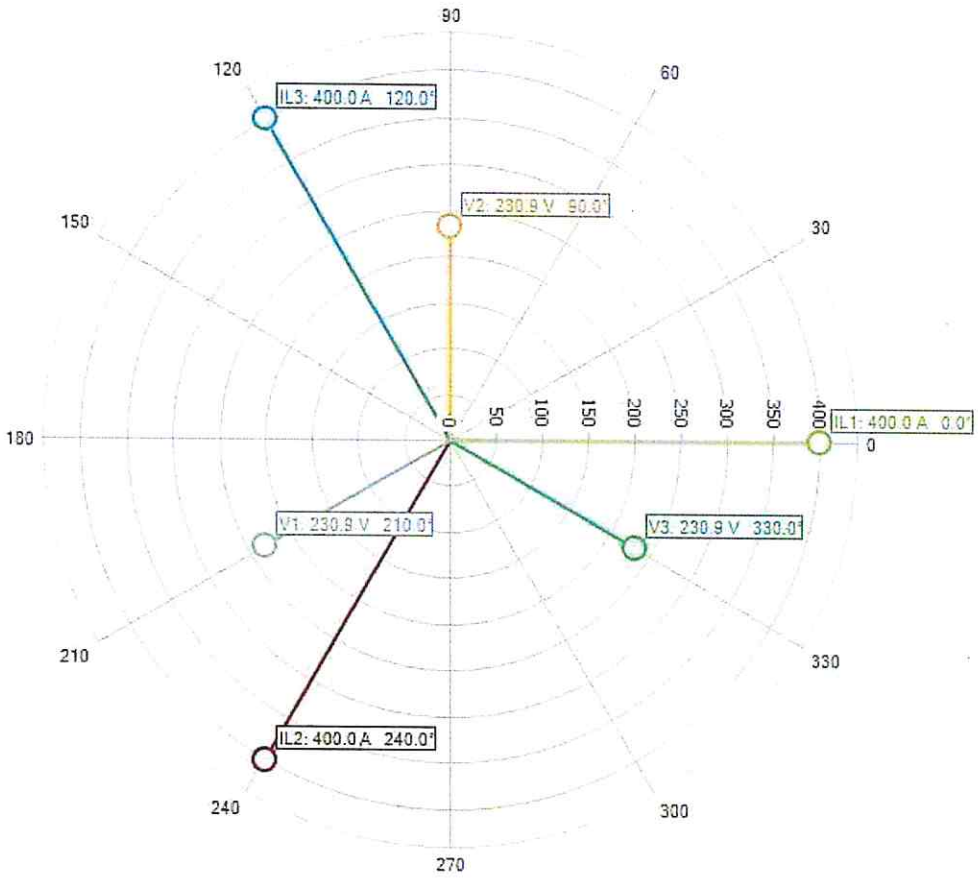
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

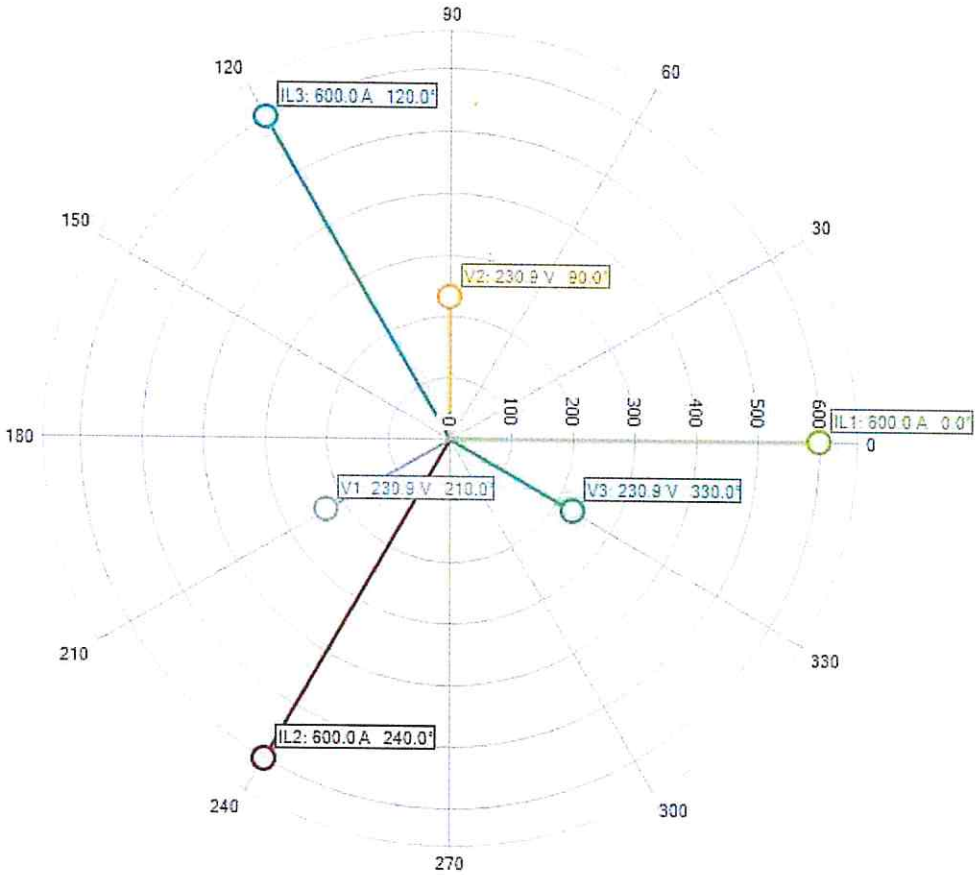
Device

Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

19 September 2024 - 10:28:36



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

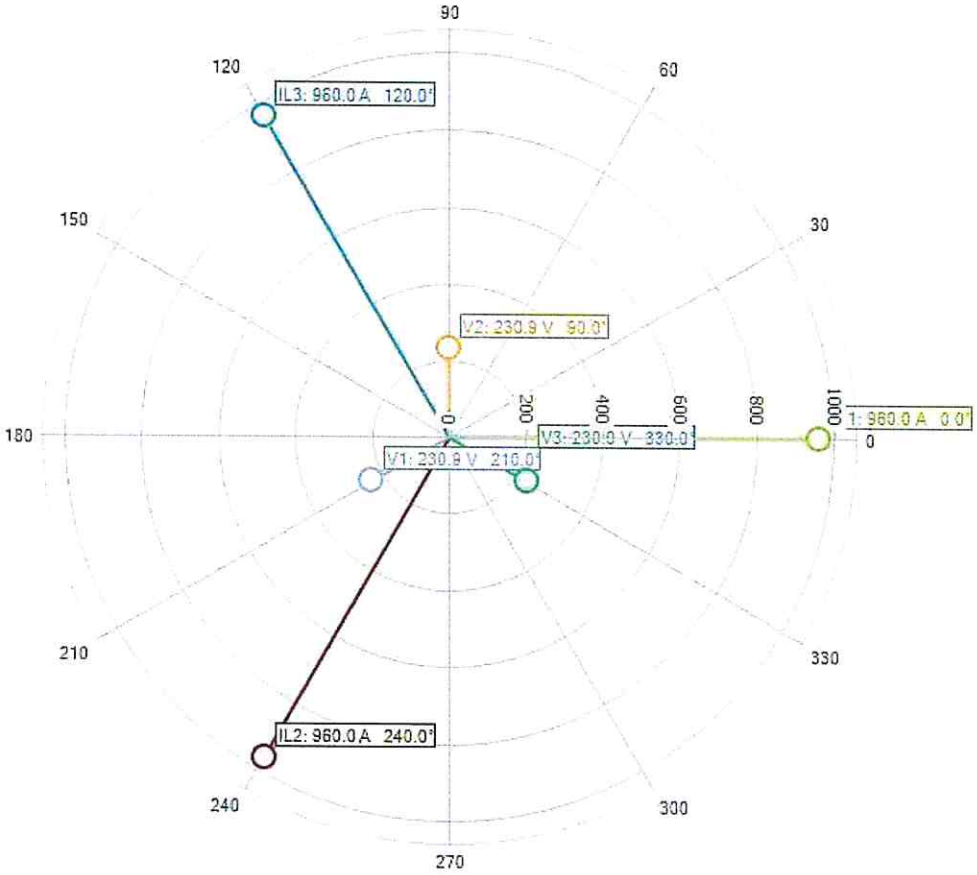
Tag name	A2/+05
Relay Serial Number	EF5000453690N000
Circuit Breaker Serial Number	CE61041919number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time I3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

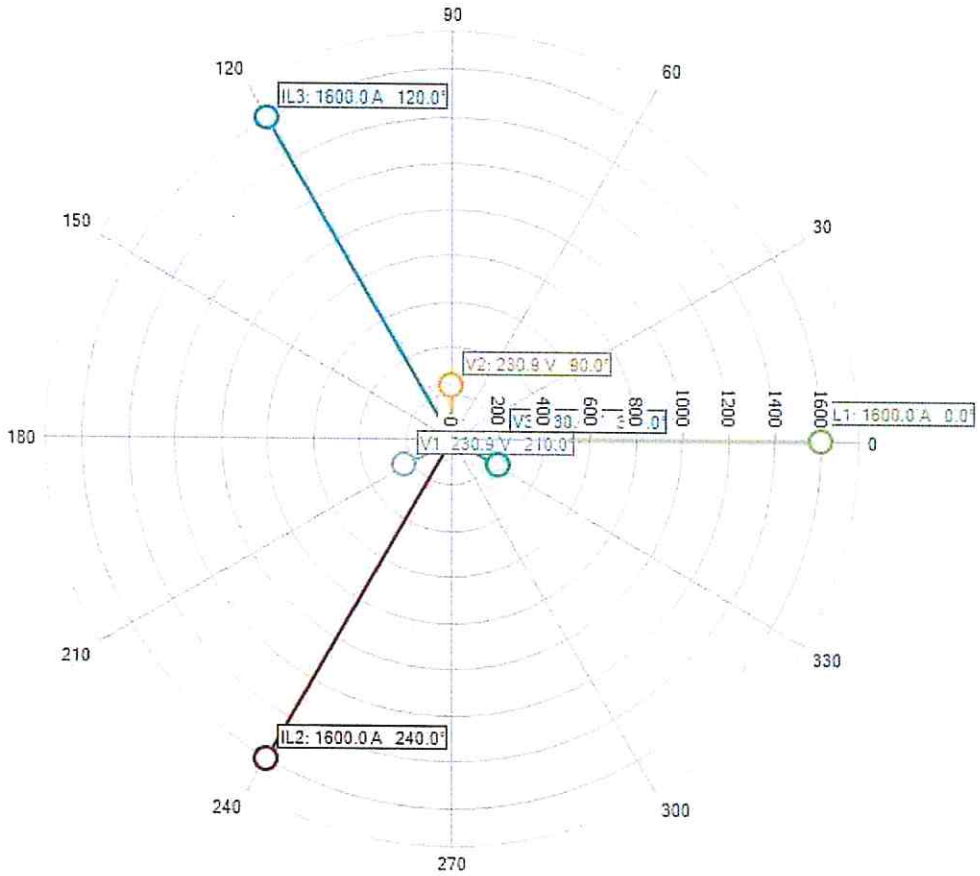
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

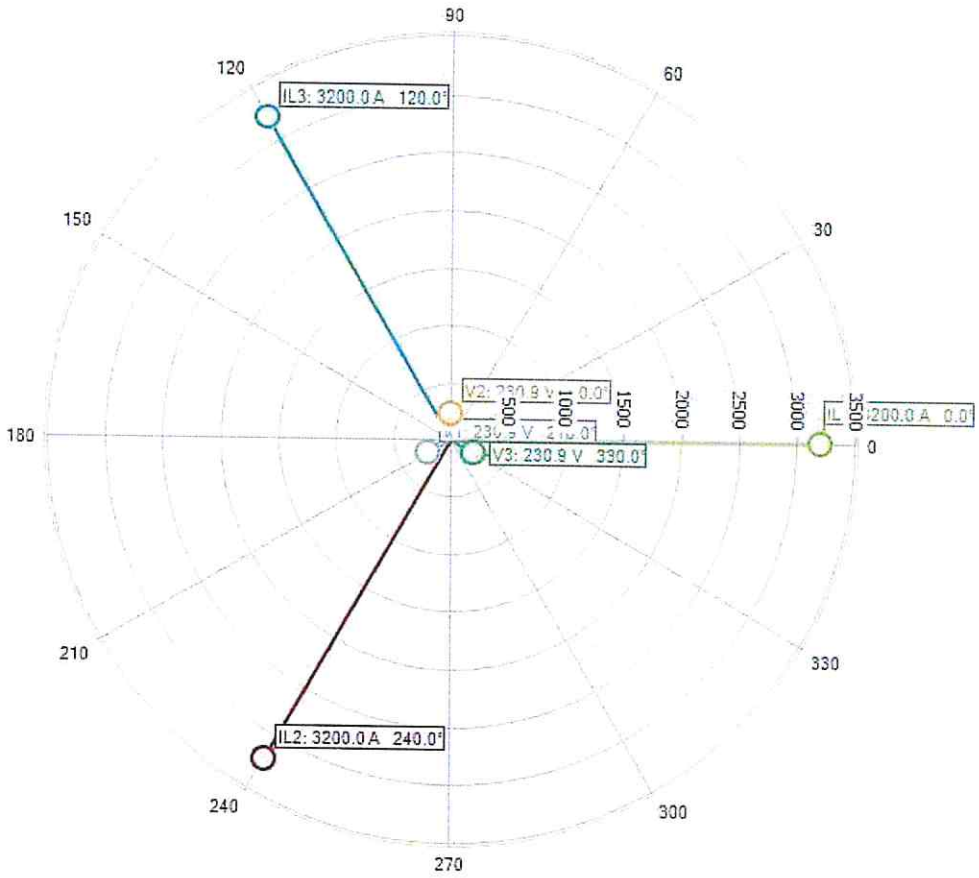
Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 22 ms.
Trip time must be between 0 ms and 1000 ms

25 September 2024 - 15:02:28



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

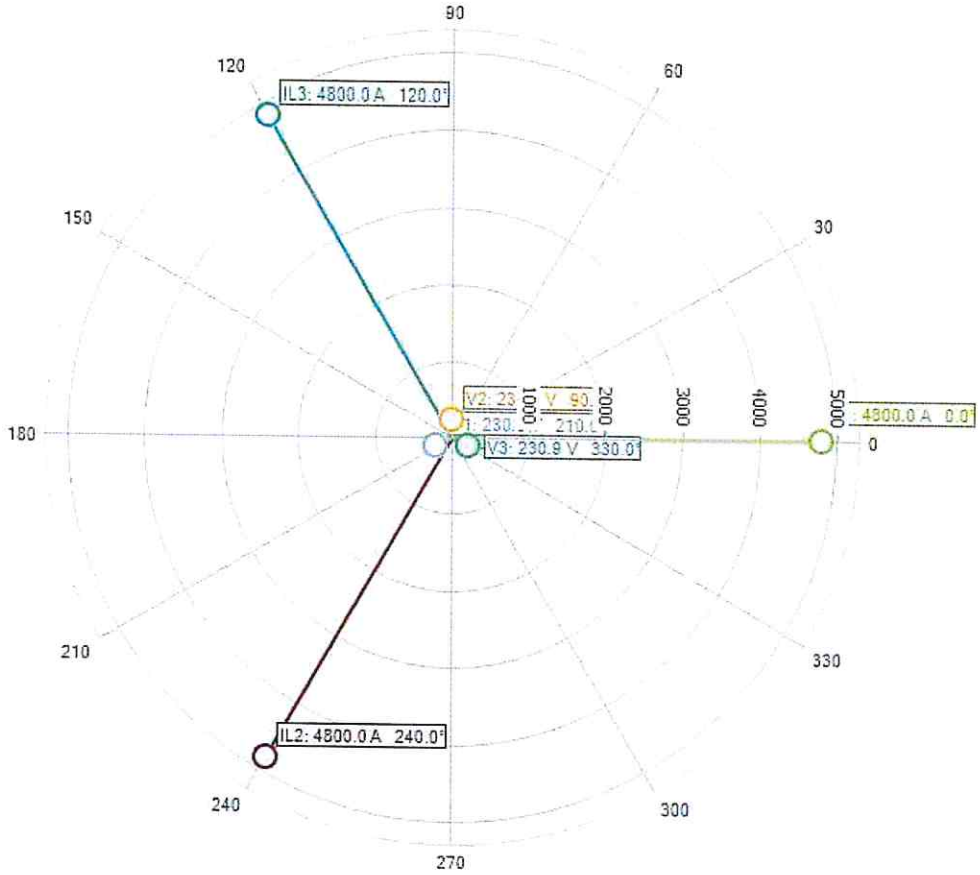
Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 28 ms.
Trip time must be between 0 ms and 1000 ms

25 September 2024 - 15:03:06



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

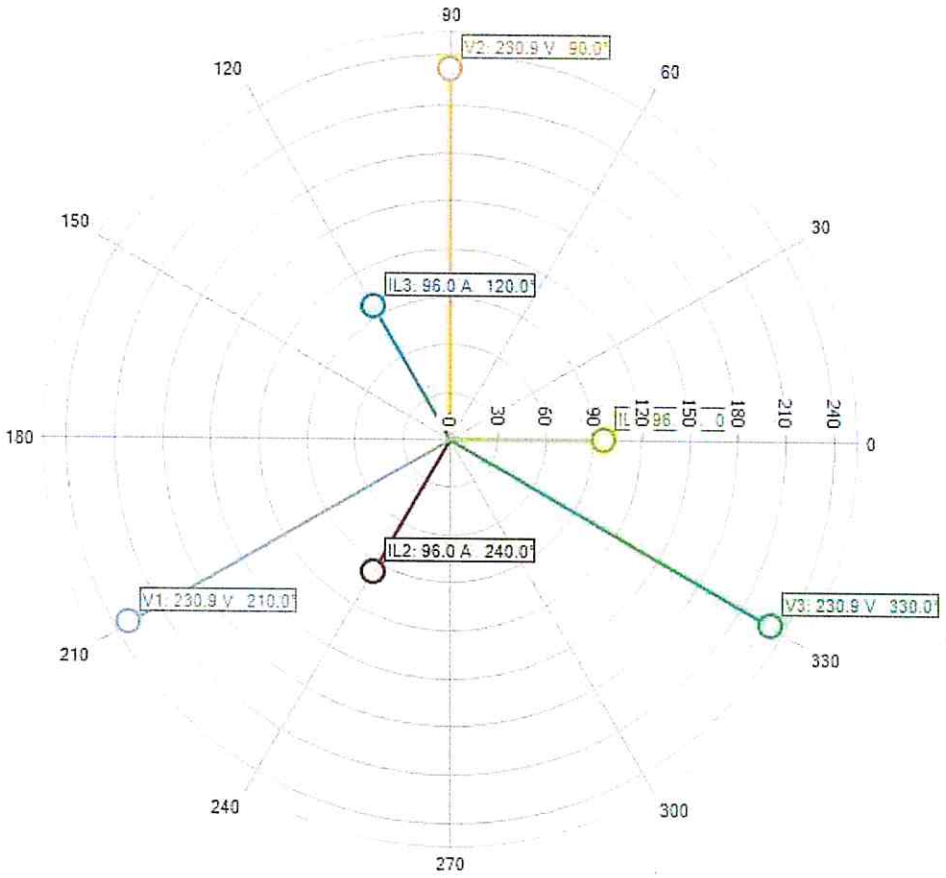
Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	320	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	50	% I1
		Threshold I1	0.625	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	3.90	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.111	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	

25 September 2024 - 14:59:07



Test

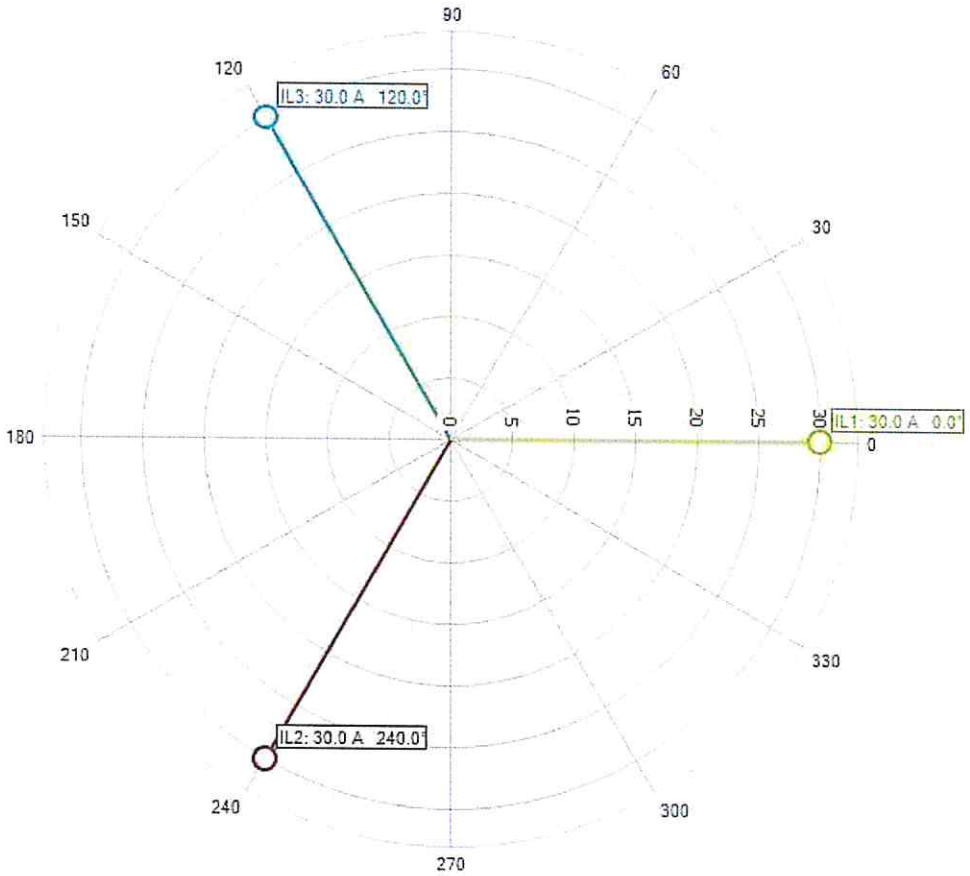
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A2/+08
Relay Serial Number	EFH0053578700010
Circuit Breaker Serial Number	CE61120108
	XT5
Device settings	In = 320 A Un = 400 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.625 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 3.90 In Protection = G Curve type = t=k Threshold = 0.111 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

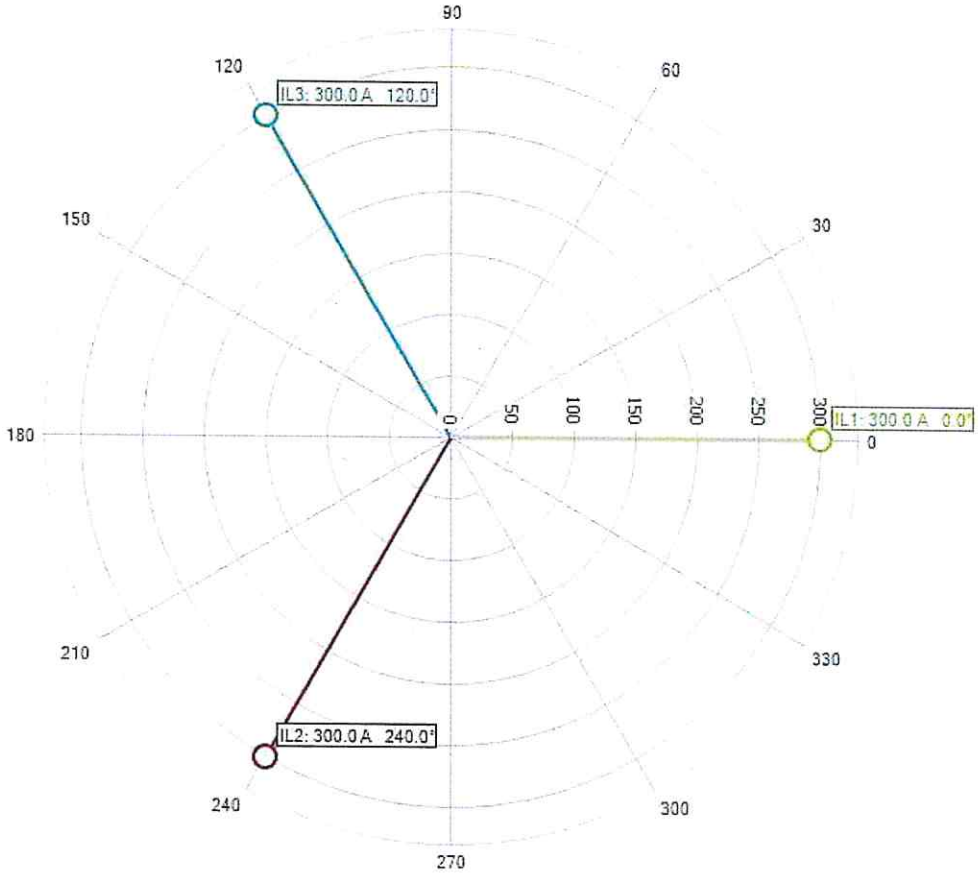
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/01
Relay Serial Number	E216850002521070
Circuit Breaker Serial Number	EF70166060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

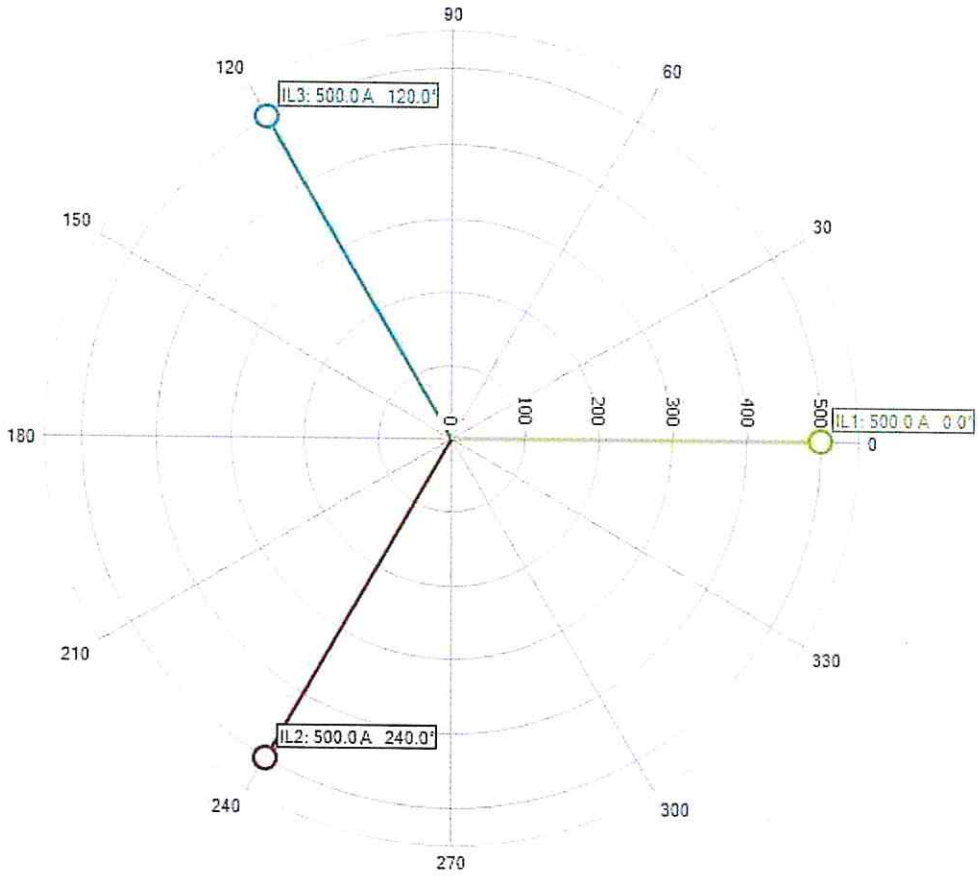
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/01
Relay Serial Number	E216850002521070
Circuit Breaker Serial Number	EF70166060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1190 ms.
Trip time must be between 0 ms and 1000 ms.



