Base Load Power Hub (BLPH)

AC UPS - BATTERY LAYOUT AND INTERCONNECTION DIAGRAM

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
Andrea Padoschi	05/02/2025

umber: 1724000372-EL-DG-00011

Document Class: 2

Rev.	Date	Description	Prepared	Reviewed	Approved
06	02/02/2025	As-Built (ASB)	DA	DA	AD
05	17/12/2024	As-Built (ASB)	DA	DA	AD
04	05/10/2024	Accepted for Construction (AFC)	DA	DA	AD
03	04/08/2024	Accepted for Construction (AFC)	DA	DA	AD
02	01/06/2024	Accepted for Construction (AFC)	DA	DA	AD
01	15/05/2024	Accepted for Construction (AFC)	DA	DA	AD
00	20/04/2024	Issue for Review (IFR)	DA	DA	AD

3W power | a company of AEG POWER SOLUTIONS

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)
04	Accepted for Construction (AFC)
05	As-Built (ASB)
06	As-Built (ASB)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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REVISION / CHANGE LOG 2

HOLDS LIST 2

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AC UPS F&G - TAG: UP-200F4 - BLACK START PROCEDURE 18

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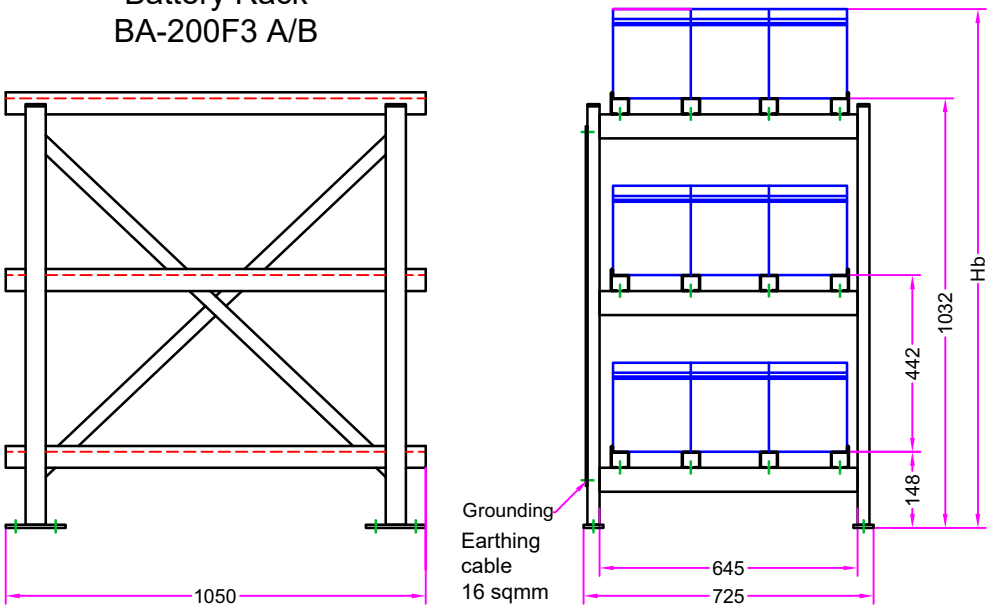
Base Load Power Hub (BLPH)

AC UPS PAS - TAG: UP-200F3

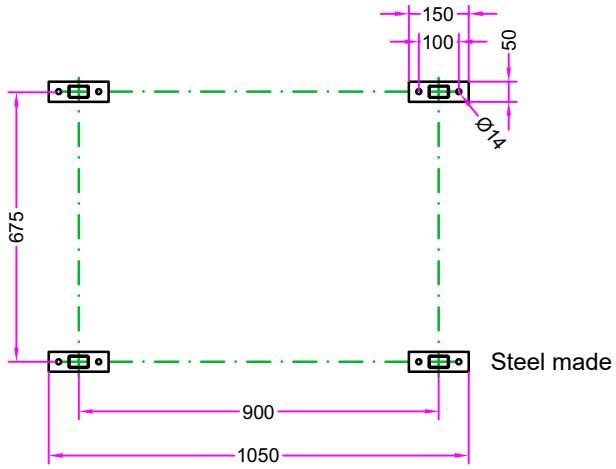
BATTERY LAYOUT AND INTERCONNECTION DIAGRAM

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Battery Rack
BA-200F3 A/B



Foot-Print:



Rack weight : 54,7 kg
Battery weight : 855,0 kg
Total weight : 909,7 kg

Material:	S235 JR EN 10025 (St-37-2)
Coating:	Plastic Coated
Tolerance:	DIN ISO 2768 "C"
Battery:	

Date	Name	Checked
16/24	Riedel	St.Selig

Execution: Rack, Standard

Drawing-/Article No: 3L3115

Rev: 00

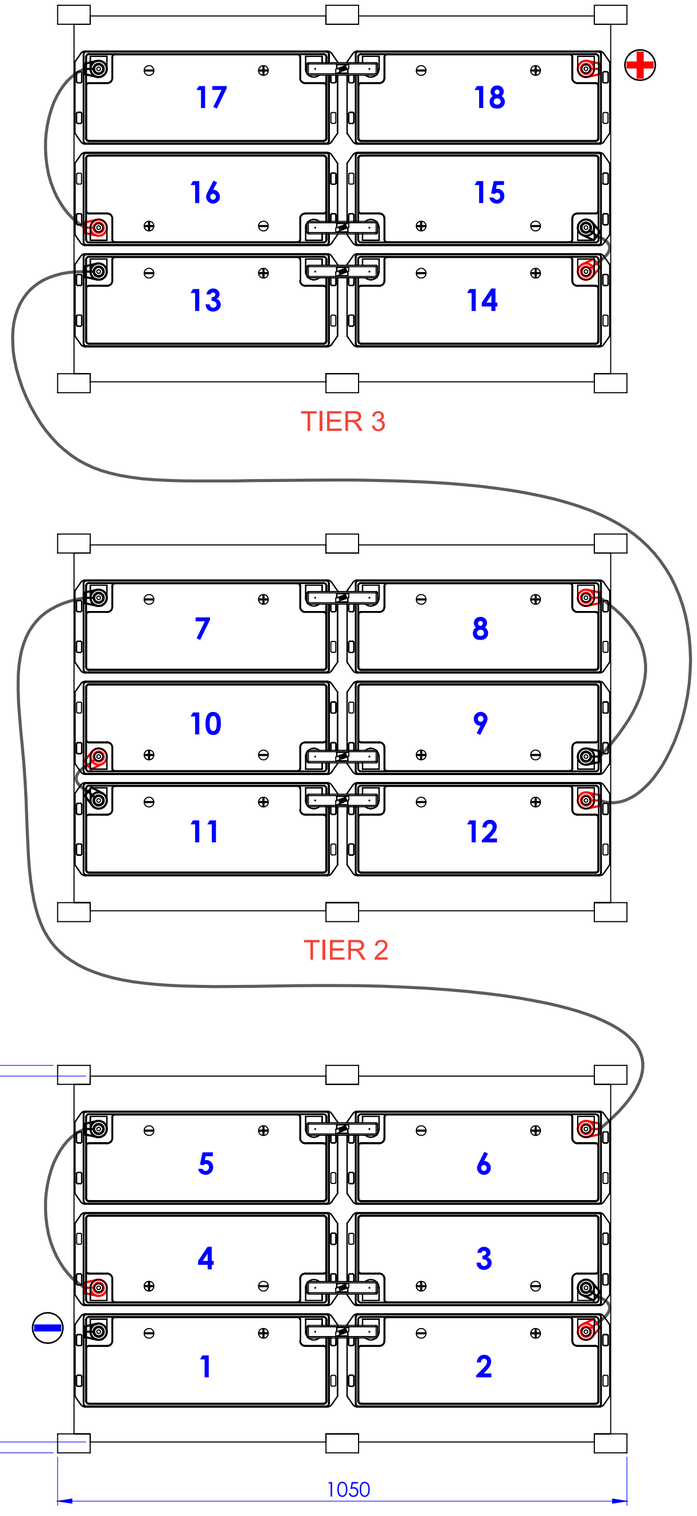
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Scale: none

