BASE LOAD POWER HUB (BLPH)

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

ELECTRICAL
SINGLE LINE DIAGRAM

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

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-100D1"
ELECTRICAL SINGLE LINE DIAGRAM
Cover

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 001

REV. 04

F.to UNI A3: 420mmx297mm

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

INDEX

Sheet	Description	Revision 0	1	2	3	4	5	6	7	8
001	Cover / ELECTRICAL SINGLE LINE DIAGRAM									
002	Index / ELECTRICAL SINGLE LINE DIAGRAM									
003	Acronyms Legend / ELECTRICAL SINGLE LINE DIAGRAM									
004	Column A1: Electrolyser Package A-20000 / ELECTRICAL SINGLE LINE DIAGRAM									
005	Column A2 : Solar Package TR-200ED1 / ELECTRICAL SINGLE LINE DIAGRAM									
006	Column A3 : Bess Package A-85000 / ELECTRICAL SINGLE LINE DIAGRAM									
007	Column A4 : Auxiliary Transformer TR-200DE1 / ELECTRICAL SINGLE LINE DIAGRAM									
008	Column A5 : Measure / ELECTRICAL SINGLE LINE DIAGRAM									
009	Column A6 : Incoming TR-100AD1 / ELECTRICAL SINGLE LINE DIAGRAM									
010	Column A7 : Fuel Cell Package A-80000 / ELECTRICAL SINGLE LINE DIAGRAM									

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231151/SD/10

Item n° : PF1113279/4

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Index

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 002

REV. 04

F.to UNI A3: 420mmx297mm

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

ACRONIMUS LEGEND

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

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
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0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

DWG n° : 231151/SD/10

Item n° : PF1113279/4

CROSSWIND

ROSETTI MARINO

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Acronyms Legend

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 003

REV. 04

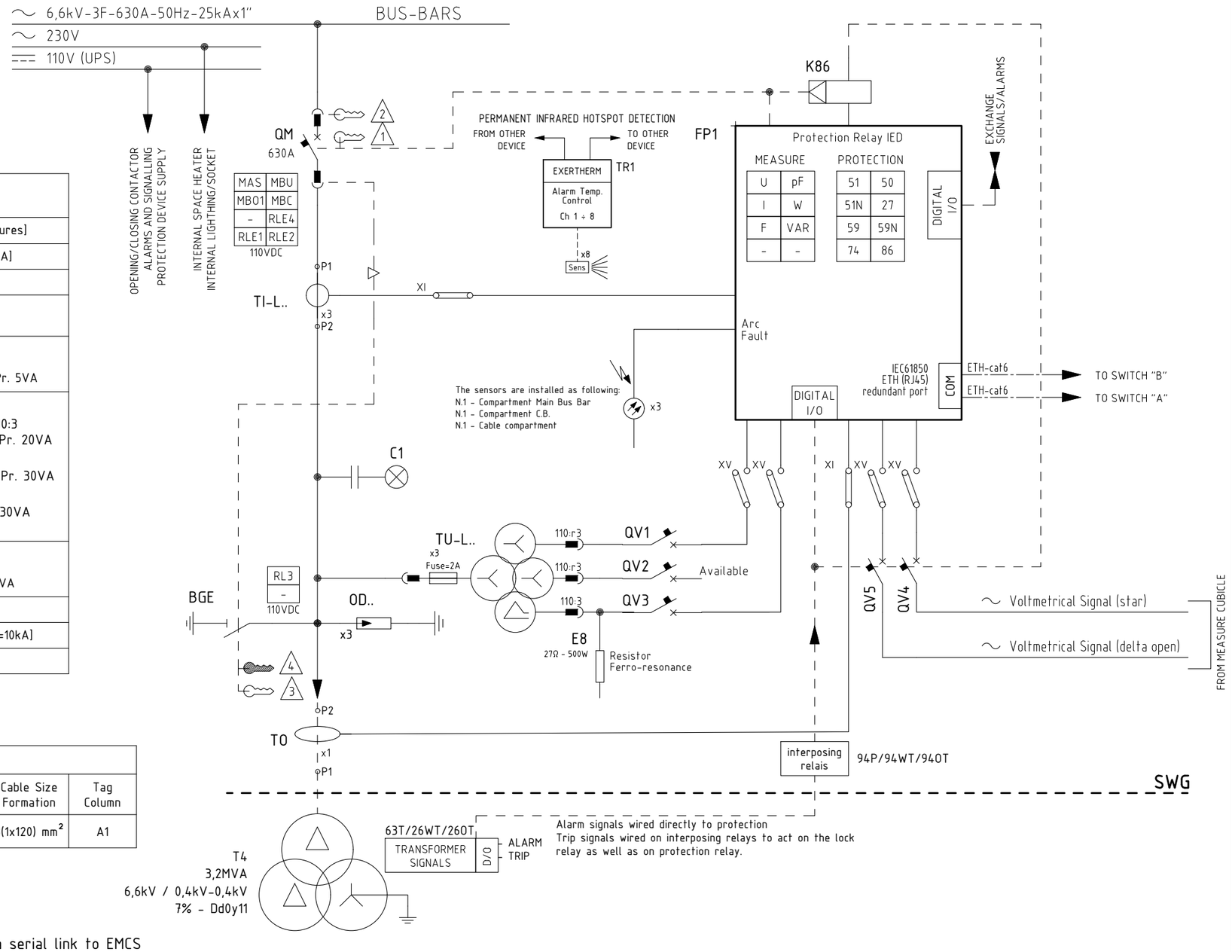
F.to UNI A3: 420mmx297mm

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

SINGLE LINE DIAGRAM
"CB FEEDER"