Test

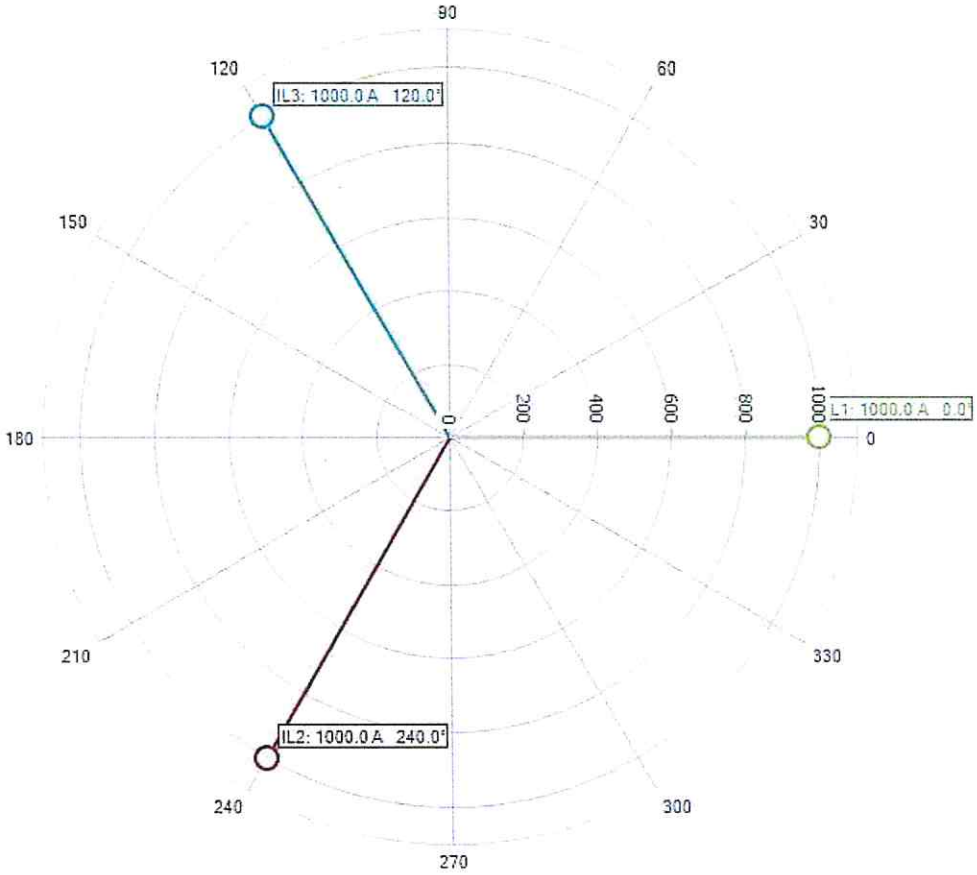
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/01
Relay Serial Number	E216850002521070
Circuit Breaker Serial Number	EF70166060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 400 ms.
Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

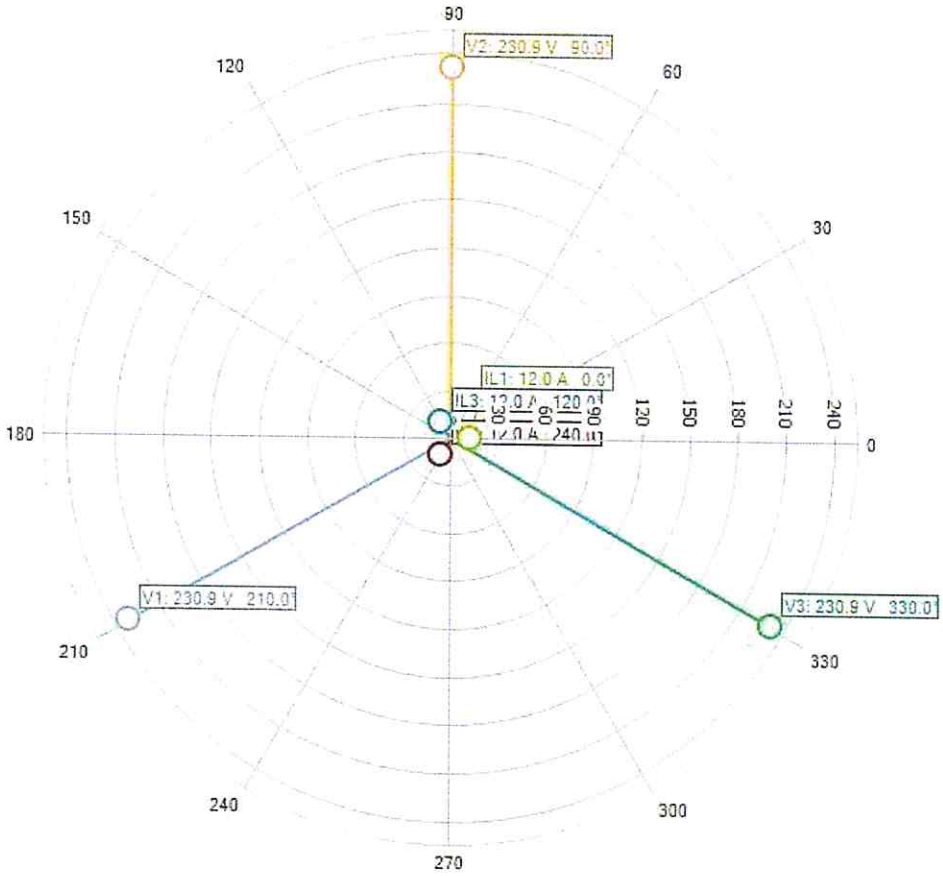
Device

Tag name	A3/01
Relay Serial Number	E216850002521070
Circuit Breaker Serial Number	EF70166060400010
	Ekip LSIG
Device settings	In = 100 A
Protection Settings	Protection = L Threshold = 0.62 In Time = 3.00 s Protection = S Curve type = t=k/i^2 Threshold = 3.00 In Time = 0.10 s Protection = I Threshold = 6.00 In Protection = G Threshold = 0.20 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 24 ms.
Trip time must be between 0 ms and 1000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Electronic protection parameters				
	Electronic/Manual parameters selection			
		Electronic/Manual parameters selectio	ELECTRONIC	
	Electronic L protection			
		Trip unit nominal current In	100	
		L threshold	0.70	In
		L time	3.00	s
		Thermal memory	Disabled	
	Electronic S protection			
		S status	Enabled	
		Curve type	t=k/i^2	
		Threshold (t=k/i^2)	3.00	In
		Time (t=k/i^2)	0.10	s
	Electronic I protection			
		I status	Enabled	
		I threshold	6.00	In
	Electronic G protection			
		G status	Enabled	
		G threshold	0.20	In
		G time	0.10	s
	Electronic LC protection			
		Iw status	Disabled	
		Iw threshold	0.30	In
		LC1 status	Disabled	
		LC1 threshold	0.50	I1
		LC2 status	Disabled	
		LC2 threshold	0.50	I1



Test

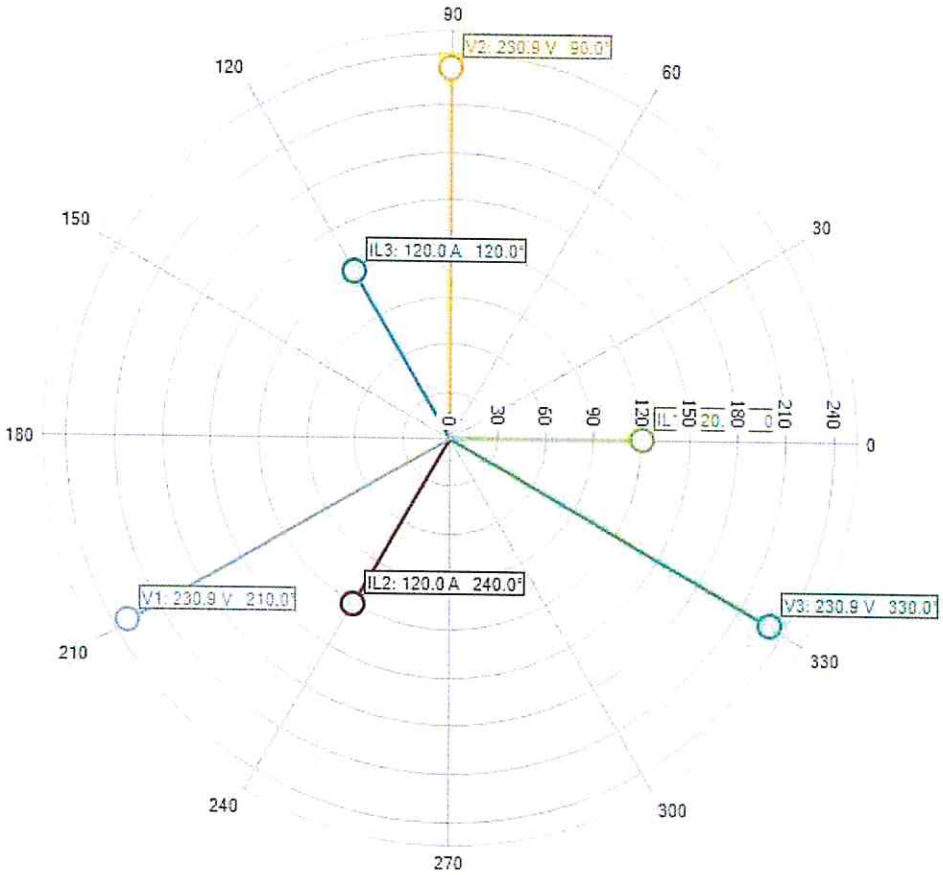
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

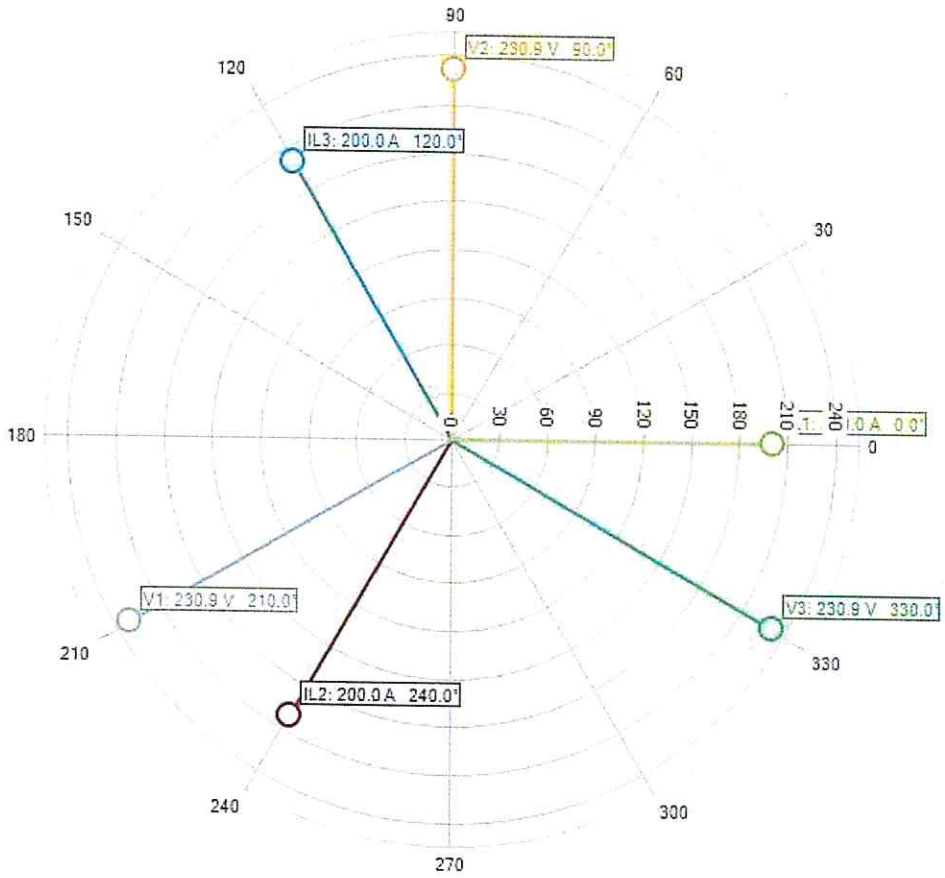
Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms

18 September 2024 - 15:22:57



Test

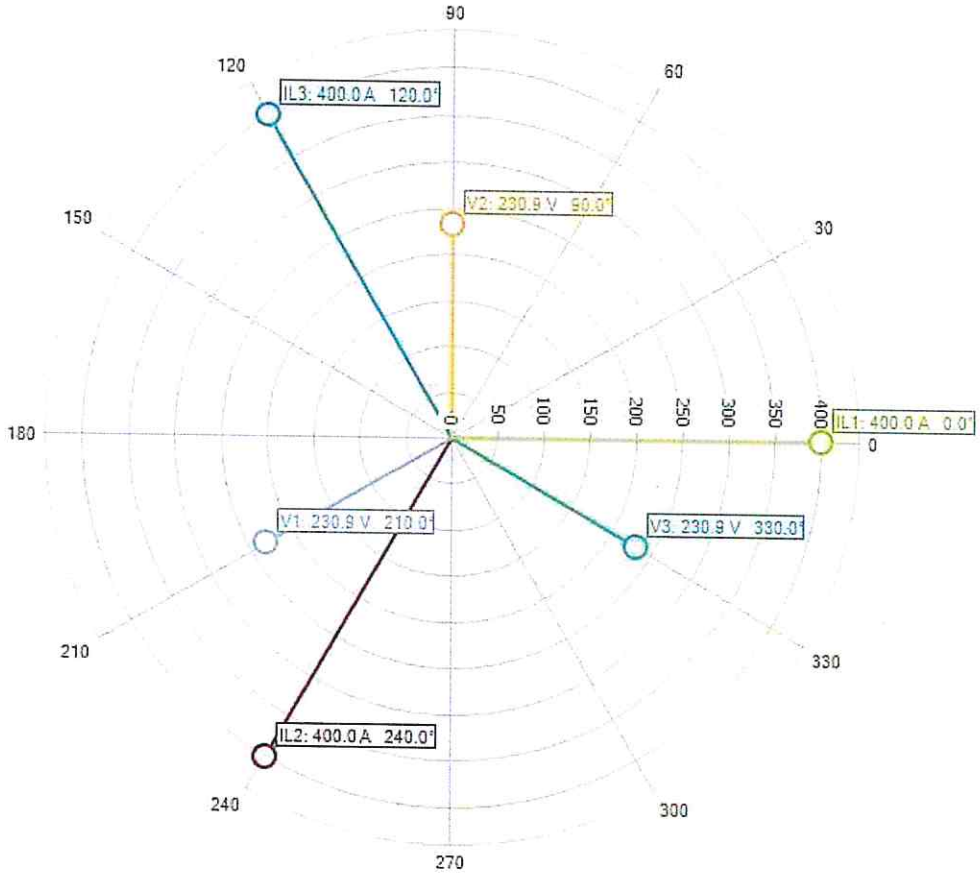
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

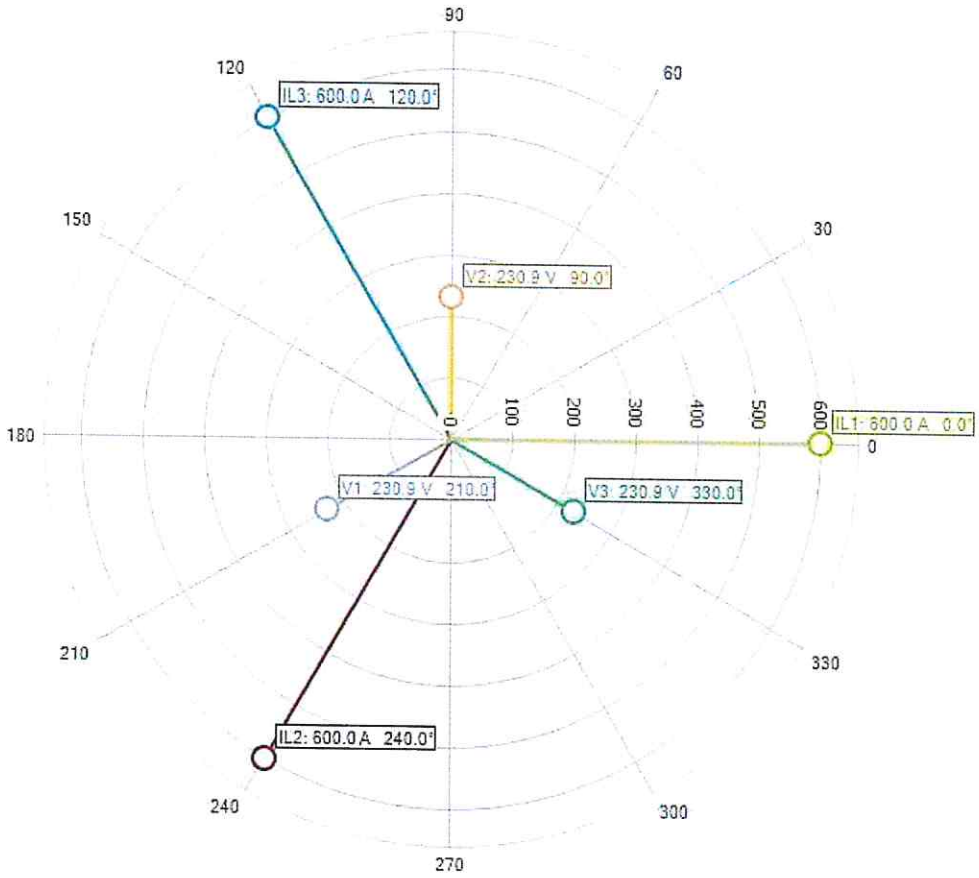
Device

Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

18 September 2024 - 15:24:10



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

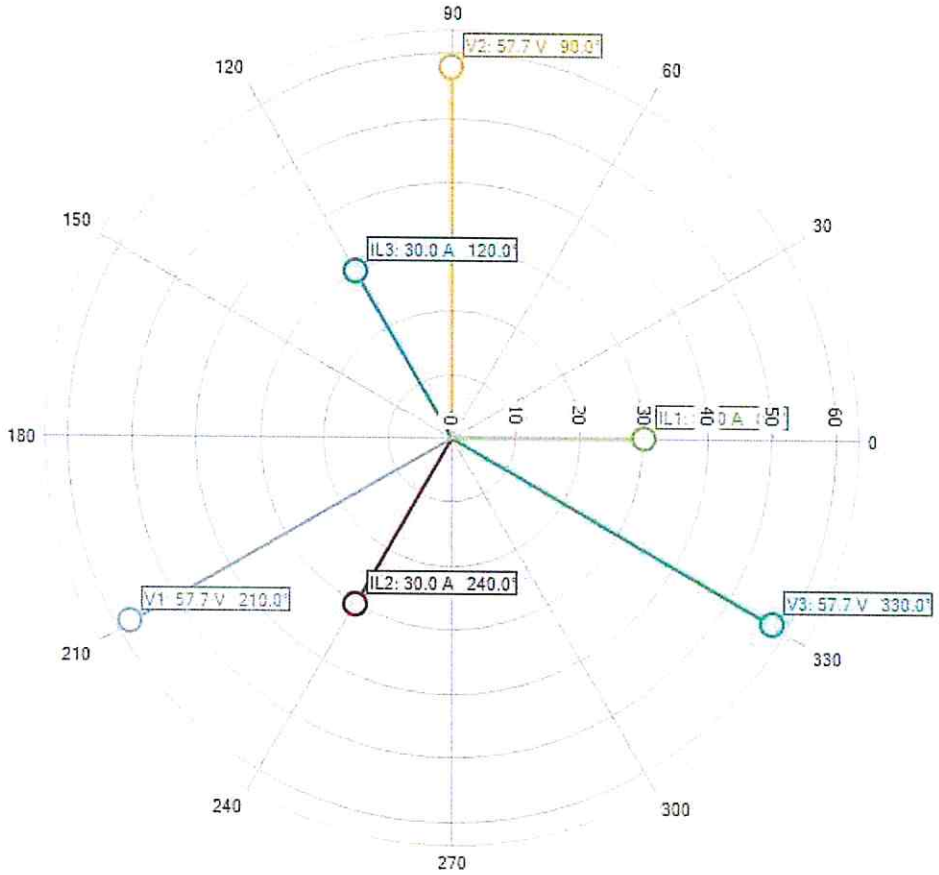
Tag name	A3/+02
Relay Serial Number	EF8000153690000A
Circuit Breaker Serial Number	CE61041915number
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

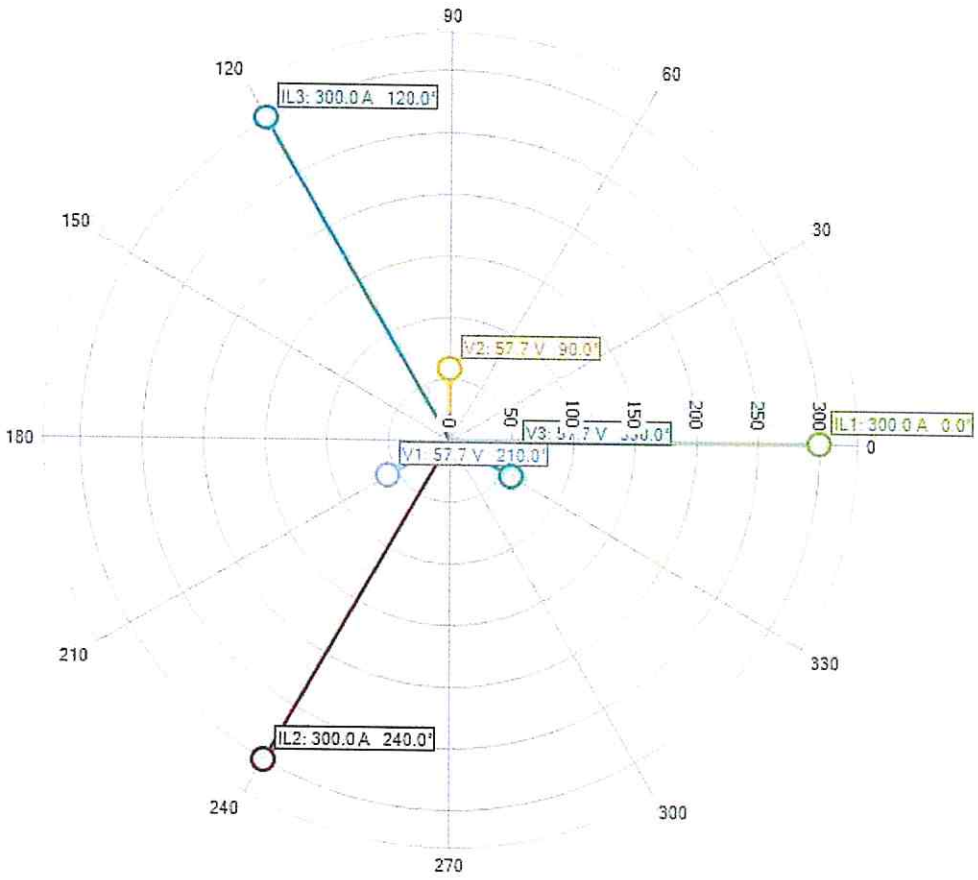
Device

Tag name	A3/+03
Relay Serial Number	EG1000153710N000
Circuit Breaker Serial Number	CE61237680number
	XT2/4
Device settings	In = 100 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

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Test

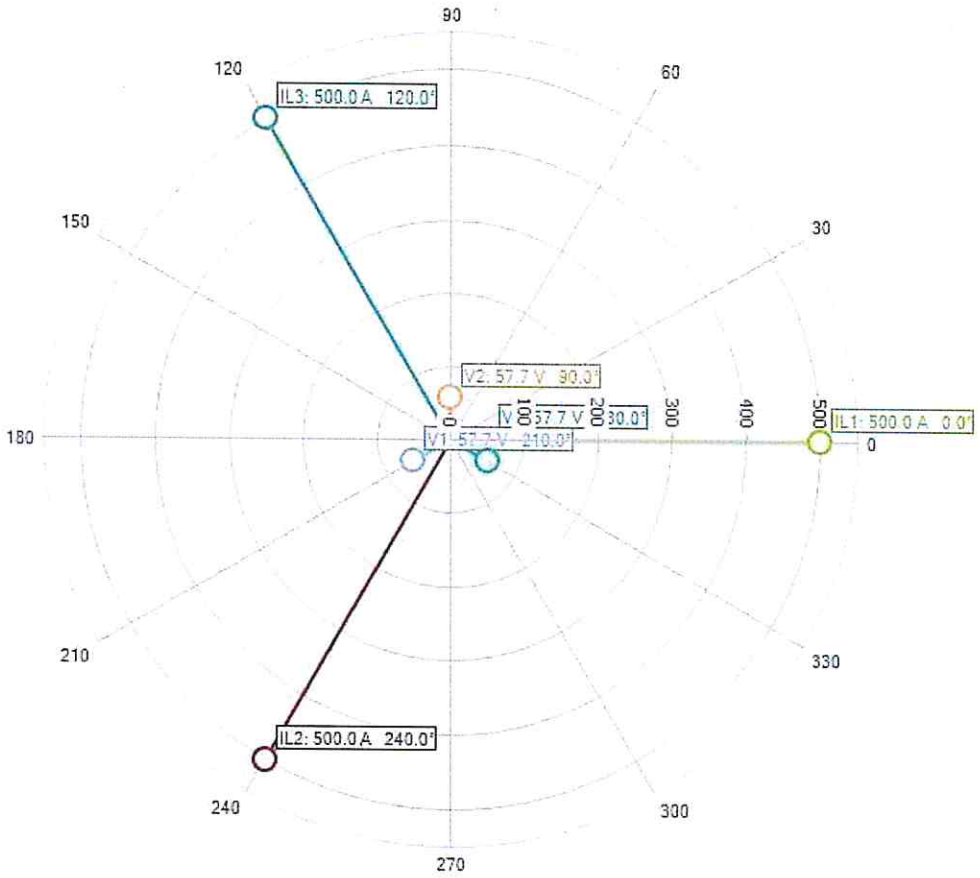
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+03
Relay Serial Number	EG1000153710N000
Circuit Breaker Serial Number	CE61237680number
	XT2/4
Device settings	In = 100 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1298 ms.
Trip time must be between 0 ms and 1000 ms



Test

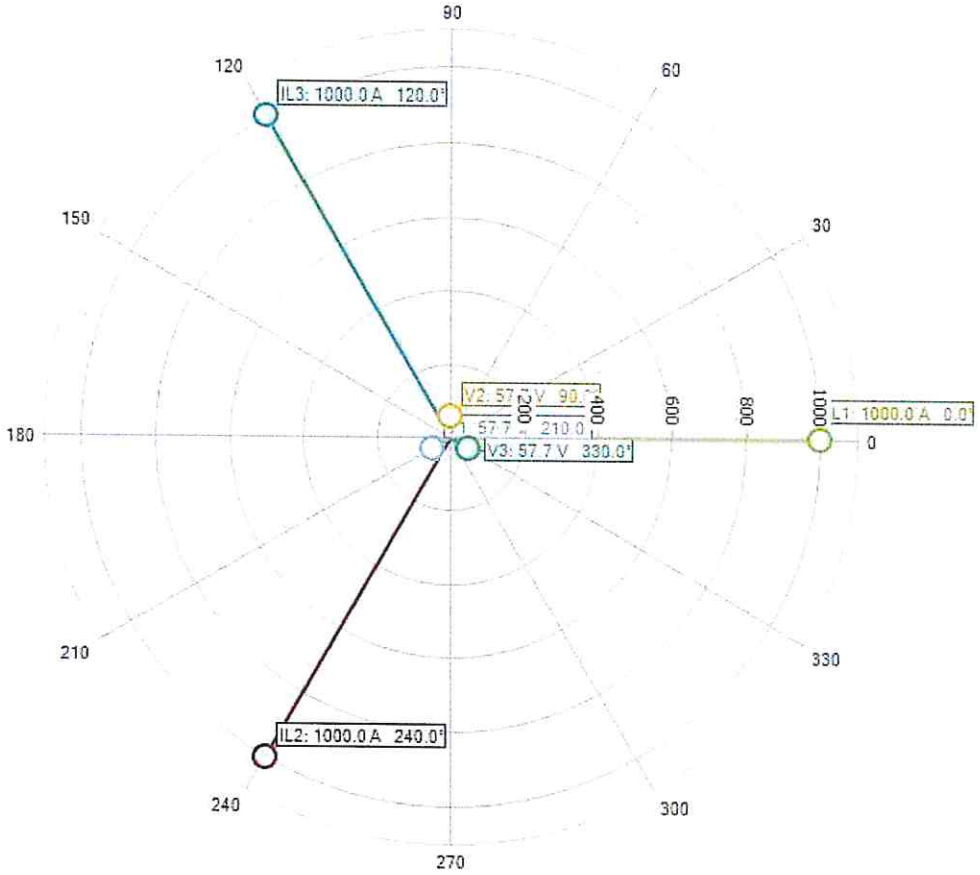
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+03
Relay Serial Number	EG1000153710N000
Circuit Breaker Serial Number	CE61237680number
	XT2/4
Device settings	In = 100 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms



Test

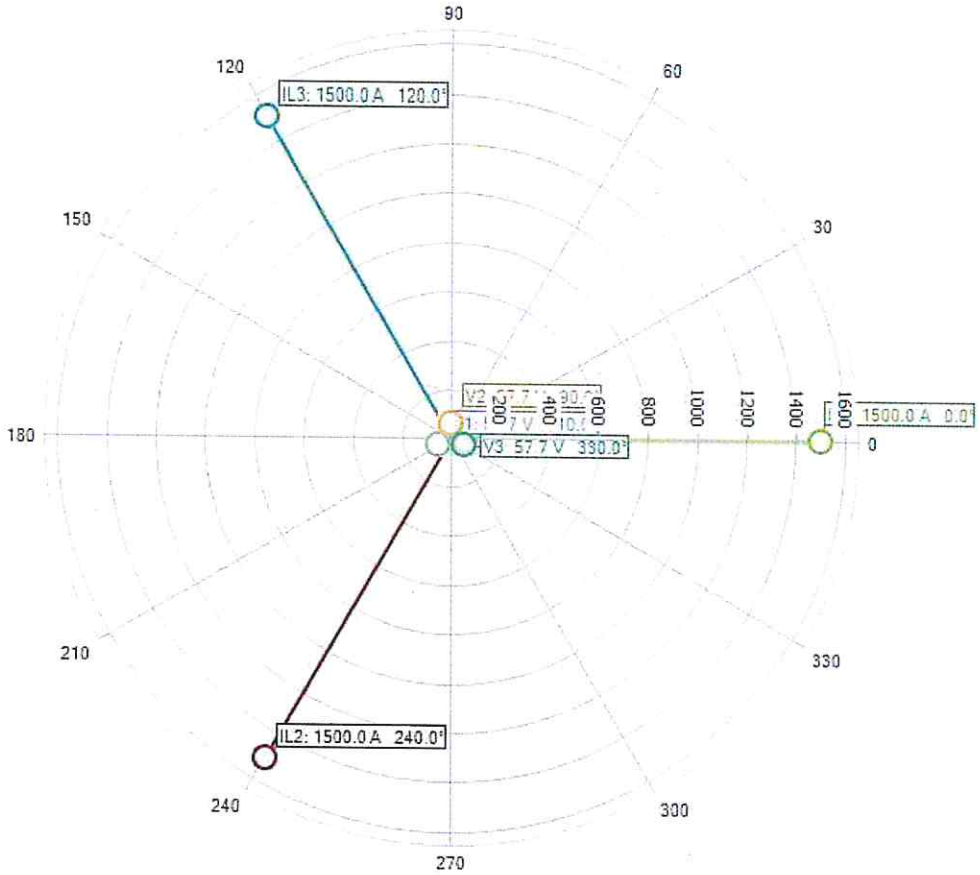
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+03
Relay Serial Number	EG1000153710N000
Circuit Breaker Serial Number	CE61237680number
	XT2/4
Device settings	In = 100 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

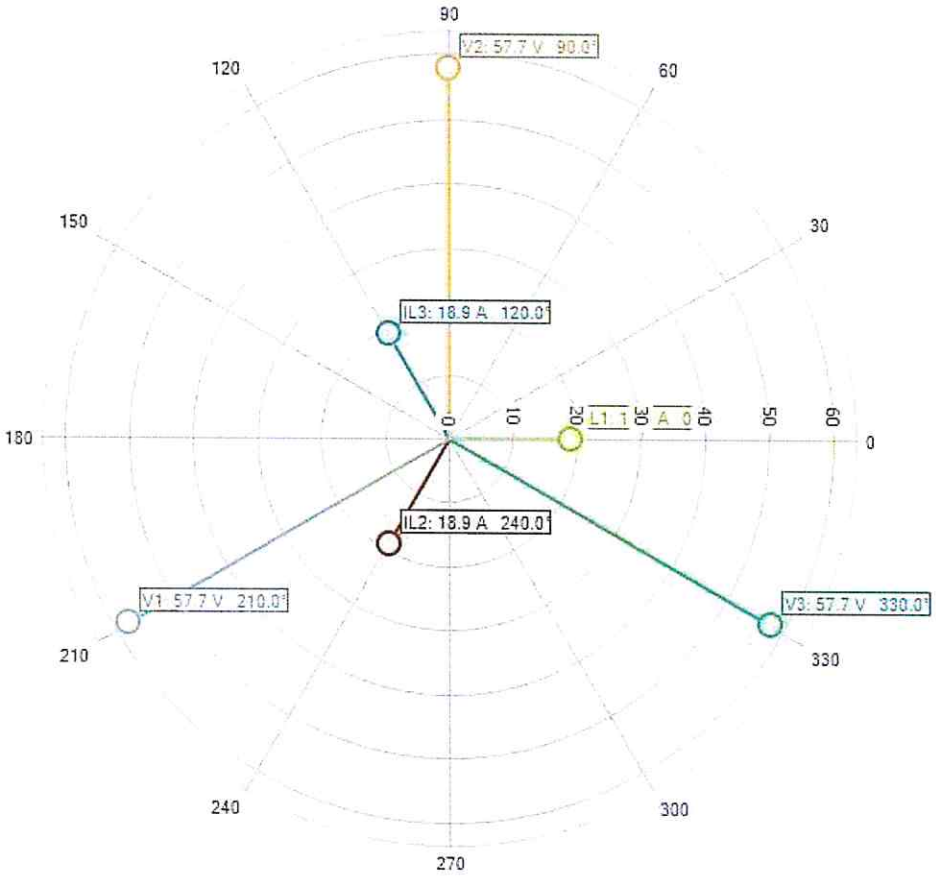
Tag name	A3/+03
Relay Serial Number	EG1000153710N000
Circuit Breaker Serial Number	CE61237680number
	XT2/4
Device settings	In = 100 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.650 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	100	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.650	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	7.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