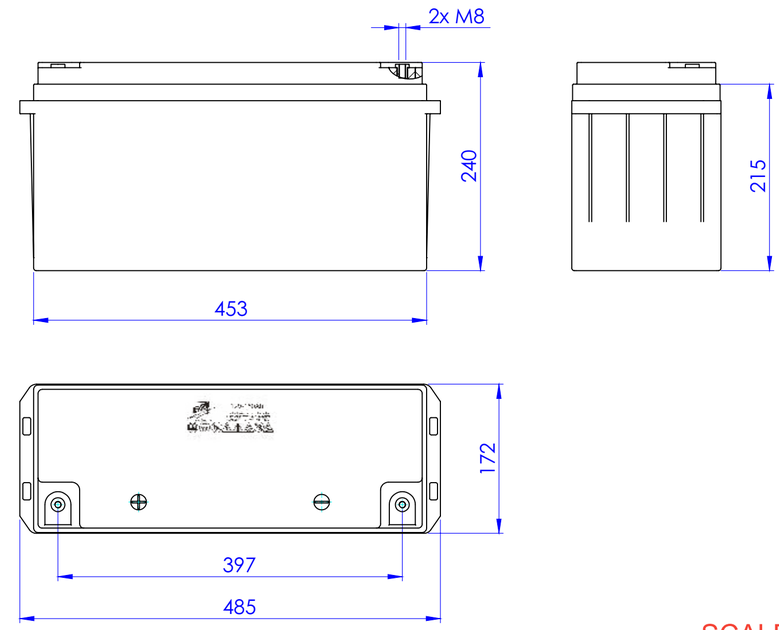
Production Details:

Welding execution according to

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BATTERY BLOCK : FLG12-150



SCALE 1:5

BILL OF MATERIALS	CODE	WEIGHT (kg)	Q.TY
CELL FLG 12-150	11000495	47,50	18
COPPER TIN STRIP FLL-FHP serie	41000222	0,04	9
CONNECTION AND AGM COVER CENTER DISTANCE 100	41000251	0,01	9
CELLS CONNECTION CABLE 50 mm 2	21000191	0,5	7 m
CABLE LUG F8 X 50	41005167	0,3	18
CABLE LUG COVER BLACK 50040	41000243	0,008	9
CABLE LUG COVER RED 50039	41000244	0,008	9

REV./REV.	DATA/DATE	PROGETTISTA/DESIGNER	DISEGNATO/DRAWN	APPROVATO/APPROVED	DESCRIZIONE MODIFICHE/DESCRIPTION, REVISIONS
TOLLERANZE GENERALI/GENERAL ALLOWANCES: NORMA UNI EN 22768-mk			CARATTERISTICHE ELETTRICHE/ELETTRIC CHARACTERISTICS:	PESO BATT./BTR. WEIGHT: 855.42 kg	PROGETTISTA/DESIGNER: P. VECCHIARELLI
FINITURA SUPERFICIALE/SURFACE FINISHES: NORMA UNI ISO 1302			TIPO ELEMENTO/CELL TYPE: 18 FLG12-150	PESO EL./CELL WEIGHT: 47.50 kg	DISEGNATO/DRAWN: P. VECCHIARELLI
FORME E POSIZIONE/FORMS AND POSITION: NORMA UNI ISO 1101			CODICE SAP EL./CELL SAP CODE: 11000495		APPROVATO/APPROVED: F. PAGLIARINI
SCALA/SCALE: 1:8	PROIEZIONE/PROJECTION	FOGLIO/SHEET: A2			DATA/DATE: 10/04/2024
DESCRIZIONE/DESCRIPTION:					FILE=DISEGNO/FILE=DRAWING: layout 18 x FLG 12-150 TAV./TAB. 1

FAAM

1724000372-EL-DG-00011

AC UPS 35kVA - 18 x FLG 12-150

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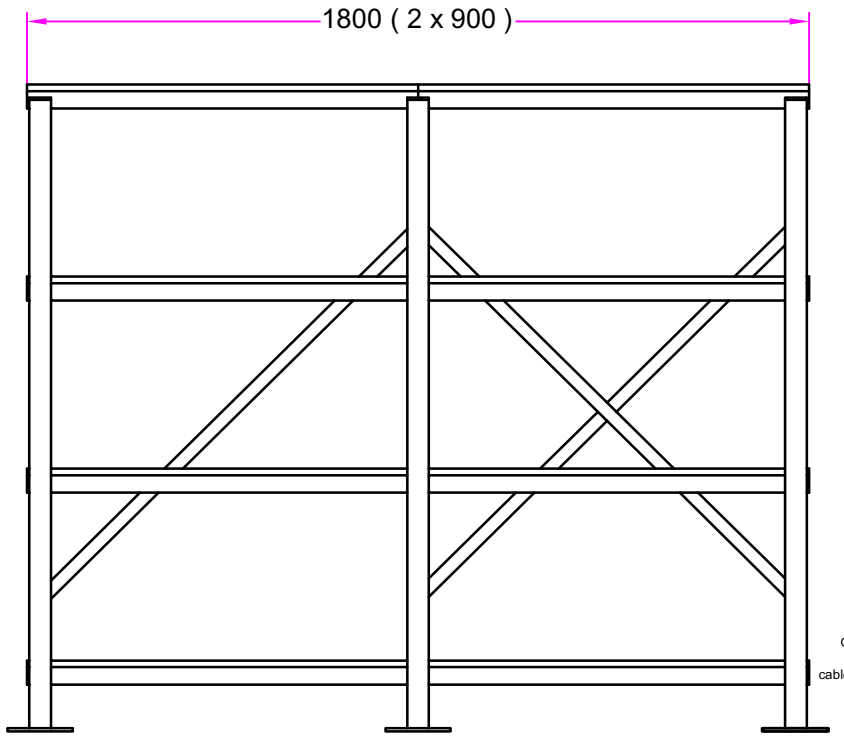
Base Load Power Hub (BLPH)