LEGEND:

- Free key with opened Circuit Breaker (Circuit Breaker locked in open position)
- Free key with insolated Circuit Breaker or Contactor (Circuit Breaker or Contactor locked in isolated position)
- Free key with opened Earthing Switch (Earthing Switch locked in open position)
- Free key with closed Earthing Switch (Earthing Switch locked in close position)
- Mechanical interlock



MAIN EQUIPMENT
[Additional Features and Auxiliary Components will be inserted on Functional Diagram]

Tag	Desciption Tag	Supplier	Type [Technical Features]
QM	Circuit Breaker	ABB	VD4/P [12KV - 630A - 25kA]
BGE	Earthing Switch	ABB	ST-E [12KV - 25kA]
FP1	Protection Relay	ABB	REX640
TI-L..	Current Transformers	ESITAS	ATB 10-BS 7,2kV - 400/1 - 25kA 1°winding : Cl. 0,5+5P20 - Pr. 5VA
TU-L..	Voltage Transformers + Fuses	ABB	TJP4.3 [7,2kV - 6,6kV:√3/110:√3-110:√3-110:3 1° winding : Cl. 0,5-3P - Pr. 20VA (110:√3) 2° winding : Cl. 0,5-3P - Pr. 30VA (110:√3) 3° winding : Cl. 3P - Pr. 30VA (110:3)
TO	Omopolar Ring Current Transformer (Internal Diameter 150mm)	ESITAS	KAP-150/250-55 1.2kV - 100/1A - 25kA 1° winding : Cl. 5P5 - Pr. 5VA
TR1	Permanent Infrared Hotspot Detection	EXERTHERM	
OD..	Voltage Discharger	DEHN	SBKW 9/DH I-0 [Ur=9kV-In=10kA]
C1	Voltage Presence Indicator	ABB	VPIS [3÷24kV]

USER DETAILS

Tag User	Desciption User	User Power	Current Transformer Ratio	Cable Size Formation	Tag Column
A-20000	ELECTROLYSER PACKAGE	3200 kVA	400 / 1A	3(1x120) mm²	A1

NOTE :

For ELECTROLYSER PAKAGE feeder interlocks and intertrips will be managed via serial link to EMCS

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
3	26/06/2024	Santinelli	Giulietti	Sigismondi	Accepted for Construction (AFC)
2	14/05/2024	Santinelli	Giulietti	Sigismondi	Issued for review (IFR)
1	14/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Column A1: Electrolyser Package A-20000

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 004

REV. 04

F.to UNI A3: 420mmx297mm

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

LEGEND:

1 Free key with opened Circuit Breaker
(Circuit Breaker locked in open position)

2 Free key with insolated Circuit Breaker or Contactor
(Circuit Breaker or Contactor locked in isolated position)

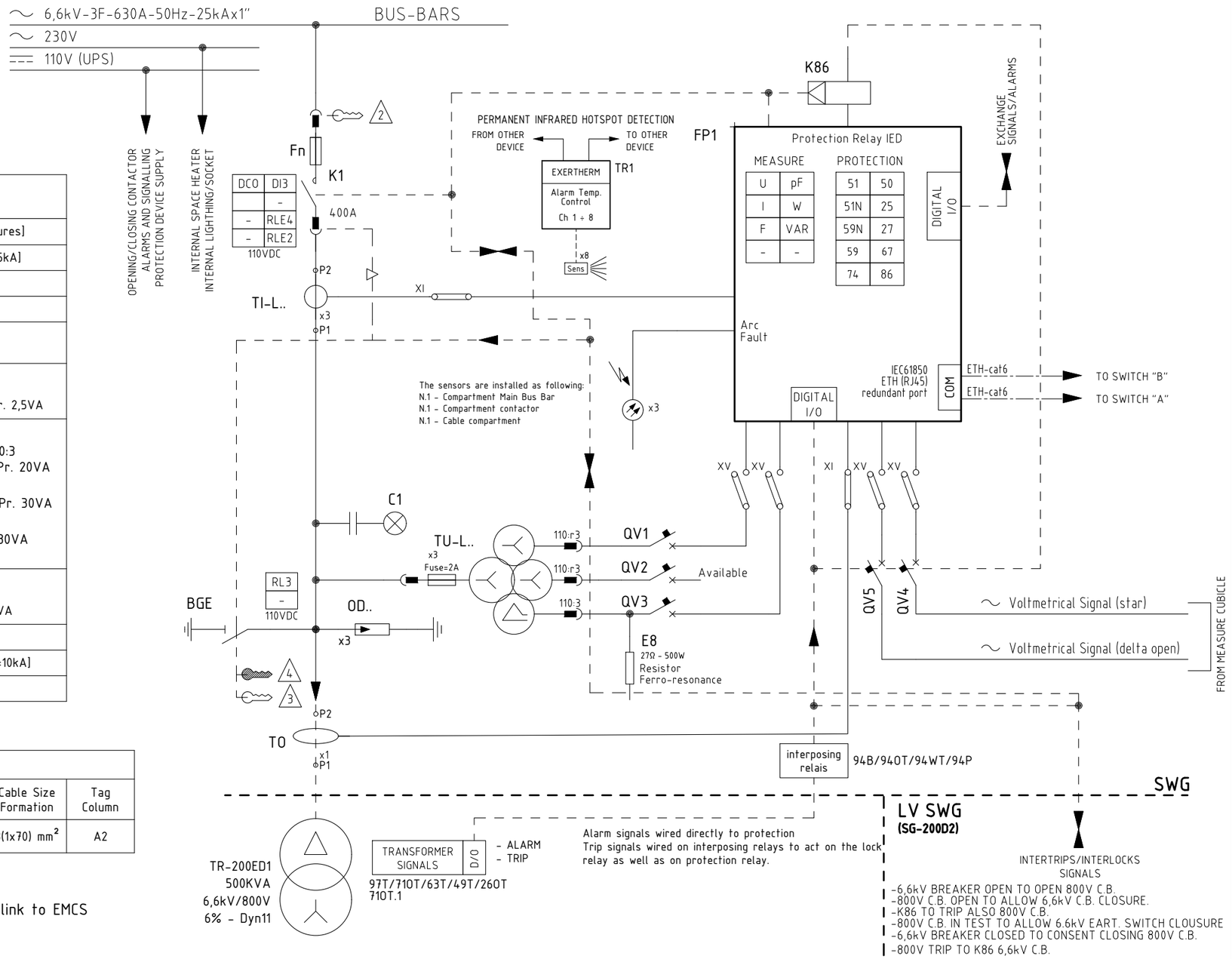
3 Free key with opened Earthing Switch
(Earthing Switch locked in open position)