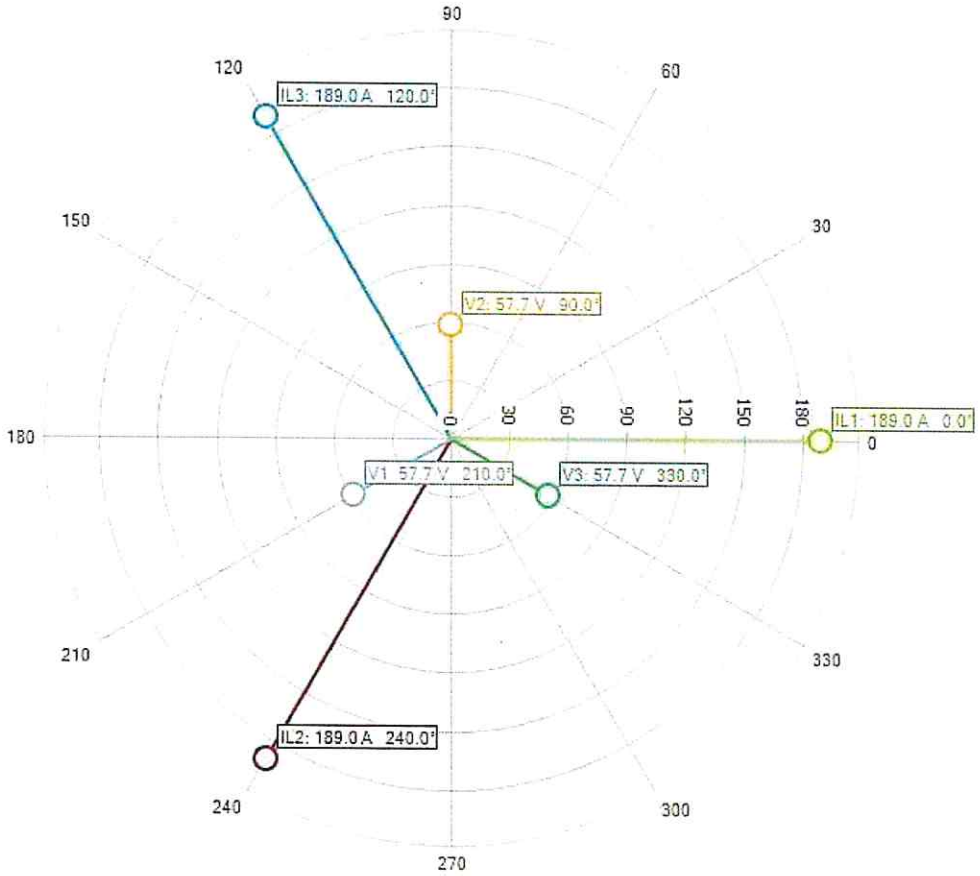
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+04
Relay Serial Number	EF8000253700N000
Circuit Breaker Serial Number	CE61066012number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

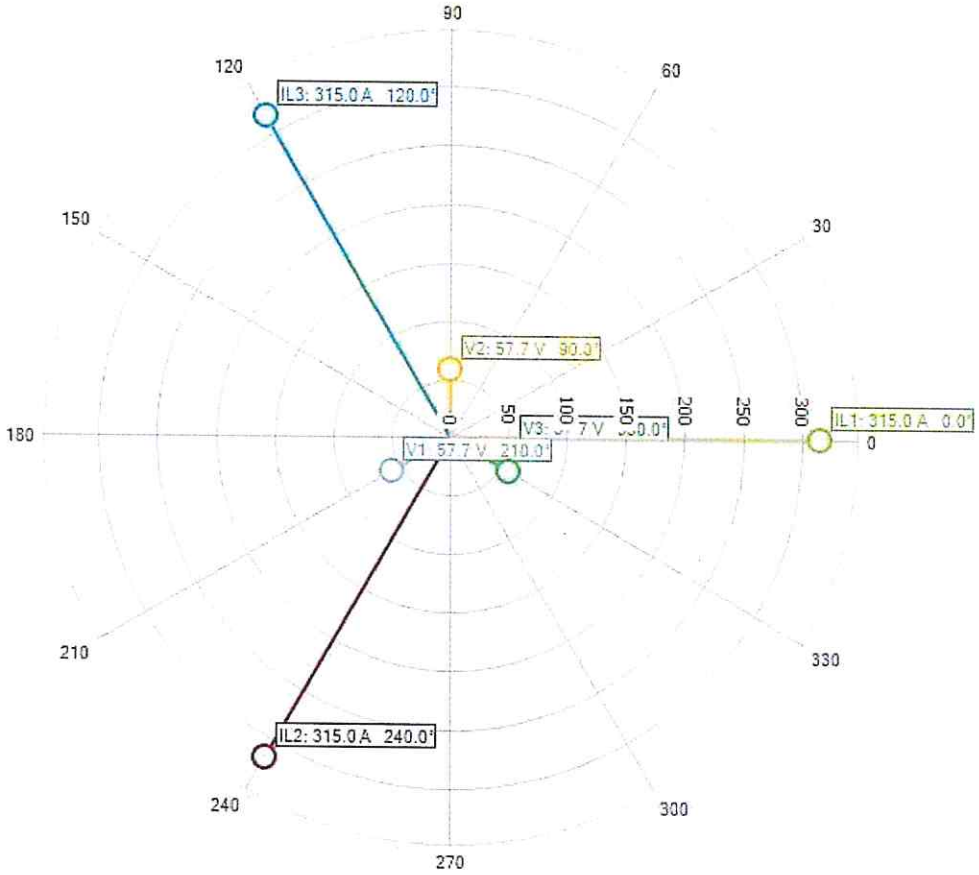
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+04
Relay Serial Number	EF8000253700N000
Circuit Breaker Serial Number	CE61066012number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 103 ms.
Trip time must be between 0 ms and 1000 ms



Test

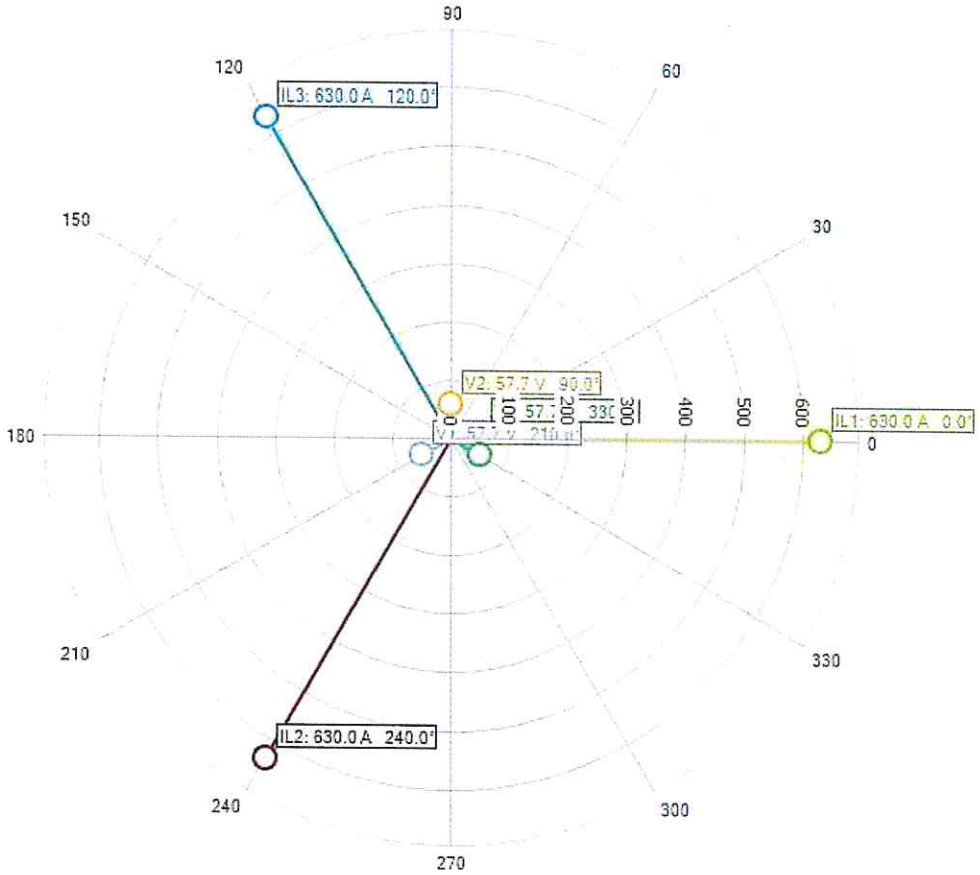
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+04
Relay Serial Number	EF8000253700N000
Circuit Breaker Serial Number	CE61066012number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 102 ms.
Trip time must be between 0 ms and 1000 ms



Test

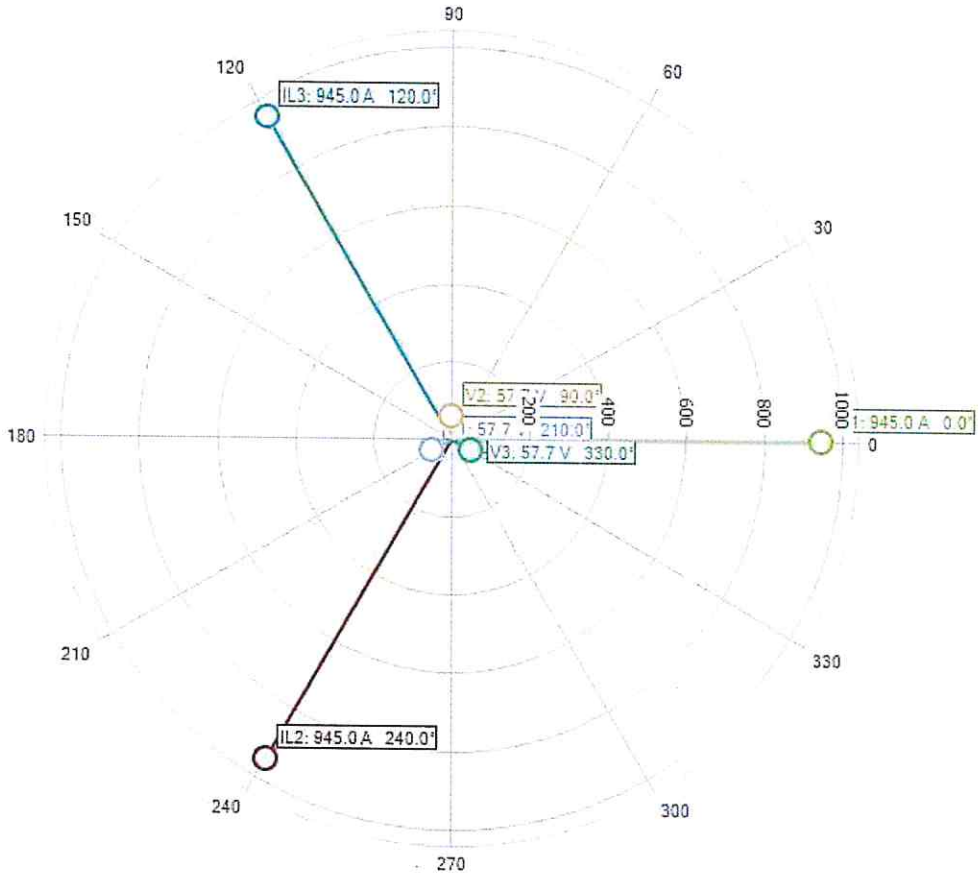
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+04
Relay Serial Number	EF8000253700N000
Circuit Breaker Serial Number	CE61066012number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 27 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

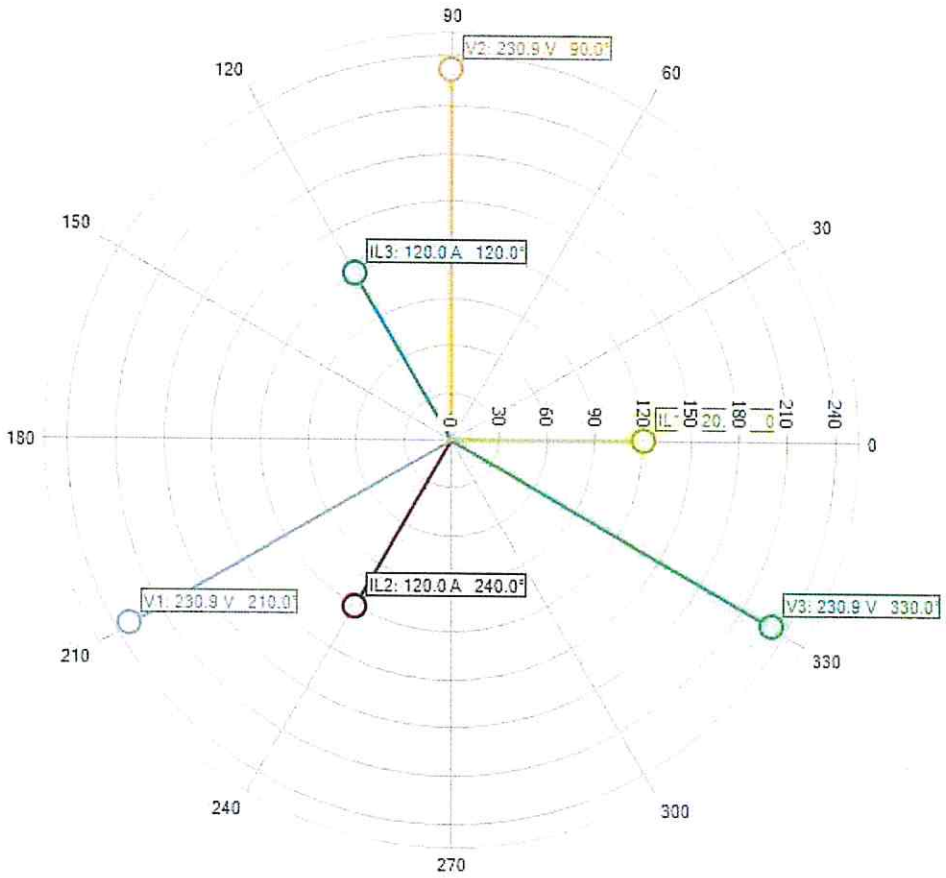
Tag name	A3/+04
Relay Serial Number	EF8000253700N000
Circuit Breaker Serial Number	CE61066012number
	XT2/4
Device settings	In = 63 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 29 ms.
Trip time must be between 0 ms and 1000 ms

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	63	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

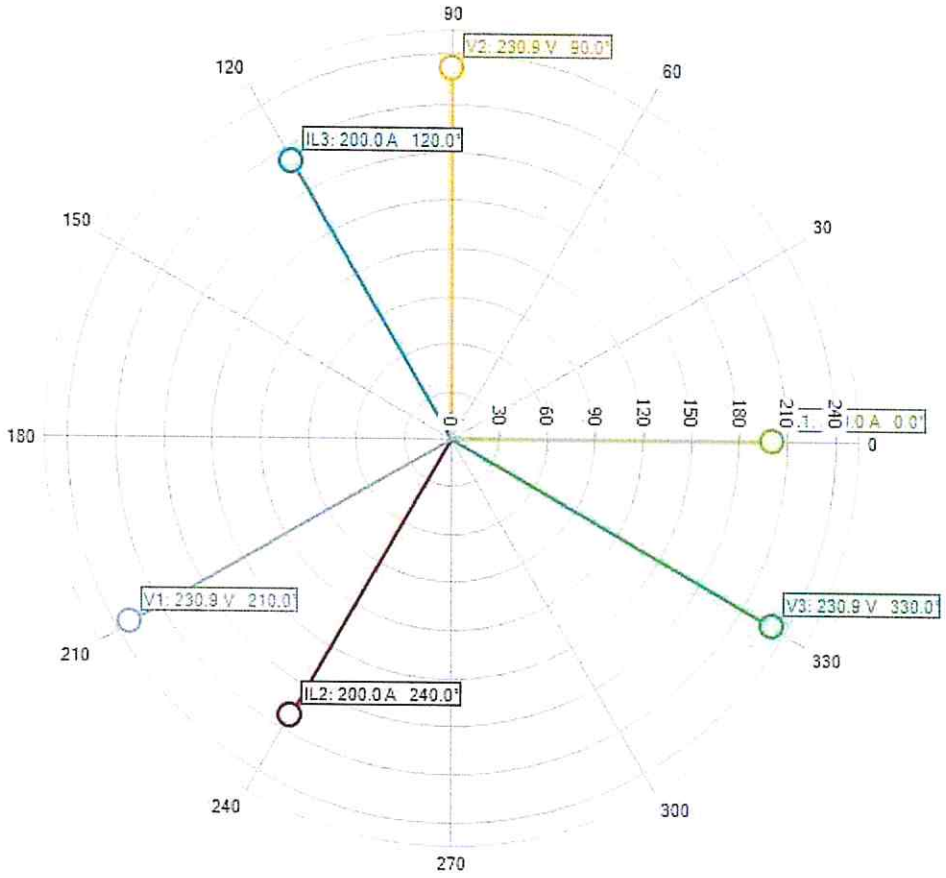
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms



Test

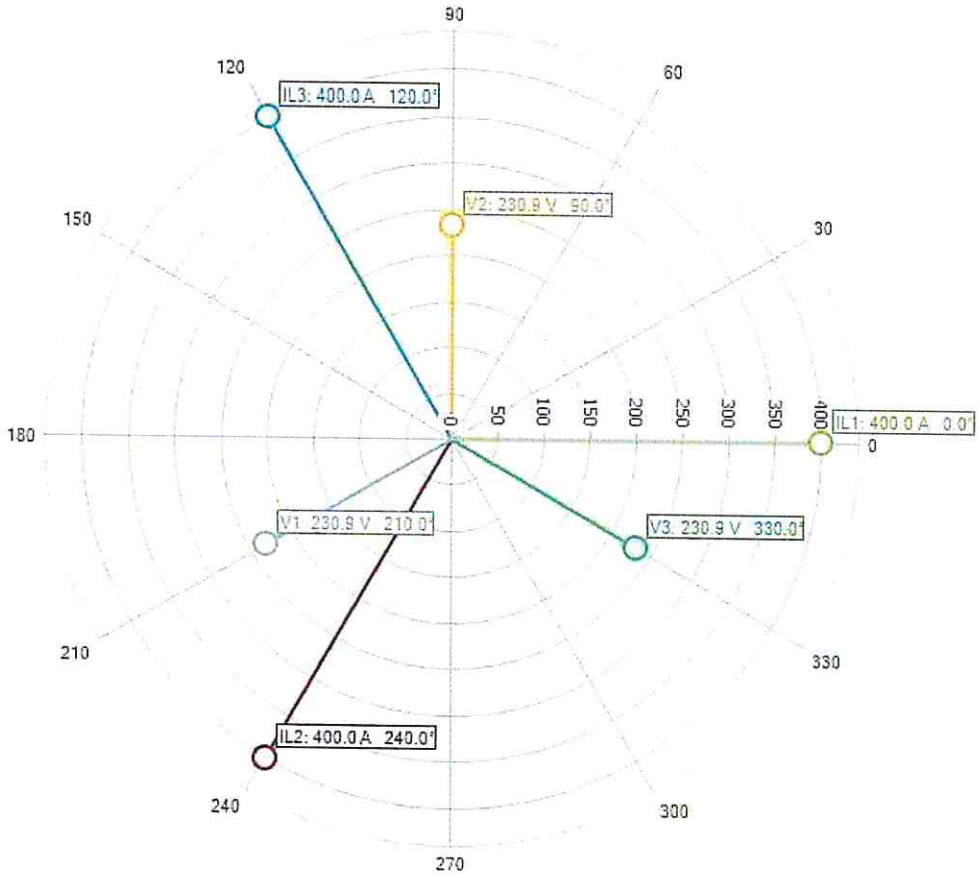
Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 101 ms.
Trip time must be between 0 ms and 1000 ms



Test

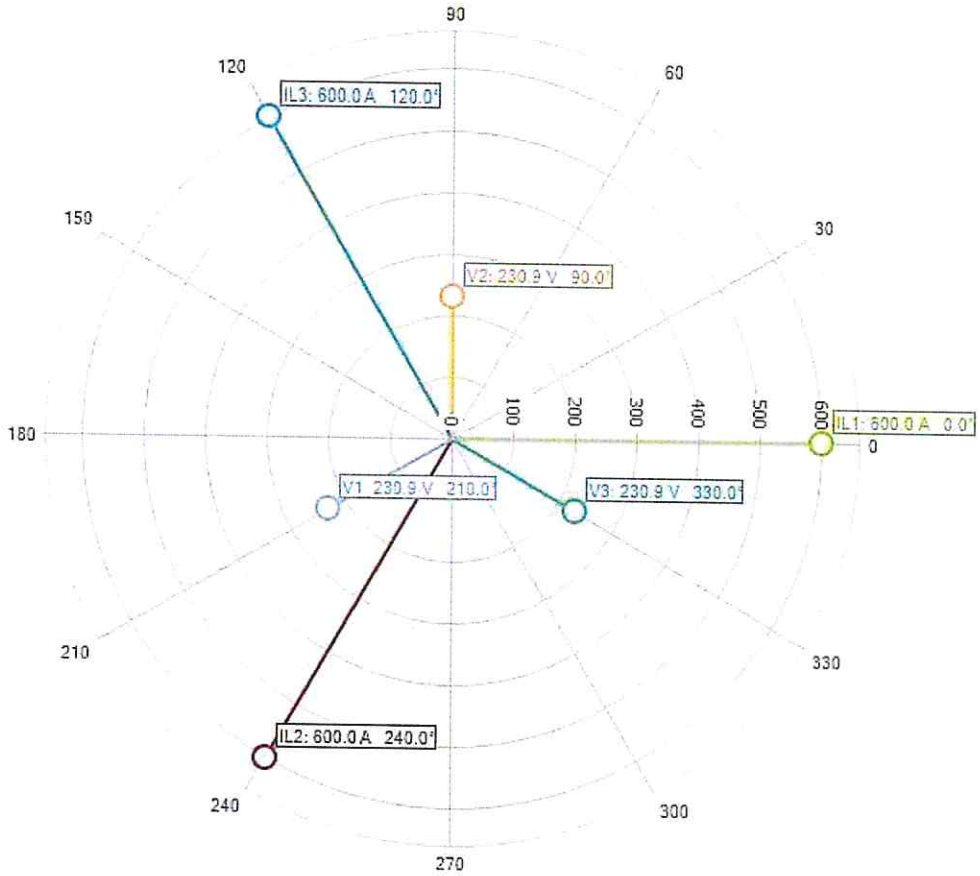
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

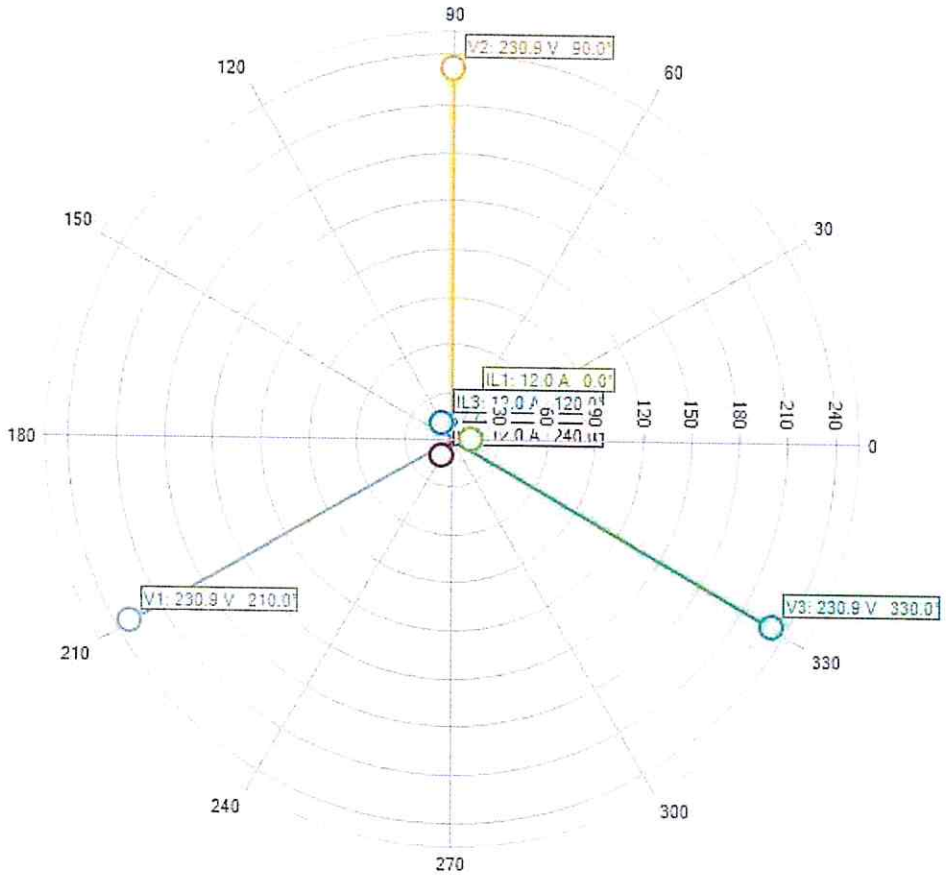
Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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



Test

Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

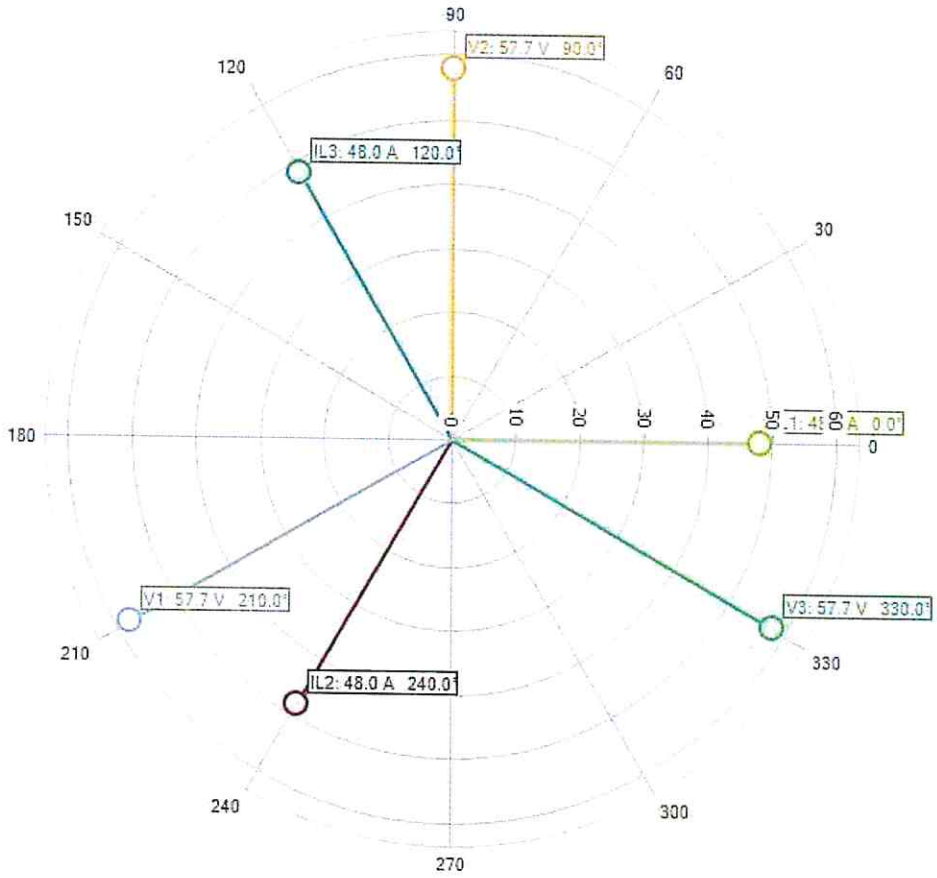
Tag name	A3/+05
Relay Serial Number	EH7000253690N000
Circuit Breaker Serial Number	CE81021102
	XT2/4
Device settings	In = 40 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.500 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 2.50 In Time = 0.10 s Protection = I Threshold = 5.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	40	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.500	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	2.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	5.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

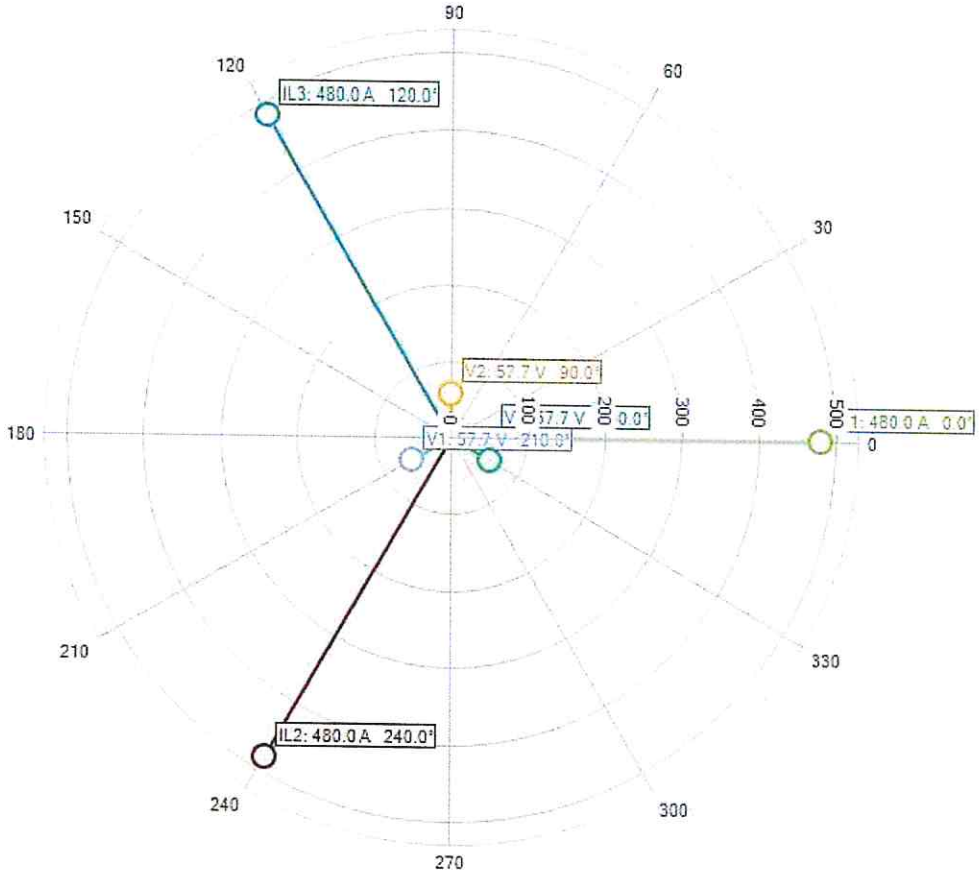
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