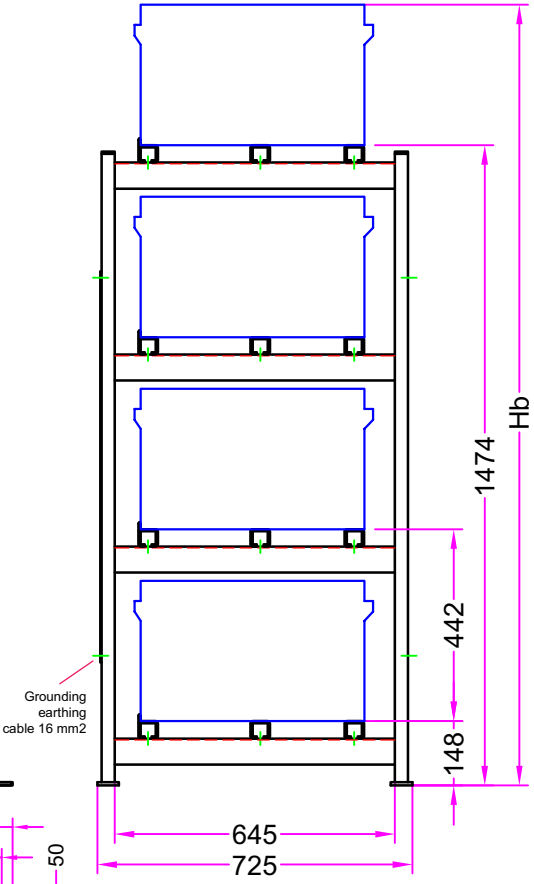
AC UPS F&G - TAG: UP-200F4

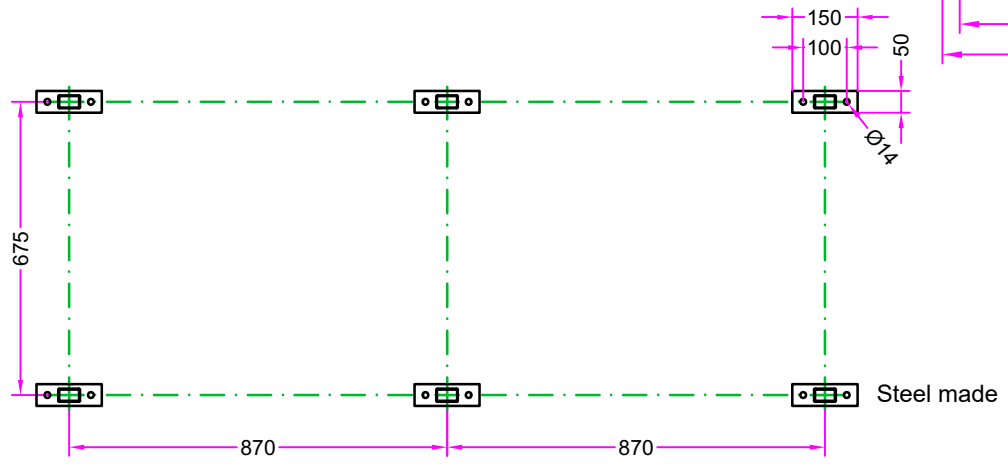
BATTERY LAYOUT AND INTERCONNECTION DIAGRAM

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Battery Rack
BA-200F4 A/B







Steel made

Rack weight : 100,6 kg
Battery weight : 2.295,0 kg
Total weight : 2.395,6 kg

Material:	S235 JR EN 10025 (St-37-2)
Coating:	Plastic Coated
Tolerance:	DIN ISO 2768 "C"
Battery:	