4 Free key with closed Earthing Switch
(Earthing Switch locked in close position)

▷ Mechanical interlock

DCO DOUBLE COMMAND OPERATED

SINGLE LINE DIAGRAM
"FEEDER with CONTACTOR"



MAIN EQUIPMENT

[Additional Features and Auxiliary Components will be inserted on Functional Diagram]

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

USER DETAILS

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

NOTE :

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
3	26/06/2024	Santinelli	Giulietti	Sigismondi	Accepted for Construction (AFC)
2	14/05/2024	Santinelli	Giulietti	Sigismondi	Issued for review (IFR)
1	14/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-100D1"

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

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 005

REV. 04

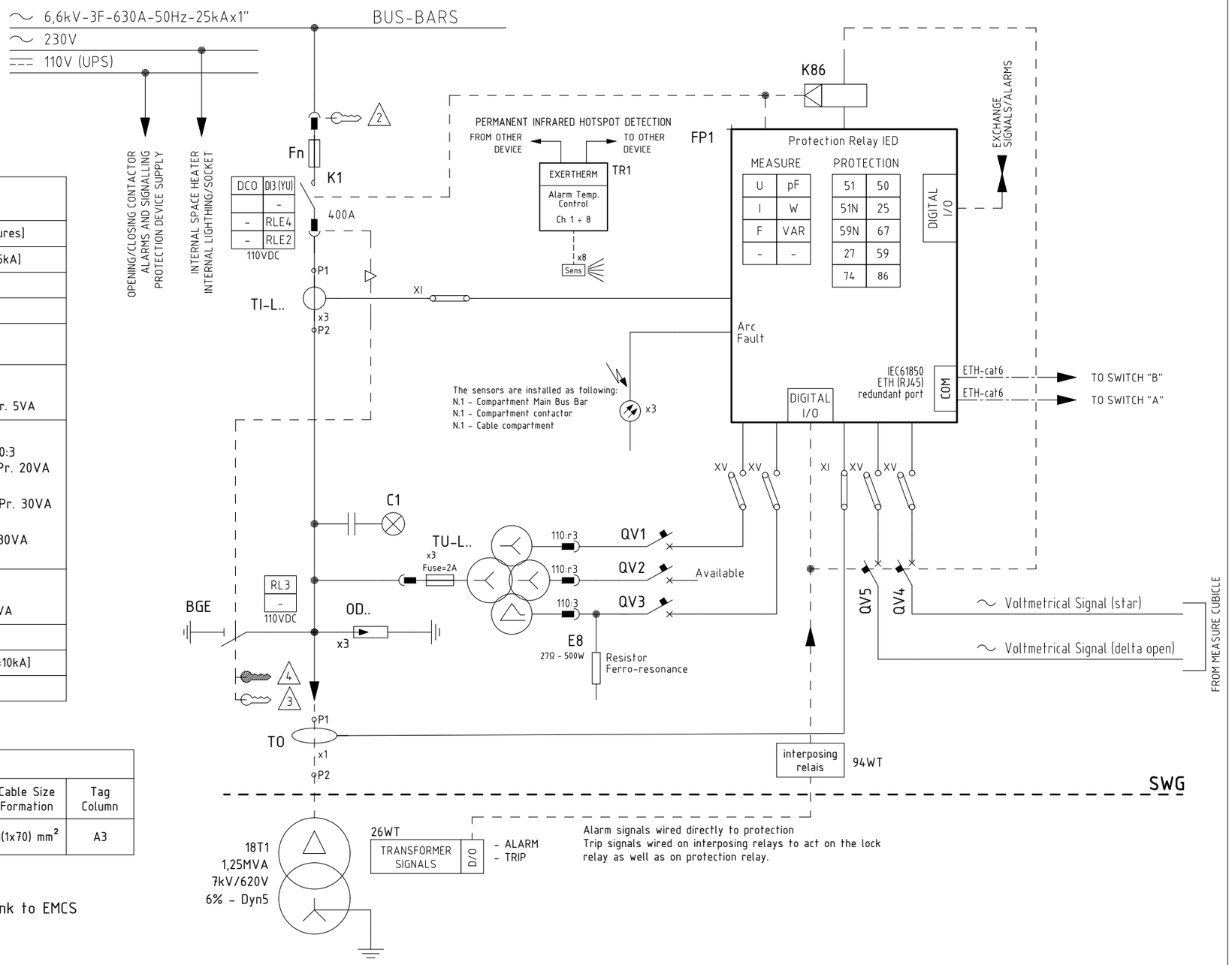
F.to UNI A3: 420mmx297mm

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

LEGEND:

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

SINGLE LINE DIAGRAM
"FEEDER with CONTACTOR"



MAIN EQUIPMENT

[Additional Features and Auxiliary Components will be inserted on Functional Diagram]

Tag	Desciption Tag	Supplier	Type [Technical Features]
K1	Contactor	ABB	VSC7/P [7,2KV - 400A - 25kA]
Fn	Fuse for Contactor	ABB	CEF 160A
BGE	Earthing Switch	ABB	ST-E [12KV - 25kA]
FP1	Protection Relay	ABB	REX640
TI-L..	Current Transformers	ESITAS	ATB 10-BS 7,2kV - 150/1 - 25kA 1°winding : Cl. 0,5+5P20 - Pr. 5VA
TU-L..	Voltage Transformers + Fuses	ABB	TJP4.3 [7,2kV - 6,6kV:√3/110:√3-110:√3-110:3 1° winding : Cl. 0,5-3P - Pr. 20VA (110:√3) 2° winding : Cl. 0,5-3P - Pr. 30VA (110:√3) 3° winding : Cl. 3P - Pr. 30VA (110:3)
TO	Omopolar Ring Current Transformer (Internal Diameter 150mm)	ESITAS	KAP-150/250-55 1.2kV - 100/1A - 25kA 1° winding : Cl. 5P5 - Pr. 5VA
TR1	Permanent Infrared Hotspot Detection	EXERTHERM	
OD..	Voltage Discharger	DEHN	SBKW 9/DH I-0 [Ur=9kV-In=10kA]
C1	Voltage Presence Indicator	ABB	VPIS [3÷24kV]

USER DETAILS

Tag User	Desciption User	User Power	Current Transformer Ratio	Cable Size Formation	Tag Column
A-85000	BESS PACKAGE	1000 kW	150 / 1A	3(1x70) mm²	A3

NOTE :

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
3	26/06/2024	Santinelli	Giulietti	Sigismondi	Accepted for Construction (AFC)
2	14/05/2024	Santinelli	Giulietti	Sigismondi	Issued for review (IFR)
1	14/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

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

IMESA ELECTRICAL ENGINEERING
CROSSWIND
ROSETTI MARINO

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Column A3 : Bess Package A-85000

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 006

REV. 04

F.to UNI A3: 420mmx297mm

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

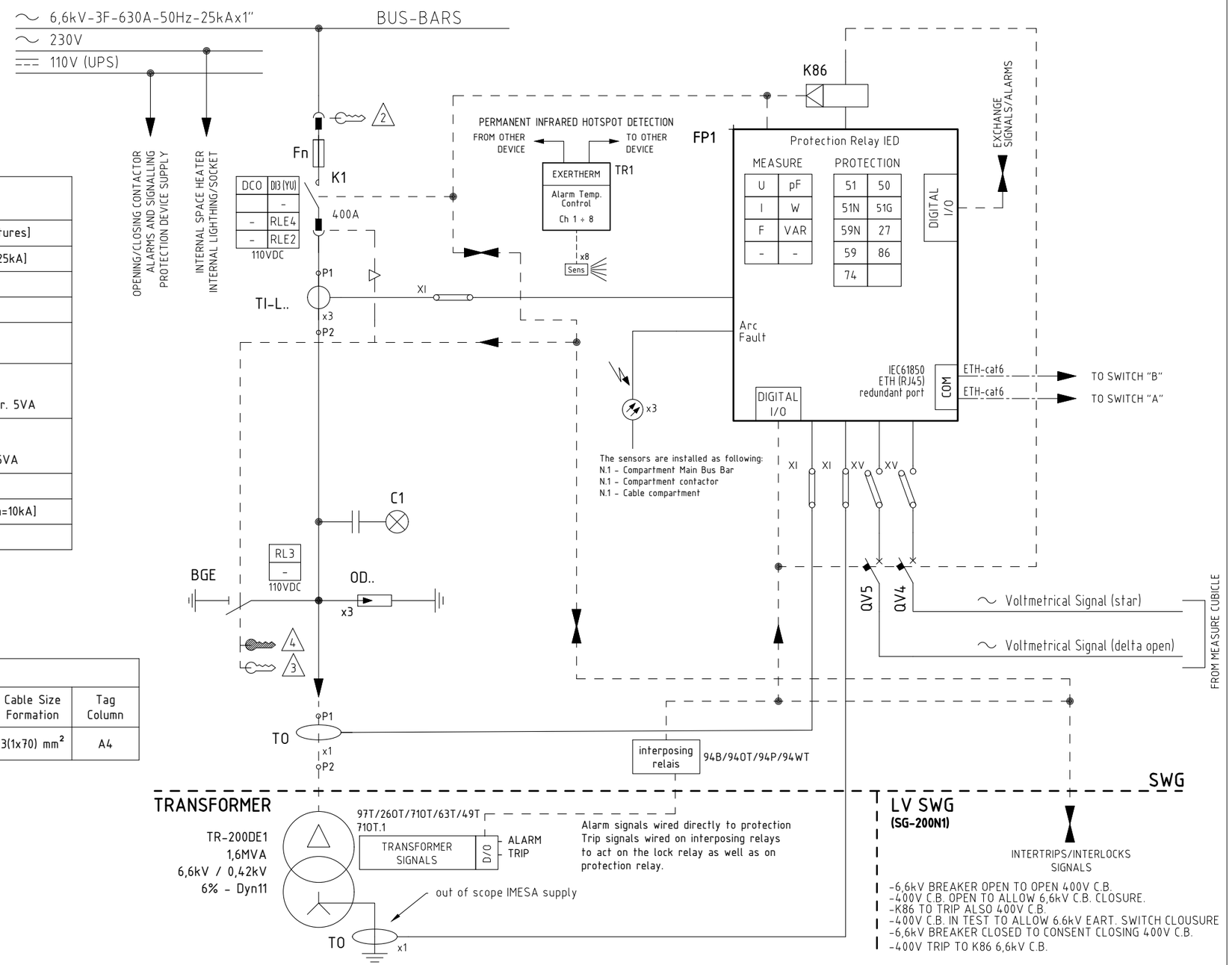
SINGLE LINE DIAGRAM
"TRANSFORMER"