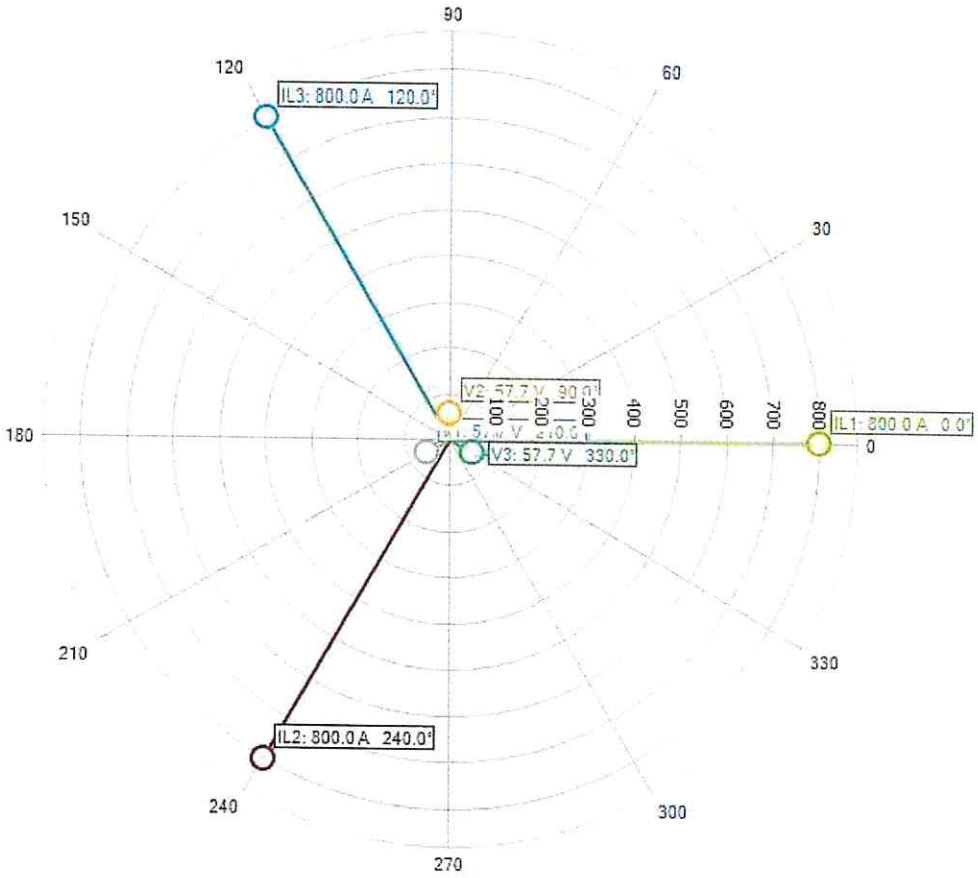
Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1588 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

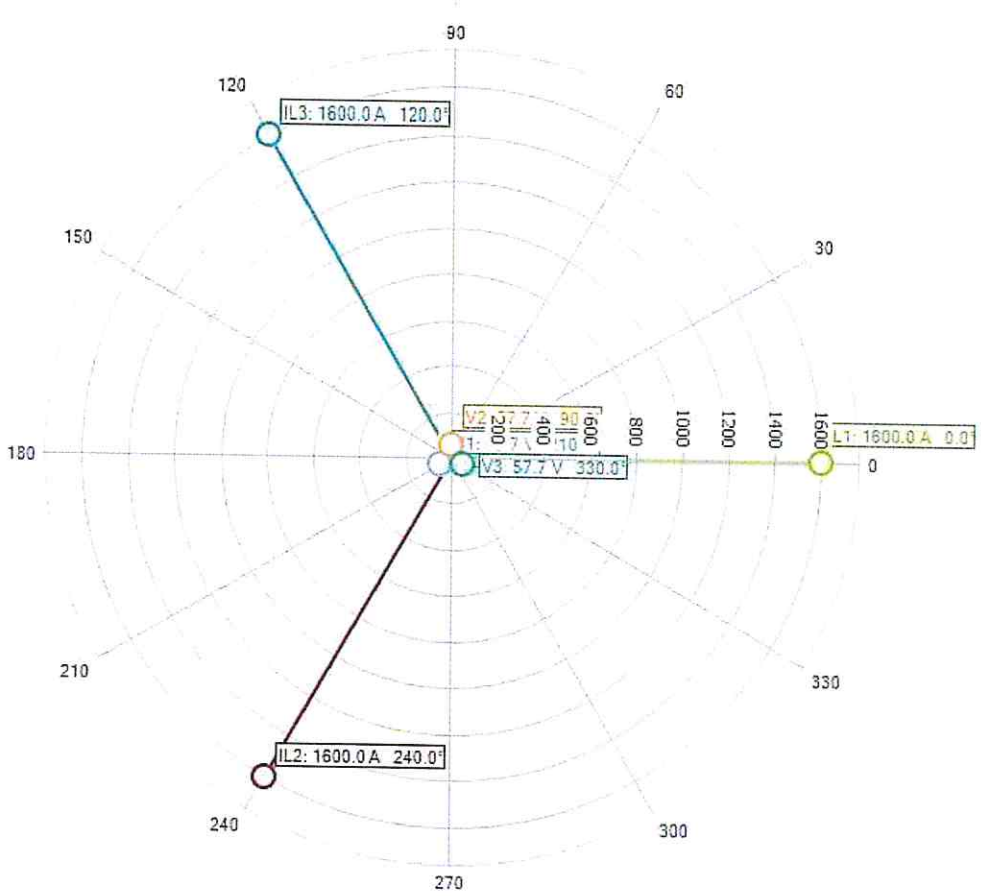
Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

01 October 2024 - 09:41:35



Test

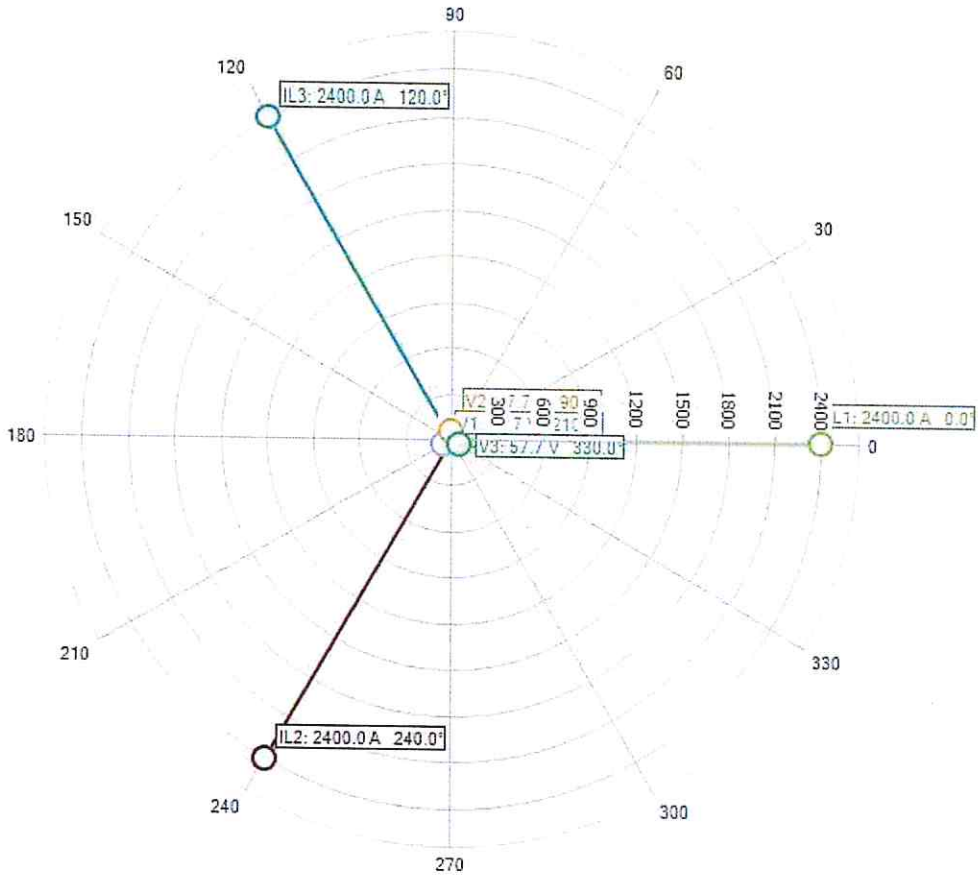
Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 20 ms.
Trip time must be between 0 ms and 1000 ms



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

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

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	160	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.720	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	7.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	

7.2 Proverlis Summary System Reports

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Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM

Electrical	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A1/+05-QF1	INCOMER SW - A1/+05-QF1	ONSHORE	C10002751	FP00	100	2025-01-13	-
		ONSHORE	C10002752	FTR-2	100	2024-12-12	-
		ONSHORE	C10002753	FTR-6	0	-	-
A2/+05-QF1	DRAWER SPARE - A2/+05-QF1	ONSHORE	C10002756	FP00	100	2024-10-15	-
		ONSHORE	C10002757	FTR-2	100	2024-09-20	-
		ONSHORE	C10002758	FTR-6	100	2024-10-02	-
		ONSHORE	C10002995	FTR-5	0	-	-
A2/+08-QF1	DRAWER TEMPORARY GENERATOR - A2/+08-QF1	ONSHORE	C10002759	FP00	100	2024-09-26	-
		ONSHORE	C10002760	FTR-2	100	2024-09-26	-
		ONSHORE	C10002996	FTR-5	0	-	-
A3/+02-QF1	DRAWER SPARE - A3/+02-QF1	ONSHORE	C10002761	FP00	100	2024-10-15	-
		ONSHORE	C10002762	FTR-2	100	2024-09-20	-
		ONSHORE	C10002763	FTR-6	100	2024-10-03	-
		ONSHORE	C10002997	FTR-5	0	-	-
A3/+05-QF1	DRAWER SPARE - A3/+05-QF1	ONSHORE	C10002764	FP00	100	2024-10-22	-
		ONSHORE	C10002765	FTR-2	100	2024-10-02	-
		ONSHORE	C10002766	FTR-6	100	2024-10-03	-
		ONSHORE	C10002998	FTR-5	0	-	-
A4/+05-QF1	DRAWER SPARE - A4/+05-QF1	ONSHORE	C10002767	FP00	100	2024-10-15	-
		ONSHORE	C10002768	FTR-2	100	2024-09-20	-
		ONSHORE	C10002769	FTR-6	100	2024-10-03	-
		ONSHORE	C10002999	FTR-5	0	-	-
A4/+06-QF1	DRAWER SPARE - A4/+06-QF1	ONSHORE	C10002770	FP00	100	2024-10-15	-
		ONSHORE	C10002771	FTR-2	100	2024-09-20	-
		ONSHORE	C10002772	FTR-6	100	2024-10-03	-
		ONSHORE	C10003000	FTR-5	0	-	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM

Electrical	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A5/+01-QF1	DRAWER SPARE - A5/+01-QF1	ONSHORE	C10002773	FP00	100	2024-10-15	-
		ONSHORE	C10002774	FTR-2	100	2024-09-18	-
		ONSHORE	C10002775	FTR-6	100	2024-10-03	-
		ONSHORE	C10003001	FTR-5	0	-	-
A5/+06-QF1	DRAWER SPARE - A5/+06-QF1	ONSHORE	C10002776	FP00	100	2024-10-15	-
		ONSHORE	C10002777	FTR-2	100	2024-09-20	-
		ONSHORE	C10002778	FTR-6	100	2024-10-03	-
		ONSHORE	C10003002	FTR-5	0	-	-
A6/+04-QF1	DRAWER SPARE - A6/+04-QF1	ONSHORE	C10002779	FP00	100	2024-10-15	-
		ONSHORE	C10002780	FTR-2	100	2024-09-20	-
		ONSHORE	C10002781	FTR-6	100	2024-10-03	-
		ONSHORE	C10003003	FTR-5	0	-	-
DP-200N1-Q39	AUX SW FROM DP - DP-200N1-Q39	ONSHORE	C10002755	FTR-2	100	2024-10-28	-
SG-200N1	LV 0,4 kV MCC Switchgear	ONSHORE	C10002991	FP05	100	2024-09-28	-
UP-200F3-QF49	SG-200-N1 AUX	ONSHORE	C10004585	FTR-2	100	2024-11-08	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 83-00 & process: COMM

Instrumental	83-00 400 V Switchboard & Connection Box (SG-200N1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
83-XS-001A	SHUTDOWN SEAWATER LIFT PUMP P-50001A	ONSHORE	C10003825	FJ01D	100	2025-04-04	-
83-XS-001B	SHUTDOWN SEAWATER LIFT PUMP P-50001B	ONSHORE	C10003824	FJ01D	100	2025-04-04	-

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000100	B	SG-200N1	Missing n.15 drawers (highlighted in the GA) and all accessories. The missing drawers wil be tested during FAT, mid-september		tested on 17/09 at Imesa with positive results - only communication test will	SLinari 2024-08-02	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000101	B	SG-200N1	Missing PLC wago cubicle A2/02 - signals in the I/O list from row 2 to 16 cannot be tested		PLC wago installed.	SLinari 2024-08-02	Vendor 2024-10-02	SLinari 2024-10-02	2024-10-02
C30000102	B	SG-200N1	Missing relè K86 incoming		Installed.	SLinari 2024-08-02	Vendor 2024-10-02	SLinari 2024-10-02	2024-10-02
C30000103	B	SG-200N1	All documentation shall be re-issued and approval in final revision after mark-up during FAT		ALL DOCUMENTS MARKED UP DURING FAT HAS BEEN RE ISSUED - REV. AS	SLinari 2024-08-02	SLinari 2024-12-05	SLinari 2024-12-05	2024-12-05
C30000115	B	A2/+08-QF1 C10002760	The Protection Study must be update with the correctly one.	Update the Protection Study on the DRAWER.	The definitive setting has been updated.	MGirotti 2024-09-26	MGirotti 2024-11-21	MGirotti 2024-11-21	2024-11-21
C30000116	B	SG-200N1 C10002991	Partial test is ok. To be completed when incoming from power transformer will be available.	Complete this steps on the Switchboard: 1) Phase out switchboard across bus section; 2) Carry out all manual changeover sequences.		MGirotti 2024-09-26	2025-02-17	MGirotti 2025-02-17	2025-02-17
C30000237	B	A3/+05-QF1 C10002764	The EKIP HI-TOUCH LSIG doesn't work.		The EKIP has been fixed and reinstalled.	MGirotti 2024-10-21	MGirotti 2025-03-19	MGirotti 2025-03-19	2025-03-19
C30000853	B	83120-CEL C10000639	Missing core identification tag inside SG-200N1	.		Pschintu 2024-11-23	2025-02-19	AAndreani 2025-02-19	2025-02-19
C30000921	B	84318-CEL C10002114	The philosophy of cross-ferruling are wrong cabinet side DP-200F3 / SG-200N1. (see document 123A90-DDL-EL-DD-20092 sh.7-8)	.		APolo 2024-11-26	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000922	B	84318-CEL C10002114	cable tag is wrong, cabinet input SG-200N1. to be replace	.		APolo 2024-11-26	2025-02-26	APolo 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000829	B	SG-200N1/B400 -NET-001.01 C10004365	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31
C30000830	B	SG-200N1/B400 -NET-001.03 C10004367	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31
C30000832	B	SG-200N1/B400 -NET-001.02 C10004366	Missing cable tags on routing, inside and outside the panels.	.		Gtangianu 2024-11-23	2025-01-31	APolo 2025-01-31	2025-01-31

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	83	Main Power Distribution Low Voltage 440 V
SUBSYSTEM	83-00	400 V Switchboard & Connection Box (SG-200N1)

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001121	B	C-SG-200N1-002/B400-SIS-001 C10000195	Missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02			
C30001122	B	C-SG-200N1-001/B400-SIS-001 C10000194	missing terminal identification (TB-X1). See attached photo.	.		Gtangianu 2024-12-02			
C30001123	B	C-SG-200N1-002/B400-SIS-001 C10000195	Missing Identification tag wires on both side the (C-SG-200N1-002/B400-SIS-001) connection.See attached photo. "	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001124	B	C-SG-200N1-001/B400-SIS-001 C10000194	Missing Identification tag wires on both side connection (C-SG-200N1-001/B400-SIS-001). See attached photo.	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001125	B	C-SG-200N1-002/B400-SIS-001 C10000195	"Missing cable tags inside and outside both panels (C-SG-200N1-002/B400-SIS-001) "	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001126	B	C-SG-200N1-001/B400-SIS-001 C10000194	"Missing cable tags inside and outside both panels (C-SG-200N1-001/B400-SIS-001).	.		Gtangianu 2024-12-02	2025-02-21	Gtangianu 2025-02-21	2025-02-21

7.3 Equipment Related Technical Queries

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7.4 As Built Documentation

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7.5 Management of Change - Summary Table of Tasks and Details of Affected Related Documentation

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Section 6 PIPING AND VESSEL PREPARATION

Section 6.1 Final Mechanical / Vessel Inspection Checks Index

NOT APPLICABLE

Section 6.2 Leak Test / Drying / Inerting Test Sheets Index

NOT APPLICABLE

Section 6.3 Chemical Loading & First Fill records Index

NOT APPLICABLE

Section 6.4 Chemical Cleaning Reports and Records Index

NOT APPLICABLE

Section 6.5 Lubrication Schedule

NOT APPLICABLE

Section 7 VENDOR

Section 7.1 Vendor Package Summary Index

NOT APPLICABLE

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

Base Load Power Hub (BLPH)

SITE ACCEPTANCE TEST PROCEDURE
LV Switchgear
Document Number: 1723002197-QC-PRO-00047

Document Class: 2

02	30/01/25	Accepted for Construction (AFC)	Flamminio	Martizzi	Chiappa
01	19/12/24	Issue for Review (IFR)	Flamminio	Martizzi	Chiappa
00	05/08/24	Issue for Review (IFR)	Flamminio	Mastri	Chiappa
Rev.	Date	Description	Prepared	Reviewed	Approved

IMESA ELECTRICAL ENGINEERING Doc. n. 231298/SD/047

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Revision / Change Log

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

HOLDS LIST

No.	Description
1	
2	
3	
4	

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.
Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

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



Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

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

1.1.2 Project Concept

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

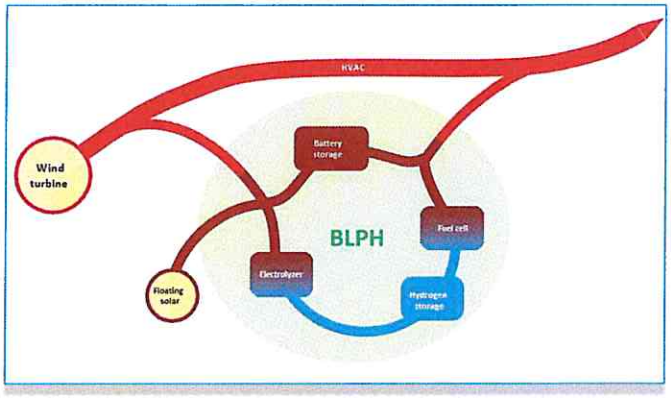


Figure 3 - BLPH Concept

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

2 SCOPE AND APPLICABILITY

This document provides the commissioning and start-up methods, as well as the testing procedures at site, applicable to L.V. Electrical Switchboards, manufactured by IMESA in compliance to Standard IEC 61439-1 and 61439-2.

The procedure is applicable to the following switchgear tag: SG-200N1, SG-200D2, DP-200N1.

3 APPLICABLE STANDARDS AND DOCUMENTS

The tester will make reference to Standards IEC 61439-1 and IEC 61439-2 and to the engineering documents listed here below.

Ref.	Imesa Doc No.	Description
A1	1723002197-EL-DA-00007	SG-200N1 GENERAL ARRANGEMENTS DWG AND FOUNDATION LOAD CALCULATION INCLUDING COG
A2	1723002197-EL-DA-00008	SG-200D2 GENERAL ARRANGEMENTS DWG AND FOUNDATION LOAD CALCULATION INCLUDING COG
A3	1723002197-EL-DA-00009	DP-200N1 GENERAL ARRANGEMENTS DWG AND FOUNDATION LOAD CALCULATION INCLUDING COG
A4	1723002197-EL-DG-00011	SG-200N1 ELECTRICAL SINGLE LINE DIAGRAM
A5	1723002197-EL-DG-00012	SG-200D2 ELECTRICAL SINGLE LINE DIAGRAM
A6	1723002197-EL-DG-00013	DP-200N1 ELECTRICAL SINGLE LINE DIAGRAM
A7	1723002197-EL-DG-00030	SG-200N1 LV SWG FUNCTIONAL DIAGRAMS - INCOMINGS, INTERCONNECTING AND AUX DISTRIBUTION
A8	1723002197-EL-DG-00031	SG-200N1 LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
A9	1723002197-EL-DG-00032	SG-200D2 FUNCTIONAL DIAGRAM
A10	1723002197-EL-DG-00033	DP-200N1 FUNCTIONAL DIAGRAM
A11	1723002197-EL-DS-00035	SG-200N1 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
A12	1723002197-EL-DS-00036	SG-200D2 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
A13	1723002197-EL-DS-00037	DP-200N1 EQUIPMENT DATA SHEETS INCLUDING MSDS and WEIGHT DATA SHEET
A14	1723002197-EL-CAL 00054 t.b.d.	INSTALLATION OPERATING AND MAINTENACE MANUAL

Hard copy of the a.m. IMESA documents, properly stamped and signed as "AS BUILT", will be available for the needed testing activities and verifications.

4 SAFETY RECOMMENDATIONS

WARNING



- **All the operations of electric maintenance and installation must be performed by qualified technicians**
- **All the standard electric safety procedures must be respected**
- **Never touch inside the switchboard; only after making sure it is out of voltage and grounded**
- **Always wear personal protective equipment (insulating shoes in rubber, protective glasses, safety helmet, etc...)**
- **Never work alone**
- **Never remove safety screens**
- **Always pay maximum attention when handling components or performing measurements inside the panel**
- **It shall be taken in mind that this test procedure is only for the equipment and is to be used together (not instead of) all safety procedures specified by local Laws, rules, regulations and Standards**

People attending the commissioning and testing activities must wear:

SHOES: Workers, staff of the Customer, the End User or its representatives (inspectors) present during the tests shall wear safety shoes, ever. The staff of the Customer, the End User or its representatives (inspectors) present during the tests must arrive already equipped with their own shoes. The staff of the Customer, the End User or its representatives (inspectors), present during the tests and not wearing safety shoes, may still access the Safe Area, but not the test area. They will therefore only observe the test from Safe Area and conducting the review of the results in test reports.

GLASSES: Workers must wear safety glasses when performing risky for their eyes.

HELMET: Workers must wear protective helmets when performing lifting and handling, or when there is a suspended load. When there are suspended loads or handling and lifting the staff of the Customer, the End User or its representatives (inspectors) present during the tests must remain in the Safe Area.

GLOVES: Workers must wear gloves when performing risky for the hands or vibrations.

DRESS: All workers must wear appropriate safety clothing, forever. Helmet, gloves, glasses, safety clothing are not required to staff of the Customer, the end Customer or his representatives (inspectors) present during the tests.

When testing the dielectric properties (applied voltage test), **insulated gloves** and **shoes with retractable toe caps**, as well as suitable **protection clothing covering body and arms**, to be worn.
If the test is suspended even temporarily, the test instrument must be disconnected from the mains.

Before to start any activity, to thoroughly check that the following points are confirmed:
- the lighting system in the area is suitable and in operation
- phone or radio communication system is available, even temporarily for the present activities
- the fire-fighting system is in operation and provided with valid certification (portable fire extinguishers may be also suitable for purpose)
- earthing plant in the area and earthing connections of the subsystems to be energized have been completed and tested

5 GENERAL DESCRIPTION

5.1 LIST OF ABREVIATIONS

S.A.T. Site Acceptance Test

VT Voltage Transformer

CT Current Transformer

NCR Non-Conformity Report

IED Intelligent Electronic Device (like programmable relay)

MCB Miniature Circuit Breaker

CB Circuit Braker

MCC Motor Control Center

LV Low Voltage (Circuit with voltage under 1000Vac or 1500Vdc)

I.O.M. Installation, Operation and Maintenance manual

a.m. above mentioned.

5.2 PURPOSE OF SAT

The purpose of the SAT (Site Acceptance Test) is to inspect the switchboard, after installation at site, to ensure that it is ready for energization and start-up and also that its performance requirements will be met.
Prior to performing any Site Acceptance Testing, all Punch list items have to be rectified and closed.

5.3 TESTING TASKS

After completion of the installation phase of the switchboard and in order to prepare it for SAT, pre-commissioning and commissioning are to be first carried out, as further detailed in the next paragraphs.

The overall test activities will be performed by means of the specific test equipment, under the control and responsibility of the test executor, along with some assistants.

The main steps that will be performed are the following:
- Verification of the test procedures and of the related documentation availability.
- Preparation of the test setup
- Execution of the tests according to the Test Procedure and release of the SAT Test Report
- Signing of the SAT Test Report by the test executor and the attending people.

For additional tests not included in its own scope of work, IMESA will provide technical support, as agreed in advance.

List of the tests

Item	Activity	Tool	Support Requested	Type of Test
a.	Mechanical check	Torque Wrench	Mech. Engineer Inspection/Quality Officer	Mandatory
b.	Primary Injection on current transformers	Injection current bench	Electrical Engineer Inspection/Quality Officer	Suggested (to verify that CT is not damaged)
c.	Primary Injection on voltage transformers	Apply low voltage to check the functionality of VT (400V)	Electrical Engineer Inspection/Quality Officer	Suggested (to verify that VT is not damaged)
d.	Testing of protection relays by secondary injection	Secondary injection bench (Omicron)	Electrical Engineer (Relay specialist) Inspection/Quality Officer	Mandatory
e.	Functional test of IEDs, and interlocks.	Secondary injection bench (Omicron)	Electrical Engineer (Relay specialist) Inspection/Quality Officer	Mandatory
f.	Insulating resistance measurement	Megger	Electrical Engineer Inspection/Quality Officer	Mandatory

5.4 TESTING EQUIPMENT

- Megger (e.g. : Chauvin Arnoux ca 6547)
- Tester / Multimeter
- Testing bench for primary injection (e.g. : Omicron CPC 100)
- Relay Testing System (through current / voltage secondary injection – (e.g. : Omicron CMC 353)
- Testing kit for air circuit breakers type Emax ABB (Ekip T&P)
- Torque Wrench (e.g. Dina Beta NM 20÷100)
- Hi-pot test bench (e.g. : Phenix 650-2P)

NOTES:
- it shall be advised in advance availability of the testing equipment at site or whether those are to be provided by the commissioning engineer himself;
- availability of calibration certificates of the above testing equipment, having valid date, must be ensured.

6 PRE-COMMISSIONING ACTIVITIES

Before to start Pre-Commissioning, please, read carefully the I.O.M. document (Installation, Operation and Maintenance manual).
Then proceed with the following checks and actions.

1. Switchboard's cubicles shall be in good and clean status. Make sure that switchboard is clean, free from dust, traces of humidity, installation material debris, cables pieces, tools, provisional connections, etc. , as well as any foreign object.

2. Visually check the interior and exterior of the switchboard for signs of evident damage or shocks. Protective shields, insulating sheaths, etc.. shall be correctly placed and in good order

3. Painting visual check

4. Make sure that the switchboard is correctly installed according to the General Arrangement Drawings and suitably fixed

5. Maintenance clearances shall be according to the General Arrangement Drawings

6. Make sure that any support or protection used to handle the equipment has been removed

7. Make sure that, after completion of the installation, the switchboard overall protection degree is as per General Arrangement Drawings

8. Visual inspection to check that bolted connections of the LV and earthing circuits (at busbars, CBs poles, etc.) are suitably tighten. No disalignment is expected at the marks provided over the bolt, during torque wrench tightening at the factory. In case found, to torque wrench again the connection (see par. 8.1)

9. Cable passages shall be free and unobstructed

10. Couple the auxiliary interpanel connections by the relevant plugs and socket (see schematic diagrams with control voltage distribution loop, panels interconn. wiring and communication network loop)

11. Cabling of control cables from the field in accordance with I/O list / schematics shall be completed

12. Check the incoming / outgoing power cables proper support

13. Make sure that terminals and all the connections have been properly tightened

14. Make sure that all the safety interlock keys (master and copies) have been provided and installed. Where manoeuvres not allowed (forced operations shall be avoided).

15. Remove each L.V. air circuit breaker and MCC drawer from its cubicle, by means of the provided lifting / transport trolley, for a visual check of the breaker status and cleaning; including poles of the fixed part and the terminals on the removable part.
    Make sure that the breaker and the MCC drawer is free from dust and traces of humidity and that there are no signs of evident damage.
    Check that LV withdrawable circuit brakers and MCC drawers can be racked-in and racked out properly

16. Make sure that all fuses are correctly installed
17. All necessary warning and caution signs (voltage level indication, warning for live parts, etc.) shall be installed according to the safety standards and procedures

The results of the a.m. activities shall be recorded on PRE-COMMISSIONING ACTIVITIES REPORT form (see par. 10).

7 COMMISIONIG ACTIVITIES

Carry out the following checks and actions.

1. To be verified that all LV withdrawable circuit breakers and MCC drawers are in open and racked-out position; with charged closing springs (where present).

   N.B.: it is recommended to manually rewind all the circuit breakers closing springs, before to supply the relevant spring motor chargers, with aux. supply voltage, in order to prevent concurrent start-up of many motor gears, which may result in excessive load for the supplying circuit.

   As an alternative, it can be taken care that supply to those motors is provided one by one; by separately closing the relevant MCB, provided within the LV compartment of each feeder unit.
2. Connect all external aux. supplies and check that are at correct voltage value and phase sequence.
3. Check thoroughly the Operating efficiency and the mechanical locks and key safety interlocks.
4. With CBs in test position, close and open the same by local command.
5. Make sure that the phase sequence is in accordance to the electrical diagrams and that all incoming breakers are connected with the same phase sequence.
6. Check monitoring loops (hardwired status / alarm signals / visual status indications).
7. Check protection relays loops, concerning IEDs' integrated logic functions.
8. Put in service (racked-in) position and repeat the test for opening / closing the same from local and remote commands, including control loops from / to the field (commands, status, alarm, etc.)
9. Check CBs tripping, locking-out and alarming functions.

The results of the a.m. activities shall be recorded on the COMMISSIONING ACTIVITIES REPORT form (see par. 10)

8 SAT TESTING PROCEDURE

8.1 MECHANICAL TESTS

1. Bus-bars tightening check

Torque wrench all the bolted joints of the shipping sections, which have been coupled at site, according to the values indicated here below.
After tightening, each bolt is to be marked by red paint to indicated its relative position against the fixed part (as done for the torque wrench tightening provided at the factory).

The table below shows the torque wrench settings to be used for bolted connections fixing the panels and the bus-bars, too.

Type of screw	Tightening torque (Nm)	Tolerance
M5	5	5%
M6	9	5%
M8	22	5%
M10	45	5%
M12	75	5%
M14	115	5%
M16	185	5%

The results of the a.m. activities shall be recorded on SAT REPORT FOR MECHANICAL TEST form (see par. 10)

8.2 PRIMARY INJECTION ON CURRENT AND VOLTAGE TRANSFORMER

1. Testing CTs ratio

Test the CT for correct ratio with direct current injection to CT primary circuit and reading the measured value from the instruments or protection relays LCD display, provided at the LV compartment front door.

2. Testing VTs ratio

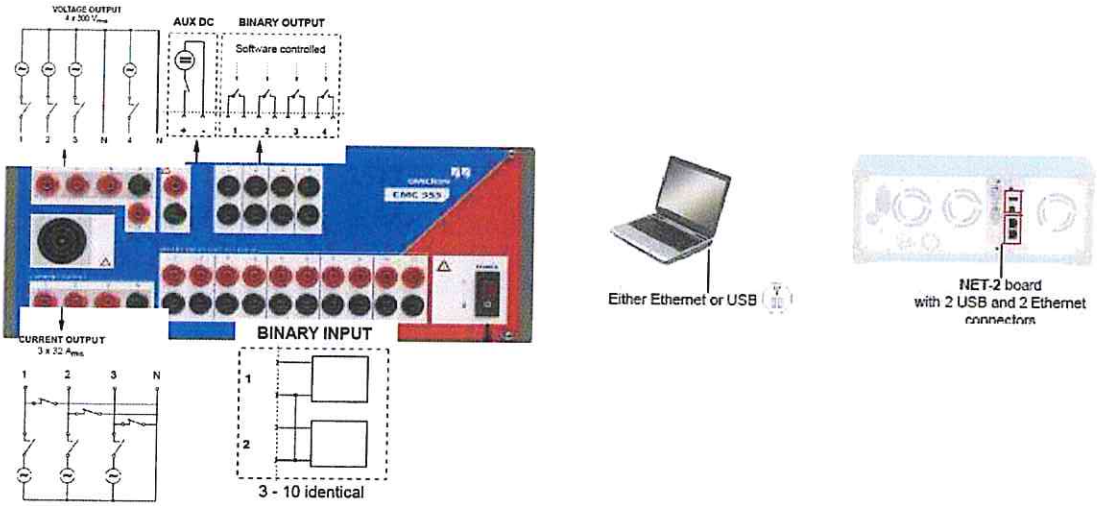
Test the VT for correct ratio with direct voltage injection to VT primary circuit (low voltage 400 V, for testing purpose) and reading the measured value from the instruments or protection relays LCD display, provided at the LV compartment front door.