Date	Name	Checked
16/24	Riedel	St.Selig

Scale: none

Execution: Rack, Standard

Drawing-/Article No: 4U1187FT

Rev: 00

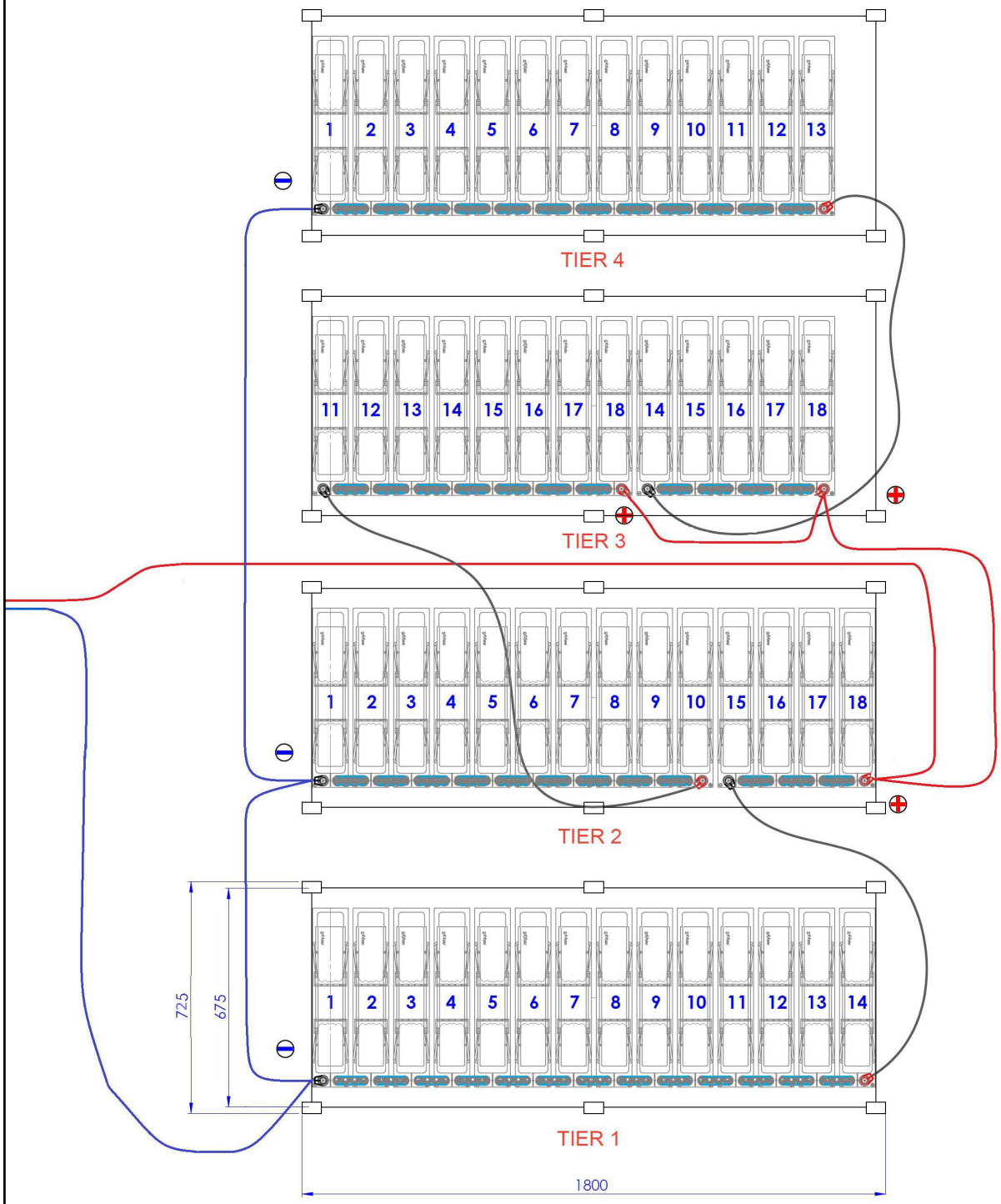
Type: 4E-PGU 1-18 HH FT with FIX002

Production Details: PPCS-01 rev. 0

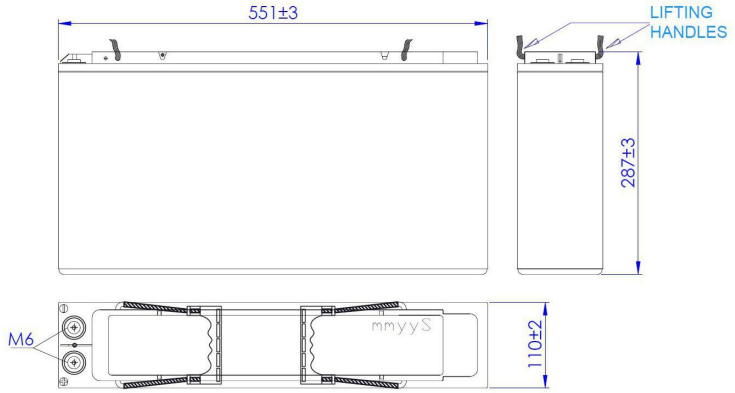
Welding execution according to WD0002

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EN 1090 EXC 3



BATTERY BLOCK : FTG12-120



SCALA 1 : 5

BILL OF MATERIALS	CODE	WEIGHT (kg)	Q.TY
CELL FTG12-120	11017386	42,5	54
CELLS CONNECTION CABLE 50mm2	21000191	0,5	15 m
CABLE LUG F6 X 50	41005168	0,3	12
CABLE LUG COVER BLACK 50040	41000243	0,008	6
CABLE LUG COVER RED 50039	41000244	0,008	6

REV./REV.	DATA/DATE	PROGETTISTA/DESIGNER	DISEGNATO/DRAWN	APPROVATO/APPROVED	DESCRIZIONE MODIFICHE/DESCRIPTION REVISIONS

TOLLERANCE GENERALI/GENERAL ALLOWANCES: NORMA UNI EN 22768-mk	CARATTERISTICHE ELETTRICHE/ELETTRIC CHARACTERISTICS:	PESO BATT./BTR. WEIGHT: 2295 kg	PROGETTISTA/DESIGNER: P. VECCHIARELLI
RUGOSITA' SUPERFICIALE/SUPERFICIAL ROUGHNESS: NORMA UNI ISO 1302	TIPO ELEMENTO/CELL TYPE: 3x18 FTG12-120	PESO EL./CELL WEIGHT: 42,5 kg	DISEGNATO/DRAWN: P. VECCHIARELLI
FORME E POSIZIONE/FORMS AND POSITION: NORMA UNI ISO 1101	CODICE SAP EL./CELL SAP CODE: 11017386		APPROVATO/APPROVED: F. PAGLIARINI
SCALA/SCALE: 1:10	PROIEZIONE/PROJECTION:	FOGLIO/SHEET: A2	DATA/DATE: 09/04/2024
DESCRIZIONE/DESCRIPTION:			FILE=DISEGNO/FILE=DRAWING: layout 3x18 FTG 12-120 — TAV./TAB.: 1

FAAM

1724000372-EL-DG-00011

AC UPS 15kVA - 3 x 18 x FTG 12-120

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Base Load Power Hub (BLPH)

AC UPS PAS - TAG: UP-200F3

BATTERY PROTECTION BOX

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MODEL C-225 REV.1

GENERAL NOTES:

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

BATTERY PROTECTION BOX

CB-200F3 A/B

N°	Q.TY	CODE	DESCRIPTION
IF	1	BFE-5	ALUMINIUM INTERNAL FRAME
X1	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X2	2	UKH70	PHOENIX TERMINALS SUITABLE FOR 70mm² CABLE
X3	11	UT4	PHOENIX TERMINALS SUITABLE FOR 4mm² CABLE
Q0	1	XT3N200TMD3	ABB XT3 MCCB, 3P, 200A, 36kA
	1	1SDA066399R1	220-240Vac/dc UNDERVOLTAGE RELEASE COIL
	2	1SDA066423R1	2NO AS PER TBE AUX CONTACTS FREE VOLTAGE
	1	M-0439/V1 + M-1044	PADLOCKABLE EXTERNAL HANDLE
F1,F2	2	UT4-HESI	PHOENIX FUSE HOLDER TERMINALS SUITABLE FOR 4mm² CABLE WITH 4A FUSE
	2	FUS5X20/4	
F3÷F8	6	UT4-HESI	PHOENIX FUSE HOLDER TERMINALS SUITABLE FOR 4mm² CABLE WITH 2,5A FUSE
	6	FUS5X20/2,5	
RLY	1	PHO2986575	PHOENIX SECURITY RELAY, 24Vcc, 3 EXCHANGE CONTACTS
R	1	RS1752429	47Ω RESISTOR, 95W, NOT ADJUSTABLE
D1÷D5	5	RS3959141	40A, 1000V, DIODES
S1	1	A2-10E/R	SELECTOR SWITCH, 2P, 16A, SCHEME I "OFF-ON"
	1	M-0553	EXTERNAL HANDLE
S2	1	WS2-10E/R	SELECTOR SWITCH, 4P, 16A, SCHEME 2Z "NORMAL-OVERRIDE"
	1	M-093/CF	KEY LOCK EXTERNAL HANDLE
CG2*	4	NEV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR ARMORED CABLE Øint. 11-20mm Øext. 20-27,5mm, ARMOR THICKNESS 0,2-1,6mm
CG2	2	NAV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR NOT-ARMORED CABLE Ø11-20mm