LEGEND:

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

MAIN EQUIPMENT [Additional Features and Auxiliary Components will be inserted on Functional Diagram]			
Tag	Desciption Tag	Supplier	Type [Technical Features]
K1	Contactor	ABB	VSC7/P [7,2KV - 400A - 25kA]
Fk	Fuse for Contactor	ABB	CMF 250A
BGE	Earthing Switch	ABB	ST-E [12KV - 25kA]
FP1	Protection Relay	ABB	REX640
TI-L..	Current Transformers	ESITAS	ATB 10-BS 7,2kV - 200/1 - 25kA 1°winding : Cl.0,5+5P20 - Pr. 5VA
TO	Omopolar Ring Current Transformer (Internal Diameter 150mm)	ESITAS	KAP-150/250-95 1.2kV - 100/1A - 25kA 1° winding : Cl. 5P5 - Pr. 5VA
TR1	Permanent Infrared Hotspot Detection	EXERTHERM	
OD..	Voltage Discharger	DEHN	SBKW 9/DH I-0 [Ur=9kV-In=10kA]
C1	Voltage Presence Indicator	ABB	VPIS [3÷24kV]

USER DETAILS					
Tag User	Desciption User	User Power	Current Transformer Ratio	Cable Size Formation	Tag Column
TR-200DE1	TRANSFORMER 1.6MVA	1.6 MVA	200 / 1A	3(1x70) mm²	A4



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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2	14/05/2024	Santinelli	Giulietti	Sigismondi	Issued for review (IFR)
1	14/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

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DWG n° : 231151/SD/10

Item n° : PF1113279/4

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-100D1"

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

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 007

REV. 04

F.to UNI A3: 420mmx297mm

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

SINGLE LINE DIAGRAM
"MEASURING BUS BAR"

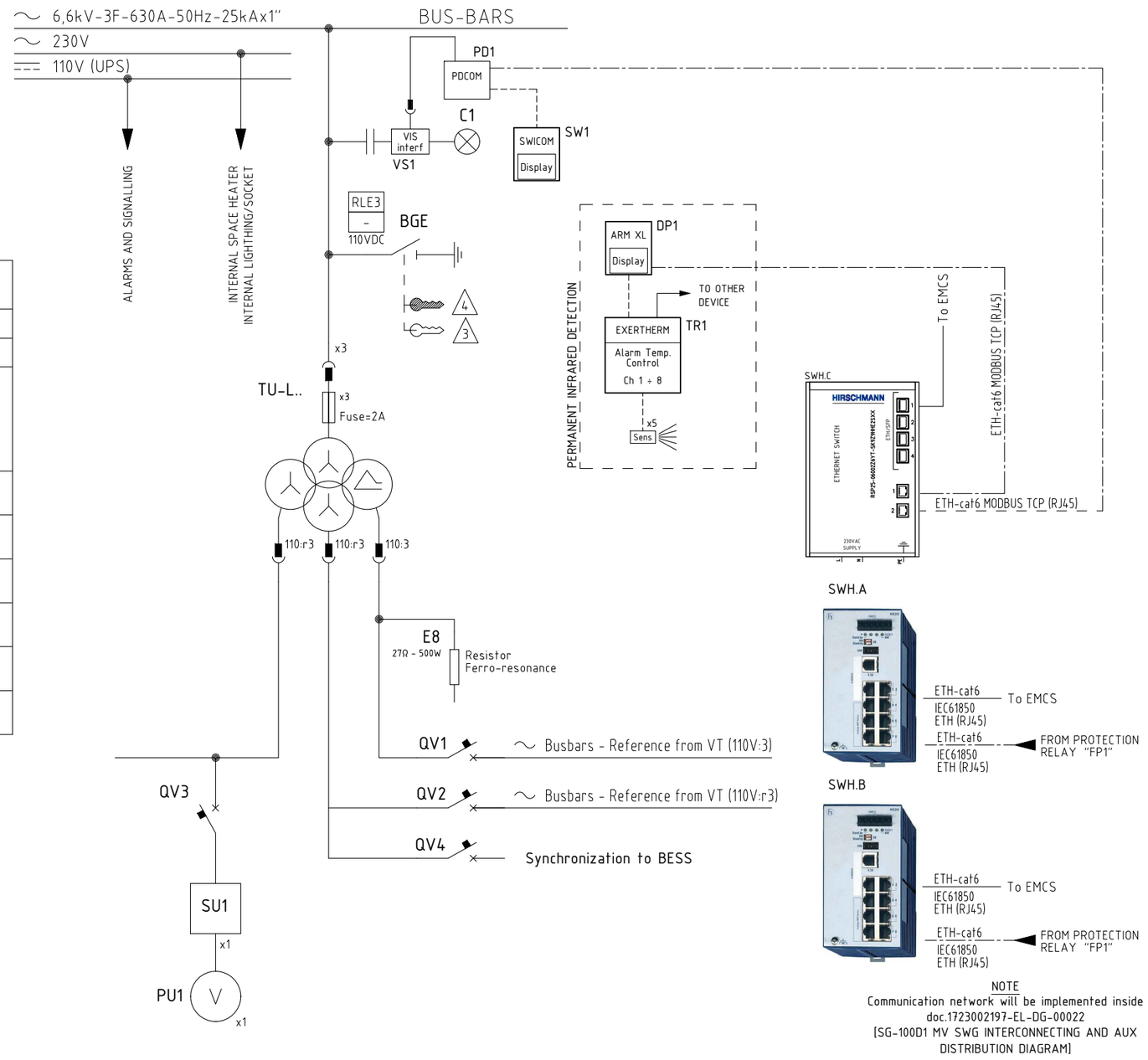
LEGEND:

Free key with opened Earthing Switch
(Earthing Switch locked in open position)

Free key with closed Earthing Switch
(Earthing Switch locked in close position)

MAIN EQUIPMENT [Additional Features and Auxiliary Components will be inserted on Functional Diagram]			
Tag	Desciption Tag	Supplier	Type [Technical Features]
BGE	Earthing Switch	ABB	ST-E [17,5KV - 31,5kA]
TU-L..	Voltage Transformers + Fuses	ABB	TJP4.3 [7,2kV - 6,6kV:√3/110:√3-110:√3-110:3 1° winding : Cl. 0,5-3P - Pr. 20VA (110:√3) 2° winding : Cl. 0,5-3P - Pr. 30VA (110:√3) 3° winding : Cl. 3P - Pr. 30VA (110:3)
PU1	Voltmeter	FRER	F96EVXYYYXC1 96x96 90° SCALE 0÷10kV on VT 6,6kV/110V
VS1+PD1	Partial Discharge Condition Monitoring	ABB	PDCOM Interface + PDCOM
TR1+DP1	Permanent Infrared Hotspot Detection	EXERTHERM	
SW1	Monitoring Unit for Partial Discharge	ABB	SWICOM
SWH.n	Managed Ethernet Switch Device	ABB	AFS660 [n°3 SFP ports + n°8 RJ45 ports]
C1	Voltage Presence Indicator	ABB	VPIS [3÷24kV]

USER DETAILS					
Tag User	Desciption User	User Power	Voltage Transformer Ratio	Cable Size Formation	Tag Column
-	MEASURING	N.A.	6,6kV:√3 110:√3-110:√3-110:3	-	A5



NOTE
Communication network will be implemented inside doc.1723002197-EL-DG-00022 [SG-100D1 MV SWG INTERCONNECTING AND AUX DISTRIBUTION DIAGRAM]

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
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0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING
DWG n° : 231151/SD/10
Item n° : PF1113279/4

CROSSWIND
ROSETTI MARINO

TITLE : "SG-100D1"
ELECTRICAL SINGLE LINE DIAGRAM
Column A5 : Measure

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

A3
DRAWING NO. 1723002197-EL-DG-00010
SHEET 008
REV. 04

F.to UNI A3: 420mmx297mm

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

SINGLE LINE DIAGRAM
"INCOMER"

LEGEND:

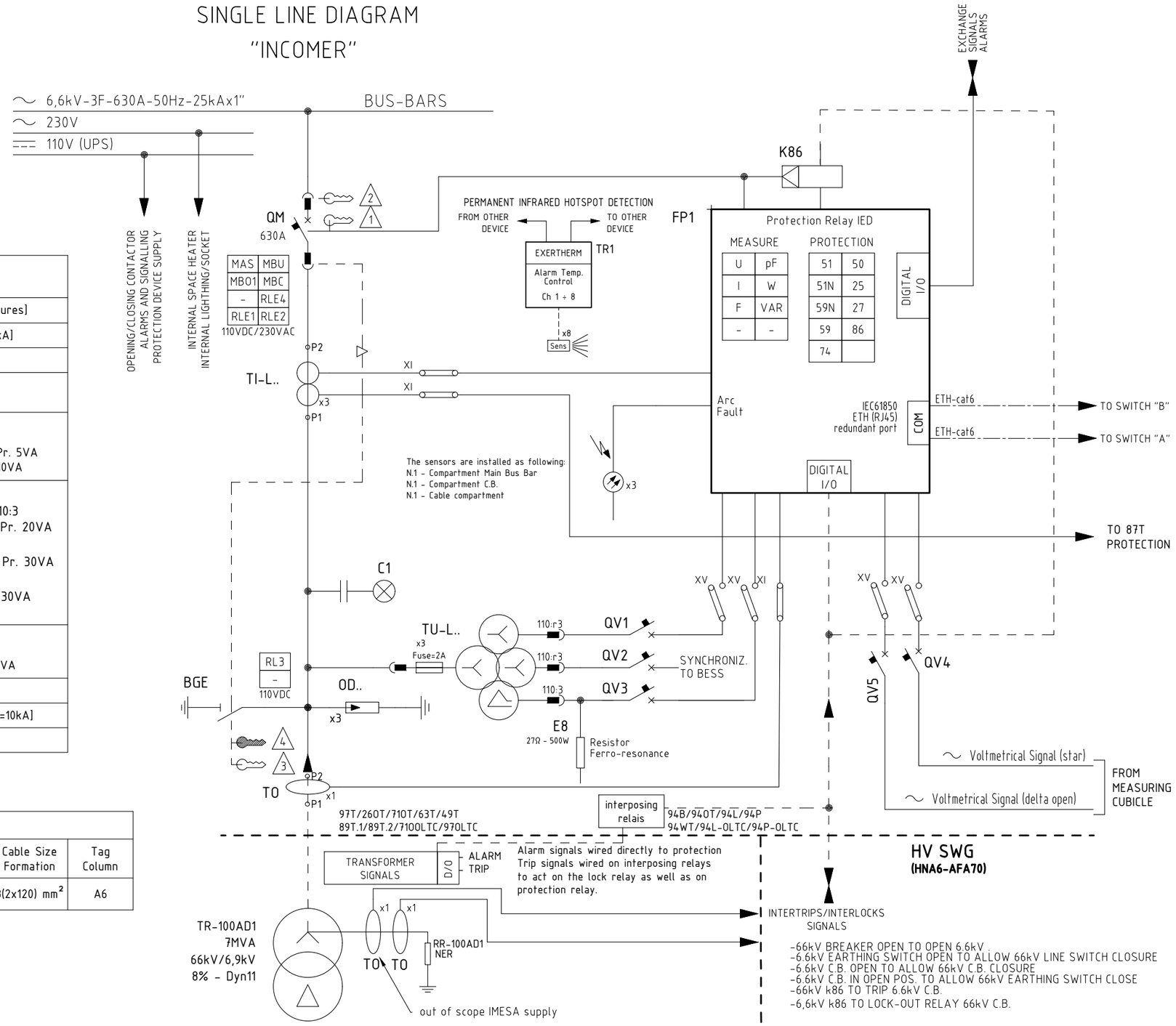
- Free key with opened Circuit Breaker (Circuit Breaker locked in open position)
- Free key with insolated Circuit Breaker or Contactor (Circuit Breaker or Contactor locked in isolated position)
- Free key with opened Earthing Switch (Earthing Switch locked in open position)
- Free key with closed Earthing Switch (Earthing Switch locked in close position)
- Mechanical interlock

MAIN EQUIPMENT
[Additional Features and Auxiliary Components will be inserted on Functional Diagram]

Tag	Desciption Tag	Supplier	Type [Technical Features]
QM	Circuit Breaker	ABB	VD4/P [12KV - 630A - 25kA]
BGE	Earthing Switch	ABB	ST-E [12KV - 25kA]
FP1	Protection Relay	ABB	REX640
TI-L..	Current Transformers	ESITAS	ATB 10-BS 7,2kV - 600/1-1 - 25kA 1°winding : Cl. 0,5+5P20 - Pr. 5VA 2°winding : Cl. 5P25 - Pr. 10VA
TU-L..	Voltage Transformers + Fuses	ABB	TJP4.3 [7,2kV - 6,6kV:√3/110:√3-110:√3-110:3 1° winding : Cl. 0,5-3P - Pr. 20VA (110:√3) 2° winding : Cl. 0,5-3P - Pr. 30VA (110:√3) 3° winding : Cl. 3P - Pr. 30VA (110:3)
TO	Omopolar Ring Current Transformer (Internal Diameter 150mm)	ESITAS	KAP-150/250-55 1.2kV - 100/1A - 25kA 1° winding : Cl. 5P5 - Pr. 5VA
TR1	Permanent Infrared Hotspot Detection	EXERTHERM	
OD..	Voltage Discharger	DEHN	SBKW 9/DH I-0 [Ur=9kV-In=10kA]
C1	Voltage Presence Indicator	ABB	VPIS [3÷24kV]

USER DETAILS

Tag User	Desciption User	User Power	Current Transformer Ratio	Cable Size Formation	Tag Column
TR-100AD1	INCOMING	7 MVA	600 / 1A	3(2x120) mm²	A6



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
3	26/06/2024	Santinelli	Giulietti	Sigismondi	Accepted for Construction (AFC)
2	14/05/2024	Santinelli	Giulietti	Sigismondi	Issued for review (IFR)
1	14/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

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

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Column A6 : Incoming TR-100AD1

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 009

REV. 04

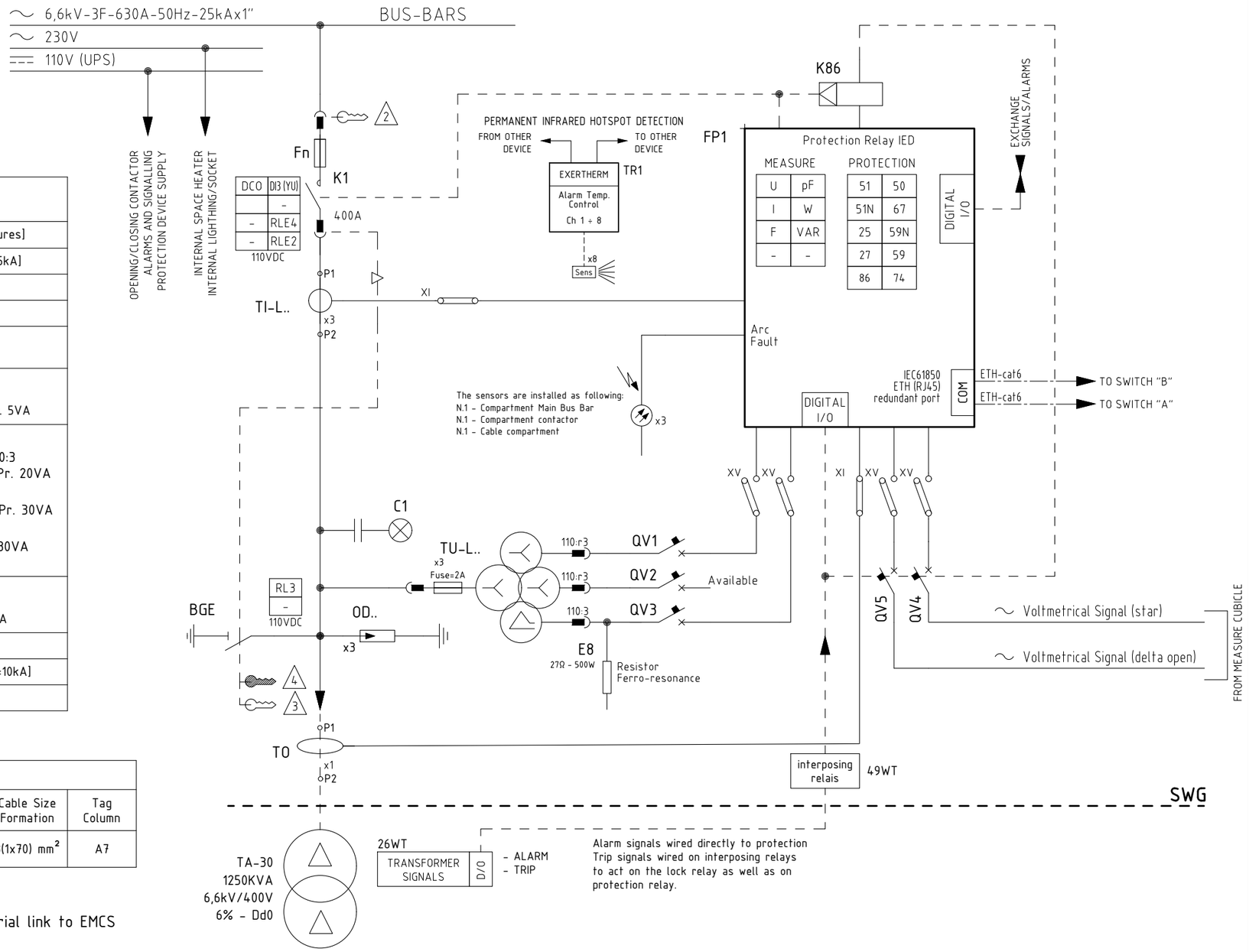
F.to UNI A3: 420mmx297mm

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

LEGEND:

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

SINGLE LINE DIAGRAM
"FEEDER with CONTACTOR"



MAIN EQUIPMENT
[Additional Features and Auxiliary Components will be inserted on Functional Diagram]

Tag	Desciption Tag	Supplier	Type [Technical Features]
K1	Contactor	ABB	VSC7/P [7,2KV - 400A - 25kA]
Fn	Fuse for Contactor	ABB	CEF 160A
BGE	Earthing Switch	ABB	ST-E [12KV - 25kA]
FP1	Protection Relay	ABB	REX640
TI-L..	Current Transformers	ESITAS	ATB 10-BS 7,2kV - 150/1 - 25kA 1°winding : Cl.0,5+5P20 - Pr. 5VA
TU-L..	Voltage Transformers + Fuses	ABB	TJP4.3 [7,2kV - 6,6kV:√3/110:√3-110:√3-110:3 1° winding : Cl. 0,5-3P - Pr. 20VA (110:√3) 2° winding : Cl. 0,5-3P - Pr. 30VA (110:√3) 3° winding : Cl. 3P - Pr. 30VA (110:3)
TO	Omopolar Ring Current Transformer (Internal Diameter 150mm)	ESITAS	KAP-150/250-55 1.2kV - 100/1A - 25kA 1° winding : Cl.5P5 - Pr. 5VA
TR1	Permanent Infrared Hotspot Detection	EXERTHERM	
OD..	Voltage Discharger	DEHN	SBKW 9/DH I-0 [Ur=9kV-In=10kA]
C1	Voltage Presence Indicator	ABB	VPIS [3÷24kV]

USER DETAILS

Tag User	Desciption User	User Power	Current Transformer Ratio	Cable Size Formation	Tag Column
A-80000	FUEL CELL PACKAGE	1000 kW	150 / 1A	3(1x70) mm²	A7

NOTE :

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

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	08/08/2024	Santinelli	Giulietti	Sigismondi	As-Built (ASB)
3	26/06/2024	Santinelli	Giulietti	Sigismondi	Accepted for Construction (AFC)
2	14/05/2024	Santinelli	Giulietti	Sigismondi	Issued for review (IFR)
1	14/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	07/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

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

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-100D1"

ELECTRICAL SINGLE LINE DIAGRAM
Column A7 : Fuel Cell Package A-80000

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00010

SHEET 010

REV. 04

F.to UNI A3: 420mmx297mm

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