The results of the a.m. activities shall be recorded on SAT REPORT FOR PRIMARY INJECTION TESTING ON CTs AND VTs form (see par. 10)

8.3 SECONDARY INJECTION TESTS ON PROTECTION RELAYS

Refer to the schematic diagrams, for connections and for checking logic functions.
Refer to the selectivity study for the protection relays' setting parameters.

Omicron secondary injection test kit – connection and interface



Example of testing instruments connection

1. Connection of the test set to the PC (USB Port) for data exchange: output of the data simulation, loading of the binary signal
2. Connection of the analogue outputs of the test set to the transformer inputs of the test object, to inject the simulated currents and voltages.
3. Connection of the binary outputs of the test set to the binary inputs of the test object, to send binary input signals to the test object.
4. Connection of the binary inputs of the test set to the binary outputs of the test object, to receive the binary output signals from the test object.

The recorded tripping values shall be in conformity with the Selectivity study

The results of the a.m. activities shall be recorded on SAT REPORT FOR PROTECTION FUNCTIONS CHECK form (see par. 10)

8.4 INSULATION RESISTANCE MEASUREMENT

The measurement of the insulation resistance is carried out to check that the installation and re-connection activities at site have been made correctly and that no damage occurred to the equipment, during shipment and installation.
All the VT's, surge arresters, insulation monitoring devices, etc. must be disconnected before the test.

1. Insulation resistance measurement of the main circuits

   It is to be carried out, applying at least 500V d.c. by means of Megger device. The measurement is to be carried out at each phase, while the other two are short-circuited and connected to ground.

   ACCEPTANCE CRITERIA: The test is considered successful if, for each tested circuit, the insulation resistance is above 1MΩ.

The values detected shall be recorded on SAT REPORT FOR INSULATION RESIST MEASUREMENT MAIN CIRCUITS form (see par. 10)

2. Insulation resistance measurement of the auxiliary circuits

   To carry out insulation resistance measurement on auxiliary circuits applying 500V d.c. by means of Megger device. The measurement is to be carried out at each pole, while the other one is connected to ground.

   ACCEPTANCE CRITERIA: The test is considered successful if, for each tested circuit, the insulation resistance is above 1MΩ.

The results of the a.m. dielectric tests shall be recorded on SAT REPORT FOR INSULATION RESIST MEASUREMENT ON AUX CIRCUITS form (see par. 10)

9 PRE-ENERGIZATION REQUIREMENTS

Before to proceed with energization of the LVSB, the following is to be verified.

- Make sure to pull off the short-circuit jumpers fitted on amperometric terminal boards, to avoid running the units with current transformer (-TA) short-circuited at secondary windings.
- Make sure to have re-closed the disconnecting terminals fitted on voltmetric terminal boards, to avoid running the units with voltage transformer (-TV) not connected at secondary windings.
- Make sure that all the miniature CBs for aux. and measuring circuits are closed.
- All system protections, controls, detectors, and monitoring devices shall be reset and ready for operation.
- All protections and control logics shall be reset and ready for operation.
- All recording equipment, where provided, shall be in operation.
- No alarm and/or trip signal shall be active.
- Voltage transformers shall be with fuses suitably placed.
- Circuit breakers shall be in service position (racked-in), open and available.
- Fuses shall be suitably placed.
- Mechanical and electrical interlocks are to be suitably in operation.
- All removable protections against direct contacts with accessible parts (panels, grids, plates, doors, etc.), shall be correctly placed and fixed.
- All the doors shall be closed and fixed panels are to be correctly positioned and bolted.

10 PRE-COMMISSIONING, COMMISSIONING AND SAT REPORT TEMPLATES

The following forms are intended for recording the results of Pre-Commissioning, Commissioning and SAT activities.

Forms provided by the customer may also be employed, on request.

- PRE-COMMISSIONING ACTIVITIES REPORT
- COMMISSIONING ACTIVITIES REPOR
- SAT REPORT FOR MECHANICAL TEST
- SAT REPORT FOR PRIMARY INJECTION TESTING ON CTs AND VT
- SAT REPORT FOR PROTECTION FUNCTIONS CHECK
- SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON MAIN CIRCUITS
- SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON AUX. CIRCUITs

IMESA ELECTRICAL ENGINEERING

PRE-COMMISSIONING ACTIVITIES REPORT

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**

Legend **OK -** N/A – not applicable × SEE NOTE

DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

NOTES:

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company: Name:	Company: Name:	Company: Name:	Company: Name:
Date:	Date:	Date:	Date:

IMESA ELECTRICAL ENGINEERING

COMMISSIONING ACTIVITIES REPORT

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**

Legend **OK -** **N/A** – not applicable **×** SEE NOTE

DESCRIPTION	1	2	3	4	5	6	7	8	9								

NOTES:

N/A

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company: Name:	Company: Name:	Company: Name:	Company: Name:
Date:	Date:	Date:	Date:

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR MECHANICAL TESTS

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**

Legend **OK** - **N/A** – not applicable × SEE NOTE

DESCRIPTION	1																	

NOTES:

TEST PERFORMER	**WITNESS**	**QUALITY OFFICER**	
EXECUTED	**ACCEPTED / VERIFIED**	**ACCEPTED / VERIFIED**	
Sign:	**Sign:**	**Sign:**	**Sign:**
Company: **Name:**	**Company:** **Name:**	**Company:** **Name:**	**Company:** **Name:**
Date:	**Date:**	**Date:**	**Date:**

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR PRIMARY INJECTION TESTING ON CTs AND VTs

SWBD: SG-200N1

CUSTOMER: ROSETTI M.	**PROJECT DESCRIPTION:** CROSSWIND 1723A90	
SITE: PIOMBONI - MARINA DI RAVENNA	**AREA:** CANTIERE	
SWITCHBOARD: SG-200N1		
DATE: 21/7/24	**DOC. N**	**REV:**

Legend OK - N/A – not applicable × SEE NOTE

DESCRIPTION	1	2
L1	OK	X
L2	OK	X
L3	OK	X

NOTES:

X L1 → PRIMARY CURRENT = 250A
READING AT PROTECTION RELAY : 251 A

X L2 → PRIMARY CURRENT: 250A
READING AT PROTECTION RELAY: 249A

X L3 → PRIMARY CURRENT: 250 A
READING AT PROTECTION RELAY: 251 A

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company:	Company: ROSETTI	Company:	Company:
Name:	Name: KRISTIAN CASADEI	Name:	Name:
Date:	Date: 24/02/2025	Date:	Date:

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR PROTECTION FUNCTIONS CHECK

SWBD:

CUSTOMER:	**PROJECT DESCRIPTION:**	
SITE:	**AREA:**	
SWITCHBOARD:		
DATE:	**DOC. N**	**REV:**
PROT. RELAYS' COORD. STUDY DOC. :	**PANEL UNIT:**	**RELAY SERIAL NO. :**

protection unit setting test values					*protection unit operation check values*			
Protection Function	*ANSI Code*	*Setting*			*Phase*	*Test Value*	*Operating Time*	*Result*
		Value	Time [s] or K	*CT/VT Ratio*				

Notes:

TEST PERFORMER	**WITNESS**	**QUALITY OFFICER**	
EXECUTED	**ACCEPTED / VERIFIED**	**ACCEPTED / VERIFIED**	
Sign:	**Sign:**	**Sign:**	**Sign:**
Company: **Name:**	**Company:** **Name:**	**Company:** **Name:**	**Company:** **Name:**
Date:	**Date:**	**Date:**	**Date:**

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON MAIN CIRCUIT

SWBD: SG-200N1

CUSTOMER: Rosetti	**PROJECT DESCRIPTION:** Crosswind 23128/SD		
SITE:	**AREA:**		
SWITCHBOARD: SG-200N1			
DATE: 12/9/24	**DOC. N**	**REV:**	

Legend **OK** - **N/A** – not applicable × SEE NOTE

DESCRIPTION	1												
MAIN CIRCUITS	OK												

MEASURED INSULATION RESISTANCE	
L1=	> 500 MΩ
L2=	> 500 MΩ
L3=	> 500 MΩ

NOTES:

N→S > 500 MΩ

Equipment disconnected during Hi-Pot test:

TEST PERFORMER	**WITNESS**	**QUALITY OFFICER**	
EXECUTED	**ACCEPTED / VERIFIED**	**ACCEPTED / VERIFIED**	
Sign:	**Sign:**	**Sign:**	**Sign:**
Company:	**Company:** ROSETTI M.	**Company:**	**Company:**
Name:	**Name:** [illegible]	**Name:**	**Name:**
Date:	**Date:** 29/07/2025	**Date:**	**Date:**

IMESA ELECTRICAL ENGINEERING

SAT REPORT FOR INSULATION RESISTANCE MEASUREMENT ON AUX. CIRCUITS

SWBD: SG-200N1

CUSTOMER: ROSETTI M.		**PROJECT DESCRIPTION:** 23/298/SD	
SITE:		**AREA:**	
SWITCHBOARD: SG-200N1			
DATE: 12/9/24		**DOC. N**	**REV:**

Legend **OK** - **N/A** – not applicable × SEE NOTE

DESCRIPTION	2												
DIELECTRIC TEST ON AUX. CIRCUITS	OK												

MEASURED INSULATION RESISTANCE	
110 V d.c. =	—
230 V a.c. =	> 500 MΩ
24 V d.c. =	—

NOTES:

Equipment disconnected during dielectric test:

TEST PERFORMER	WITNESS	QUALITY OFFICER	
EXECUTED	ACCEPTED / VERIFIED	ACCEPTED / VERIFIED	
Sign:	Sign:	Sign:	Sign:
Company: Name:	Company: ROSETTI M. Name: KRISTIAN CASTELLANI	Company: Name:	Company: Name:
Date:	Date: 24/07/2025	Date:	Date:

PROTECTION TEST ON ABB RELAY

PROJECT : CROSSWIND

FUNCTIONAL GROUP : BLPH

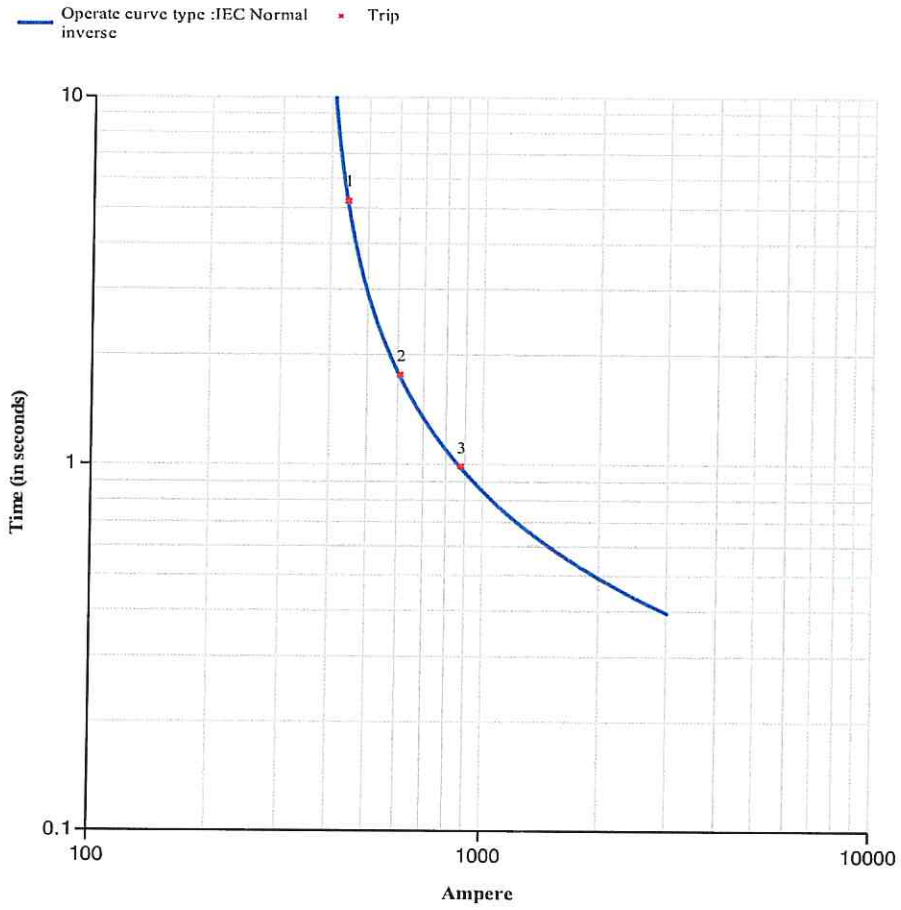
SYSTEM : SG-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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



RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : DEFLPDEF1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 100 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Pol reversal : False
Io signal Sel : Calculate Io
Uo signal Sel : Calculate Uo
Pol quantity : Zero seq. volt.
Start value : 0.150 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Time multiplier : 0.12
Operate curve type : IEC Normal inverse
Operate delay time : 100 msec
Operation mode : Phase angle
Characteristic angle : -90 deg
Max forward angle : 30 deg
Max reverse angle : 30 deg
Min forward angle : 30 deg
Min reverse angle : 30 deg
Voltage start value : 0.02 xUn
Enable voltage limit : True

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	I0	I0"(A)	I0(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	582	0.233	327.01	531	0.212	247.89	662	0.265	79.23	441.473	0.177	338.89	5138	5233	1.85
2	785	0.314	355.29	901	0.36	270.39	813	0.325	153.58	606.669	0.243	275.68	1738	1762	1.38
3	1186	0.474	357.86	1129	0.452	279.54	1046	0.418	158.82	874.623	0.35	296.97	983	994	1.12

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

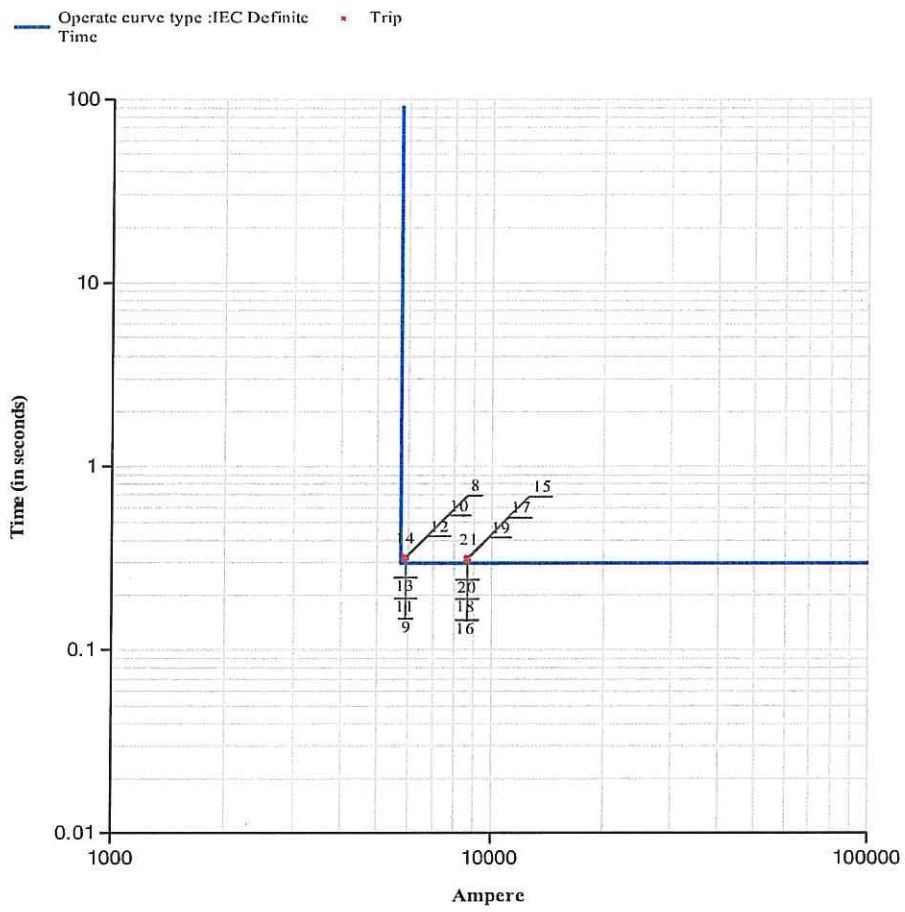
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHHPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 2.30 xIn
Start value mult. : 1.0
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	2.231	0	2.231	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
2	2.231	0	2.231	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	2.231	240	2.231	60	63.509	0	63.509	240	63.509	120	0	0	0
4	2.231	-60	0	240	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
5	2.231	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	2.231	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	2.231	120	63.509	0	63.509	240	63.509	120	0	0	0
8	2.369	0	2.369	240	2.369	120	63.509	0	63.509	240	63.509	120	300	321	7
9	2.369	0	2.369	180	0	120	63.509	0	63.509	240	63.509	120	300	323	7.67

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-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHHPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	2.369	240	2.369	60	63.509	0	63.509	240	63.509	120	300	323	7.67
11	2.369	-60	0	240	2.369	120	63.509	0	63.509	240	63.509	120	300	323	7.67
12	2.369	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	2.369	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	2.369	120	63.509	0	63.509	240	63.509	120	300	324	8
15	3.45	0	3.45	240	3.45	120	63.509	0	63.509	240	63.509	120	300	317	5.67
16	3.45	0	3.45	180	0	120	63.509	0	63.509	240	63.509	120	300	316	5.33
17	0	0	3.45	240	3.45	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	3.45	-60	0	240	3.45	120	63.509	0	63.509	240	63.509	120	300	320	6.67
19	3.45	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
20	0	0	3.45	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	3.45	120	63.509	0	63.509	240	63.509	120	300	318	6

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

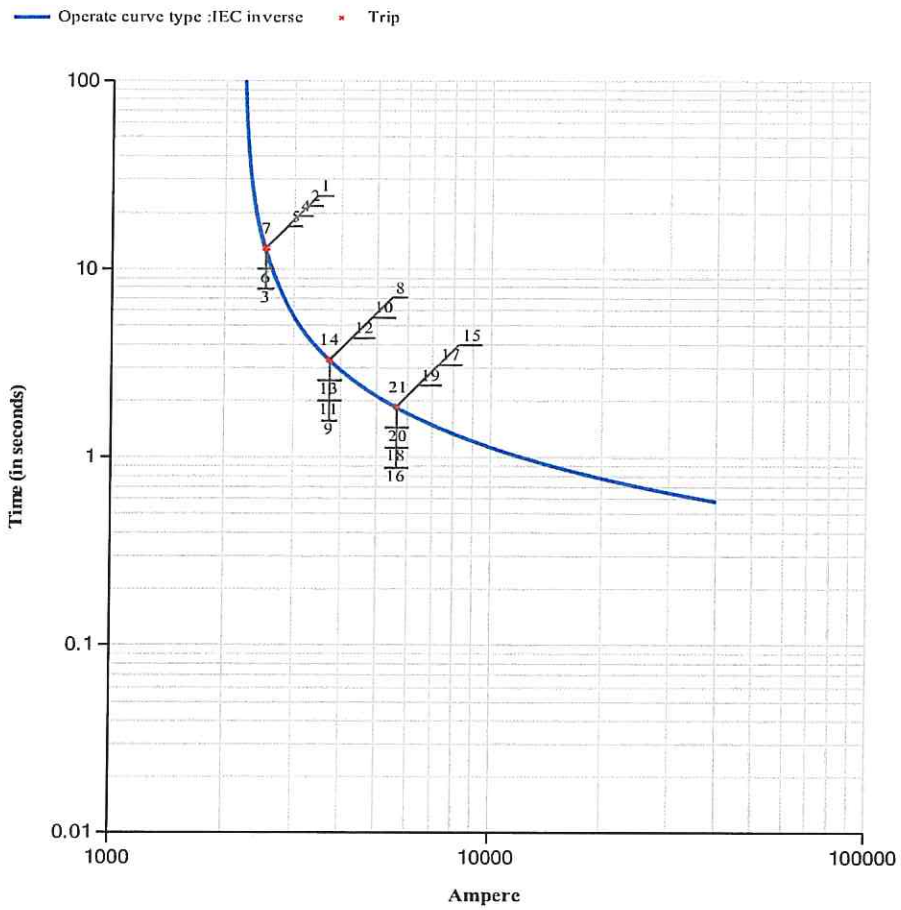
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.88 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC inverse
Time multiplier : 0.25
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	1.012	0	1.012	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
2	1.012	0	1.012	180	0	120	63.509	0	63.509	240	63.509	120	12504	13057	4.42
3	0	0	1.012	240	1.012	60	63.509	0	63.509	240	63.509	120	12504	13055	4.41
4	1.012	-60	0	240	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
5	1.012	0	0	0	0	0	63.509	0	63.509	240	63.509	120	12504	13054	4.4
6	0	0	1.012	240	0	0	63.509	0	63.509	240	63.509	120	12504	13056	4.41
7	0	0	0	0	1.012	120	63.509	0	63.509	240	63.509	120	12504	13059	4.44
8	1.496	0	1.496	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3329	1.46
9	1.496	0	1.496	180	0	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC1

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	1.496	240	1.496	60	63.509	0	63.509	240	63.509	120	3281	3327	1.4
11	1.496	-60	0	240	1.496	120	63.509	0	63.509	240	63.509	120	3281	3330	1.49
12	1.496	0	0	0	0	0	63.509	0	63.509	240	63.509	120	3281	3334	1.62
13	0	0	1.496	240	0	0	63.509	0	63.509	240	63.509	120	3281	3330	1.49
14	0	0	0	0	1.496	120	63.509	0	63.509	240	63.509	120	3281	3332	1.55
15	2.253	0	2.253	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1868	1.3
16	2.253	0	2.253	180	0	120	63.509	0	63.509	240	63.509	120	1844	1873	1.57
17	0	0	2.253	240	2.253	60	63.509	0	63.509	240	63.509	120	1844	1870	1.41
18	2.253	-60	0	240	2.253	120	63.509	0	63.509	240	63.509	120	1844	1875	1.68
19	2.253	0	0	0	0	0	63.509	0	63.509	240	63.509	120	1844	1868	1.3
20	0	0	2.253	240	0	0	63.509	0	63.509	240	63.509	120	1844	1870	1.41
21	0	0	0	0	2.253	120	63.509	0	63.509	240	63.509	120	1844	1871	1.46

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

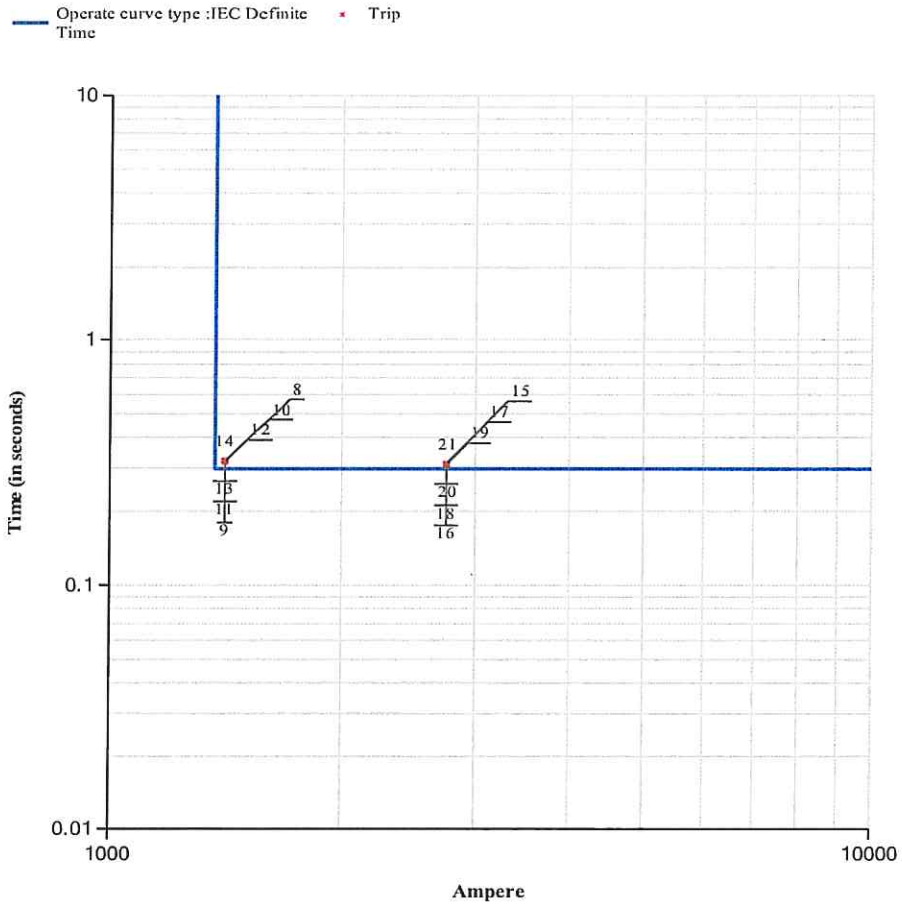
EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644



IEC61850 : DPHLPDOC2
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
Primary Current : 2500 A
Nominal current : 2199.4 A
Reset delay time : 20 msec
Minimum operate time : 300 msec
Allow non direction : True
Measurement mode : DFT
Min operate current : 0.01 xIn
Min operate voltage : 0.01 xUn
Num of start phases : 1 Out of 3
Start value : 0.55 xIn
Start value mult. : 1.00
Directional mode : Non Directional
Operate curve type : IEC Definite Time
Operate delay time : 300 msec
Type of reset curve : Immediate
Characteristic angle : 60 deg
Max forward angle : 80 deg
Max reverse angle : 80 deg
Min forward angle : 80 deg
Min reverse angle : 80 deg
Voltage Mem time : 40 msec
Pol quantity : Cross Pol

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	0.534	0	0.534	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
2	0.534	0	0.534	180	0	120	63.509	0	63.509	240	63.509	120	0	0	0
3	0	0	0.534	240	0.534	60	63.509	0	63.509	240	63.509	120	0	0	0
4	0.534	-60	0	240	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
5	0.534	0	0	0	0	0	63.509	0	63.509	240	63.509	120	0	0	0
6	0	0	0.534	240	0	0	63.509	0	63.509	240	63.509	120	0	0	0
7	0	0	0	0	0.534	120	63.509	0	63.509	240	63.509	120	0	0	0
8	0.567	0	0.567	240	0.567	120	63.509	0	63.509	240	63.509	120	300	322	7.33
9	0.567	0	0.567	180	0	120	63.509	0	63.509	240	63.509	120	300	322	7.33

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-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : DPHLPDOC2

N.	I1"(A)	I1(°)	I2"(A)	I2(°)	I3"(A)	I3(°)	V1"(V)	V1(°)	V2"(V)	V2(°)	V3"(V)	V3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0.567	240	0.567	60	63.509	0	63.509	240	63.509	120	300	322	7.33
11	0.567	-60	0	240	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
12	0.567	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	321	7
13	0	0	0.567	240	0	0	63.509	0	63.509	240	63.509	120	300	325	8.33
14	0	0	0	0	0.567	120	63.509	0	63.509	240	63.509	120	300	324	8
15	1.1	0	1.1	240	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33
16	1.1	0	1.1	180	0	120	63.509	0	63.509	240	63.509	120	300	314	4.67
17	0	0	1.1	240	1.1	60	63.509	0	63.509	240	63.509	120	300	314	4.67
18	1.1	-60	0	240	1.1	120	63.509	0	63.509	240	63.509	120	300	313	4.33
19	1.1	0	0	0	0	0	63.509	0	63.509	240	63.509	120	300	312	4
20	0	0	1.1	240	0	0	63.509	0	63.509	240	63.509	120	300	316	5.33
21	0	0	0	0	1.1	120	63.509	0	63.509	240	63.509	120	300	316	5.33

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-200N1

CLIENT : ROSETTI MARINO Group of Companies

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

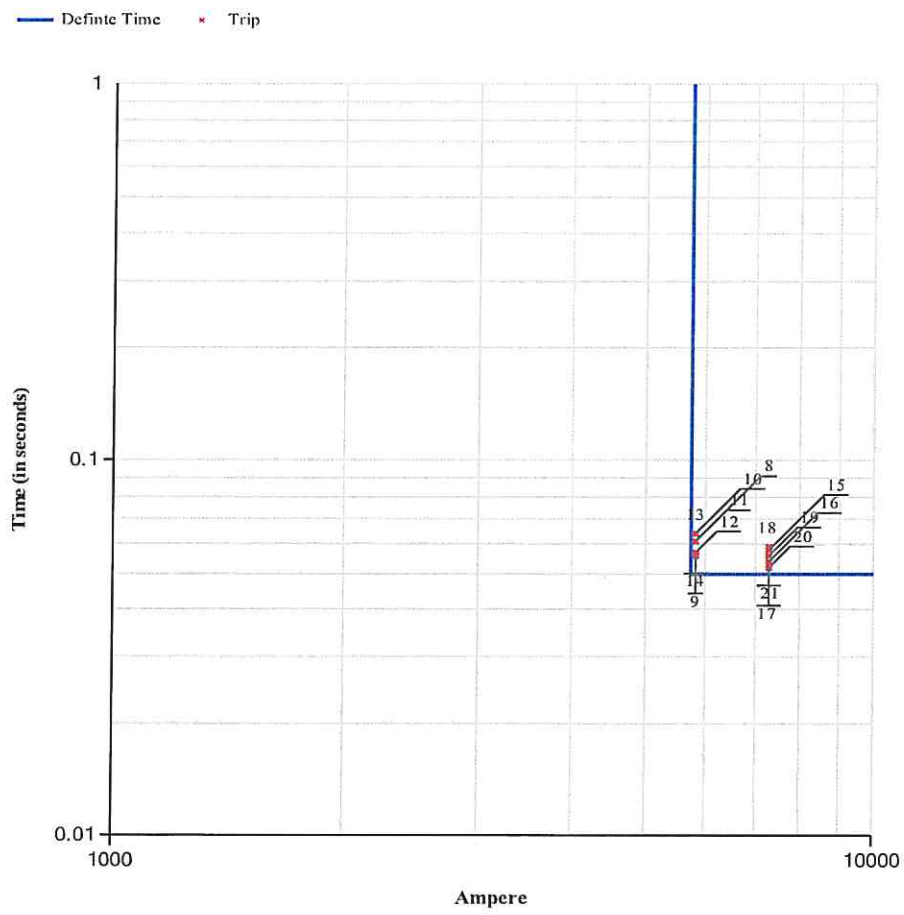
ITEM : UNIT A2/+02

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

RELAY TYPE : ABB REF615

Sn. : 1VHR91822644

IEC61850 : PHIPTOC1
Nominal Voltage : 420 V
Frequency Nominal : 50 Hz
CT RATIO : 2500 / 1 A
Nominal current : 2199.4 A
Num of start phases : 1 Out of 3
Reset delay time : 20 ms
Start value : 2.30 xIn
Start valure Mult : 1.0
Operate delay time : 50 ms



N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
1	5663	2.265	0	0	0	0	0	0	0	0	0	0
2	0	0	0	5663	2.265	240	0	0	0	0	0	0
3	0	0	0	0	0	0	5663	2.265	120	0	0	0
4	5663	2.265	0	5663	2.265	180	0	0	0	0	0	0
5	0	0	0	5663	2.265	240	5663	2.265	60	0	0	0
6	5663	2.265	300	0	0	0	5663	2.265	120	0	0	0
7	5663	2.265	0	5663	2.265	240	5663	2.265	120	0	0	0
8	5833	2.333	0	0	0	0	0	0	0	50	61	22
9	0	0	0	5833	2.333	240	0	0	0	50	56	12