SELECTOR SWITCHES DETAIL



TRUE TABLE

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

O	CONTACT OPEN
X	CONTACT CLOSED

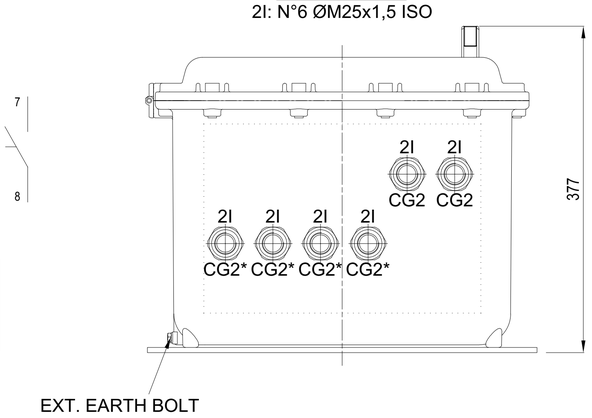
TRUE TABLE

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

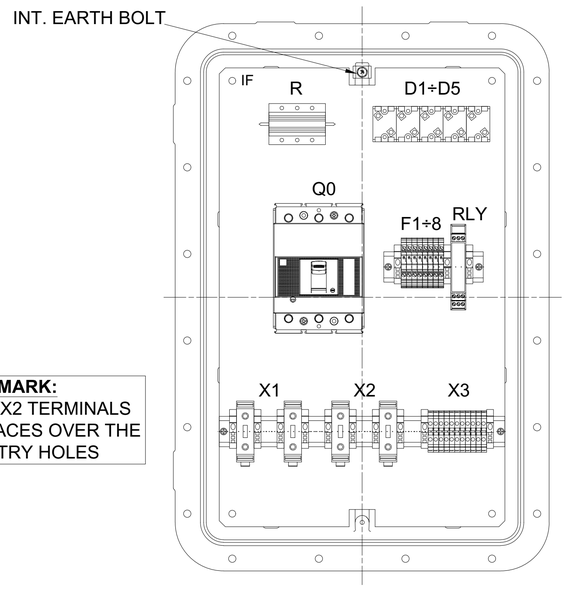
O	CONTACT OPEN
X	CONTACT CLOSED

BOTTOM VIEW

2I: N°6 ØM25x1,5 ISO

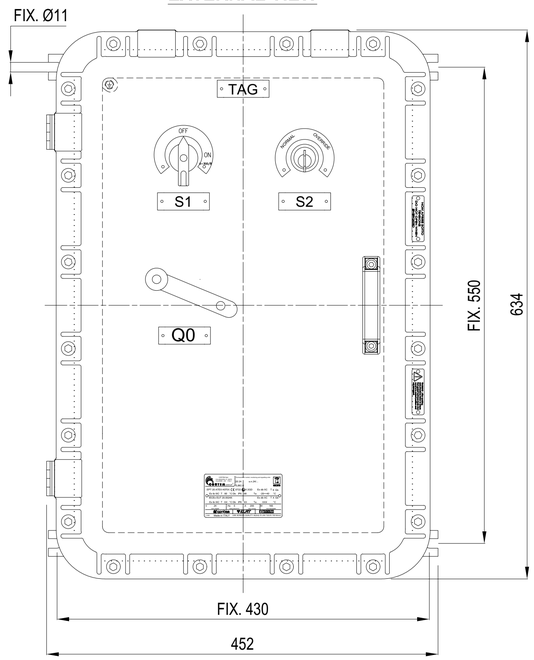


INTERNAL VIEW

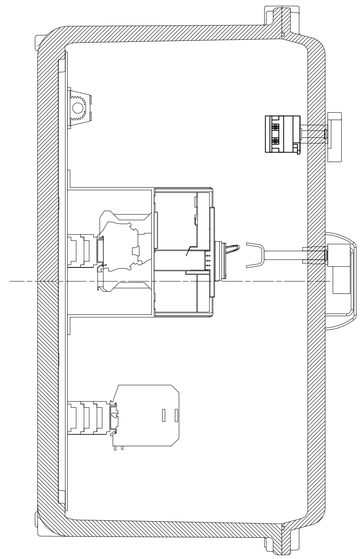


REMARK:
X1/X2 TERMINALS PLACES OVER THE ENTRY HOLES

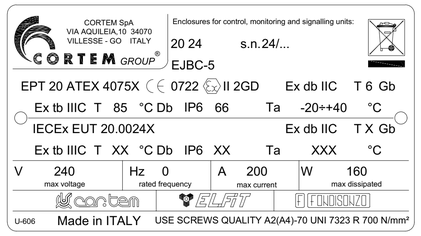
EXTERNAL VIEW



INT. LEFT SIDE VIEW



CERTIFICATE NAMEPLATE



TAG NAMEPLATE

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

N°	TAG N°
TAG	CB-200F4 A
	CB-200F4 B
	CB-200F3 A
	CB-200F3 B
S1	S1
S2	S2
Q0	Q0

REV.	DATE	PREP'D	CHK'D	APP'D	DESCRIPTION
1	24/05/2024	GRATTON	GIUSTI	GRATTON	MODIFIED AND REISSUED FOR APPROVAL
0	13/05/2024	BOGAR	GIUSTI	GRATTON	ISSUED FOR APPROVAL

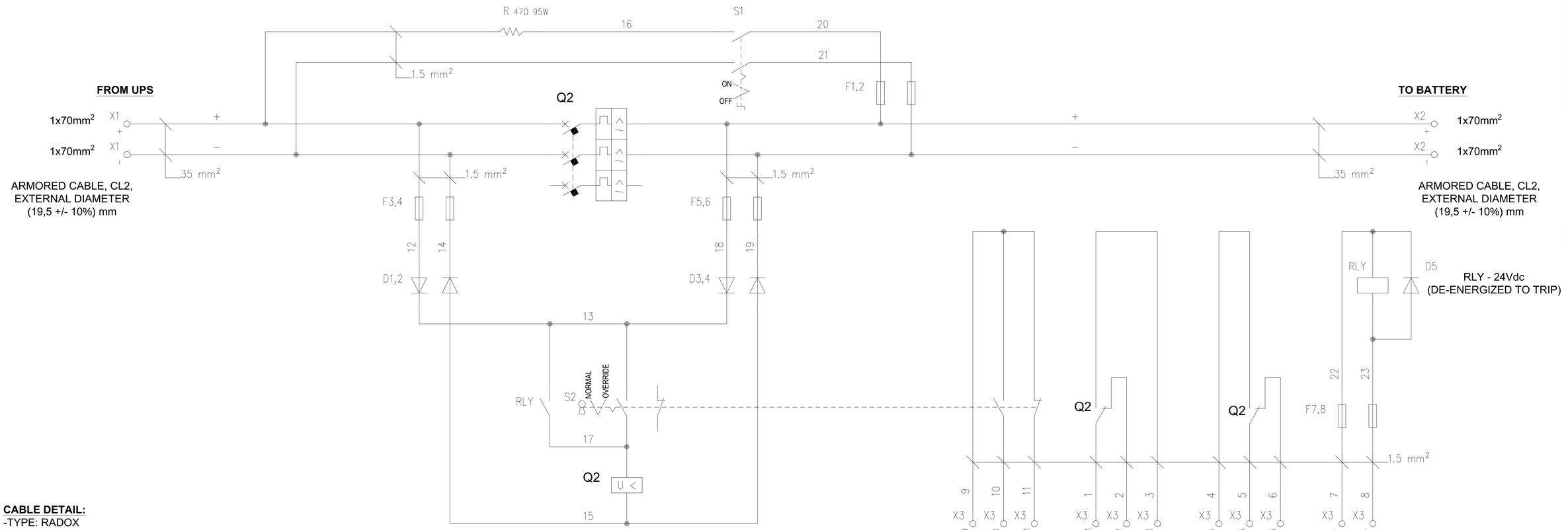
DRAWING TITLE: AC UPS - TAG: UP-200F3

001 EJBC-5/C2401778/10.
ITEM 10
EXT/INT. LAYOUT

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

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AUTHORIZATION

Smart Professional R. 2012



CABLE DETAIL:
-TYPE: RADOX
-COLORS: BLACK FOR (+) AND AUX
WHITE FOR (-)

CIRCUIT	DESCRIPTION			F3,4		Q2		F5,6		F1,2							F7,8						
	NUMBER																						
	PHASE	POWER	kW	+ -		+ -		+ -		+ -							+ -						
SWITCH	MANUFACTURER					ABB																	
	TYPE					XT3N200TMD3																	
	POLE N.	In	A			3	200																
	Idn A	CURVE																					
	Pdi kA	JUNCTION BOX N°				36kA																	
FUSE	TYPE			FUS5X20				FUS5X20		FUS5X20							FUS5X20						
	CURRENT		A	2,5				2,5		4							2,5						
CONTACTOR	TYPE																						
	In A	Pn	kW																				
THERMAL RELAY	TYPE																						
	CURRENT		A																				
TERMINALS CABLES	TERMINAL TYPE											UT				UT				UT			
	TERMINAL SECTION		mm²									4				4				4			
	TERMINAL NUMBER																						
	CABLE SECTION		mm²																				

REV.	DATE	PREP'D	CHK'D	APP'D	DESCRIPTION
1	24/05/2024	GRATTON	GIUSTI	GRATTON	MODIFIED AND REISSUED FOR APPROVAL
0	13/05/2024	BOGAR	GIUSTI	GRATTON	ISSUED FOR APPROVAL

DRAWING TITLE

AC UPS - TAG: UP-200F3

001 EJBC-5/C2401778/10.
ITEM 10
INTERNAL WIRING

CORTEM GROUP

CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 2 NEXT 3 TOT. 4

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AUTHORIZATION

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Base Load Power Hub (BLPH)

AC UPS PAS - TAG: UP-200F3

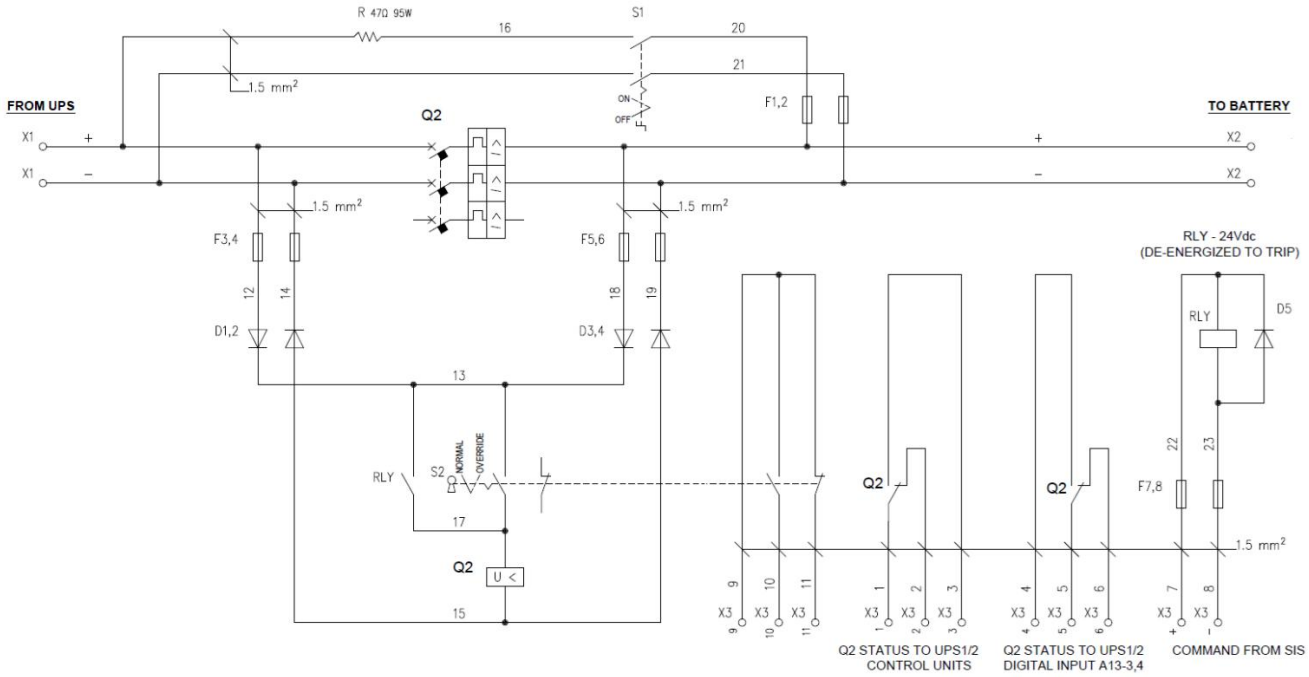
BLACK START PROCEDURE

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AEG

POWER
SOLUTIONS

BLACK START PROCEDURE



Black Start procedure

The target is to allow the energization of the loads from the battery, while the battery charger being still de-energized.