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-200N1

EQUIPMENT DESCRIPTION : INCOMING TRANSFORMER

RELAY TYPE : ABB REF615

ITEM : UNIT A2/+02

Sn. : 1VHR91822644

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

IEC61850 : PHIPTOC1

N.	I1(A)	I1"(A)	I1(°)	I2(A)	I2"(A)	I2(°)	I3(A)	I3"(A)	I3(°)	Exp.(ms)	Trip(ms)	Dev.(%)
10	0	0	0	0	0	0	5833	2.333	120	50	64	28
11	5833	2.333	0	5833	2.333	180	0	0	0	50	61	22
12	0	0	0	5833	2.333	240	5833	2.333	60	50	57	14
13	5833	2.333	300	0	0	0	5833	2.333	120	50	64	28
14	5833	2.333	0	5833	2.333	240	5833	2.333	120	50	57	14
15	7287	2.915	0	0	0	0	0	0	0	50	58	16
16	0	0	0	7287	2.915	240	0	0	0	50	54	8
17	0	0	0	0	0	0	7287	2.915	120	50	53	6
18	7287	2.915	0	7287	2.915	180	0	0	0	50	59	18
19	0	0	0	7287	2.915	240	7287	2.915	60	50	56	12
20	7287	2.915	300	0	0	0	7287	2.915	120	50	52	4
21	7287	2.915	0	7287	2.915	240	7287	2.915	120	50	53	6

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

Section 7.3 Vendor Spares & Special Tools lists references

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	SPARE PART INDEX REGISTER (COMMISSIONING AND OPERATION)
The document relates to	HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)
Project ID	123A90
Doc. nº	1723002197-COM-LIS-00052
Rev.	Issued for review
Rev. Date	08-Aug-24
Contract	CW-I-WP4-2023-05
Status	IFR
Class	3

The equipment consists of the following units/components

1	Tag no.	SG-10/01	SG-20/M1	SG-20/02	DP-20/M1
2	Tag description	HV SWBD 6.6kV	LV SWBD 400/230V	LV SWBD 690V	LV SWBD 400/230V

Supplier: IMESA S.p.A

Address: via G. di Vittorio, 14

JESI - (AN)

ITALY

PO Number: 1723002197_123A90

PO description: HV and LV Switchgears

Supplier telephone no: +39 0731 211034

E-mail: spareparts@imesaspa.com; damiano.santinelli@imesaspa.com

Contact name: Mr. Damiano Santinelli

Contact mobile no: +39 0731 649242

WEBSITE

General Information:

3	Manuf.actuer model/ type no.	M/miner /C	PC/MCC	PC	MCC/I
4	Manuf.actuer serial no.	231155/LED/01/2024	231298/ED/040/2024	231298/ED/070/2024	231298/ED/080/2024
5	Nos.of units	1	1	1	1

MATERIALS DATA

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref. Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certificate Type (if applicable)	Certificate Reference (if applicable)	Shelf life (years)	Weights (net)	Weights (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturer name	Commissioning spares Quantity ordered	2 Years spares Quantity ordered	Remarks
7	8		9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	6,00	REX640 GENERAL PURPOSE CODE															MPQ2000001VCF698331R0001	1VCF698331R0001	ABB PT			
2	6,00	ACCESSORY FOR REX640 - 2RCA033008A0001 - SCHERMO A COLORI TOUCH															MPQ2000001VCF698331R0002	1VCF698331R0002	ABB PT			
3	6,00	ACCESSORY FOR REX640 - 1MRS120549-3 - LHMI CABLE 3mt															MPQ2000001VCF698331R0012	1VCF698331R0012	ABB PT			
4	3,00	UMK-RJH/5/8PTDA VARIOFACE MODULE															MPQ2000002900682	2900682	PHOENIX CONTACT spa			
5	5,00	BSR10 SENTRY RELAY SIL3 24Vcc 3NA+1NC COD. A1004000															MPQ2000002TLA01004OR0000	A1004000	ABB SACE SPA			
6	6,00	VOLTAGE PRESENCE SIGNALING DEVICE VPIS 3LED dis.43911082															MPQ2000004391108Z	VPIS108Z	ELECTRONSYSTEM MD srl			
7	1,00	VOLTAGE PRESENCE SIGNALING DEVICE VPIS1118 3-3-36kV dis.43931118															MPQ2000004393111I8	VPIS1118	ELECTRONSYSTEM MD srl			
8	2,00	PATCH CORD CAT.6 UTP WHITE L=1mt ART. 6U-010WH															MPQ2000006U010WH	6U010WH	SECURNET srl			
9	6,00	PATCH CORD CAT.6 UTP YELLOW L=5mt ART. 6U-050-YE															MPQ2000006U050YE	6U050YE	SECURNET srl			
10	1,00	PATCH CORD CAT.6 UTP YELLOW L=7.5mt															MPQ2000006U075YE	6U075YE	SECURNET srl			
11	7,00	MODBUS DATACARD, 8-CHANNEL, EM SENSOR INPUT, RS485 MODBUS RTU OUTPUT															MPQ2000008B0208	808208	QHI Group Ltd			
12	1,00	CONFIGURATION & COMMISSIONING KIT 800447															MPQ2000008B0447	800447	QHI Group Ltd			
13	53,00	IR SENSOR EM-10 SC 801100 CABLE L=10MT															MPQ2000008B01100	801100	QHI Group Ltd			
14	1,00	ARM XL PANEL - 10KB CH 4.3" TOUCHSCREEN DISPLAY															MPQ2000009B0451	900451	QHI Group Ltd			
15	1,00	M-FAST SFP-TX/BiM5 OPTICAL FIBER TRANSCEIVER 100MBIT/S															MPQ2000009420980D1	842098D01	ABB PT			
16	21,00	SURGE DISCHARGE 9KV 10KA CL:1 DMI-9-10-1-L															MPQ2000009900O3	990003	DEHN ITALIA spa		2	
17	122,00	S2C-S/H 6R SINGNALINC CONTACT/AUX															MPQ2000004S63819	A563819	ABB SACE SPA		7	
18	7,00	BCO MOULE AC TYPE 2P 2SA DDA202-25-300mA/AC															MPQ2000008427917	B427917	ABB SACE SPA		1	
19	15,00	REGLETTE LED 4W 220-240V 50-60HZ COD.74041 - RGL P LED 4W 313mm 4000K I															MPQ2000008EG74041	74041	BEGHELLI srl	1		
20	1,00	VOLMETRICAL SWITCH 1Tav.FF CA10.A004-600-FT2 + 50.F776 + 50C 6251															MPQ2000004CA10A004600FT2	CA10A004600FT2	KRAUS & NAIMER			
21	18,00	MICROSWITCH D2VW-5L2-1 WITH LONG LEVER/ROT. OMRON															MPQ2000005D2VW5L21	D2VW-5L2-1	OMRON ELECTRONICS spA		1	
22	144,00	FEED THROUGH TERMINAL BLOCK DAS.4 DOUBLE LEVEL 4mmq GREY															MPQ2000005DS100GR	DS100GR	CABUR spa		8	
23	6,00	TERMINAL PLATE GREY DAS/PT/GR															MPQ2000005DS101GR	DS101GR	CABUR spa		1	
24	7,00	M1173 SCOKET ITALIAN STANDARD 2P+T WITH PROTECTION 250V															MPQ2000005EA9447	EA9447	ABB SACE SPA			
25	40,00	CONTACT BLOCK HOLDER MCBH-00 3 SLOT															MPQ2000006EOS697	EOS697	ABB SACE SPA	6		
26	146,00	MCB-10 1NO CONTACT BLOCK															MPQ2000006EOS705	EOS705	ABB SACE SPA	6		
27	106,00	MCB-01 1NC CONTACT BLOCK															MPQ2000006EOS713	EOS713	ABB SACE SPA		6	
28	1,00	CR-M024DC2L RELAY. CR-M 24VCC 2SC +LED															MPQ2000006ER5454	1SVR405611R100	ABB SACE SPA			
29	8,00	CR-M230AC2L RELAY230V AC 2C/O CONTACTS NA/NC 250V/12A															MPQ2000006ER5520	ER5520	ABB SACE SPA			
30	29,00	CR-M110DC4L RELAY CR-M 110VCC 4C/O CONTACTS +LED															MPQ2000006ER5892	ER5892	ABB SACE SPA	3		
31	191,00	STANDARD SOCKET CR-M4SS FOR RELAY WITH 2/4 C/O CONTACTS															MPQ2000006ER6866	1SVR405651R3000	ABB SACE SPA			
32	75,00	RETAIN.METAL SPRING CR-MH1 ER7286															MPQ2000006ER7286	ER7286	ABB SACE SPA			
33	7,00	H3DM-M2 MULTIFUNC. RELAY WITH TIMER. aux:24-230VCA/CC 2SC.T															MPQ2000009H3DM2	H3DM2AC0C242	OMRON ELECTRONICS spA			
34	47,00	END PLATE GREY HSCB/6/PT/GR															MPQ2000008HB201GR	HB201GR	CABUR spa			
35	7,00	SHORT CIRCUIT PLATE 2 POLES, RED, HSCB/6/PO/2															MPQ2000008HB203	HB203	CABUR spa			
36	7,00	SHORT CIRCUIT PLASTE 4 POLES, RED, HSCB/6/PO/4															MPQ2000008HB204	HB204	CABUR spa			
37	99,00	TERMINAL BLOCK - VOLTMETRIC- HSCB.6/DD/GR SPRING CLAMP															MPQ2000008HB210GR	HB210GR	CABUR spa			
38	60,00	TERMINAL BLOCK - AMMETRICAL- HSCB.6/CD/GR SPRING CLAMP															MPQ2000008HB220GR	HB220GR	CABUR spa			
39	735,00	FEED THROUGH TERMINAL BLOCK HMM.4/GR SPRING CLAMP															MPQ2000009HM250GR	HM250GR	CABUR spa	40		
40	56,00	END PLATE GRAY HMT.4/PT/GR															MPQ2000008HM251GR	HM251GR	CABUR spa			
41	84,00	FEED THROUGH TERMINAL BLOCK HMM.6 SPRING CLAMP															MPQ2000008HM320GR	HM320GR	CABUR spa			
42	21,00	END PLATE HMT.6/PT GRIGIA															MPQ2000008HM321GR	HM321GR	CABUR spa			
43	6,00	FEED THROUGH TERMINAL BLOCK HMM.10 SPRING CLAMP															MPQ2000008HM330GR	HM330GR	CABUR spa			
44	2,00	END PLATE GRAY HMM.10PT															MPQ2000008HM331GR	HM331GR	CABUR spa			
45	6,00	TO 0,72/3/4V 50HZ 100/1A SPS-SVA DWG:5089-00-44 Ø150MM															MPQ2000006KAP15025055	KAP15025055	ESITAS ELEKTRIK SANAYI			
46	3,00	RECTIFIER BRIDGE KBPC 50A 600V KBPC5006															MPQ2000006KBPC5006	KBPC5006	GENERIC			
47	6,00	MiBL-04Y LED BLOCK WITH YELLOW LED 110-130VAC															MPQ2000006KV0225	KV0225	ABB SACE SPA			
48	6,00	MiBL-05Y LED BLOCK WITH YELLOW LED 110÷130VDC															MPQ2000006KV0274	KV0274	ABB SACE SPA			
49	33,00	MP1-10R RED PUSH BUTTON WITH PLASTIC RING. D22															MPQ2000006KW0752	KW0752	ABB SACE SPA	2		
50	33,00	MP1-10G GREEN PUSH BUTTON WITH PLASTIC RING.D22															MPQ2000006KW0760	KW0760	ABB SACE SPA	2		
51	7,00	MP1-10B BLACK PUSH BUTTON WITH PLASTIC RING.D22															MPQ2000006KW0802	KW0802	ABB SACE SPA			
52	7,00	MP1-11Y YELLOW PUSH BUTTON WITH PLASTIC RING - ILLUMINATED. D22															MPQ2000006KW1016	KW1016	ABB SACE SPA			
53	34,00	M2S52-10B 90 DEG. 2P POS. SELECTOR BLACK WITH LEVER AND BLACK RING. D22															MPQ2000006KW3293	1SFAE611201R1006	ABB SACE SPA	2		
54	7,00	PAVM321 DIN SOCKET FOR SCREW TERMINAL BLOCK															MPQ2000009PAVM321	PAVM321	A.M.R.A. soA			
55	42,00	PLUG-IN CROSS CONNECTION PTC/5.0/2 2 POLES															MPQ2000009PTC0502	PTC0502	CABUR spa			
56	42,00	PLUG-IN CROSS CONNECTION PTC/8/0/2 3 POLES															MPQ2000009PTC0802	PTC0802	CABUR spa			
57	8,00	ANTICONDENSATE RESISTOR SKR 150W SUPPLY 220-240VCA															MPQ2000008R1R150230	R1R150230	TORRESAN P. srl COSTRUZIONI EL			
58	6,00	RMBE13-C110T BISTABILE 110VCC 7SC LIN.-M TROPICALIZED															MPQ2000008RMBE13C110T	RMBE13C110T	A.M.R.A. soA		1	
59	2,00	RSPS25-060022GYT-SK9SHHE2SSXX.X RSPS RAIL SWITCH POWER SMART CONFIG.															MPQ2000008RSPS2506022GYT	RSPS2506022GYT	HIRSCHMANN			
60	27,00	MCB 2P 2A-C S202M-C2															MPQ2000005SS50239	SS50239	ABB SACE SPA		2	
61	22,00	MCB 2P 4A-C S202M-C4															MPQ2000005SS50253	SS50253	ABB SACE SPA		2	
62	8,00	MCB 2P 10A-C S202M-C10															MPQ2000005SS50284	SS50284	ABB SACE SPA		1	
63	2,00	MCB 3P 2A-C S203M-C2															MPQ2000005SS50383	SS50383	ABB SACE SPA		1	
64	18,00	MCB 4P 2A-C S204M-C2															MPQ2000005SS50680	SS50680	ABB SACE SPA		1	
65	1,00	MCB 2P 4A-D S202M-D4															MPQ2000006S600422	S600422	ABB SACE SPA		1	
66	1,00	MCB 2P 6A-D S202M-D6															MPQ2000006S600446	S600446	ABB SACE SPA		1	
67	2,00	MCB 2P 25A-D S202M-D25															MPQ2000006S600545	S600545	ABB SACE SPA		1	
68	1,00	MCB 2P 32A-D S202M-D32															MPQ2000006S600613	S600613	ABB SACE SPA		1	
69	1,00	DC/DC CONVERTER IN=110VDC OUT=24VDC 150W 6A MOD. SPS1510X-110C-24-6															MPQ2000009SPS151DX110C246	SPS151DX110C246	ADVEL SRL			
70	15,00	TRT-10A ADJUSTABLE THERMOSTAT. -10° A +80° 1NC IP20 EN50022/35.															MPQ2000007TRT10A230VNC	TRT10A230VNC	FANDIS			
71	3,00	CMF 7.2kV 250A 442/87MM STRIKER 80N 11YMB760741M4811 59014360223289															MPQ2000021VCF501000R0002	1VCF501000R0002	ABB PT		3	
72	2,00	RSP25-11003267T-SK9V9HHE2SXX SWITCH HIRSCHMANN															MPQ2000021VCF698390R0397	2-1VCF698390R0397	HIRSCHMANN			
73	1,00	VOLTAGE INDICATOR 96X96 90° CA 0÷8KV ON TV 6600/110V TROP. SHP VERSION															MPQ2000029F96EVXYYXC1	2-F96EVXYYXC1	FREN Srl			
74	6,00	FUSIBLE CEF 6/12KV 16OA 442/87MM S 1YMB711238M4812															MPQ2000081VCF501000R0002	8-1VCF501000R0002	ABB PT		3	
75	3,00	FUSIBLE CEF 6/12KV 63A 442/63MM S 1YMB711239M4612															MPQ2000091VCF501000R0002	9-1VCF501000R0002	ABB PT		3	
76	3,00	FUSIBLE CEF 6/12KV 200A 442/87MM S 1YMB711239M4812															MPQ2000101VCF501000R0002	10-1VCF501000R0002	ABB PT			
77	6,00	OPTICAL FIBER CABLE PRE-MANUFACT. LENS L=7M: 1MRS120534-7															MPQ2000171VCF698000R0012	00017 1VCF698000R0012	ABB PT			
78	12,00	OPTICAL FIBER CABLE PRE-MANUFACT. LENS L=5M 1MRS120534-5															MPQ2002021VCF698000R0012	00020 1VCF698000R0012	ABB PT			
79	3,00	TA ATB10-BS 7,2/20/60KV 60HZ 600/1-5 SVA-0,5/5P20 10VA-5P20 SEC.P1 SIDE															MPQ2000035ATB10BS	35-ATB10BS	ESITAS ELEKTRIK SANAYI			
80	3,00	TA ATB10-BS 7,2/20/60KV 60HZ 400/1 0.5/5P20-5VA SEC.P2 SIDE															MPQ2000036ATB10BS	36-ATB10BS	ESITAS ELEKTRIK SANAYI			

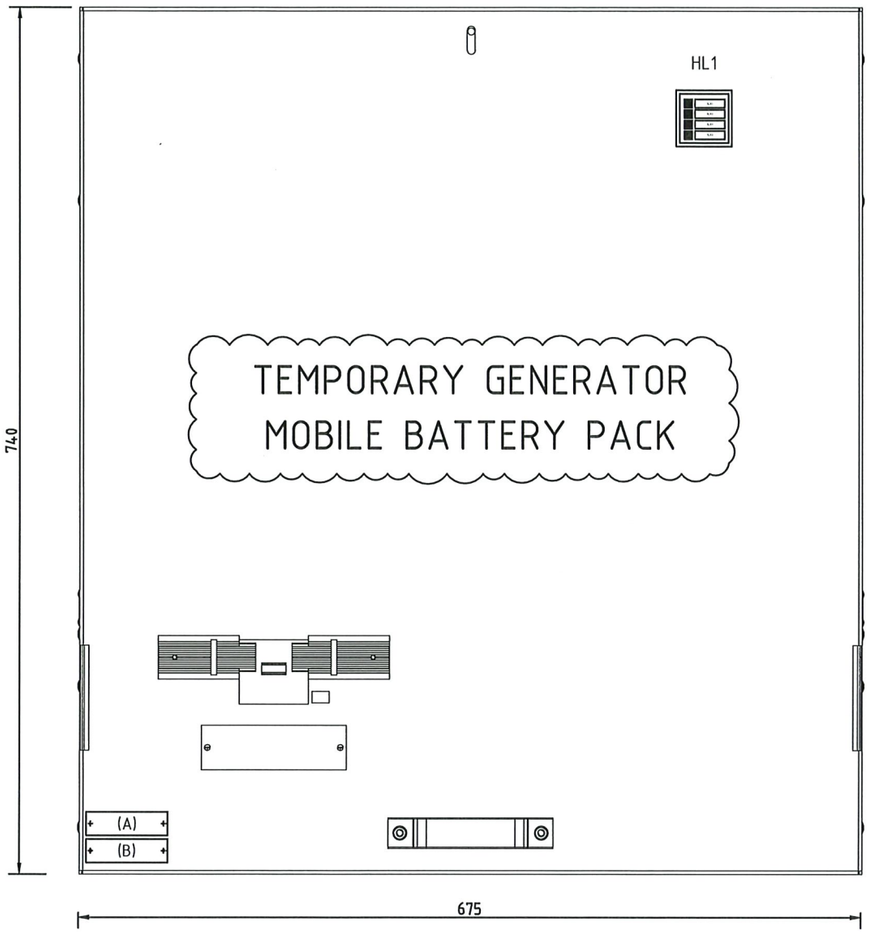
3,00				81	3,00	TA ATB10-BS 7 2/20/60KV 50HZ 50/1 0.5/5P15-2.5VA SEC.P1 SIDE														MP0200037ATB10BS	37-ATB10BS	ESITAS ELEKTRIK SANAYI						
6,00				82	6,00	TA ATB10-BS 7 2/20/60KV 50HZ 150/1 0.5/5P20 5VA DWG:5150-00 SEC.P2 SIDE														MP0200038ATB10BS	38-ATB10BS	ESITAS ELEKTRIK SANAYI						
3,00				83	3,00	TA ATB10-BS 7 2/20/60KV 50HZ 200/1 0.5/5P20 5VA DWG:5150-00 SEC.P2 SIDE														MP0200039ATB10BS	39-ATB10BS	ESITAS ELEKTRIK SANAYI						
6,00				84	6,00	ANTIFERRORESONANCE RESISTOR TR318 27 OHM 500W L=2.5M														MP0201041VCF501000R0001	104-1VCF501000R0001	ABB PT						
18,00				85	18,00	TJP 4.3 TV 7,2KV 50/60HZ 6600:r3/110:r3/110:r3/110:3V E404008164														MP0201091VCF501000R0001	109-1VCF501000R0001	ABB PT						
	2,00			86	2,00	DX122 IO-MODULE FOR UMC100. 8 DI 110-230 V AC. 4DO. 1AO. SUPPLY 24 V DC														MP0200000151AIG2200D0102	1SAIG2200D0102	ABB SACE SPA						
	2,00			87	2,00	SMK3.0 ADAPTOR AND COMUNICATION INTERFACE														MP0200000151AIR9296008D001	1SAIR9296008D001	ABB SACE SPA						
	2,00			88	2,00	XT2S-160 INTERR MA 20 - 120-280 3p F F														MP0200000151DA0677658R1-5	1SDA067765R1	ABB SACE SPA						
	2,00			89	2,00	XT2S-160 INT. EKIP LSIG In=10A 4P F F														MP0200000151DA0678515R1-1	1SDA067851R1	ABB SACE SPA						
	7,00			90	7,00	XT2S-160 INT. EKIP LSIG In=63A 4P F F														MP0200000151DA0678531R1-1	1SDA067853R1	ABB SACE SPA						
	3,00			91	3,00	XT2S-160 INT. EKIP LSIG In=100A 4P F F														MP0200000151DA0678548R1-1	1SDA067854R1	ABB SACE SPA						
	14,00			92	14,00	XT2S 160 BREAKING PART 4P FF.														MP0200000151DA0681698R1-1	1SDA068169R1	ABB SACE SPA						
	4,00			93	4,00	XT2S 160 BREAKING PART 4P FF.														MP0200000151DA0681699R1-2	1SDA068169R1	ABB SACE SPA						
	1,00			94	1,00	XT2S 160 BREAKING PART 4P FF														MP0200000151DA0681698R1-3	1SDA068169R1	ABB SACE SPA						
	3,00			95	3,00	XT4S-250 BREAKING PART 4p F F														MP0200000151DA0681798R1-4	1SDA068179R1	ABB SACE SPA						
	2,00			96	2,00	XT4S-250 BREAKING PART 4p F F														MP0200000151DA0681798R1-5	1SDA068179R1	ABB SACE SPA						
	1,00			97	1,00	MOBILE PART E1.2C 1250 4P EKIP Hi-TOUCH LSIG WMP														MP0200000151DA0728198R1-1	1SDA072819R1	ABB SACE SPA						
	1,00			98	1,00	E4.2N/MS 3200 4P W MP														MP0200000151DA0735418R1-5	1SDA073541R1	ABB SACE SPA						
	1,00			99	1,00	XT5S 400 BREAKING PART 4P F F														MP0200000151DA1005568R1-3	1SDA100556R1	ABB SACE SPA						
	1,00			100	1,00	XT5S 400 BREAKING PART 4P F F														MP0200000151DA1005568R1-4	1SDA100556R1	ABB SACE SPA						
	3,00			101	3,00	FUSIBLE NH-000 In=16A 690VAC +aem.combinata aL/aG 3NA6805-6														MP0200000I3NA68056	3NA68056	SIEMENS spa						
	1,00			102	1,00	COUPLER MODULE FIELDBUS MODBUS RS485COD.750-315/300-000														MP0200000750315300000	750315300000	WAGO ELETTRONICA srl						
	2,00	2,00		103	4,00	MODULE WITH 8 DIGITAL CHANNELS INPUTS 24V DC 3MS cod.750-430														MP0200000750430	750430	WAGO ELETTRONICA srl						
	1,00	1,00		104	2,00	END CAP MODULE cod.750-600														MP0200000750600	750600	WAGO ELETTRONICA srl						
	1,00	1,00		105	2,00	POWER SUPPLY DISTRIBUTION MODULE 750-602														MP0200000750602	750602	WAGO ELETTRONICA srl						
	1,00			106	1,00	CONFIGURABLE INTERFACE MODULE RS485/RS232 COD: 750-652														MP0200000750652	750652	WAGO ELETTRONICA srl						
	4,00		4,00	107	8,00	SURGE DISCHARGE 255V 25KA CL 1 TIPO DVC I 255 FM														MP0200000961205	961205	DEHN ITALIA spa						
	1,00			108	1,00	RCND FLAG RELAY TO AUM.A4RCND230VCA230VCA														MP0200000A4RCND230VCA	A4RCND230VCA230VCA	TORRESAN P. srl COSTRUZIONI EL						
	3,00			109	3,00	AF190-40-11-13 CONTACTOR 4P 275A 100-250VC/DC														MP0200000AF190401113	AF190401113	ABB SACE SPA						
	1,00			110	1,00	AF265-40-11-13 CONTACTOR 4P 132KW100-250VCA/CC														MP0200000AF265401113	AF265401113	ABB SACE SPA						
	2,00			111	2,00	AF38-30-00-13 CONTACTOR 3P 18,5kW 100...250VAC/CC														MP0200000AF38300013	AF38300013	ABB SACE SPA						
	14,00			112	14,00	AF40-40-00-13 CONTACTOR 4P 70A AC1 100-250VAC/DC														MP0200000AF40400013	AF40400013	ABB SACE SPA						
	4,00			113	4,00	AF52-40-00-13 CONTACTOR 4P 52A 100-250VAC/DC														MP0200000AF52400013	AF52400013	ABB SACE SPA						
	1,00			114	1,00	AF80-40-00-13 CONTACTOR 4P 125A 100-250VAC/CC														MP0200000AF80400013	AF80400013	ABB SACE SPA						
	1,00	2,00		115	3,00	M1L-100R RED LAMP - ROUND D22														MP0200000EO5622	EO5622	ABB SACE SPA						
	1,00	2,00		116	3,00	M1L-100G GREEN LAMP - ROUND D22														MP0200000EO5630	EO5630	ABB SACE SPA						
	1,00	1,00		117	2,00	M1L-100Y YELLOW LAMP - ROUND D22														MP0200000EO5648	EO5648	ABB SACE SPA						
	191,00		4,00	118	195,00	CR-M230AC4L REALY 230VAC 4C/O +LED														MP0200000ER5926	1SVR405613R3100	ABB SACE SPA			3	10		
	186,00		4,00	119	190,00	CR-MH RETAIN. DEVICE PL FOR SOCKET CR-M														MP0200000ER6098	1SVR405659R1000	ABB SACE SPA				10		
	210,00			120	210,00	TERMINAL BLOCK - DOUBLE LAYER HMD.2/GR														MP0200000HD100GR	HD100GR	CABUR spa				20		
	410,00			121	410,00	TERMINAL BLOCK - DOUBLE LAYER HMD.2N/GR														MP0200000HD400GR	HD400GR	CABUR spa				20		
	1,00		2,00	122	3,00	M1BL-07R MODULE WITH INTEGRATED LED - RED 230VCA														MP0200000KV0357	KV0357	ABB SACE SPA						
	1,00		2,00	123	3,00	M1BL-07G MODULE WITH INTEGRATED LED - GREEN 230VCA														MP0200000KV0365	KV0365	ABB SACE SPA						
	2,00		1,00	124	3,00	M1BL-07Y MODULE WITH INTEGRATED LED - YELLOW 220VAC														MP0200000KV0373	KV0373	ABB SACE SPA						
	1,00			125	1,00	M2SSK2-101 ROUND SELECTOR WITH KEY 2P.0-1 EXT CLOSED IN "0"														MP0200000KW4168	KW4168	ABB SACE SPA						
	3,00			126	3,00	FUSIBLE 10,3X38 20A gG E 9F10 GG20 500VCA														MP0200000M277323	M277323	ABB SACE SPA			1			
	4,00			127	4,00	FUSIBLE 10.3X38 16A eG E 9F10 GG16 500VCA														MP0200000M277543	M277543	ABB SACE SPA			1			
	15,00			128	15,00	MULTILED INDICATOR 22/48 3LED (GR-RD+AM)230VAC/DC PR. LAMP+FASTON+TROP														MP0200000ML224831230STLTT	ML224831230STLTTR	DOMO SRL						
	25,00			129	25,00	MULTILED INDICATOR 22/48 4LED (GR-RD+RD+AM) 230VAC/DC PR. LAP+FAS+TROP														MP0200000ML224841230STLTT	ML224841230STLTT	DOMO SRL						
	1,00			130	1,00	MO132-0.16A C.B. MOTOR PROTECTION IONLY MAGNETICI MO132														MP0200000MO132OV16	MO132OV16	ABB SACE SPA						
	2,00			131	2,00	MRP31.0 MODBUS INTERFACE RTU FOR UMC100.3														MP0200000MRP31O	1SAI2S1000R0001	ABB SACE SPA						
	3,00			132	3,00	AMPEROMETRIC TRASF. 250/1A SVA-SP2O TROP														MP0200000TAR105JKSN01V18	TAR105JKSN01V18	FRER Srl						
	2,00			133	2,00	VOLTAGE TRASF. 10VA CL 0,5 400/110V 1TTV010400110 TROPICALIZZATI														MP0200000TTV010400KC1XT	TTV010400KC1XT	FRER Srl						
	2,00			134	2,00	UMC100-PAN OPERATING PANEL FBP PER UMC100 3UC														MP0200000UMC1003PAN	1SAI5900000R0103	ABB SACE SPA						
	2,00			135	2,00	UMC100.3 UC UNIVERSAL MOTOR CONTROLLER 0.24-63A 110...240Vac/dc														MP0200000UMC100SUC	1SAI5300000R1100	ABB SACE SPA						
	1,00	1,00		136	2,00	SWITCHING POWER SUPPLY 90-264VCA/24VCC 5A - CSF120CP														MP0200000XCSF120CP	XCSF120CP	CABUR spa						
	59,00			137	59,00	I/O MODULE 5DI+2DO MODBUS RS485 V=10÷40Vdc 19÷28Vac														MP0200000Z5DI2DO	Z5DI2DO	SENECA			3			
	1,00			138	1,00	REF615 (versione F) HBFAEFCNDCABBA1G														MP0200049VCF698395R1001	0004915VCF698395R1001	ABB PT						
		2,00		139	2,00	FUSIBLE NH-00 6A 800V														MP0200000I1634906	1634906	ITALWEBER spa			1			
		3,00		140	3,00	FUSIBLE NH-00 35A 800V														MP0200000I1634935	1634935	ITALWEBER spa			1			
		2,00		141	2,00	EKIP COMUNICATION MODULE MODBUS TCP FOR E1.2 ..E6.2														MP0200000151DA0724151R1	1SDA072415R1	ABB SACE SPA						
		2,00		142	2,00	EKIP COM ACTUATOR COMUNICATION MODULE E1.2..E6.2														MP0200000151DA0724166R1	1SDA072416R1	ABB SACE SPA						
		1,00		143	1,00	E1.2N/E9 1250 Ekip Touch LSIG 3p WMP														MP0200000151DA1042968R1-3	1SDA104296R1	ABB SACE SPA						
		1,00		144	1,00	E1.2N/E9 1250 Ekip Hi-Touch LSIG 3p WMP														MP0200000151DA1042979R1-1	1SDA104297R1	ABB SACE SPA						
		1,00		145	1,00	FIELDBUS COUPLER MODBUS TCP/UDP ETHERNET 10/100 MBIT/S COD.750-362														MP0200000750362	750362	ABB SACE SPA						
		4,00		146	4,00	DEHNbloc Maxi DBM-1-CI-440-FM 1-POLE with integrated backup fuse														MP0200000961146	961146	DEHN ITALIA spa			2			
		1,00		147	1,00	RCD MODULE. TYPE A ZP 25A DDA202-25-300mA/A														MP0200000B427960	B427960	ABB SACE SPA						
		1,00		148	1,00	SWITCH WITH LEVER R16 2/5 COD.R601-205002-W002														MP0200000R601205002W002	R601205002W002	COVELETRIC snc di RIZZITEL						
		1,00		149	1,00	MCB-2P 6A-C 5202M-C6														MP0200000S5S0260	S5S0260	ABB SACE SPA						
		1,00		150	1,00	ISOLATING TRANSFORMER SINGLE PHASE 50HZ 800/230V P=100VA - TROPICALIZ														MP0200001F14XXX	00001 F14XXX	L.E.F. srl						
			3,00	151	1,00	XT2N 160 EKIP LSI 3E3A1 4 POLES FIXE FRONTAL CONNECTION														MP0200000151DA0671048R1-3	1SDA067104R1	ABB SACE SPA						
			1,00	152	1,00	S800-AUX AUX CONTATCS 2NA+2NC														MP0200000A1206B0	A1206B0	ABB SACE SPA						
			51,00	153	51,00	S2C-HER AUX CONTACT														MP0200000AS63826	AS63826	ABB SACE SPA			3			
			18,00	154	18,00	RCD MODULE TYPE AC ZP 25A DDA202-25-30mA/AC														MP0200000B427911	B427911	ABB SACE SPA			1			
			96,00	155	96,00	FEED THROUGH TERMINAL BLOCK WITH SCREW CBD.4 4mmq														MP0200000CB240	CB240	CABUR spa			5			
			10,00	156	10,00	EHD4-11N AUX CONTACTS 1NA+1NC														MP0200000EHD411N	EHD411N	ABB SACE SPA			1			
			1,00	157	1,00	ES816-20N-06 230V C.C/C.A. MODULAR CONTACTOR 2NA														MP0200000ES81620N06	ES816/20N06	ABB SACE SPA			1			
			8,00	158	8,00	ES840-20 230V AC/DC MODULAR CONTACTOR														MP0200000ES8420N06	ES840/20N06	ABB SACE SPA			1			
			1,00	159	1,00	ES863-40N-06 230V AC/DC MODULAR CONTACTOR														MP0200000ES86340N06	ES863/40N06	ABB SACE SPA			1			
			1,00	160	1,00	TL1 DUSK SENSOR . 1 MODULE COD M229921														MP0200000M229921	M229921	ABB SACE SPA						
			1,00	161	1,00	E204/160q SWITCH DISCONNECTOR 4P 160A M645291														MP0200000M645291	M645291	ABB SACE SPA			1			
			1,00	162	1,00	MCB-4P 50A-C S804S-C50														MP0200000S120091	S120091	ABB SACE SPA			1			
			2,00	163	2,00	MCB S302P C 1 25KA 2P														MP0200000S302PC1	S302PC1	ABB SACE SPA			1			
			4,00	164	4,00	MCB S302P C10 25KA 2P														MP0200000S302PC10	S302PC10	ABB SACE SPA			1			
			6,00	165	6,00	MCB S302P C16 25KA 2P														MP0200000S302PC16	S302PC16	ABB SACE SPA			1			
			11,00	166	11,00	MCB S302P C20 25KA 2P														MP0200000S302PC20	S302PC20	ABB SACE SPA			1			
			21,00	167	21,00	MCB S302P C 6 25KA 2P														MP0200000S302PC6	S302PC6	ABB SACE SPA			2			
			4,00	168	4,00	MCB S302P D16 25KA 2P														MP0200000S302PD16	S302PD16	ABB SACE SPA			1			
			2,00	169	2,00	MCB S304P C10 25KA 4P														MP0200000S304PC10	S304PC10	ABB SACE SPA			1			
1				170	1,00	SWICOM (DISPLAY)														MP0200000VCF681000R0101	1VCF681000R0101	ABB SACE SPA						
1				171	1,00	PDCOM (PARTIAL DISCHARGE MONITORING)														MP0200000VCF681000R0103	1VCF681000R0103	ABB SACE SPA						
1				172	1,00	INTERFACE PDCOM VIS/INSULATOR														MP0200000VCF681000R0104	1VCF681000R0104	ABB SACE SPA						
4				173	4,00	**VSC7/P 7,2KV CONTATTORE V-Contact 400A DCO FOR UNIGEAR - IEC 62271-106 - FOR FUSE E=442mm** OPERATION COUNTER (1VCF309500R0097) NAMEPLATE IN ENGLISH (1VCF309500R0882) ELECTRONIC CONTROL MODULE MAC R2 (1VCF309503R0881) UNDERVOLTAGE SHUNT RELEASE (1VCF309503R3881) POWER SUPPLY MODULE FOR MAC R2 110VDC (1VCF309588R9909) LOCK SOLENOID 110-127Vac/dc (1VCF329700R0913)														MP0200000VCF305581R3200-3	1VCF305581R3200	ABB SACE SPA						
2				174	2,00	**C.B. 3P 12KV 630A 25KA WITHDRAWABLE VD4/P 12.06.25 P150 FOR POWERCUBE** KEY LOCK OPEN POS. WITH DIFFERENT KEY (1VCF339700R0271) POSITION CONTACT (1VCF339700R0291) SPRING CHARGE/DISCHARGE SIGNALING (1VCF339700R0395) NAMEPLATE IN ENGLISH (1VCF339700R0882) TROLLEY LOCKING MAGNET (1VCF339700R1909) 16 AUX CONTACTS (1VCF339701R0194) OPENING INSTANTANEOUS SHUNT RELEASE 110vcc(1VCF339701R2909) SPRING CHARGE MOTOR 110Vcc (1VCF339701R8909) UNDERVOLTAGE SHUNT RELEASE 110-127v AC/DC (1VCF339800R4913) MECHANICAL INTERLOCK WITH DOOR (1VCF349700R0407) CABLING WITH AFUMEX CABLE N07G9-K (1VCF349700R4831)														MP0200000VCF337121R1141-4	1VCF337121R1141	ABB SACE SPA						
6				175	6,00	**TV/F 12/17,5kV WITH AUX CONTACTS FOR NEW VD4 <=40kA** NAME PLATE IN ENGLISH FOR TV/F (1VCF499800R0302) TV/FELECTROMECHANICAL LOCK FOR CELL DOOR 110Vcc (1VCF579700R0909) ELCTROMECHANICAL LOCK 110Vcc FOR EARTHING SWITCH (1VCF599500R0909) KEY LOCK WITH EARTHING SWITCH C.B. INSERTION (1VCF599504R0042) KEY LOCK FOR SWITCH OPEN/CLOSED POSITION (1VCF599504R0063) N.5 AUX CONACTS FOR EARTHING SWITCH (1VCF599505R0001) N.10 AUX CONTACTS FOR EARTHING SWITCH (1VCF599505R0002) SHUTTER FAIL SAFE (1VCF599505R0111) EARTHING SWITCH ST-E 17.31 150 (1VCF599700R0131) 5B PIN WITH AFUMEX CABLE (1VCF599700R0161) 5NA+5NC C.AUX.C.B. INSERTED AND 5NA+5NC C.AUX C.B. OPENED (1VCF599700R0171) EARTHING SWITCH DOOR INTERLOCK MECHANISM (1VCF599700R0280) LEVER FOR EARTHING SWITCH(1VCF599700R0290) PAINTED DOOR (1VCF599700R4882) SUPPORT FOR PUSH BUTTON ON PAINTED DOOR (1VCF599700R4884)														MP0200000VCF498412R0100-20	1VCF498412R0100	ABB SACE SPA						