- The operator shall put the selector S2 on "override" position (contact closed)
- The operator shall close the selector S1 to pre-charge the charger output DC capacitors
- Once the charger DC capacitors are charged and the voltage across Q2 power contacts is close to 0V (and at least >80% of the system DC nominal voltage), the operator shall close the breaker Q2
- The operator shall open the selector S1
- The site safety and SCADA systems restart and the RLY relay is automatically energized when all safety conditions are fulfilled. The charger is energized through its AC supply and then it can restart
- The operator shall put the selector S2 on "normal" position (contact open)
- The system returns to normal working conditions

Base Load Power Hub (BLPH)

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

BATTERY PROTECTION BOX

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MODEL C-225 REV.1

GENERAL NOTES:

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

BATTERY PROTECTION BOX

CB-200F4 A/B

SELECTOR SWITCHES DETAIL



TRUE TABLE

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

O	CONTACT OPEN
X	CONTACT CLOSED

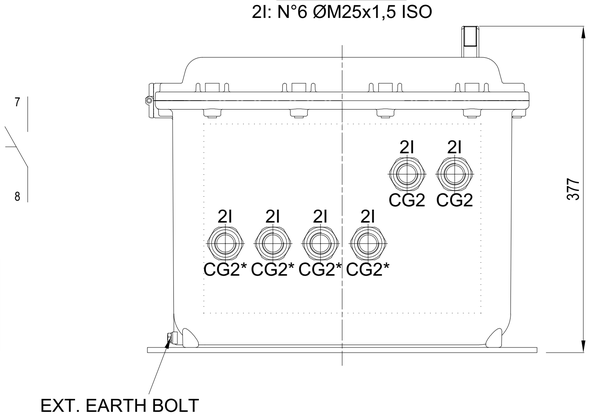
TRUE TABLE

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

O	CONTACT OPEN
X	CONTACT CLOSED

BOTTOM VIEW

2I: N°6 ØM25x1,5 ISO



N°	Q.TY	CODE	DESCRIPTION
IF	1	BFE-5	ALUMINIUM INTERNAL FRAME
X1	2	UKH95	PHOENIX TERMINALS SUITABLE FOR 70mm^2 CABLE
X2	2	UKH95	PHOENIX TERMINALS SUITABLE FOR 70mm^2 CABLE
X3	11	UT4	PHOENIX TERMINALS SUITABLE FOR 4mm^2 CABLE
Q0	1	XT3N200TMD3	ABB XT3 MCCB, 3P, 200A, 36kA
	1	1SDA066399R1	220-240Vac/dc UNDERVOLTAGE RELEASE COIL
	2	1SDA066423R1	2NO AS PER TBE AUX CONTACTS FREE VOLTAGE
	1	M-0439/V1 + M-1044	PADLOCKABLE EXTERNAL HANDLE
F1,F2	2	UT4-HESI	PHOENIX FUSE HOLDER TERMINALS SUITABLE FOR 4mm^2 CABLE WITH 4A FUSE
	2	FUS5X20/4	
F3÷F8	6	UT4-HESI	PHOENIX FUSE HOLDER TERMINALS SUITABLE FOR 4mm^2 CABLE WITH 2,5A FUSE
	6	FUS5X20/2,5	
RLY	1	PHO2986575	PHOENIX SECURITY RELAY, 24Vcc, 3 EXCHANGE CONTACTS
R	1	RS1752429	47Ω RESISTOR, 95W, NOT ADJUSTABLE
D1÷D5	5	RS3959141	40A, 1000V, DIODES
S1	1	A2-10E/R	SELECTOR SWITCH, 2P, 16A, SCHEME I "OFF-ON"
	1	M-0553	EXTERNAL HANDLE
S2	1	WS2-10E/R	SELECTOR SWITCH, 4P, 16A, SCHEME 2Z "NORMAL-OVERRIDE"
	1	M-093/CF	KEY LOCK EXTERNAL HANDLE
CG2*	4	NEV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR ARMORED CABLE Øint. 11-20mm Øext. 20-27,5mm, ARMOR THICKNESS 0,2-1,6mm
CG2	2	NAV25IB	NICKEL PLATED BRASS CABLE GLANDS ØM25 FOR NOT-ARMORED CABLE Ø11-20mm

INTERNAL VIEW

REMARK:
X1/X2 TERMINALS PLACES OVER THE ENTRY HOLES

EXTERNAL VIEW

INT. LEFT SIDE VIEW

CERTIFICATE NAMEPLATE

CORTEM SpA
VIA AQUILEIA,10 34070
VILLESSE - GO ITALY
CORTEM GROUP
Enclosures for control, monitoring and signalling units:
20 24 s.n.24/...
EJBC-5
EPT 20 ATEX 4075X 0722 II 2GD Ex db IIC T 6 Gb
Ex tb IIIC T 85 °C Db IP6 66 Ta -20÷+40 °C
IECEx EUT 20.0024X Ex db IIC T X Gb
Ex tb IIIC T XX °C Db IP6 XX Ta XXX °C
V 240 max voltage | Hz 0 rated frequency | A 200 max current | W 160 max dissipated
U-606 Made in ITALY USE SCREWS QUALITY A2(A4)-70 UNI 7323 R 700 N/mm²

TAG NAMEPLATE

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

N°	TAG N°
TAG	CB-200F4 A
	CB-200F4 B
	CB-200F3 A
	CB-200F3 B
S1	S1
S2	S2
Q0	Q0

REV.	DATE	PREP'D	CHK'D	APP'D	DESCRIPTION
1	24/05/2024	GRATTON	GIUSTI	GRATTON	MODIFIED AND REISSUED FOR APPROVAL
0	13/05/2024	BOGAR	GIUSTI	GRATTON	ISSUED FOR APPROVAL

DRAWING TITLE: AC UPS TAG: UP-200F4

001 EJBC-5/C2401778/10.
ITEM 10
EXT/INT. LAYOUT

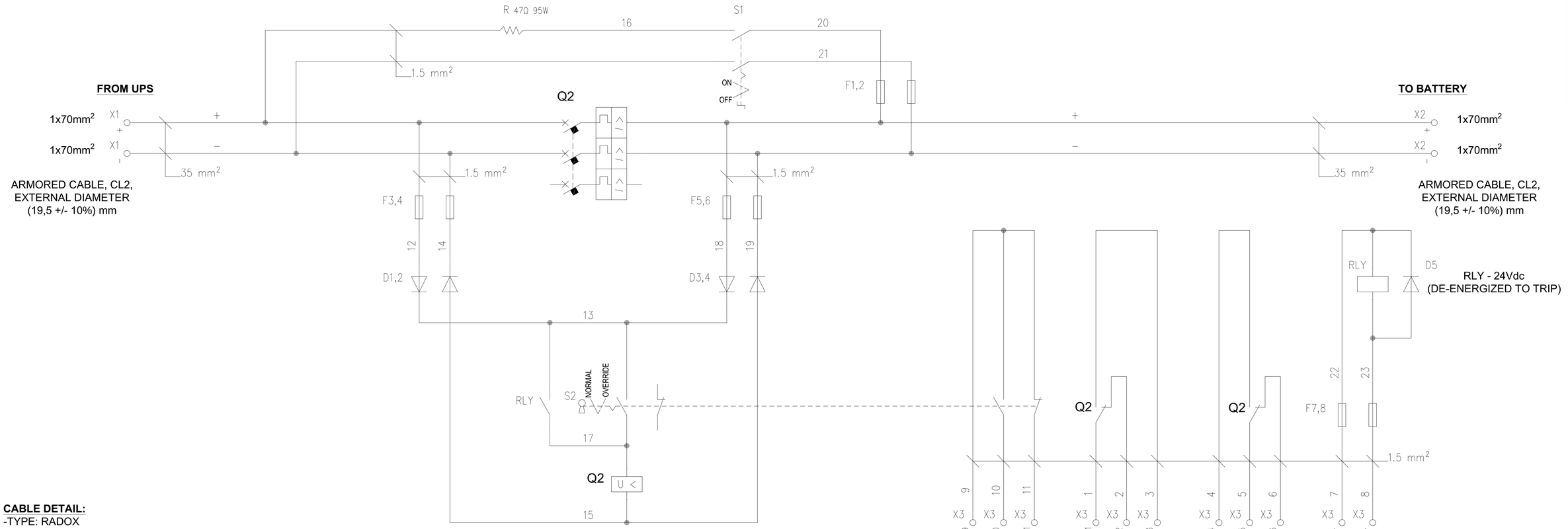
CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 1 NEXT 2 TOT. 4