Section 7.4 Vendor Data / Operations / Maintenance Manuals References

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LE2-320"

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

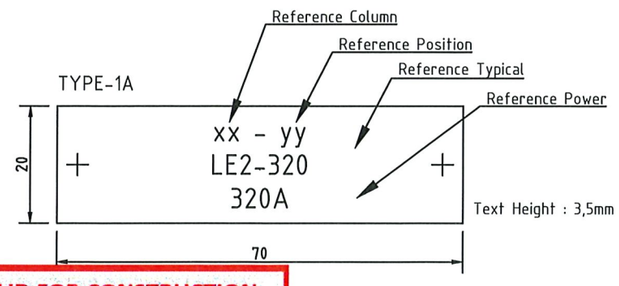


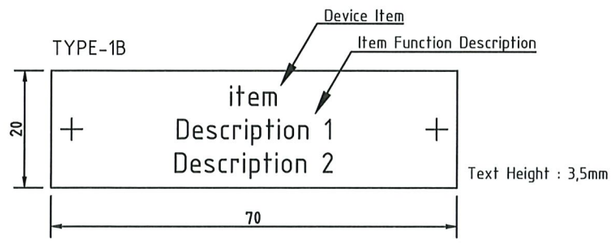
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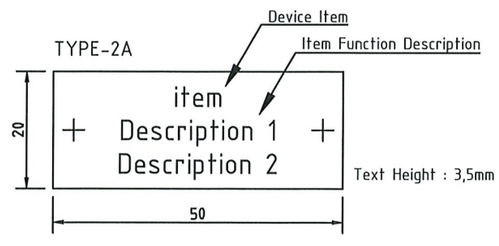
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

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

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







VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LE2-250
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Door Front Lay-Out - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 048 | REV. 02

F.to UNI A3: 420mmx297mm

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

USERS LEGEND

TYPICAL : LINE FEEDER "LE2-320"

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

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE POWER (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	JB-200E2	TEMPORARY GENERATOR / MOBILE BATTERY PACK	A2 / +08	138 kW	LE2-320

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LE2-250
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

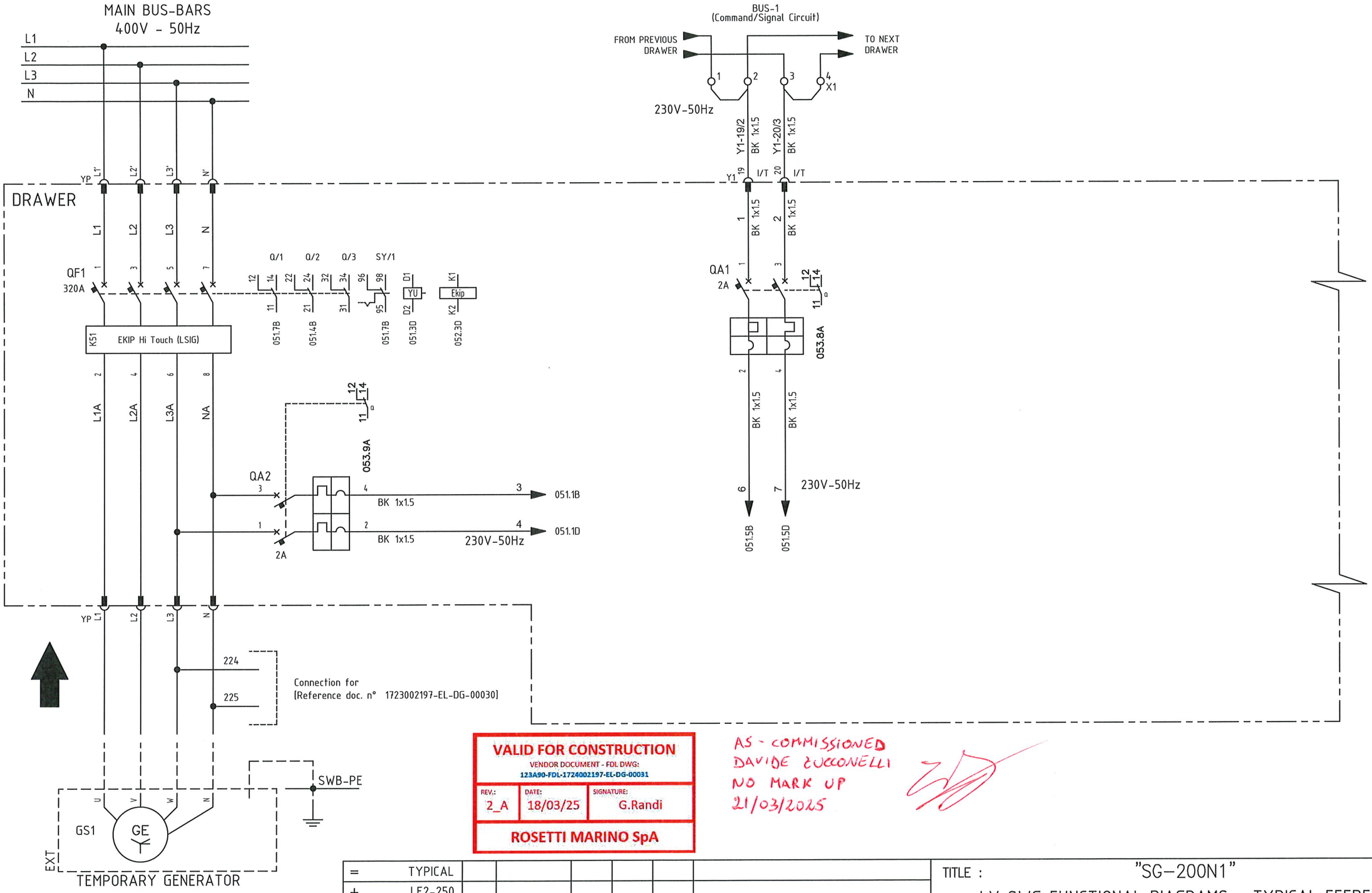
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Users Legend - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 049 | REV. 02

F.to UNI A3: 420mmx297mm

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



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

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

=	TYPICAL						
+	LE2-250						
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)		
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)		
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

IMESA ELECTRICAL ENGINEERING
DWG n° : 231298/SD/31
Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 050 | REV. 02

F.to UNI A3: 420mmx297mm

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

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

SG-200N1
INCOMING CIRCUIT-BREAKER
QG1
Q
5 X2
6 X2
9 X1
10 X1
11 X1
12 X1
Y1-17/9 BK 1x1.5
Y1-18/12 BK 1x1.5
17 I/T
18 I/T
Y1

230VAC
3 X2
4 X2
13 X1
14 X1
Y1-8/13 BK 1x1.5
Y1-9/14 BK 1x1.5
8 I/T
9 I/T

QG1
A1
YC
A2
CLOSING COIL

ONLY FOR REPRESENTATION
FOR DETTAILS TO SEE RELEVANT
DOCUMENT N°1723002197-EL-DG-00030

050.4C 3
230V-50Hz

44 T
43 I/T
8
BK 1x1.5
9
BK 1x1.5

QF1
050.1B
22
24
Q
21

PERMESSIVE TO CLOSE
WITH DRAWER ON
TEST/RACK-OUT POSITION
OR C.B. OPEN

5 BK 1x1.5

QF1
050.1B
D1
YU
D2

050.4C 4

050.6C 6
230V-50Hz

22 T
21 I/T

10 BK 1x1.5
11 BK 1x1.5
12 BK 1x1.5

QF1
050.1B
12
14
Q
11

QF1
050.1B
96
98
SY
95

KA2
051.7D
11
12
14

KA3
051.7D
12
14
11

13 BK 1x1.5
14 BK 1x1.5
15 BK 1x1.5

HL1
230VAC
1
2
3
4
L1 GR
L2 RD
L3 AM
DOMO
CIRCUIT BREAKER OPEN
CIRCUIT BREAKER CLOSE
FEEDER TRIPPED

KA1 A1 A2
KA2 A1 A2
KA3 A1 A2

050.6C 7
DRAWER ON TEST
C.B. OPEN/CLOSED
C.B. TRIPPED

053.7A 11 12 14 22 21 24 32 31 34 42 41 44
051.9B 11 12 14 22
053.6A 21 24 32 31 34 42 41 44
051.9B 11 12 14 22
053.7A 21 24 32 31 34 42 41 44

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
\+ LE2-250
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LE2-320"

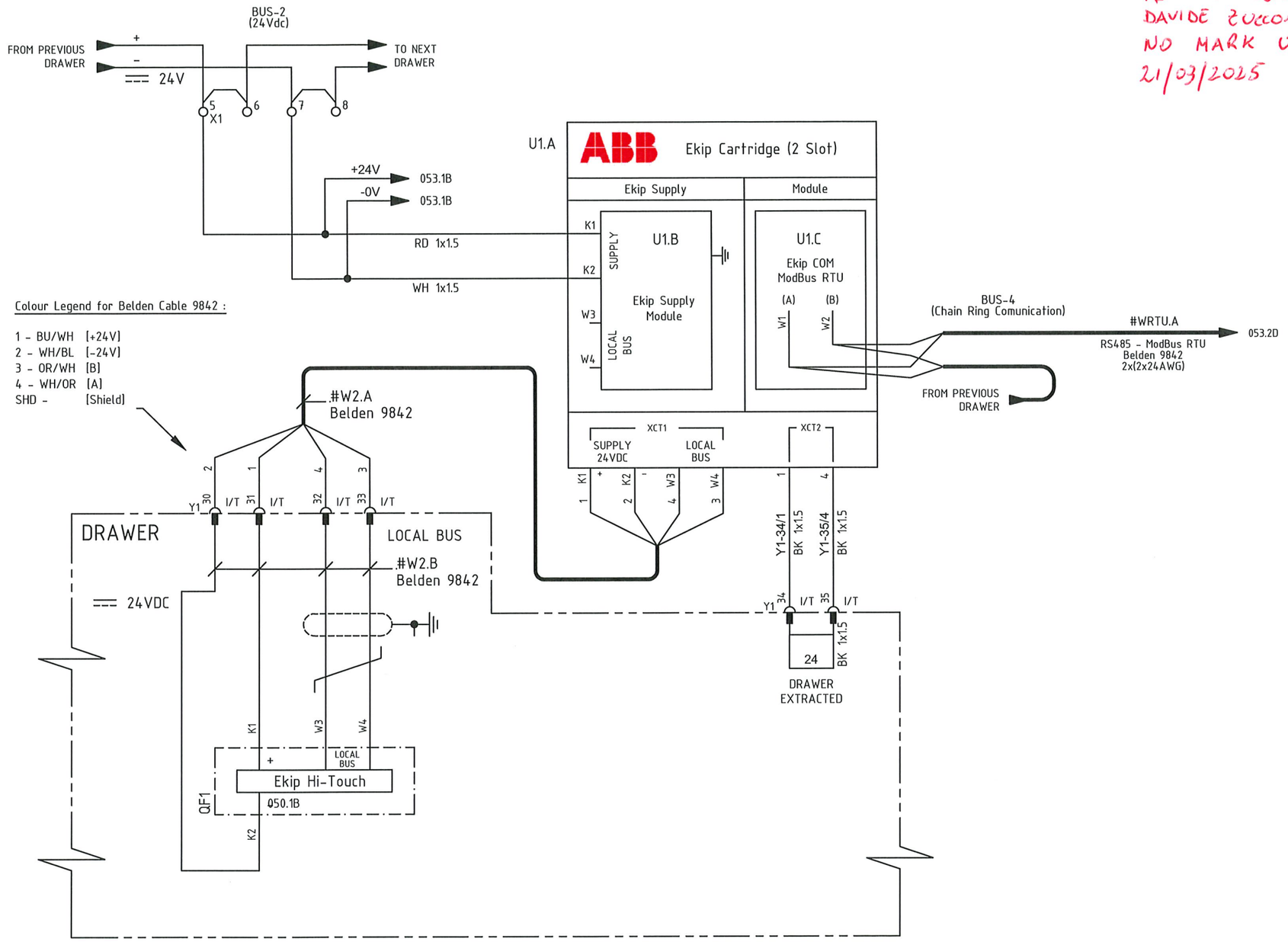
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK
SCALE : NTS

A3
DRAWING NO. 1723002197-EL-DG-00031
SHEET 051
REV. 02

F.to UNI A3: 420mmx297mm

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

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VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL
+	LE2-250
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LE2-320"

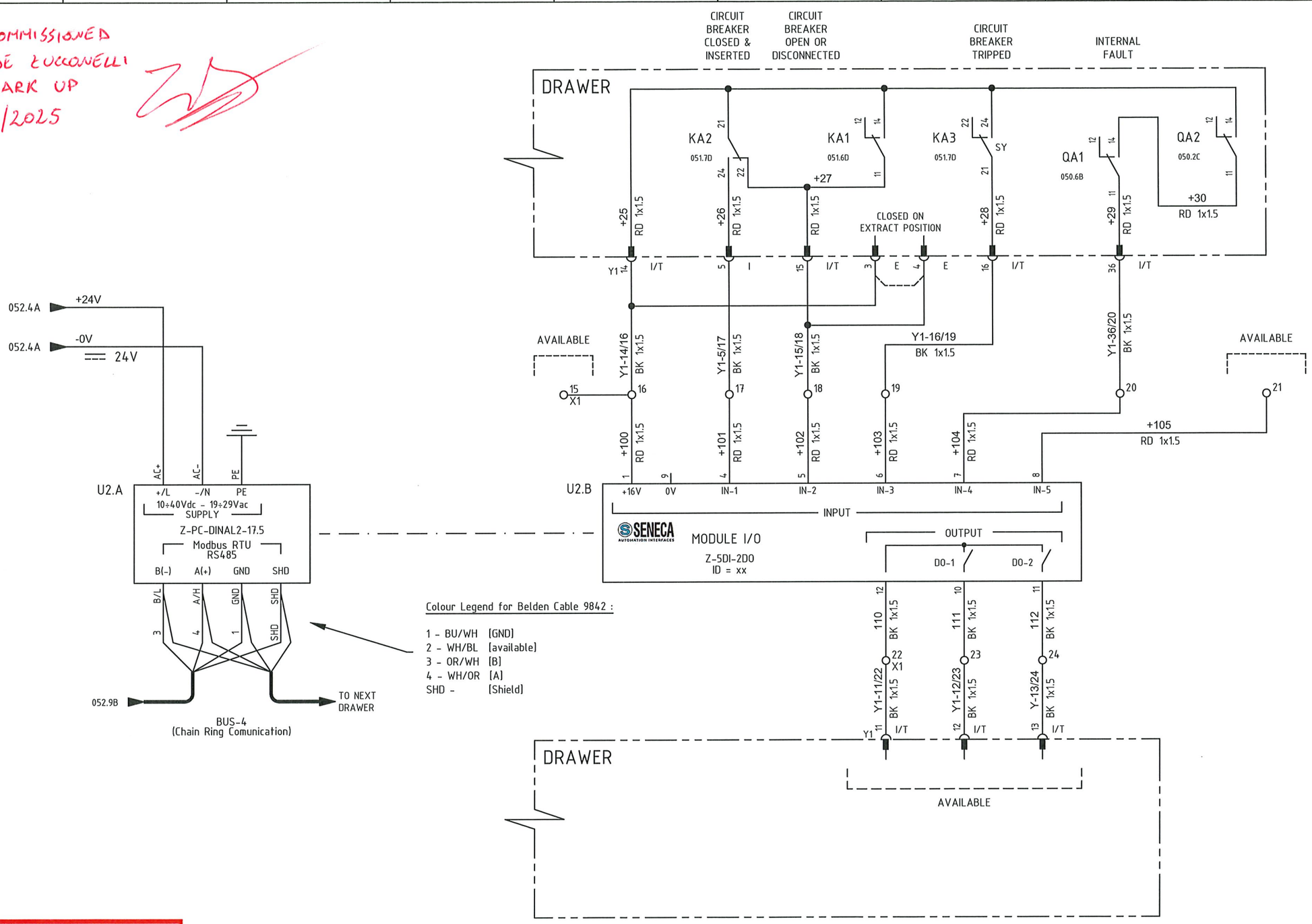
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3	DRAWING NO.	SHEET	REV.
	1723002197-EL-DG-00031	052	02

F.to UNI A3: 420mmx297mm

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

AS-COMMISSIONED
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NO MARK UP
21/03/2025



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL					
+	LE2-250					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)	
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)	
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 053 | REV. 02

F.to UNI A3: 420mmx297mm

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

TYPICAL - LE2-320 - Y1

AUXILIARY SOCKET
136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			●	●				●	●																																			
RACKED-OUT			X	X																																							
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED-IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
PIN USED			053.6B	053.7B	053.6B			051.4B	053.8B		053.7D	053.7D	053.8D	053.5B	053.6B	053.7B	051.2B	051.3B	050.6A	050.6A	051.6B	051.6B								052.3C	052.3C	052.4C	052.4C	052.6C	052.7C							051.5B	051.4B	051.4B

1 2 3 4 5 6 7 8 36 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 37 38 39 40 41 42 43 44 9

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

← CROS-REFERENCE USED PIN

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

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LE2-250
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 054 | REV. 02

F.to UNI A3: 420mmx297mm

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

TYPICAL - LE2-320

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	050.5A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	050.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	050.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	050.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	052.3A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	052.3A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	052.4A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	052.4A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	051.2A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	051.2A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	051.3A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	051.3A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	051.4A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	051.4A	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	053.4B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	053.5B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	053.6B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	053.6B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	053.7B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	053.8B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	053.9B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	053.7D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	053.7D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	053.8D	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

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

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL
+	LE2-250
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LE2-320"

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

A3	DRAWING NO.	SHEET	REV.
	1723002197-EL-DG-00031	055	02

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
GS1	050		1	Generatore sincrono trifase indotto collegato a stella e neutro accessibile		TYPICAL LE2-320
HL1	051	ML22/483L230STLTTR	1	MULTILED 48x48 - 3 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LE2-320
KA1	051	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LE2-320
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LE2-320
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LE2-320
KA2	051	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LE2-320
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LE2-320
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LE2-320
KA3	051	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LE2-320
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LE2-320
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LE2-320
QA1	050	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LE2-320
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LE2-320
QA2	050	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LE2-320
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LE2-320
QF1	050	1SDA100556R1	1	XT5S 400 BREAKING PART 4p F F	ABB	TYPICAL LE2-320
		1SDA100692R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=320A XT5 4p	ABB	TYPICAL LE2-320
		1SDA066434R1	1	AUX-C 3Q+1SY 250Vac/dc XT2..XT6 F/P	ABB	TYPICAL LE2-320
		1SDA104958R1	1	YU-C XT5 F/R 220-240Vac-220-250Vdc	ABB	TYPICAL LE2-320
U1.2	052	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LE2-320
U1.3	052	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LE2-320
U1.A	052	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LE2-320
U2.A	053	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LE2-320
U2.B	053	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LE2-320
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LE2-320
		HD400GR_	16	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LE2-320
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LE2-320
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LE2-320
		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LE2-320

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

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LE2-250
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LE2-320"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 056 | REV. 02

F.to UNI A3: 420mmx297mm

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

"INCOMING TRANSFORMER"

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

INCOMING FROM
HV SWBD "SG-100D1"

TR-200D1
1,6MVA
6.6 / 0.42kV
zcc%=6%
Dyn 11

out of scope
IMESA supply

TO P1 S1 S2 P2

51G PROTECTIVE FUNCTION
ON 6,6kV side

PE (ext)

VENDOR
SWBD supplier

BATTERY LIMIT

PE (swbd)

~ 400V - 50Hz - 2500A - 50kA

L1-A
L2-A
L3-A
N-A

017.1A
017.2A
017.2A
017.2A

LANS Optical Fiber for
Internal Arc Survey
(on Incoming Busbars Compartement)

021.5C CC CC +

AUXILIARY VOLTAGE SWITCH

QU1

QU2

L3-A 3 4 1 1x4 BK
N-A 1 2 2 1x4 BK
16A

QU1 5 6 220/1 1x4 BK 019.1A
QU1 3 4
QU1 1 2 220/2 1x4 BK 019.1B

DISTRIBUTION
AUXILIARY VOLTAGE

Pos.1 = Incoming from
Temporary Generator

Pos.2 = Incoming from
Transformer

1 0 2

Close
on "Pos.2"

from
TEMPORARY GENERATOR
drawer placed on
"CLA2 / +08"

QU3

018.9A L3 3 4 3 1x4 BK
018.9A N 1 2 4 1x4 BK
16A

QU1 5 6
QU1 3 4
QU1 1 2

Close
on "Pos.1"

=						
+						
2	28/08/2024	Giulietti	Flamminio	Sigismondi	As Built (ASB)	
1	08/07/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)	
0	10/06/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

DWG n°: 231298/SD/30
Item n°: PF1002983/30

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : SG-200N1
FUNCTIONAL DIAGRAM
Power Diagram

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00030

SHEET 016

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00030 Rev.02

MEASURING "INCOMING

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

016.2D L1-A
016.2D L2-A
016.3D L3-A
016.3D N-A

FU1
L1-A 1 2 5 BK 1x25
L2-A 3 4 6 BK 1x25
L3-A 5 6 7 BK 1x25
N-A 7 8 8 BK 1x25
20A-gG

F1 F2 F3 FN
L
N/PE
12 / 11 14
029.2B
029.2B
029.2B
029.3B

TA1 2500/1A
TA2 2500/1A
TA3 2500/1A
P1 S1 P2 S2
L1-S1 C 1x2.5 BK
L2-S1 1x2.5 BK
L3-S1 1x2.5 BK
XI 1 2 3 4
1x2.5 BK
9 021.2C
10 021.1C
11 021.1D
12 021.2D
1A-cl.5P20
XI 5
1x2.5 GNYE
TO PROTECTION RELAY

~ 400V - 50Hz - 2500A - 50kA

33 34 41 42
026.6B
12 11 14
026.6C

QV1
L1-A 5 6 13 1x1.5 BK
L2-A 3 4 14 1x1.5 BK
L3-A 1 2 15 1x1.5 BK
0,10÷0,16A

TV1 400V 110V A a B b
TV2 400V 110V A a B b

QV2
16 1x1.5 BK 5
17 1x1.5 BK 3
18 1x1.5 BK 1
2A

6 19 XV 3 22 1x1.5 BK 021.2B
4 20 XV 2 23 1x1.5 BK 021.1B
2 21 XV 1 24 1x1.5 BK 021.1B
110V-cl.0,5
TO PROTECTION RELAY

L1-A L2-A L3-A N-A
018.2A 018.3A 018.3A 018.3A

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
2	28/08/2024	Giulietti	Flamminio	Sigismondi	As Built (ASB)
1	08/07/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	10/06/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)

DWG n°: 231298/SD/30
Item n°: PF1002983/30

IMESA ELECTRICAL ENGINEERING
CROSSWIND
ROSETTI MARINO

TITLE : SG-200N1
FUNCTIONAL DIAGRAM
Power Diagram

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK
SCALE : NTS
A3
DRAWING NO. 1723002197-EL-DG-00030
SHEET 017
REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00030 Rev.02

CIRCUIT BREAKER

TEMPORARY GENERATOR/
MOBILE BATTERY PACK

L1 L2 L3 N

L3 → 016.5D
N → 016.5D
to AUXILIARY VOLTAGE SWITCH

A2 / +08

ONLY FOR REPRESENTATION
FOR DETTAILS TO SEE RELEVANT
DOCUMENT N°1723002197-EL-DG-00031

QA1 QF1

Q/1 Q/2

D1 YU D2 018.7B 12 14 22 24 11 21

D1 YU QF1 018.7B D2

11 X1 12 X1

#W1 4x1.5

5 X2 6 X2

25 1x1.5 BK

42 44

112 114 QF1 018.2B S75I 111 QF1 018.2B Q

26 1x1.5 BK 41

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

L1-AA 038.1A
L2-AA 038.1A
L3-AA 038.1A
N-AA 038.1A

400V - 50Hz - 2500A - 50kA

L1-A L2-A L3-A N-A

017.1D 017.2D 017.2D 017.2D

Bmax B2+6

					INSERTED	TEST	ISOLATED
S75I	101-102 / 101-104	111-112 / 111-114	151-152 / 151-154	161-162 / 161-164	x	x	x
S75T	121-122 / 121-124	171-172 / 171-174			x	x	x
S75B	131-132 / 131-134	141-142 / 141-144	181-182 / 181-184	191-192 / 191-194	x	x	x