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MODEL C-225 REV.1



CABLE DETAIL:
-TYPE: RADOX
-COLORS: BLACK FOR (+) AND AUX
WHITE FOR (-)

CIRCUIT	DESCRIPTION			F3,4		Q2		F5,6		F1,2							F7,8						
	NUMBER																						
	PHASE	POWER	kW	+ -		+ -		+ -		+ -							+ -						
SWITCH	MANUFACTURER					ABB																	
	TYPE					XT3N200TMD3																	
	POLE N.	In	A			3	200																
	Idn A	CURVE																					
	Pdi kA	JUNCTION BOX N°				36kA																	
FUSE	TYPE			FUS5X20				FUS5X20		FUS5X20							FUS5X20						
	CURRENT		A	2,5				2,5		4							2,5						
CONTACTOR	TYPE																						
	In A	Pn	kW																				
THERMAL RELAY	TYPE																						
	CURRENT		A																				
TERMINALS CABLES	TERMINAL TYPE											UT				UT				UT			
	TERMINAL SECTION		mm²									4				4				4			
	TERMINAL NUMBER																						
	CABLE SECTION		mm²																				

REV.	DATE	PREP'D	CHK'D	APP'D	DESCRIPTION
1	24/05/2024	GRATTON	GIUSTI	GRATTON	MODIFIED AND REISSUED FOR APPROVAL
0	13/05/2024	BOGAR	GIUSTI	GRATTON	ISSUED FOR APPROVAL

DRAWING TITLE: AC UPS - TAG: UP-200F4

001 EJBC-5/C2401778/10.
ITEM 10
INTERNAL WIRING

CORTEM JOB: COV2401778
DRAWING SCALE: /
DRAWING NUMBER: A3-C 27438
SHEET 2 NEXT 3 TOT. 4

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Base Load Power Hub (BLPH)

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

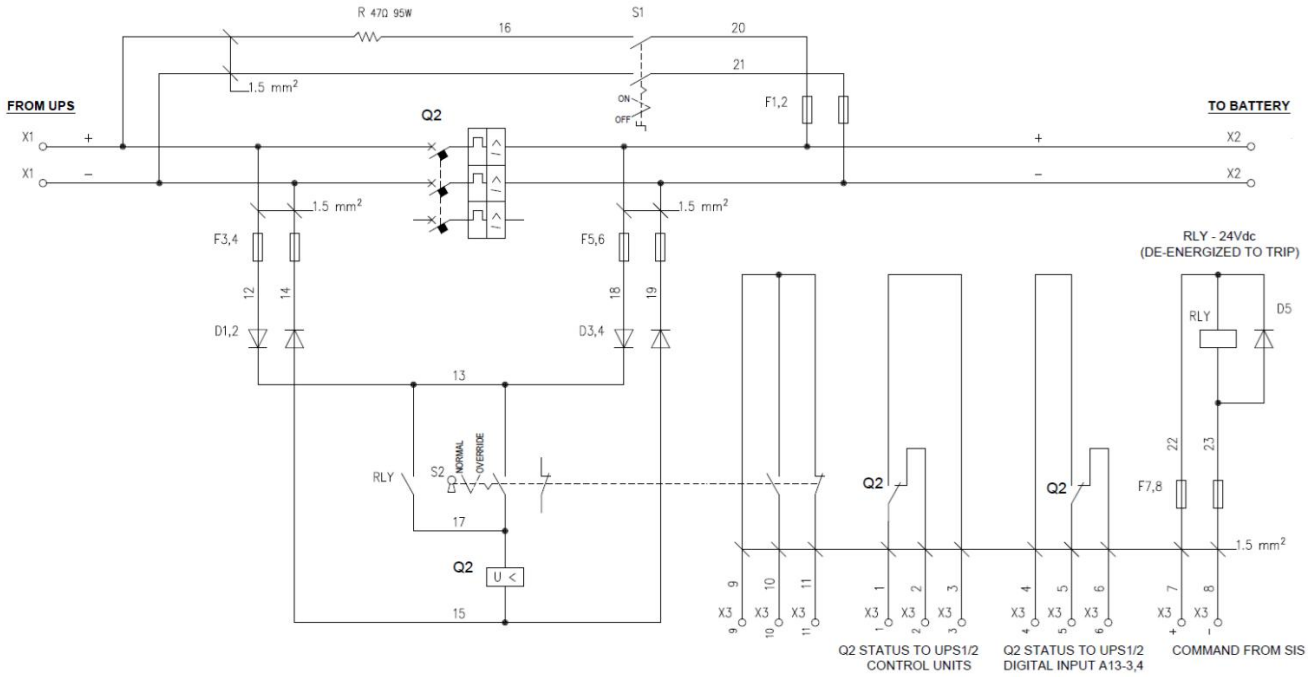
BLACK START PROCEDURE

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AEG

POWER
SOLUTIONS

BLACK START PROCEDURE



Black Start procedure

The target is to allow the energization of the loads from the battery, while the battery charger being still de-energized.

- The operator shall put the selector S2 on "override" position (contact closed)
- The operator shall close the selector S1 to pre-charge the charger output DC capacitors
- Once the charger DC capacitors are charged and the voltage across Q2 power contacts is close to 0V (and at least >80% of the system DC nominal voltage), the operator shall close the breaker Q2
- The operator shall open the selector S1
- The site safety and SCADA systems restart and the RLY relay is automatically energized when all safety conditions are fulfilled. The charger is energized through its AC supply and then it can restart
- The operator shall put the selector S2 on "normal" position (contact open)
- The system returns to normal working conditions