S75I/1 S75I/2 S75T/1 S75B/1 S75B/2

104 102 114 112 122 124 132 134 142 144

101 111 121 131 141

023.9A 018.6D 023.8A 025.4A 023.9A

Q/1 Q/2 Q/3 Q/4 S33M RTC

12 14 22 24 32 34 42 44 U1 36 38 46 48 C1 C11

11 21 31 41 U2 35 45 C2 C12

022.9B 025.2A 023.7A 018.7D 019.2C 025.6A 022.2D 022.5D

QF1 3200A

LENS Optical Fiber for
Internal Arc Survey
(on Circuit-Breaker Compartement)

021.5C CB CB +

(1) (2)

(1) KEY LOCK FOR OPEN POSITION (CIRCUIT-BREAKER)

(2) RACKING-IN/RACKING-OUT PREVENTION LOCK WITH KEY (CIRCUIT-BREAKER)

LENS Optical Fiber for
Internal Arc Survey
(on Main Busbars Compartement)

021.5C BB BB +

400V - 50Hz - 2500A - 50kA

MAIN BUS BARS

=							
+							
DWG n° : 231298/SD/30							
Item n° : PF1002983/30	2	28/08/2024	Giulietti	Flamminio	Sigismondi	As Built (ASB)	
	1	08/07/2024	Giulietti	Flamminio	Sigismondi	Accepted for Construction (AFC)	
	0	10/06/2024	Giulietti	Flamminio	Sigismondi	Issued for review (IFR)	
	REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : SG-200N1
FUNCTIONAL DIAGRAM
Power Diagram

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00030

SHEET 018

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00030 Rev.02

CAE EPLAN Electric P8

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

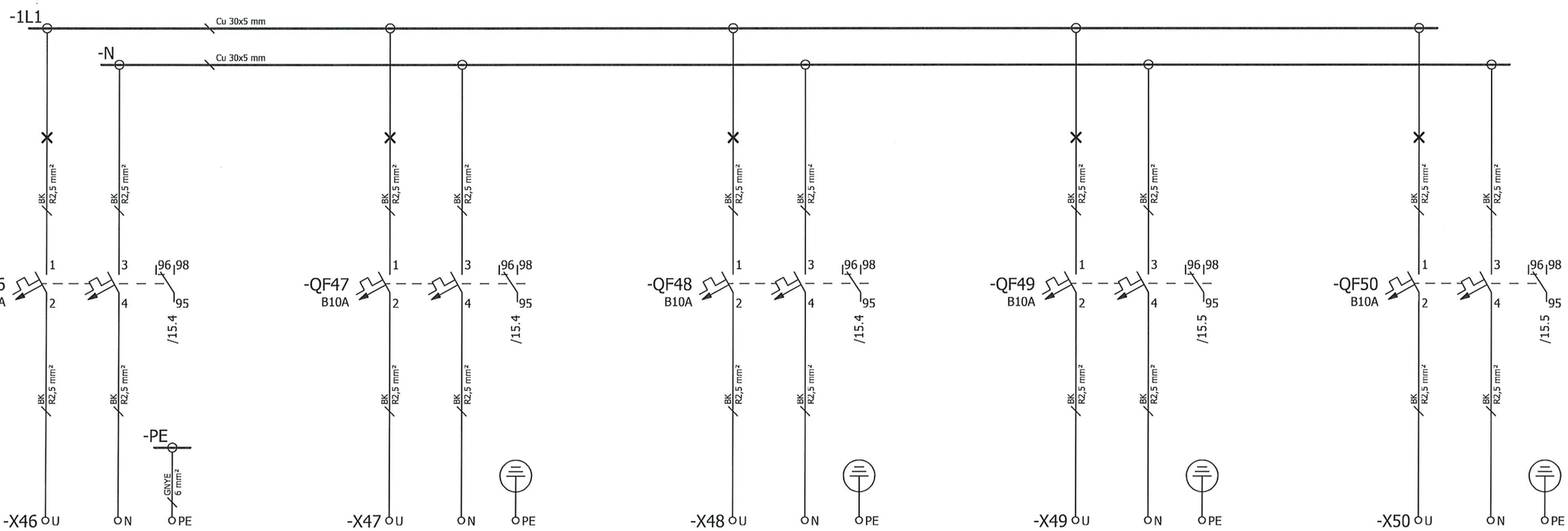
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3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

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

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1000007888_010



Load
230V/N/PE~50Hz

B400-PCS-001
PCS-CONTROLLER AND I/O
CABINET-LINE B - 1.5KW

Load
230V/N/PE~50Hz

B400-EMCS-001
EMCS-CONTROLLER AND I/O
CABINET-LINE A - 1KW

Load
230V/N/PE~50Hz

B400-EMCS-001
EMCS-CONTROLLER AND I/O
CABINET-LINE B - 1KW

Load
230V/N/PE~50Hz

SG-200-N1
LV SWITCHBOARD AUXILIARY
1KW

Load
230V/N/PE~50Hz

SPARE

				Date	23.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 40 kVA
Circuit diagram

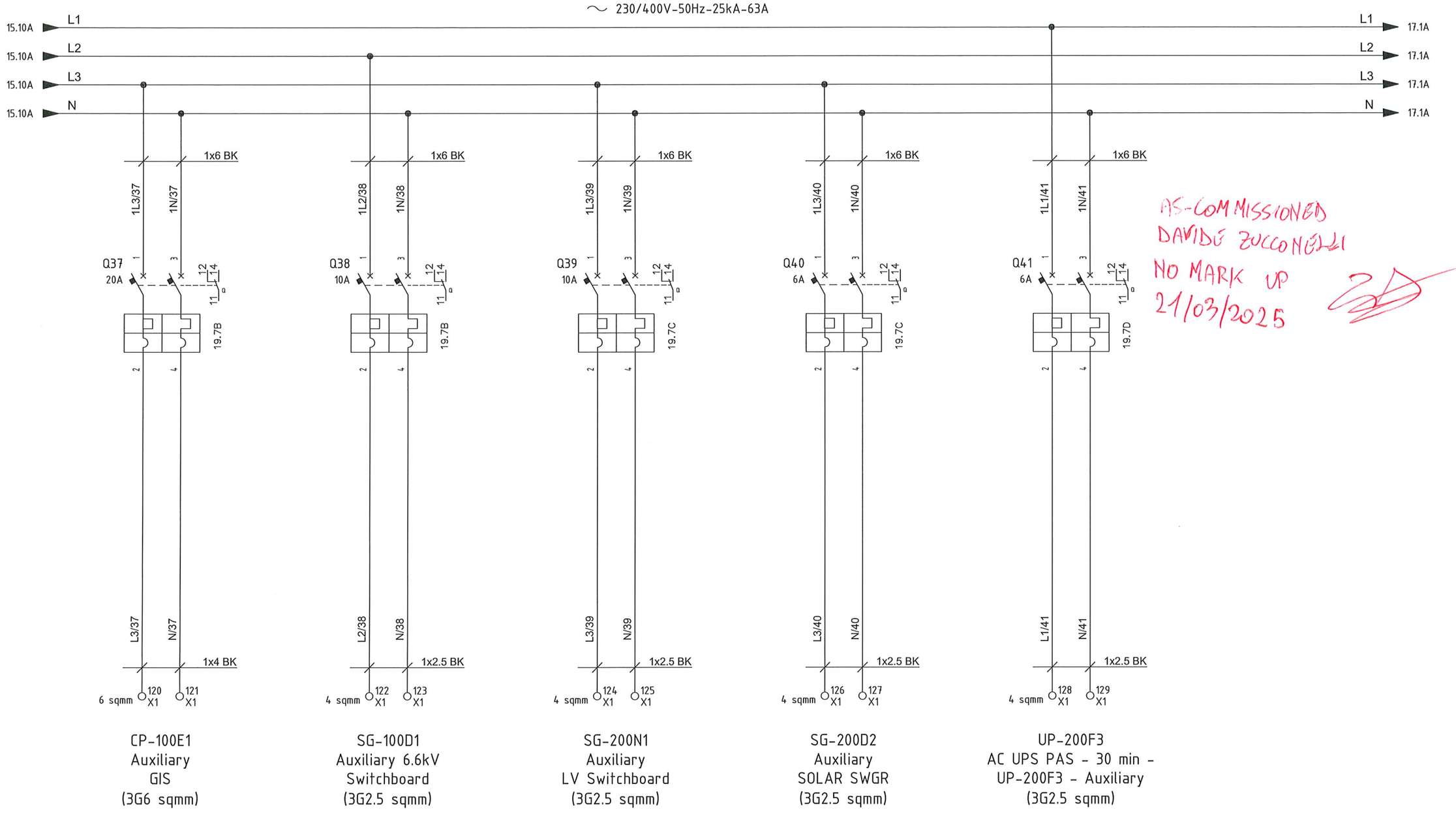
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10009757

1000007888_010 en

=
+ MBC1
& EFS

A3

sheet 10
sheets 17



CP-100E1
Auxiliary
GIS
(3G6 sqmm)

SG-100D1
Auxiliary 6.6kV
Switchboard
(3G2.5 sqmm)

SG-200N1
Auxiliary
LV Switchboard
(3G2.5 sqmm)

SG-200D2
Auxiliary
SOLAR SWGR
(3G2.5 sqmm)

UP-200F3
AC UPS PAS - 30 min -
UP-200F3 - Auxiliary
(3G2.5 sqmm)

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

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00033

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

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
3	12/03/2025	Santinelli	Flamminio	Sigismondi	Replaced Twiligh Switch TW1
2	19/08/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
0	29/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

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

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

SCALE : NTS

A3

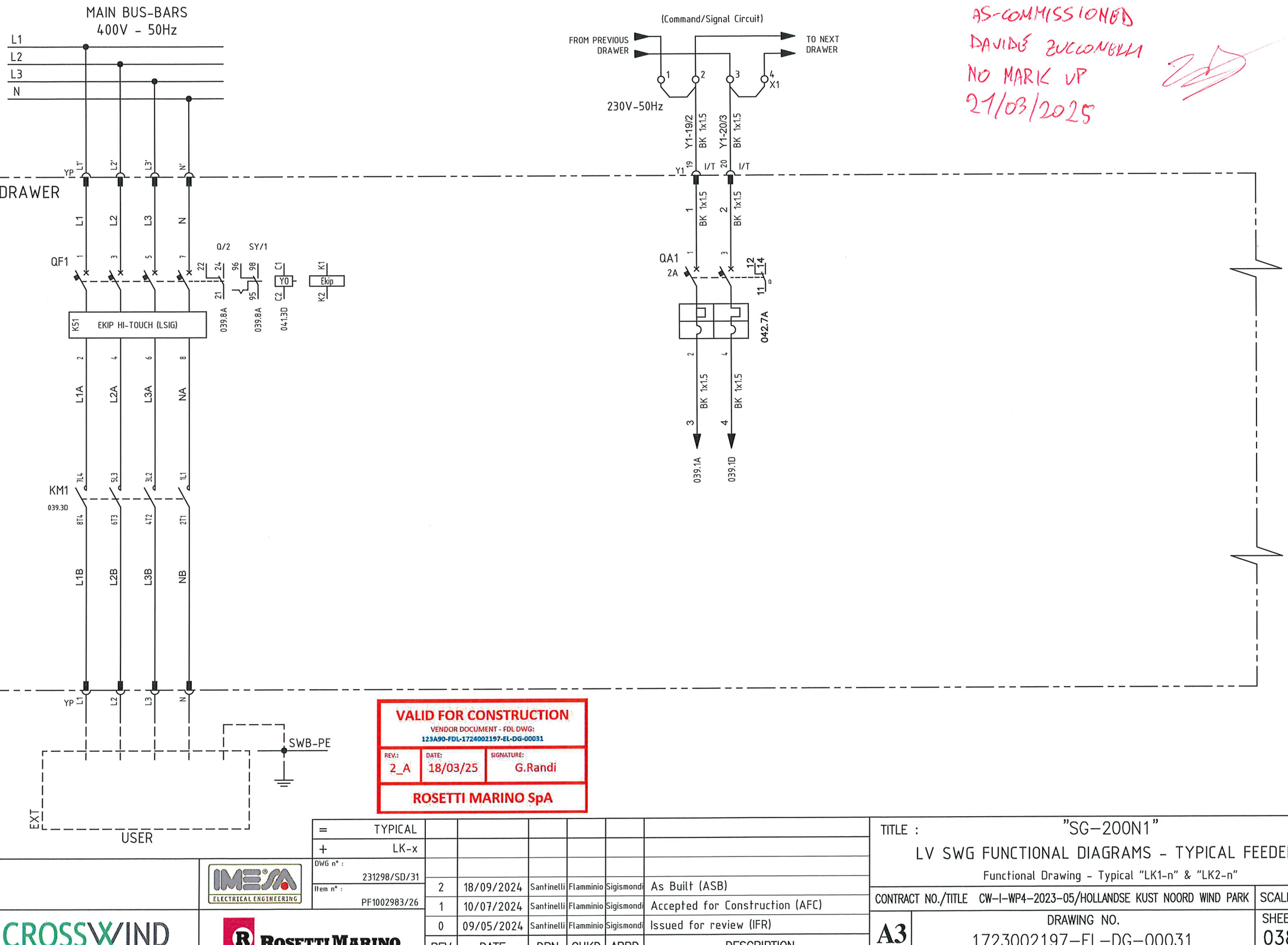
DRAWING NO. 1723002197-EL-DG-00033

SHEET 1.6

REV. 03

F.to UNI A3: 420mmx297mm

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



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DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

=	TYPICAL					
+	LK-x					
DWG n° : 231298/SD/31						
Item n° : PF1002983/26						
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)	
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)	
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

CROSSWIND
IMESA ELECTRICAL ENGINEERING
ROSETTI MARINO

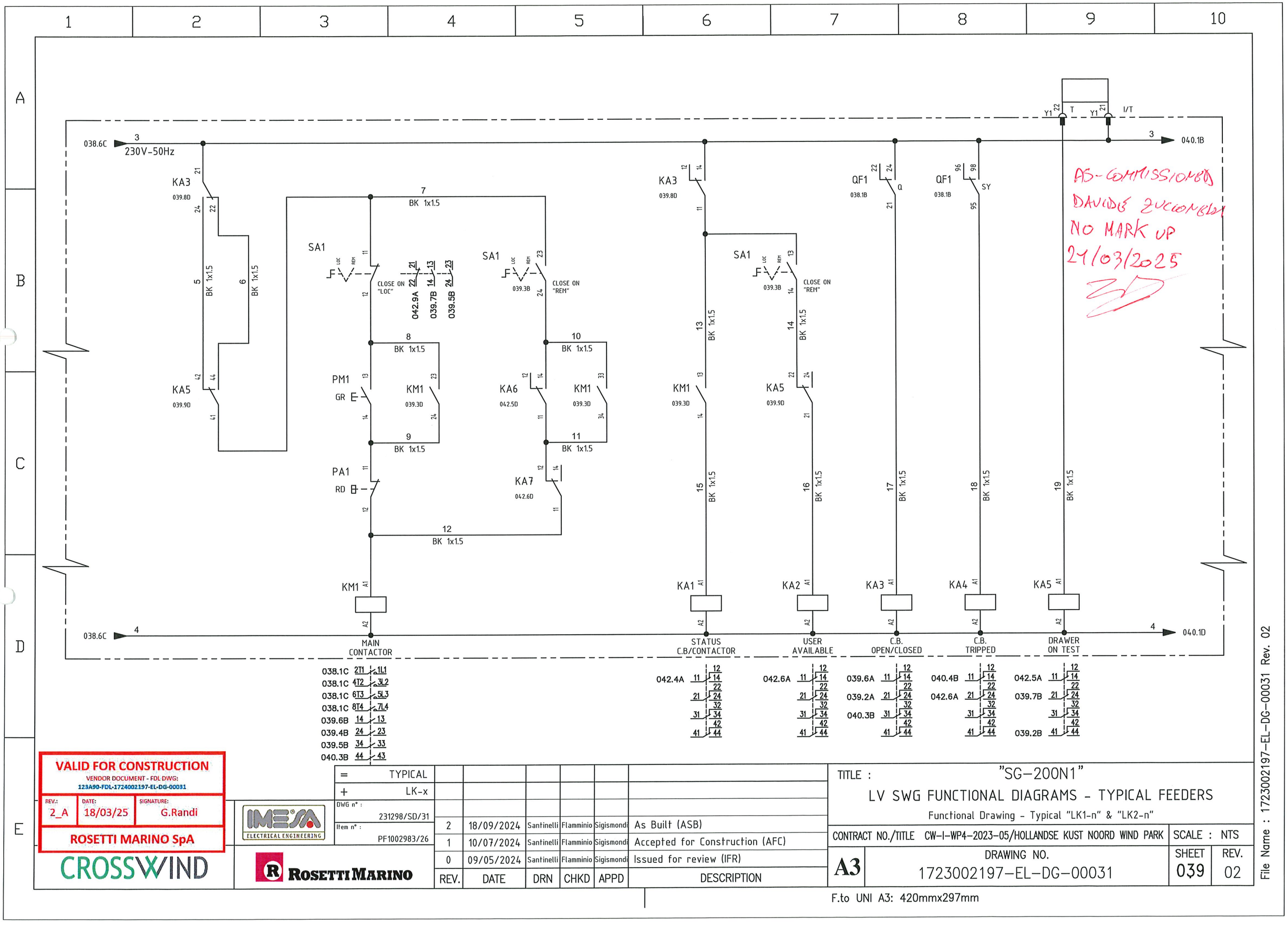
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 038 | REV. 02

F.to UNI A3: 420mmx297mm

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



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

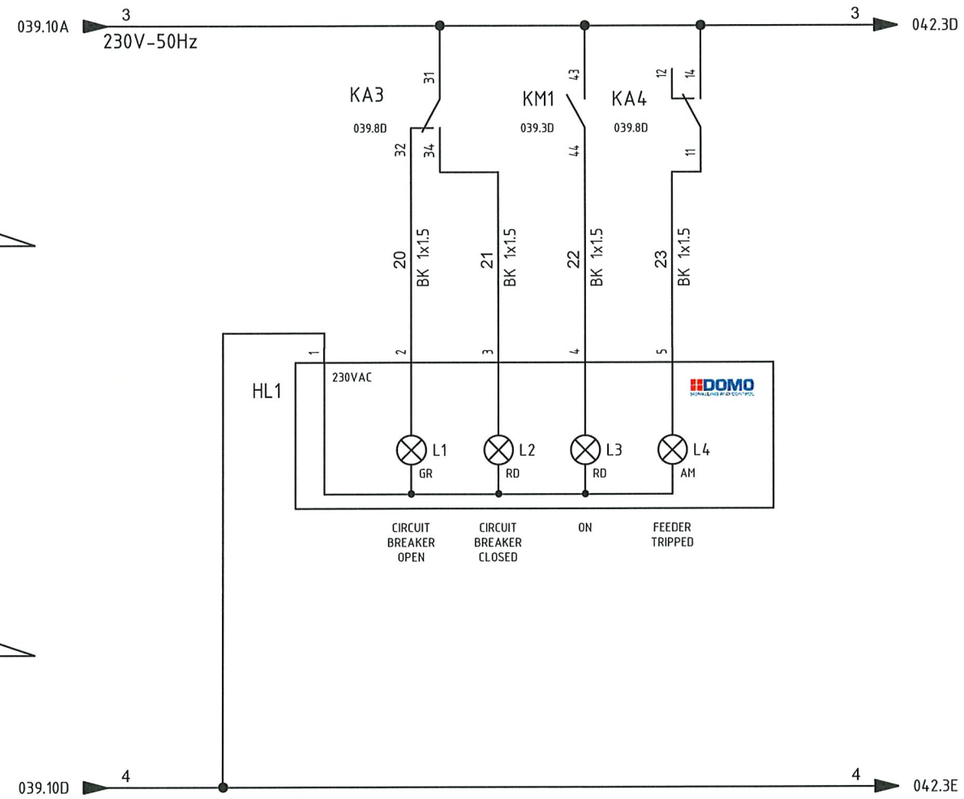
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 039 | REV. 02

F.to UNI A3: 420mmx297mm

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

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
27/03/2025



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL					
+	LK-x					
DWG n° :	231298/SD/31					
Item n° :	PF1002983/26					
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)	
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)	
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

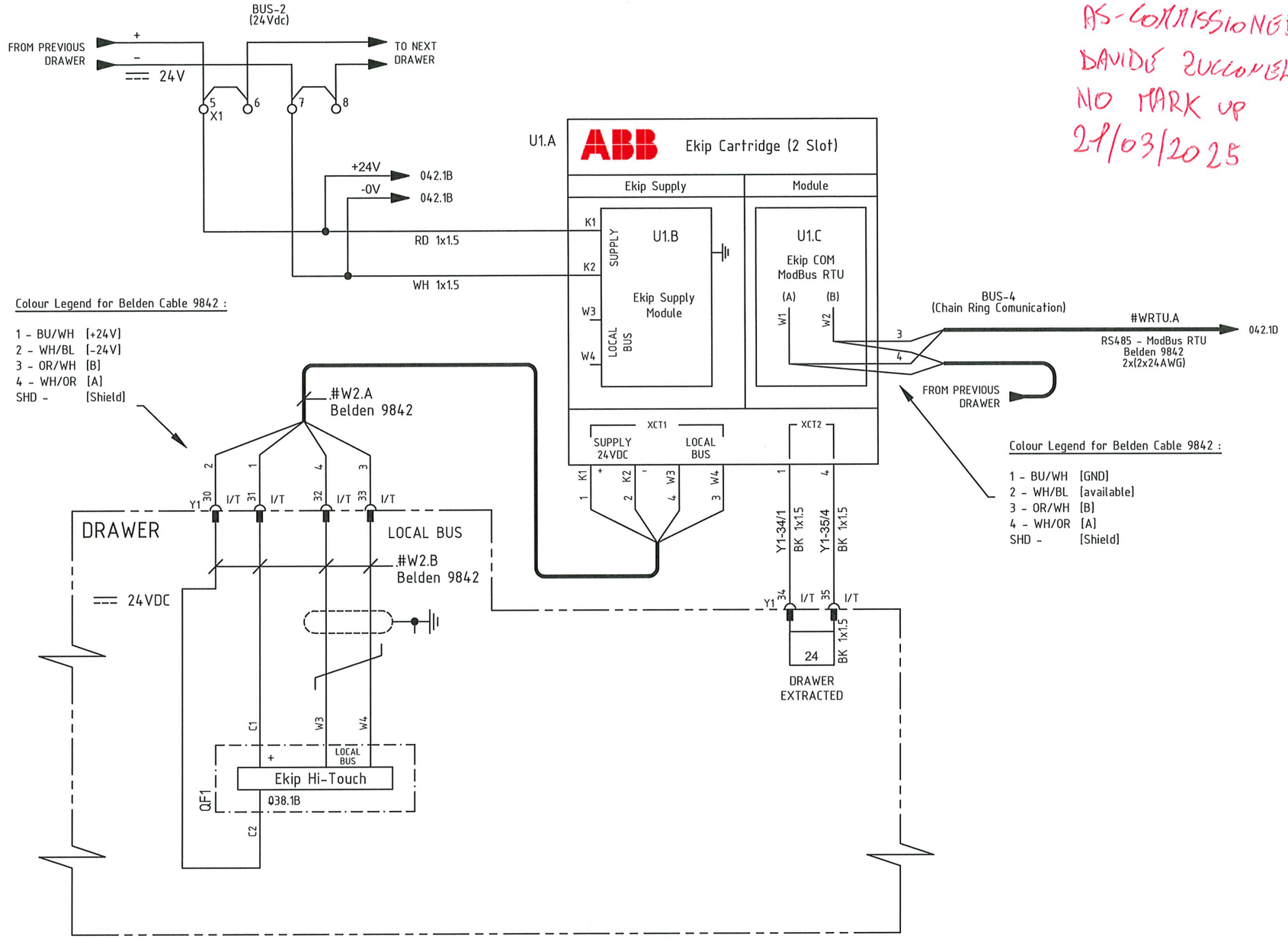
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 040 | REV. 02

F.to UNI A3: 420mmx297mm

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

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



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 041

REV. 02

F.to UNI A3: 420mmx297mm

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

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

DRAWER

C.B. - CONTACTOR CLOSED & INSERTED
C.B. - CONTACTOR OPEN OR DISCONNECTED
CIRCUIT BREAKER TRIPPED
FEEDER AVAILABLE
INTERNAL FAULT
USER ON LOCAL

KA1 039.6D
KA5 039.9D
KA4 039.8D
KA2 039.7D
QA1 038.6B
SA1 039.3B
CLOSE ON "LOC"

+25 RD 1x1.5 · +26 RD 1x1.5 · +27 RD 1x1.5 · +28 RD 1x1.5 · +29 RD 1x1.5 · +30 RD 1x1.5 · +31 RD 1x1.5 · +32 RD 1x1.5

Y1 14 I/T · 5 I · 15 I/T · 3 E · 4 E · 16 I/T · 10 I/T · 8 I/T · 9 I/T · 36 I/T · 37 I/T

Y1-14/9 BK 1x1.5 · Y1-5/10 BK 1x1.5 · Y1-15/11 BK 1x1.5 · Y1-16/12 BK 1x1.5 · Y1-10/13 BK 1x1.5 · Y1-9/14 BK 1x1.5 · Y1-36/15 BK 1x1.5 · Y1-37/19 BK 1x1.5

AVAILABLE

+103 RD 1x1.5 · +104 RD 1x1.5 · +105 RD 1x1.5 · +106 RD 1x1.5 · +107 RD 1x1.5 · +108 RD 1x1.5 · +115 RD 1x1.5 · +116 RD 1x1.5 · +117 RD 1x1.5 · +118 RD 1x1.5

041.4A +24V
041.4A -0V
24V

U2.A
AC+ AC- PE
+/L -/N PE
10÷40Vdc - 19÷29Vac SUPPLY
Z-PC-DINAL2-17.5
Modbus RTU RS485
B(-) A(+) GND SHD

U2.B
+16V 0V IN-1 IN-2 IN-3 IN-4 IN-5
INPUT
SENECA AUTOMATION INTERFACES
MODULE I/O
Z-5DI-2DO
ID = 01
OUTPUT
DO-1 DO-2

U2.C
+16V 0V IN-1 IN-2 IN-3 IN-4 IN-5
INPUT
SENECA AUTOMATION INTERFACES
MODULE I/O
Z-5DI-2DO
ID = 02
OUTPUT
DO-1 DO-2

B/L A/H GND SHD
3 4 1 SHD
041.9B
TO NEXT DRAWER
BUS-4
(Chain Ring Comunication)

Colour Legend for Belden Cable 9842 :
1 - BU/WH [GND]
2 - WH/BL [available]
3 - OR/WH [B]
4 - WH/OR [A]
SHD - [Shield]

109 BK 1x1.5 · 110 BK 1x1.5 · 111 BK 1x1.5 · 112 BK 1x1.5 · 113 BK 1x1.5 · 114 BK 1x1.5
Y1-11/20 BK 1x1.5 · Y1-12/21 BK 1x1.5 · Y1-13/22 BK 1x1.5

DRAWER
040.5B 3 230V-50Hz
040.5D 4
KA6 · KA7
CONTACTOR CLOSE COMMAND
CONTACTOR OPEN COMMAND
KA6 039.5B · KA7 039.5C

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK
SCALE : NTS
A3
DRAWING NO. 1723002197-EL-DG-00031
SHEET 042
REV. 02

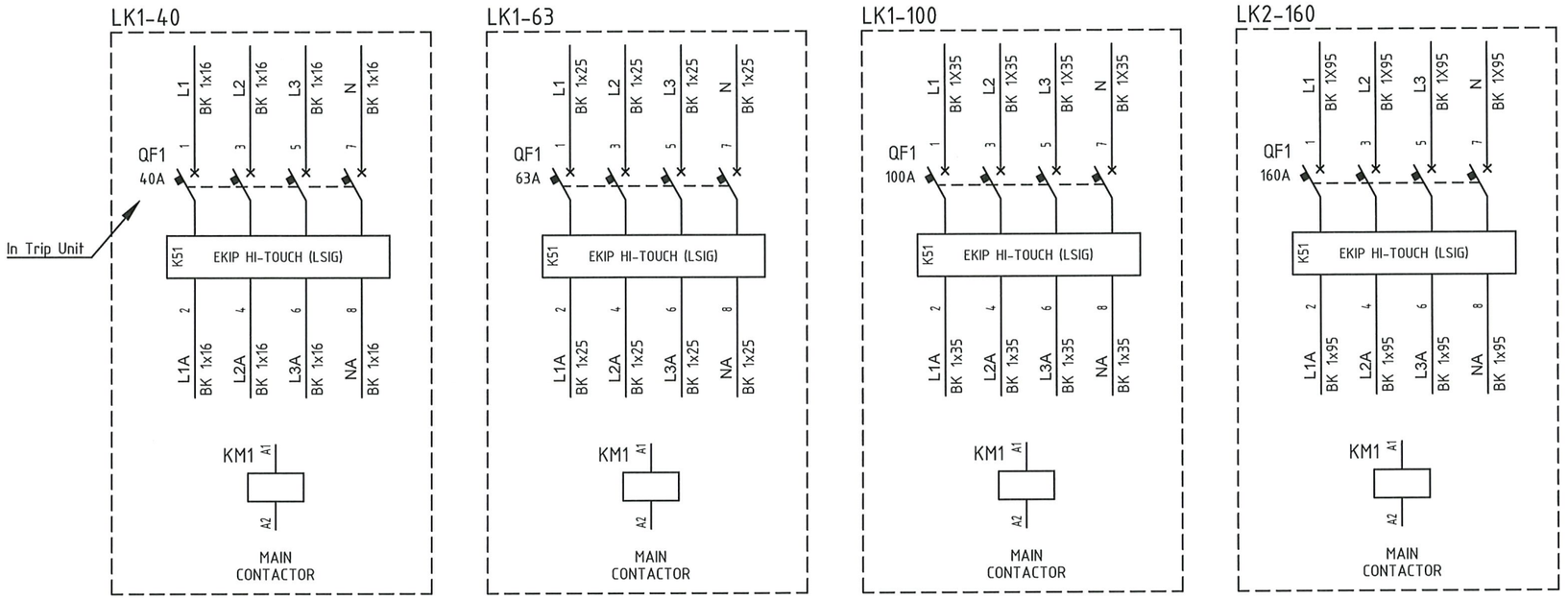
F.to UNI A3: 420mmx297mm

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

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

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



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 043 | REV. 02

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x - Y1

AUXILIARY SOCKET
136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			●	●				●	●																																			
RACKED-OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED-IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

←	FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
←	FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
←	FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
←	CROS-REFERENCE USED PIN

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

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
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TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 02

F.to UNI A3: 420mmx297mm

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

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

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

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 045 | REV. 02

F.to UNI A3: 420mmx297mm

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

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

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

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 046 | REV. 02

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

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

F.to UNI A3: 420mmx297mm

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

AS-COMMISSIONED
DAVIDE ZUCCOMELLI

NO MARK UP
21/03/2025

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF80400013	1	AF80-30-00-13 CONTACTOR 4P 80A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-100
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-100
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-100
		1SDA100164R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=100A XT2 4p	ABB	TYPICAL LK1-100
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-100

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL
+	LK-x
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LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 02

F.to UNI A3: 420mmx297mm

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

Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE