

MODULYS XL

Ultimate Modular UPS from 200kW to 4.8MW



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catalogues and technical manuals.

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1. WARRANTY CERTIFICATE

The warranty terms are stipulated in the offer, by default the following clauses apply.

The Socomec warranty is strictly limited to Socomec product(s) and does not extend to third-party equipment which may be integrated with this(these) product(s), nor the performance of such third-party equipment.

The manufacturer guarantees its products to be free from manufacturing faults and defects in design, materials or workmanship, subject to the limits set forth below.

The manufacturer reserves the right to modify the delivery with a view to fulfilling these guarantees or to replace defective parts. The manufacturer's warranty does not apply in the following cases:

- faults or defects in the design of parts added or supplied by the customer,
- faults due to unforeseen circumstances or force majeure,
- replacement or repair resulting from normal wear and tear of the modules or machinery,
- damage caused by negligence, lack of proper maintenance or misuse of the products,
- repair, modification, adjustment or replacement of parts undertaken by unqualified third parties or personnel without the express consent of Socomec.

The warranty period is twelve months commencing from the date of delivery of the product.

The repair, replacement or modification of the parts during the warranty period does not extend the warranty period.

In order to establish a valid warranty claim, the purchaser must notify the manufacturer in writing immediately after the discovery of any apparent material defects and provide any and all supporting evidence of the defects at the latest within eight days before the date of expiry of the warranty.

Defective parts which have been returned and replaced free of charge shall become the property of Socomec.

The warranty is void if the purchaser has undertaken modifications or repairs on the devices on their own initiative and without the express consent of the manufacturer.

The manufacturer's responsibility is strictly limited to the obligations defined in this warranty (repair and replacement) excluding any other right to claim compensation or indemnity.

Any import tax, duty, fee or charge of any nature whatsoever imposed by European regulations or those of an importing country or of a transit country shall be paid by the purchaser.

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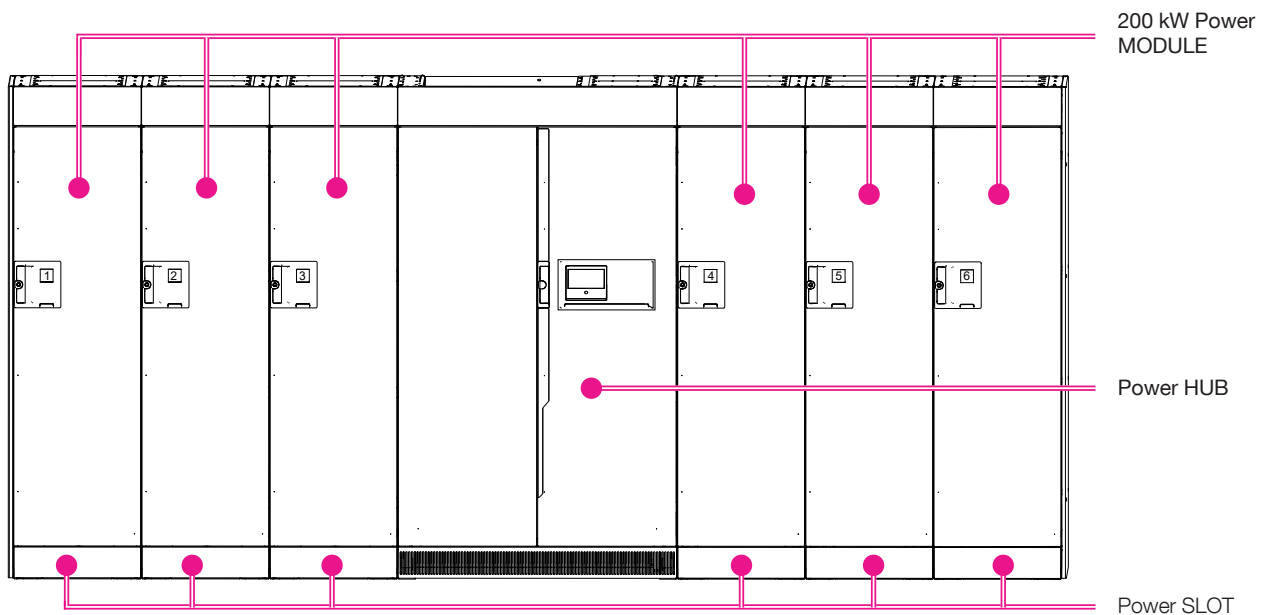
2. GENERAL DESCRIPTION

2.1. RANGE

The MODULYS XL is a modular UPS Unit system designed to provide high performance and power scalability. Power scalability can be increased by adding power blocks of 200 kW (Power MODULE) to extend the system up to 1200 kW or less, according to the maximum power requirement. Systems can be parallelised to increase the rated power up to 4.8 MW.

As the system has been designed to allow the Power MODULE to be hot-swappable, the load can be fully protected by on-line double conversion during system extension or maintenance.

Manufactured in Europe, the MODULYS XL is a modular system including an individual Socomec switching system for each power block enabling easy and safe coupling and disconnection.



Power HUB for the UPS UNIT

- All input(s), output and battery connections to the UPS UNIT.
- Full rated centralized static bypass.
- Remote communication interfaces.
- User interface (HMI).
- 63 A - 3 Phase plug for advanced maintenance services.

Power SLOT for Power MODULE plug-in

- Built-in bus bars for interconnection together with other Power SLOT and connection to the Power HUB.
- Preconnected communication bus.

Power MODULE rated for 200kVA/kW continuous operation

- Single and fully rated Rectifier - Inverter & Battery charger.
- Double conversion's side bypass.
- Real Power MODULE selective disconnection (input and output controlled galvanic disconnectors).
- Local battery disconnection switch.
- Plug-in system (power and control) to connect to the Unit.

2.2. RATED POWER

The rated power is related to the number of installed Power MODULE elements.

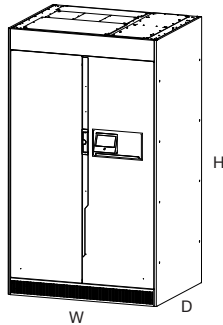
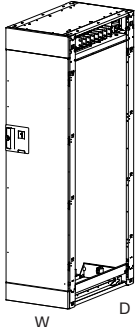
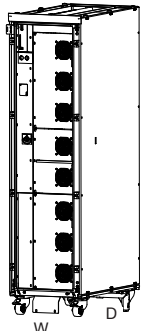
The number of Power SLOT enclosures installed at the beginning defines the maximum power that can be reached through Hot-scalability for each UPS UNIT level.

Rated power per UPS UNIT																		
Number of Power SLOT enclosures	3			4				5					6					
Number of Power MODULE elements (200 kW)	1	2	3	1	2	3	4	1	2	3	4	5	1	2	3	4	5	6
Power (kW) N configuration	200	400	600	200	400	600	800	200	400	600	800	1000	200	400	600	800	1000	1200
Power (kW) N+1 configuration		200	400		200	400	600		200	400	600	800		200	400	600	800	1000
Parallel units	up to 4 units (200 - 1200 kVA/kW) in parallel																	

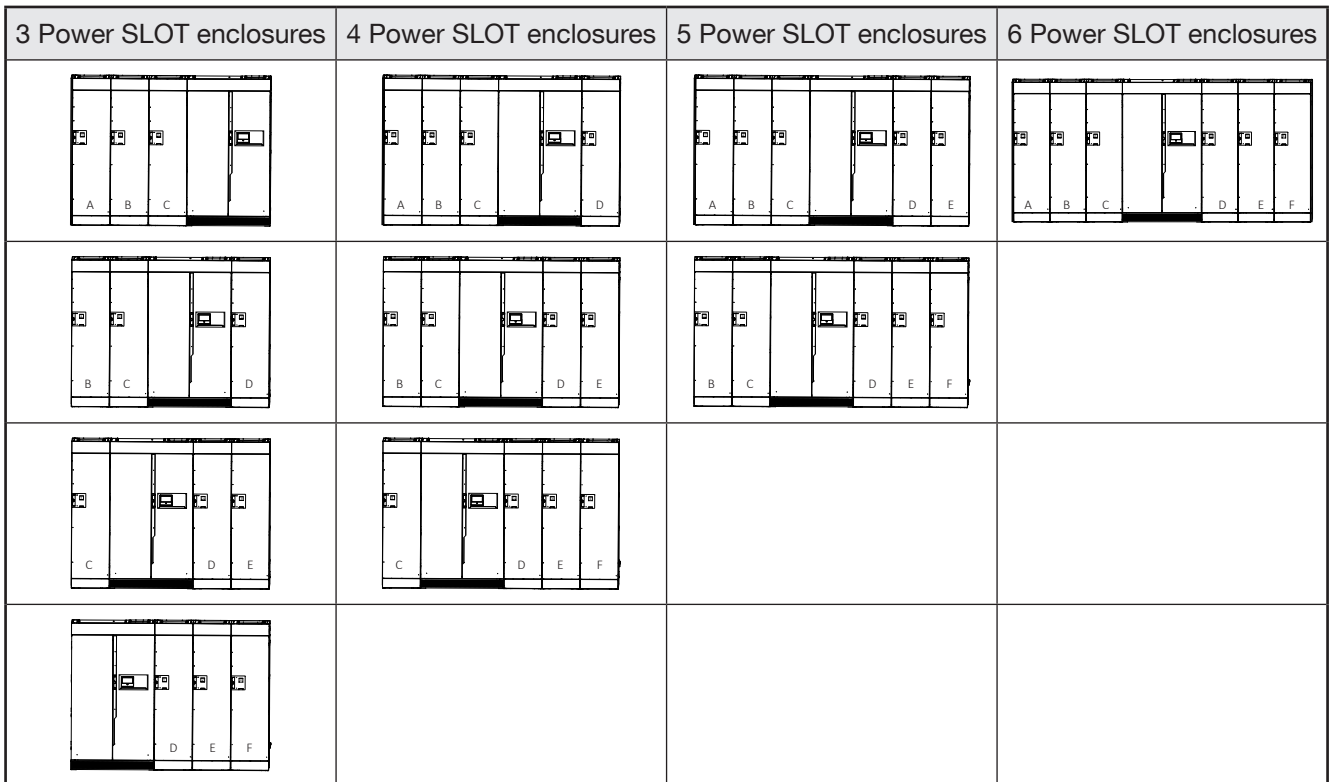
2.3. THE BRICKS

The MODULYS XL is built on a flexible brick concept. The UPS Unit can be built by associating the bricks according to the requirements.

1. Select the Power HUB.
 2. Specify the number of Power SLOT enclosures according to the maximum power and the redundancy level which is required to protect the load at the final stage.
 3. Specify the number of Power MODULE elements that are needed to protect the load at the initial stage; Power MODULE elements are plugged into installed Power SLOT enclosures.
- Unused Power SLOT enclosures are ready for later Power MODULE elements plug-in, when needed.

Dimensions and weight						
Section	View	Rated power (kVA / kW)	Width [W] (mm)	Depth [D] (mm)	Height [H] (mm)	Weight (kg)
Power HUB		Up to 1200	1200	975	2120	750
Power SLOT		200	550	975	2120	110
Power MODULE		200	500	950	1940	460

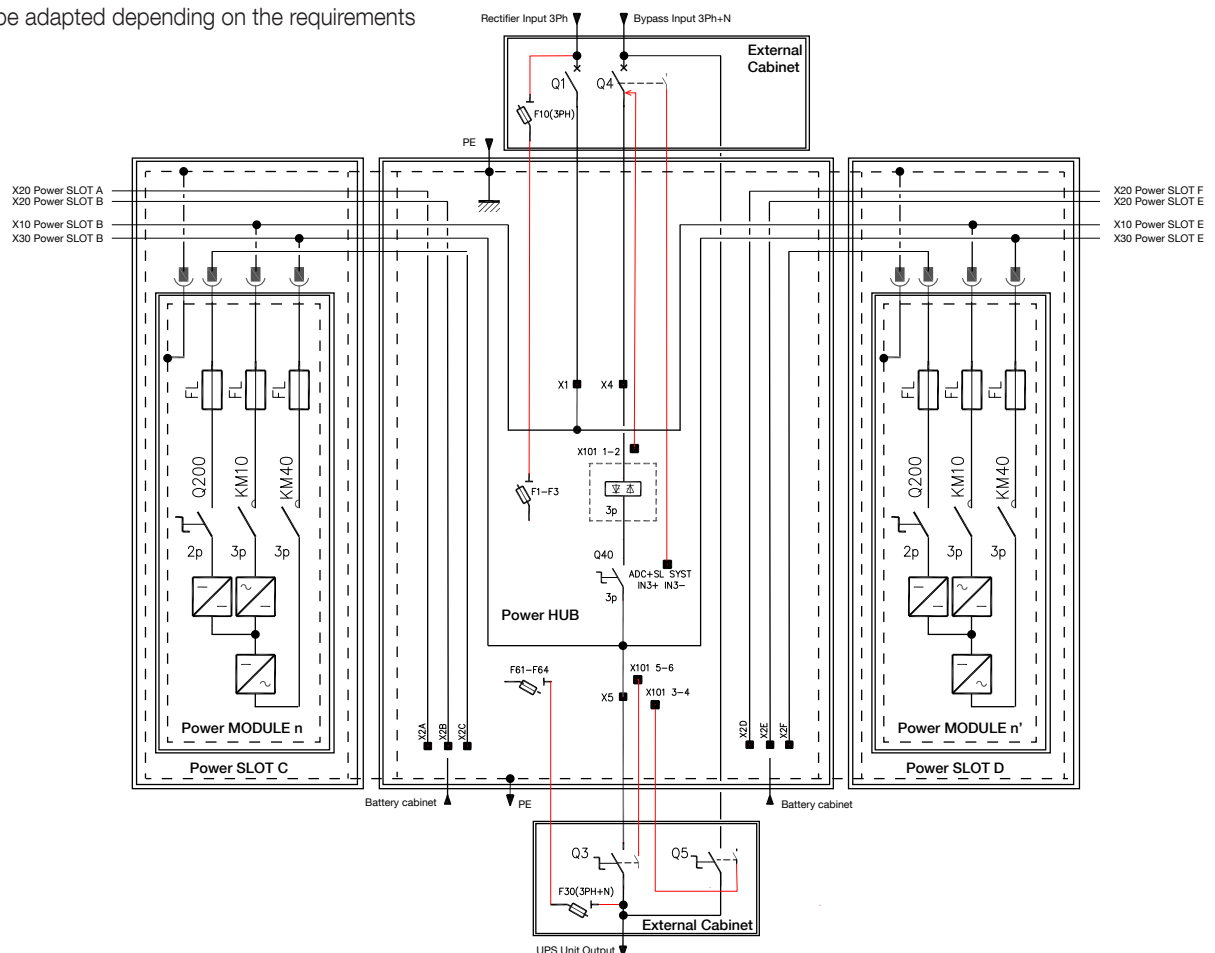
THE DESIGN ALLOWS FOR A FLEXIBLE NUMBER AND POSITION OF THE POWER SLOT ENCLOSURES - UP TO 3 ON EACH SIDE



The UPS UNIT can be defined as per required. Power SLOT enclosures installed at the initial stage are ready to hot-swap connection of the Power MODULE elements. The Power MODULE can be plugged into the Power SLOT without any constraints in terms of position or number. The Power SLOT position (A, B, C, D, E or F) is important because it is used for battery configuration.

2.4. SINGLE-WIRE ELECTRICAL DIAGRAM

Can be adapted depending on the requirements



3. SAFETY

3.1. IMPORTANT NOTE

- This document provides important instructions for the safe use, handling and connection of the Uninterruptible Power System (UPS).
- Socomec retains full and exclusive ownership of this document. Only a personal right to use the document for the application indicated by Socomec is granted to the recipient of this document. All reproduction, modification, dissemination of this document whether in part or whole and by any manner are prohibited except upon Socomec's express prior written consent.
- This document is not a specification. Socomec reserves the right to make any changes to data without prior notice.
- Keep this manual handy for future consultation, this Safety Information is to be retained for future reference.
- Reference security information is in English.
- The manufacturer will not be held liable for failure to follow the instructions in this manual, which is also available at www.socomec.com.
- The UNIT must be installed and activated only by qualified technical personnel authorized by Socomec (wearing appropriate safety headgear, gloves, shoes and glasses).
- The UNIT must be repaired only by authorized technicians that have been specially trained for this purpose (wearing appropriate safety headgear, gloves, shoes and glasses)
- Do not expose the UPS Unit to dust, rain or liquids in general. Do not insert foreign objects into the UPS Unit.
- It is recommended that the ambient temperature and the humidity of the MODULYS XL UPS Unit environment are maintained below the values specified by the manufacturer.
- The cabinets must be transported and handled in an upright position.



The MODULYS XL MUST be handled with the utmost care by at least two people.


- Connect the PE grounding conductor first before you make any other connection.




The UPS Unit power sources (rectifier and bypass) must be protected from transient power surges by devices suited to the installation; mains transient power surges must be limited to 2.5 kV. These devices must be sized to take into account all the installation parameters (geographical position, whether or not there is a lightning rod, whether or not there are other suppressors in the electrical installation etc.).

- Affix a label bearing the following words on all the external switches of the UPS Unit power supply:

005





BEFORE WORKING ON THIS CIRCUIT

- ISOLATE UNINTERRUPTIBLE POWER SYSTEM (UPS)
- THEN CHECK FOR HAZARDOUS VOLTAGE BETWEEN ALL TERMINALS INCLUDING THE PROTECTIVE EARTH

RISK OF VOLTAGE BACKFEED

- Do not connect the output neutral to ground (except for TNC earthing option). The MODULYS XL UPS Unit does not modify the system's neutral connections; the use of a galvanic isolation transformer is required if the modifications to neutral connections are required downstream of the UPS Unit (refer to § 8.5.1 Connecting earth cables).
- Switch off and isolate the UPS Unit and then wait for 5 minutes (after the Power MODULE has been extracted) before removing the protection panels in order to carry out work on parts under dangerous voltage.



The MODULYS XL UPS Unit could restart automatically.

- Before connecting the external battery cabinet, check that this is fully compatible with the model of the UPS Unit.
- The use of external battery cabinets not supplied by the manufacturers is not recommended.
- CAUTION: Danger of explosion if batteries are replaced with non-original ones.
- The batteries are considered as toxic waste. If they are replaced, entrust the used batteries solely and exclusively to specialist disposal companies As provided for by the local laws in force, batteries must not be disposed of with other industrial or domestic waste.



It is very dangerous to touch any part of the batteries as there is no isolation between the batteries and the mains power source.

- If the UPS Unit needs to be scrapped, it is essential to entrust the equipment solely and exclusively to specialist disposal companies These are obliged to dismantle and dispose of the various components in accordance with the legal provisions in force nationally.
- This equipment conforms to the European Community directives for professional equipment and bears the approval mark:



The regulations and standards applicable to the place of installation of the product must also be observed to ensure the prevention of accidents. The product you have chosen is designed for commercial and industrial use only. In order to be used for particular “critical applications” such as life support systems, medical applications, commercial transportation, nuclear facilities or any other application or systems where product failure is likely to cause substantial harms to person or property, the products may have to be adapted. For such uses we would advise you to contact Socomec beforehand to confirm the ability of these products to meet the requested level of safety, performance, reliability and compliance with applicable laws, regulations and specifications.



This product is designed for secondary industrial and commercial applications. Installation restrictions or additional measures may be needed to prevent disturbances.



The liability of Socomec in relation with the product subject of these instructions is as stated in the applicable conditions of sales agreed between Socomec and its client.

3.2. DESCRIPTION OF THE SYMBOLS USED ON THE LABELS AFFIXED TO THE UNIT

All recommendations and warnings on labels and plates attached to the interior or exterior of the equipment must be observed.



DANGER! HIGH VOLTAGE (BLACK/YELLOW)



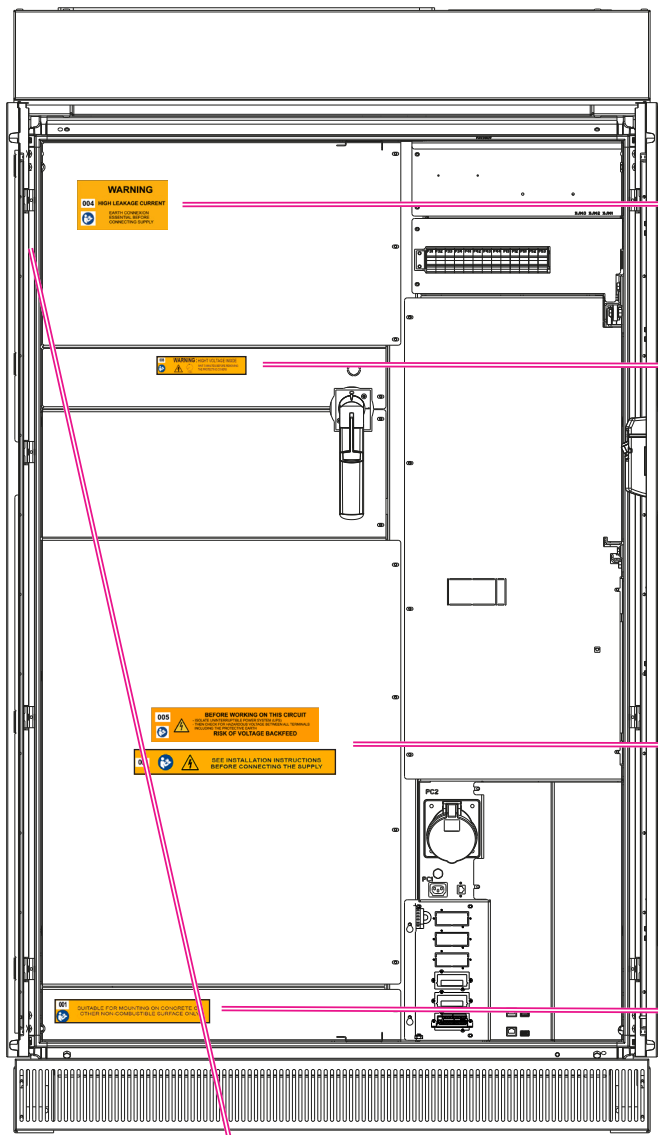
EARTH TERMINAL



READ THE MANUAL BEFORE USING THE UPS Unit

3.3. LABEL POSITIONS

3.3.1. POWER HUB



WARNING
004 HIGH LEAKAGE CURRENT
 EARTH CONNEXION
 ESSENTIAL BEFORE
 CONNECTING SUPPLY

003 WARNING : HIGHT VOLTAGE INSIDE
 WAIT 5 MINUTES BEFORE REMOVING
 THE PROTECTIVE COVERS

005 BEFORE WORKING ON THIS CIRCUIT
 - ISOLATE UNINTERRUPTIBLE POWER SYSTEM (UPS)
 - THEN CHECK FOR HAZARDOUS VOLTAGE BETWEEN ALL TERMINALS
 INCLUDING THE PROTECTIVE EARTH
RISK OF VOLTAGE BACKFEED

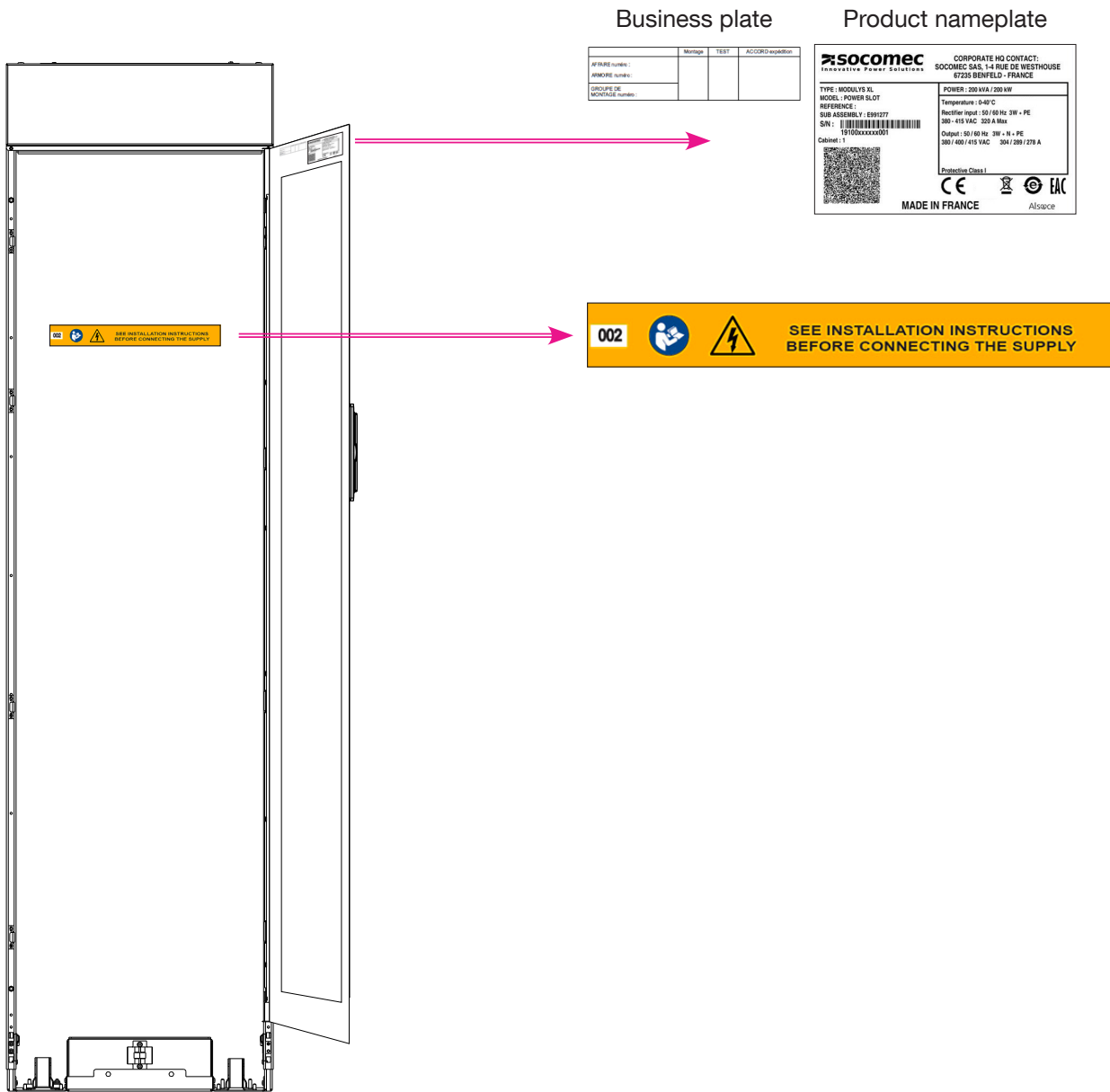
**002 SEE INSTALLATION INSTRUCTIONS
 BEFORE CONNECTING THE SUPPLY**

**001 SUITABLE FOR MOUNTING ON CONCRETE OR
 OTHER NON-COMBUSTIBLE SURFACE ONLY**

Product nameplate

SOCOMEc Productive Power Solutions		CORPORATE HQ CONTACT: SOCOMEc SAS, 14 RUE DE WESTHOUSE 67235 BENFELD - FRANCE	
TYPE: MODULYS XL MODEL: POWER SLOT REFERENCE: E991377 SUB ASSEMBLY: E991377 SN: 19700xxxxx001 Cabinet: 1	POWER: 200 WVA / 200 WVA Temperature: 0-40°C Rectifier input: 50 / 60 Hz 3W - PE 380 - 415 VAC 325 A Max Output: 50 / 60 Hz 3W - N - PE 200 / 600 415 VAC 30A / 200 / 270 A	Protective Class I CE EAC MADE IN FRANCE Alsace	

3.3.2. POWER SLOT



Business plate

AFRAME number:	Montage	TEST	ACCORD expiration
ANSI/IEC number:			
COULURE DE MONTAGE number:			

Product nameplate

socomec
Innovative Power Solutions

CORPORATE HQ CONTACT:
SOCOME SAS, 1-4 RUE DE WESTHOUSE
67225 BENFELD - FRANCE

TYPE: MODULYS XL MODEL: POWER SLOT REFERENCE: SUB ASSEMBLY: E991277 S/N: 191200xxxxx001 Cabinet: 1	POWER: 200 A / 200 kW Temperature: 0-40°C Rectifier input: 50/60 Hz 3W - PE 380 - 415 VAC 200 A Max Output: 50/60 Hz 3W - N - PE 300 / 400 / 415 VAC - 304 / 289 / 278 A
---	---

Protective Class I

CE EAC

MADE IN FRANCE Alsace

002 **SEE INSTALLATION INSTRUCTIONS BEFORE CONNECTING THE SUPPLY**

3.3.3. POWER MODULE

Business plate

AFWIRE number:	Montage	TEST	ACCORDO expiration:
AWIRE number:			
CABINET number:			

002 **SEE INSTALLATION INSTRUCTIONS BEFORE CONNECTING THE SUPPLY**

003 **WARNING : HIGHT VOLTAGE INSIDE**
WAIT 5 MINUTES BEFORE REMOVING THE PROTECTIVE COVERS

001 **SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY**

004 **WARNING**
HIGH LEAKAGE CURRENT
EARTH CONNEXION ESSENTIAL BEFORE CONNECTING SUPPLY

Product nameplate

socomec Innovative Power Solutions		CORPORATE HQ CONTACT: SOCOMEC SAS, 14 RUE DE WESTHOUSE 87255 BENFIELD - FRANCE	
TYPE : MODULYS XL	POWER : 200 kVA / 200 kW	Temperature : 0-40°C	
MODEL : POWER SLOT	Rectifier input : 50 / 60 Hz 3W + PE		
REFERENCE :	380 - 415 VAC 320 A Max		
SUB ASSEMBLY : E991277	Output : 50 / 60 Hz 3W + N + PE		
SN :	380 / 400 / 415 VAC 304 / 280 / 278 A		
19100xxxxxx001			
Cabinet : 1			
	Protective Class I		
		MADE IN FRANCE	Alsace

107 **Do not close battery switch Q200 if rectifier is OFF.**

Do not handle on sloping surfaces

4. FOREWORD

4.1. GENERAL REMARKS

Thank you for the trust you have placed in us by choosing Socomec Uninterruptible Power Systems.

This equipment is fitted with up-to-date technology with power semiconductors (IGBT) including digital micro-controllers.

Our equipment complies with standards IEC 62040-2 and IEC 62040-1.



This is a product for restricted sales distribution to informed partners. Installation restrictions or additional measures may be needed to prevent disturbances.

4.2. REGULATIONS: ENVIRONMENTAL PROTECTION

Recycling of electrical products and equipment

Provision is made in European countries to dismantle and recycle materials making up the system. The various components must be disposed of in accordance with the legal provisions in force in the country where the system is installed.

Battery disposal

Used batteries are considered as toxic waste. It is therefore essential to entrust them solely and exclusively to firms specialised in their recycling. They cannot be treated with other industrial or household waste, as set out in local regulations in force.

5. STORAGE, TRANSPORT AND HANDLING

If the product is to be stored for more than 6 months, please contact us.

The MODULYS XL must remain in a vertical position during all shipping and handling operations.

Ensure that the floor is strong enough to support the weight of the UPS Unit and of the battery cabinet, if used.



Avoid moving the unit by putting pressure on the front door.



The UPS Unit **MUST** be handled with the utmost care by at least two people.

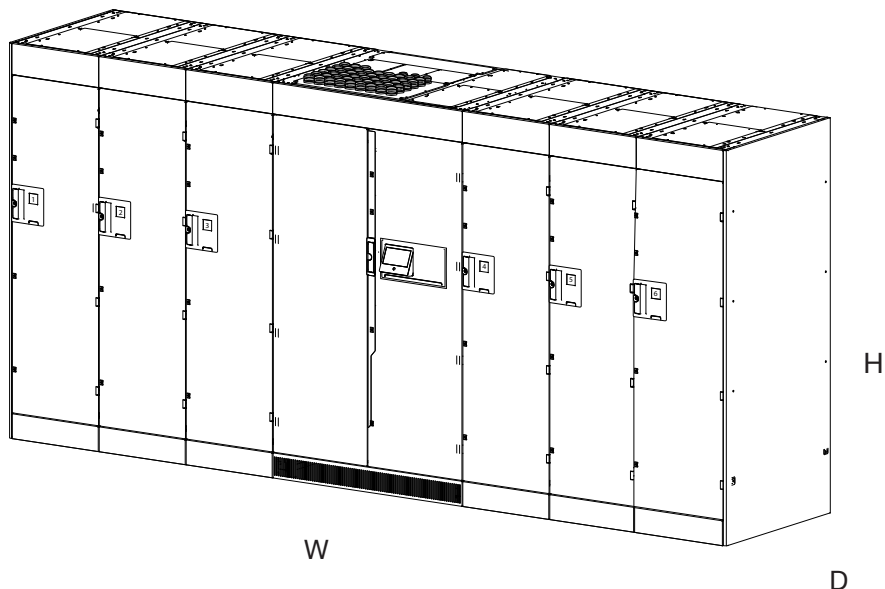


CAUTION IF DAMAGED.

Packages, crushed, punctured, or torn such that contents are revealed must be set aside in an isolated area and inspected by a qualified person. If the package is deemed to be not shippable, the contents must be promptly collected, segregated, and either the consignor or consignee should be contacted.

5.1. DIMENSIONS AND WEIGHT (TOTAL)

UNIT dimensions						
Number of Power SLOT			3	4	5	6
Maximum power (kW)			600	800	1000	1200
UNIT size	Width [W]	mm	2890	3440	3990	4540
	Depth [D]	mm	975			
	Height [H]	mm	2120			
Weight		kg	2500	3100	3650	4250
Single unit clearances		mm	No rear or lateral clearance; Top = 400 mm			
Access for maintenance		mm	Front only (≥ 1200 mm free space for Power MODULE extraction)			



5.2. LIST OF ACCESSORIES

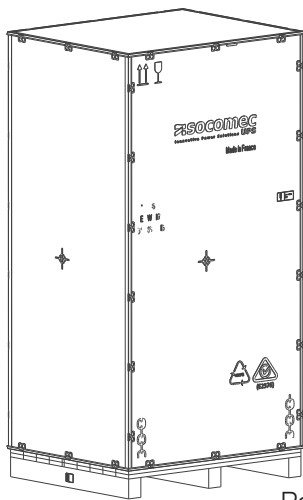
Item Code	Description	Quantity	Location
203605	SCREW H M 10 25 8.8	32	Power HUB
1521205	CONTACT WASHER Ø10 NORMAL ZnB	32	Power HUB
E226338	LABEL NUMBER MXL	1	Power HUB
E236144	CABINET SHIM (WEDGE)	2	Power HUB
E432378	SCREW ATFOR CBX M5-8 ZnB	16	Power HUB
E943216	KIT BATT TEMP SENSOR	1	Power HUB
EA060528	CAN TERMINAL RESISTOR PLUG	2	Power HUB
EA224143-AX	LOWER GRID	2	Power HUB
EA225123	SPLINTING PLATES	8	Power HUB
EA226423	IP ACCES SCREEN	2	Power HUB
EA228203	LATERAL SCREEN PLATES	2	Power HUB
LCA-M807074	MXL SLOT-PUJ_DC to AC	1	Power HUB
LCA-M807234	MXL 1200-PUJ_MAINTENANCE_EXTENSION	1	Power HUB
202405	SCREW H M 6 30 8.8	1	Power Slot
203605	SCREW H M 10 25 8.8	32	Power Slot
1504005	NUT H M6 CLASS 8 ZnB	1	Power Slot
1521205	CONTACT WASHERS Ø10 NORMAL ZnB	32	Power Slot
E430028	SCREW TENSILOCK H M6x16 8.8 ZnB	4	Power Slot
E430038	SCREW TENSILOCK H M8X20 8.8 ZnB	8	Power Slot
E430058	NUT TENSILOCK M8 CL. 8 ZnB	8	Power Slot
EA060938	ASSEMBLED CABLE RJ45 FUTP 1M	1	Power Slot
EA224423	SPLINTING PLATES	8	Power Slot

5.3. UNPACKING PROCEDURE

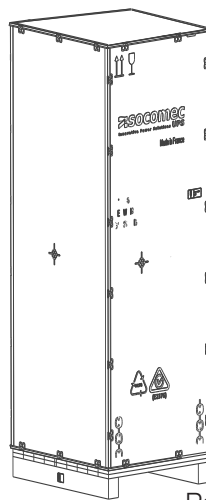
Place the various elements in the installation area.



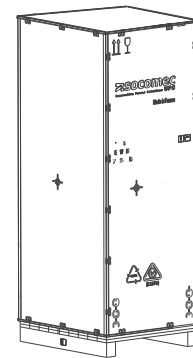
The packaging guarantees the stability of the product during transport and delivery. Take the packaged product as close as possible to the installation site.



Power HUB



Power SLOT



Power MODULE



IMPORTANT: IN THE EVENT OF DAMAGE Packages, crushed, punctured, or torn such that contents are revealed must be set aside in an isolated area and inspected by a qualified person. If the package is deemed to be not shippable, the contents must be promptly collected, segregated, and either the consignor or consignee should be contacted.



All packaging material must be recycled in compliance with the laws in force in the country where the system is installed.



The Power HUB is delivered with 2 side panels. These panels must be removed from the Power HUB and used to close both sides of the complete system.



The Power SLOT is shipped upside down (because of the weight positioned at the top) on a pallet, between 4 brackets preventing it from slipping.

It can be easily turned over (on the largest side) by two people (110 kgs).



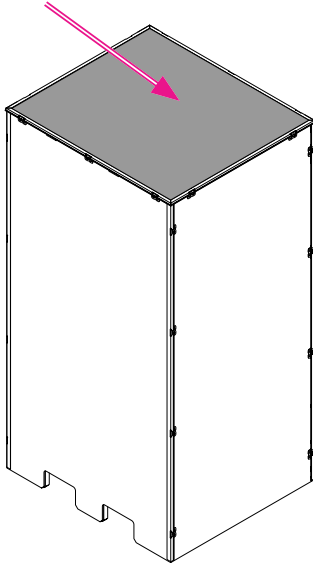
CAUTION: Handle with care to avoid dropping the Power SLOT.



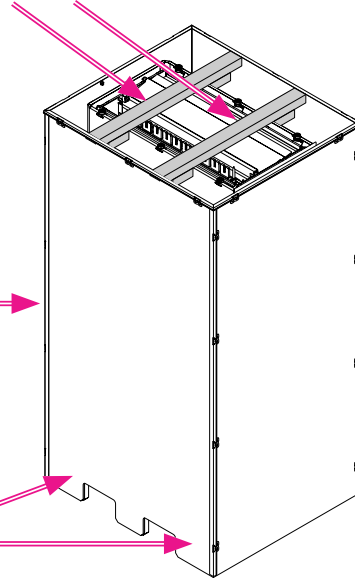
CAUTION: Handle with care to avoid dropping the Power MODULE.

UNPACKING THE POWER MODULE:

1- Remove the top

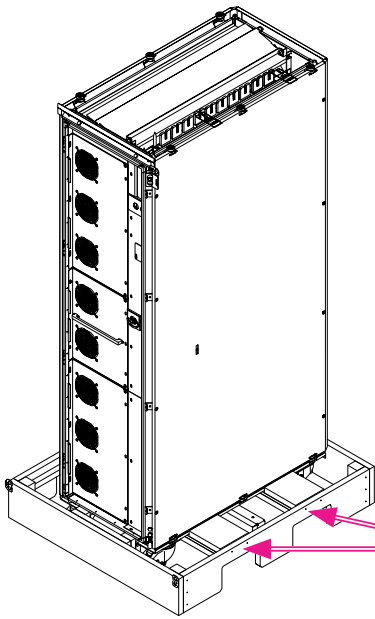


2- Remove the 2 cleats

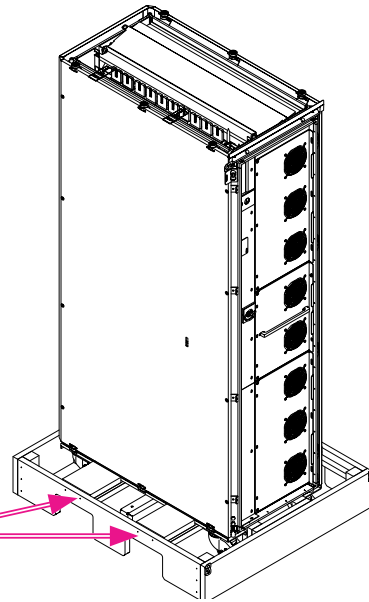


4- Remove the 4 panels

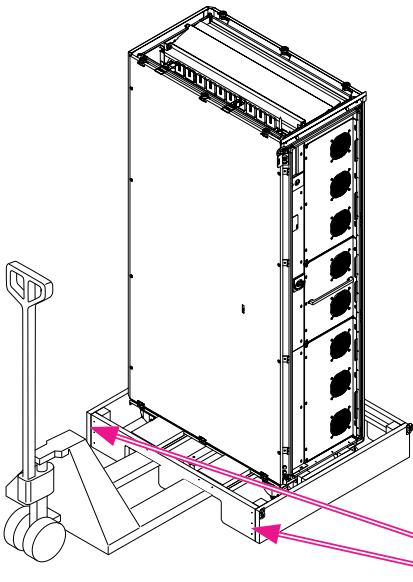
3- Remove screws on each side



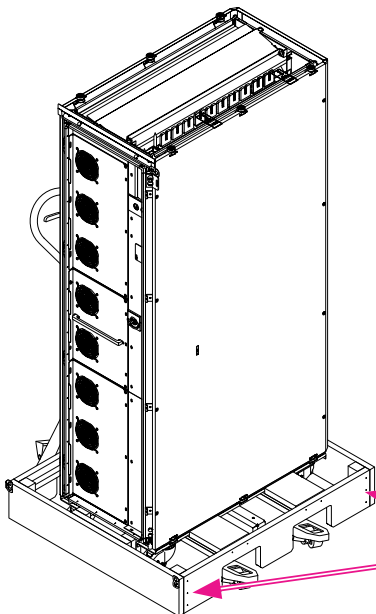
5- Remove the 2 x 2 screws



6- Positioning the forklift, lift it until the pallet rises slightly.

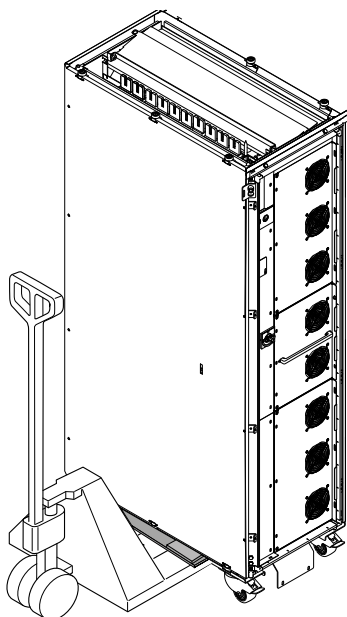


7- Remove the 2 x 3 screws



8- Remove the 2 x 3 screws

9- Remove the plates from the 4 sides

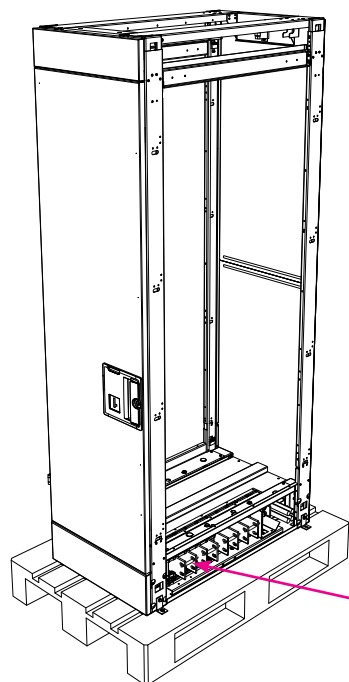


10- Gently place the module on its wheels and remove the forklift and the 2 wooden crossbars

UNPACKING THE POWER SLOT:

The Power SLOT arrive on pallet upside down due to transportation constraints. In that case, the gravity center is lower in order to improve the stability

Initial status



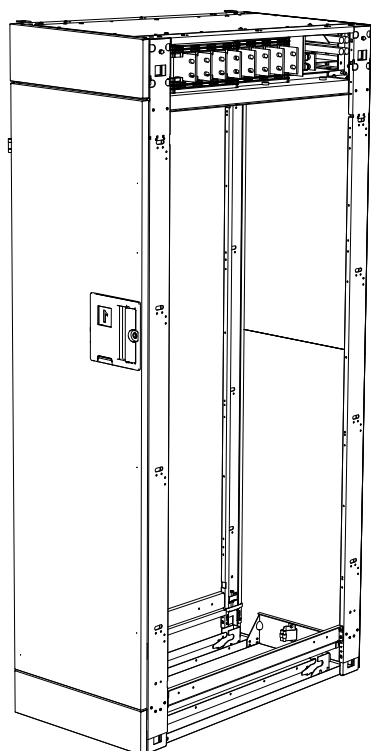
the Power SLOT weighs 110 kg



The copper bars are held together with plastic clamps. Only remove them once the Power SLOT has been turned over.

Please follow the unpacking manual to reverse the power slot according to the local standard (the number of people according to the weight of the Power SLOT)

Final position



5.4. HANDLING FROM THE TOP



When being moved, the cabinets must be kept in an upright position.



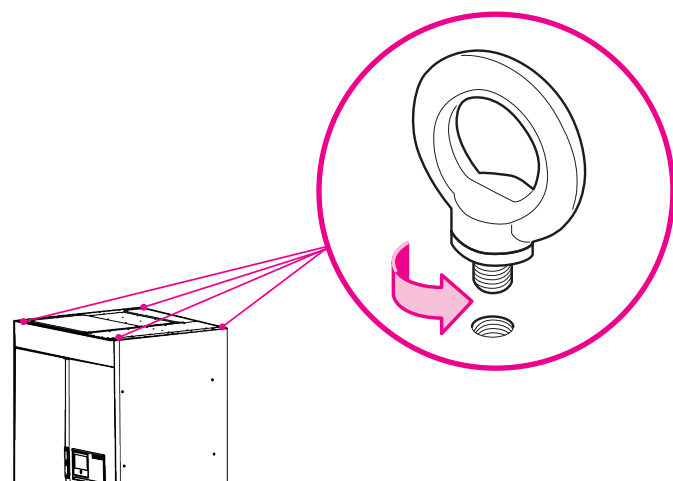
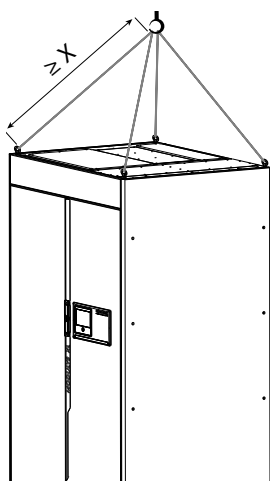
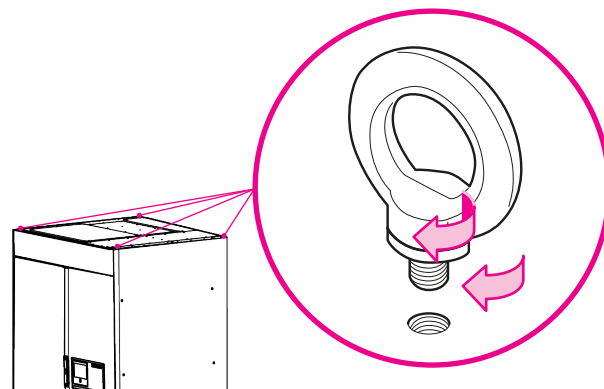
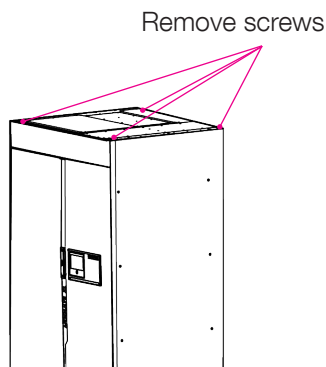
Never use harnesses!

5.4.1. HANDLING WITH BELTS

- Hoisting rings (delivered on request): inner \varnothing 30 mm, M12 thread.



Lift and handle the cabinets with the utmost care and without jerking.



- Length of belts X:

	Power HUB	Power SLOT	Power MODULE
X \geq (cm)	200*	150* ⁽¹⁾	150

* Without threading ⁽¹⁾ once returned

Note: to insert the rings at the front of the Power MODULE, it is necessary to remove the panel at his top.

5.5. HANDLING FROM UNDERNEATH

The Power SLOT and Power MODULE arrive on pallets.



Given the equipment is heavy, handling using a pallet truck on slopes or ramps – even only slightly inclined, is hazardous and can cause severe accidents.



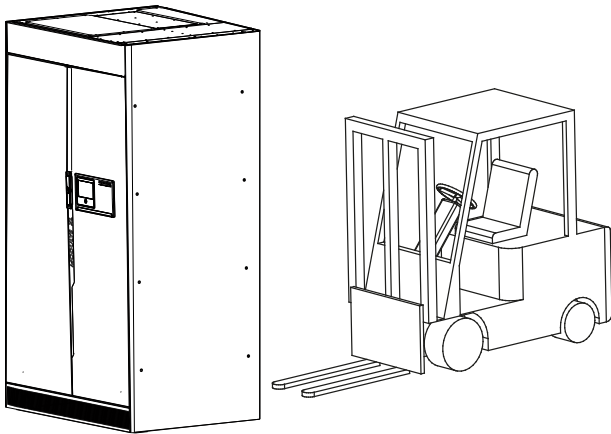
When moving the unit on even slightly sloping surfaces, use the blocking equipment and breaking devices to ensure that the unit does not fall over.



Take all required precautions and use appropriate means and tools.

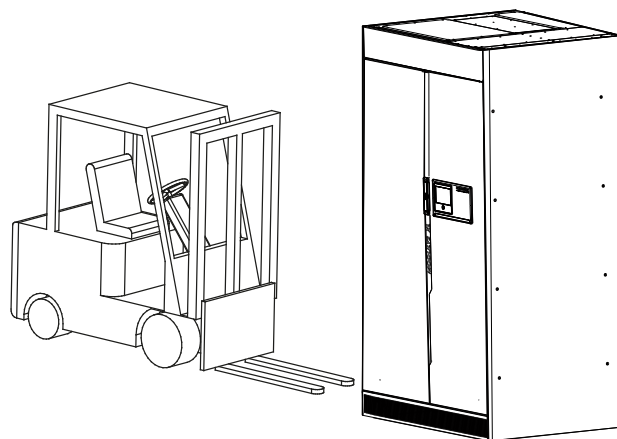
HANDLING FROM THE FRONT OR REAR

Remove the lower grids on the front and rear of the UPS and place the forklift under the unit.



LATERAL HANDLING

Lateral handling is also possible, provided that the side panels are removed.



The fork should be at least 2 cm longer than the cabinet.

To take the POWER MODULE off its pallet, it must be lifted by lateral handling

6. POSITIONING

6.1. ENVIRONMENTAL REQUIREMENTS

- The MODULYS XL is not designed for outdoor use.
- Do not expose the MODULYS XL to direct sunlight or to sources of excessive heat.
- The recommended operating temperature, humidity and altitude values are listed in the technical specifications table (see § 13). Cooling systems may be required to maintain these values.
- The MODULYS XL must be installed in an environment without obstructions and which is dry, clean and dust-free.
- Avoid dusty environments or areas where there is dust from conductive or corrosive materials (e.g. metal dust or chemical solutions).
- The MODULYS XL can be installed against a wall. The upper part of the MODULYS XL must be positioned at least 40 cm away from the ceiling (see figure 6.1-1).
- The MODULYS XL switches are accessed from the front; however, a space of at least 1.5 metres should be left at the front of The MODULYS XL for maintenance purposes.
- For UPS units arranged frontally, leave a minimum space of 60 cm between the two open door cabinets to allow a passageway when both are open (in accordance with the provisions of standard IEC 60364 - see figure 6.1-1).
- Two MODULYS XL can be installed back to back (figure 6.1-2).
- Observe the direction of the ventilation flows (figure 6.1-3) and heat dispersion flows (figure 6.1-4). See § 6.2 for the technical specifications relating to the required ventilation values.



Provide enough space around MODULYS XL to be able to move the Power MODULE and introduce it into its Power SLOT, see § 14.1.



The MODULYS XL should only be installed on a concrete surface or other non-combustible surface.



In case of corrosive or industrial atmosphere environments, please consult us.



For all the safety requirements of the battery installation, such as battery room ventilation, consult also the applicable international and local safety codes and standards.



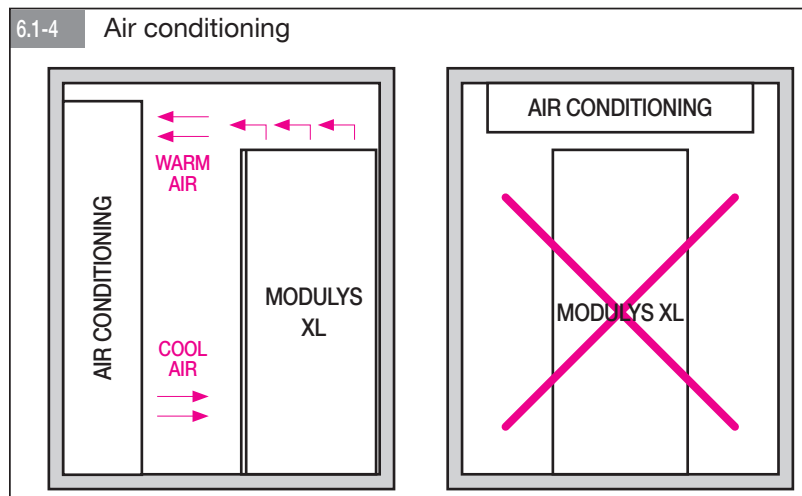
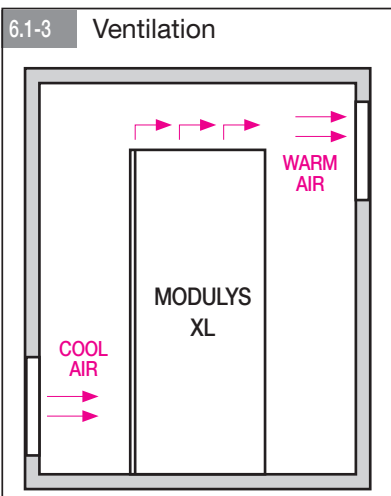
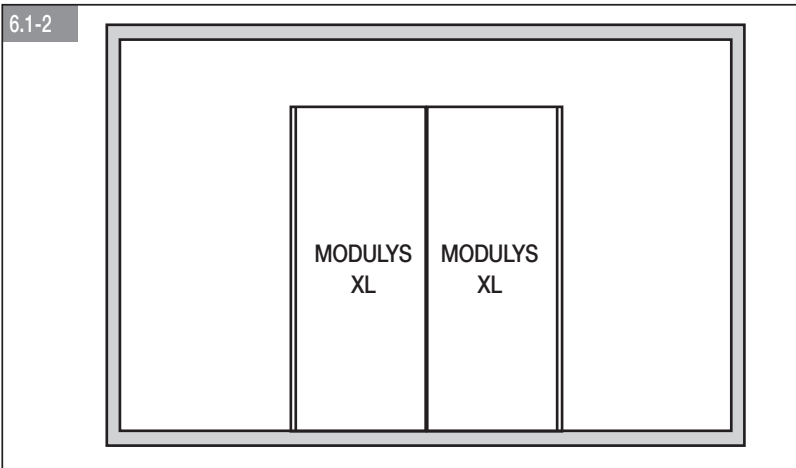
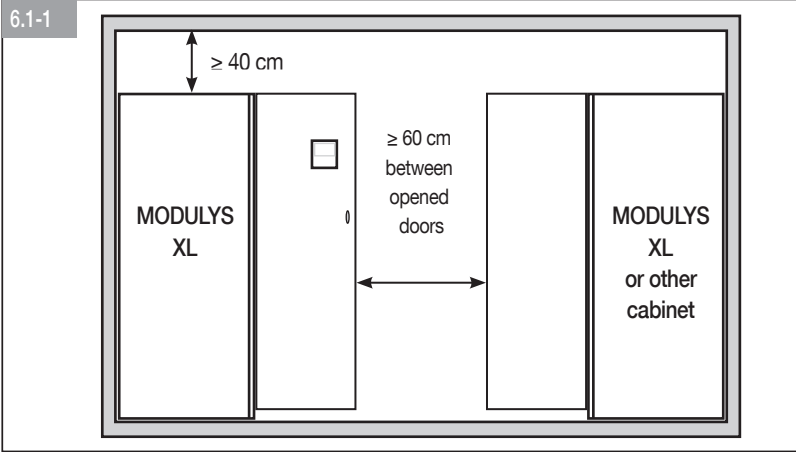
In compliance with standard IEC 60364-4-42, the MODULYS XL must be installed in a room with restricted access; entry into this restricted access room should only be possible for authorized qualified personnel.



For optimum ventilation, the side panels must remain in place.



For fixing on the floor, see § 14.2.



6.2. HEAT DISSIPATION AND VENTILATION CHARACTERISTICS

UNIT rated power (kVA)		200	400	600	800	1000	1200	200	400	600	800	1000
System configuration		N configuration						N+1 redundant configuration				
Number of Power MODULE elements (200 kW)		1	2	3	4	5	6	1+1	2+1	3+1	4+1	5+1
Maximum air flow	(m ³ /h)	2100	4200	6300	8400	10500	12600	4200	6300	8400	10500	12600
Power dissipation (max) in the worst conditions	(kW)	10.4	20.8	31.2	41.7	52.1	62.5	10.2	21.2	32.6	44.3	55.7
	(kcal/h) x1000	8.9	17.9	26.8	35.8	44.7	53.7	8.7	18.1	27.9	37.9	47.7
	BTU/h x1000	36	71	106	142	178	213	35	73	113	153	193

6.3. FLOOR MOUNTING

Extension feet may be required depending on the UPS Unit system and its configuration.

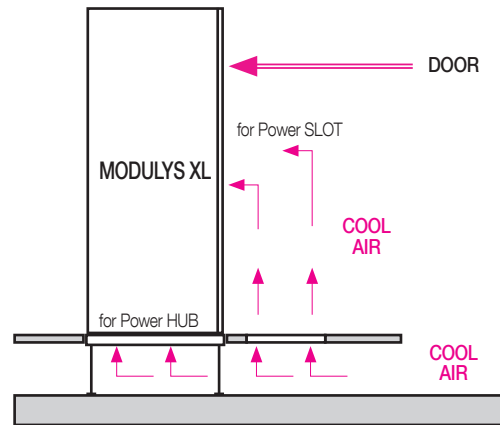
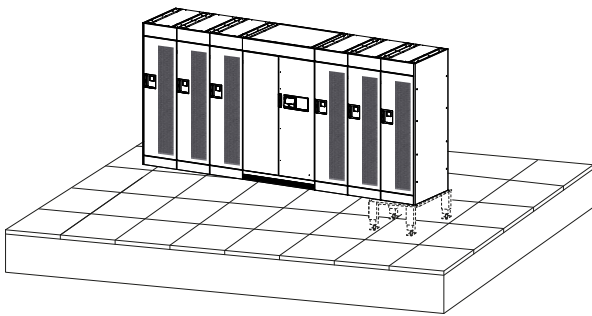
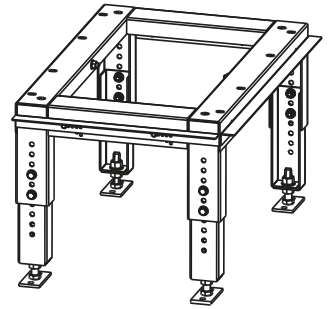
6.3.1. INSTALLATION ON RAISED FLOORING

If the MODULYS XL is to be installed on raised flooring, the Socomec adjustable frame (see figure on the right) must be used to support the weight of the unit (see figure below left).

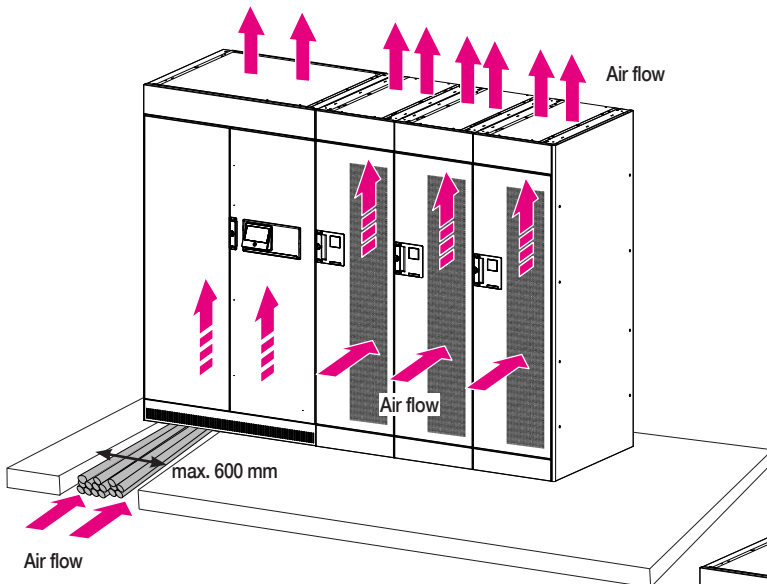


Refer to the relevant installation manual provided in the packaging for information on frame assembly operations.

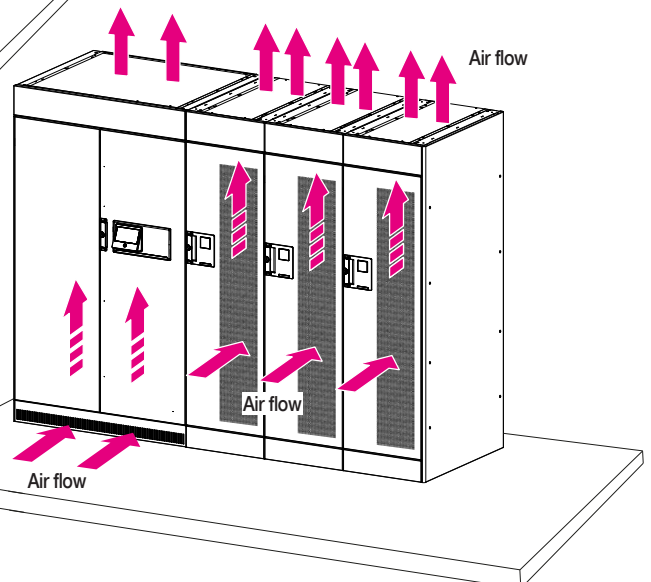
Allow for small openings in the floor panels to ensure the air flow at the front for the Power SLOT and from below for the Power HUB (see figure below right).



6.3.2. INSTALLATION OVER CABLE TRENCH



Make sure that the rails (width 105 mm) on which the wheels of the Power Module will pass rest on a surface that can accept its weight



6.3.3. INSTALLATION ON CONCRETE FLOOR



The Power SLOT's rails, which must support the weight of the Power MODULE when it is inserted, must not be in the gap (see § 14.4).

7. ASSEMBLY



Special attention must be given to the assembly of the cabinets from the beginning in order to be able to correctly connect the last Power SLOT:

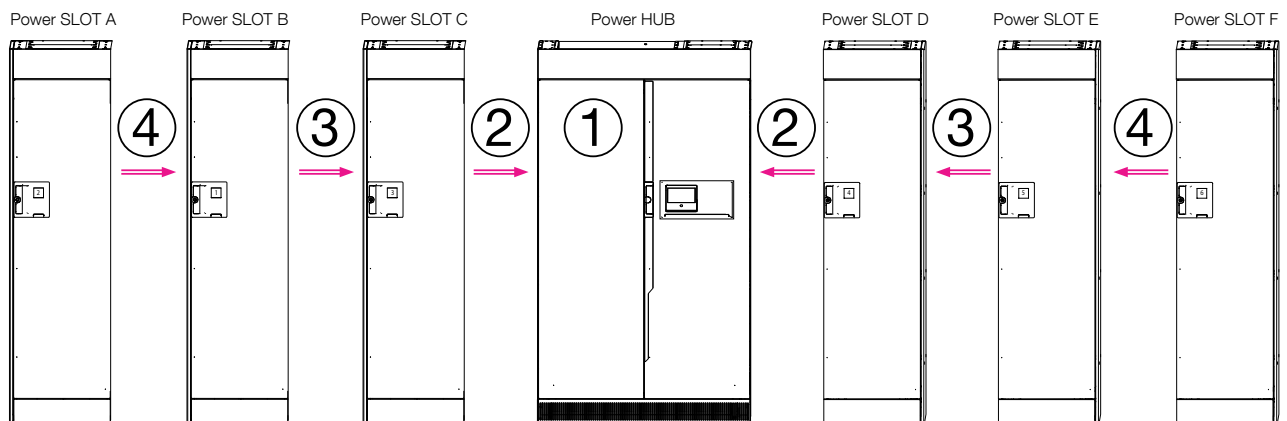
- the floor must be flat along the entire length of the system,
- the feet of the Power SLOT can be adjusted to compensate for up to 8 mm of difference between the front and back of the cabinet.



Using a ruler, check the flatness of the floor at the surface occupied by the UNIT.
Tolerances: Apply Class 2 (CSTC Records 2015 / 2.31).

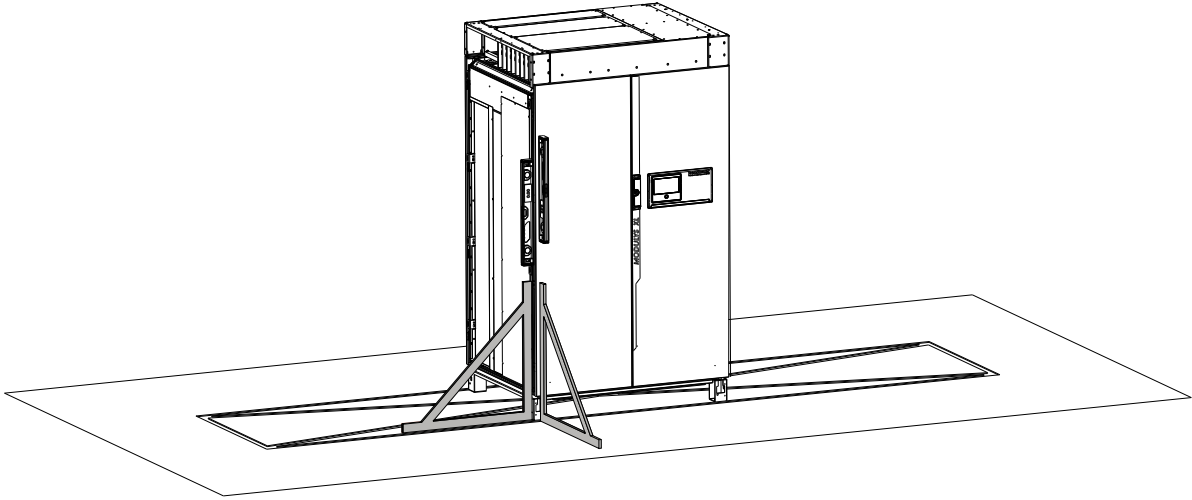
Flatness classes	Screed flatness tolerance depending on the length of the ruler	
	1 m	2 m
Class 1 (severe)	2 mm	3 mm
Class 2 (normal)	3 mm	4 mm
Class 3 (large)	5 mm	6 mm

ORDER OF ASSEMBLY:



7.1. POWER HUB POSITIONING

- Identify the location of the Power HUB and Power SLOT by marking the floor where the feet will rest.
- Using a 1.2 m long flat ruler and an electronic spirit level, read the direction of inclination in mm / m from the floor at the front, back and both sides of the floor space reserved for the Power HUB and the various Power SLOT enclosures.



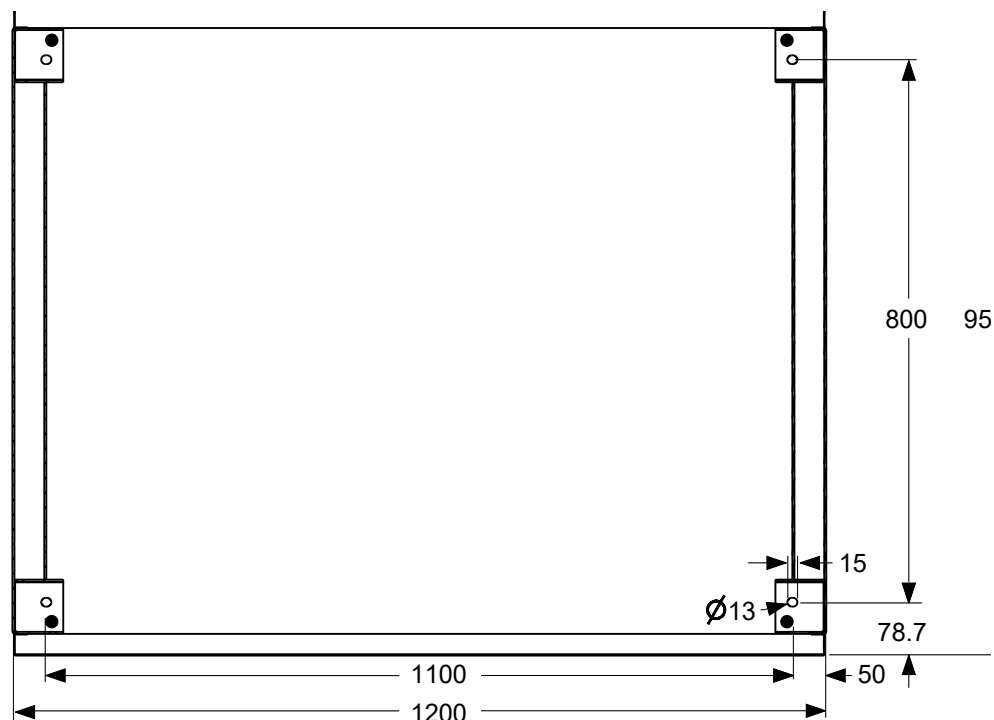
Since the Power HUB is the first cabinet to be installed, it will be necessary to take into account the different level measurements for the installation of the cabinet.

The Power HUB must be installed perpendicular to the floor in both directions (not necessarily level).



if no access is possible from the rear of the Power HUB cabinet (because it is adjacent to a wall or other cabinet), please connect the battery interconnection cables between the Power HUB and the Power SLOT (and their bridging bars if needed) before positioning the Power HUB cabinet (see § 7.3 C and § 9.4).

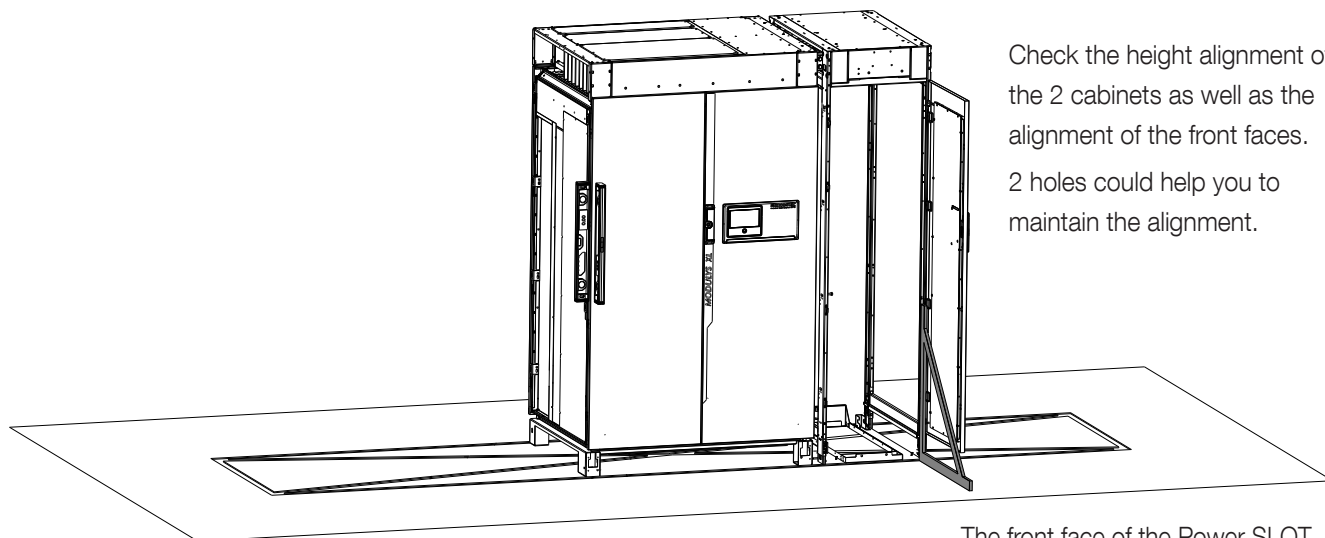
- To fasten the Power HUB (mandatory for standard seismic resistance zone 2 - 4), drill the floor and use dowels with M10 lag bolts. Without seismic constraints, it is not necessary to fix the power HUB.



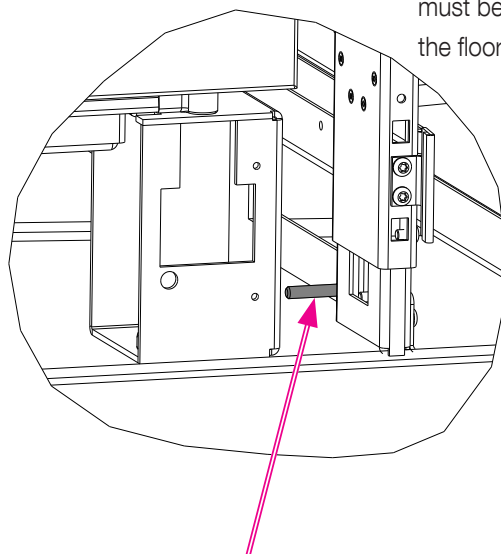
- Dismantling of the 2 side panels and their 8 fastening clips that will be assembled once the installation is completed at the ends of the UNIT.

7.2. ADDING A POWER SLOT TO THE POWER HUB

The Power SLOT must be placed depth-wise, leaving a space of 50 mm between the cabinets. Once in place depth-wise, push the Power SLOT against the Power HUB or against another Power SLOT.



Check the height alignment of the 2 cabinets as well as the alignment of the front faces. 2 holes could help you to maintain the alignment.



The front face of the Power SLOT must be installed perpendicular to the floor (not necessarily level).

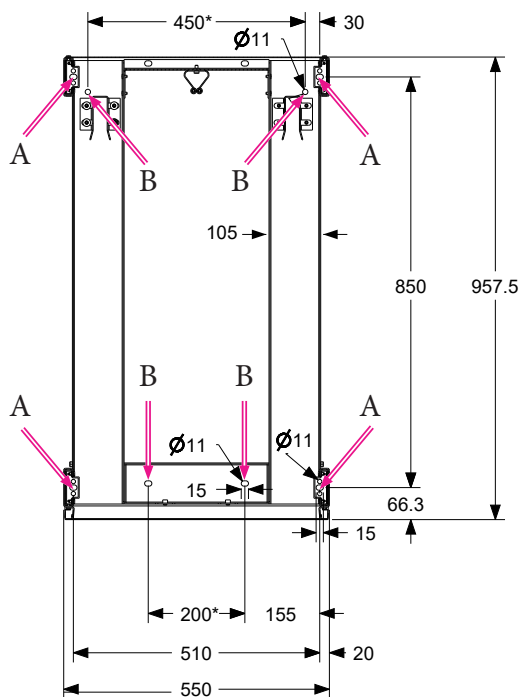
Installation of a M6 x 30 screw. This screw is used to position the Power SLOT relative to the Power MODULE.

The screw must pass behind the foot of the Power MODULE and be in contact with the foot.



This screw must be removed once the cabinets are screwed together

A. Ground drilling for Power SLOT.



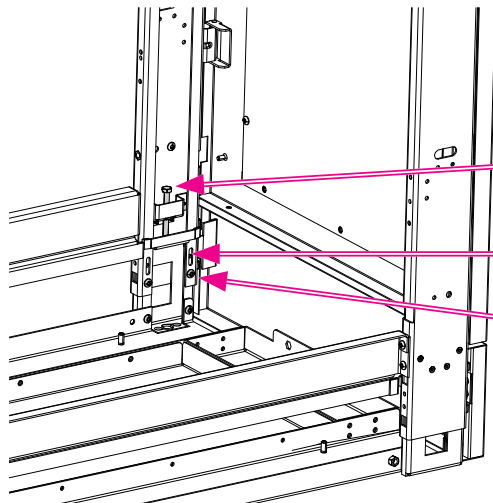
A: For the Power Slot fastening, drill the floor and use 4 dowels with M10 lag bolts.

B: In case of seismic constraints (zone 2 – 4) – Please use additional fastening to be compliant



Make sure that the rails (width 105 mm) on which the wheels of the Power Module will pass rest on a surface that can accept its weight

B. Height adjustment of the Power SLOT if needed.



2. Adjust the height of the Power SLOT using the M6 screw (1 turn of the screw corresponds to 1 mm in height),

3. Place the two M5 self-drilling screws in the slotted (oblong) hole.

1. Remove the two M5 self-drilling screws,

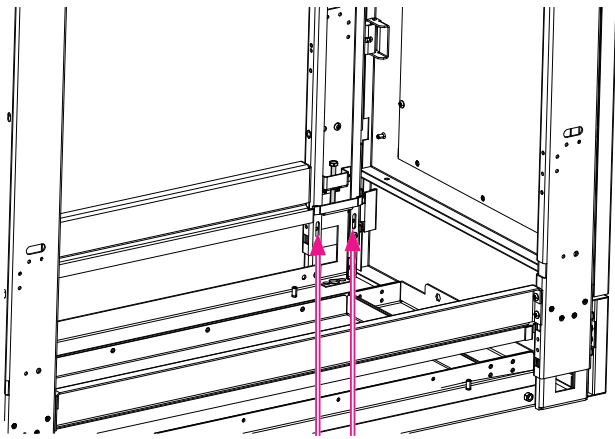
C. Angle of inclination for rails.

Once the Power SLOT is installed, the angle of inclination must be compared between the 2 rails. If there is a difference in the depth of inclination between the 2 rails of more than 2 mm/m, it will be necessary to insert shims, preferably at the rear, under the rail with the least inclination.

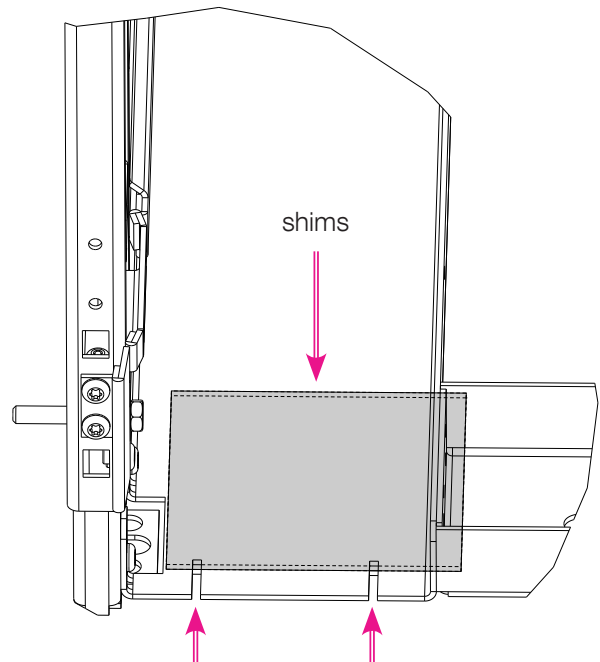
In addition, the depth-wise inclination of the 2 rails must be in the same direction. If this is not the case, E236144 thickness shims must be added under the SLOT rails at the front or at the rear (maximum 4 shims, each 2mm thick) to ensure that both rails have the same angle of inclination.

If more than one shim is required, one or more shims must be added in the middle of the rail to minimize rail bending.

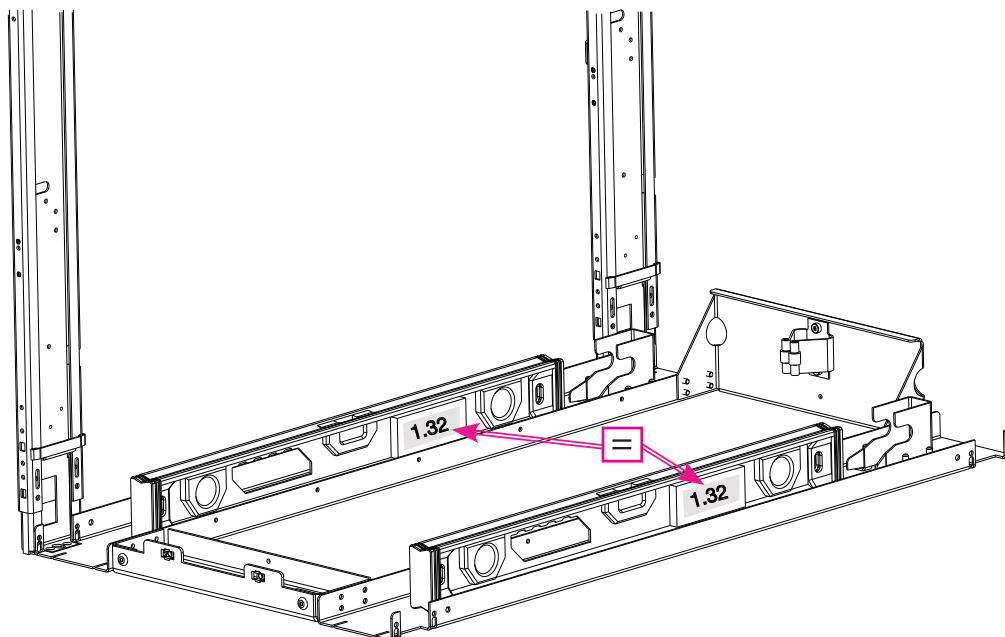
The angle of inclination measured in the rails must be on the uprights. A tolerance of 1 mm / m is acceptable.



By removing the M5 self-tapping screws, thickness shims can be placed under the rail. The screws must be reassembled after rigging. At the rear, a 25 torx point with rounded end should be used.

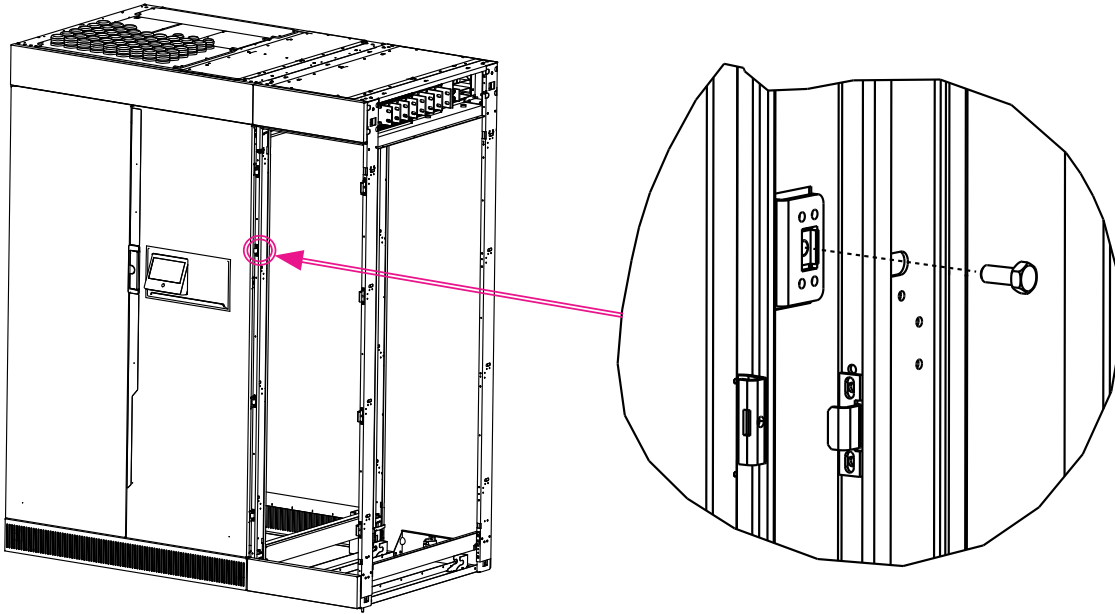


The elasticity slots must remain clear



D. Screwing the Power SLOT to the Power HUB.

Using eight M8 x 20 screws.

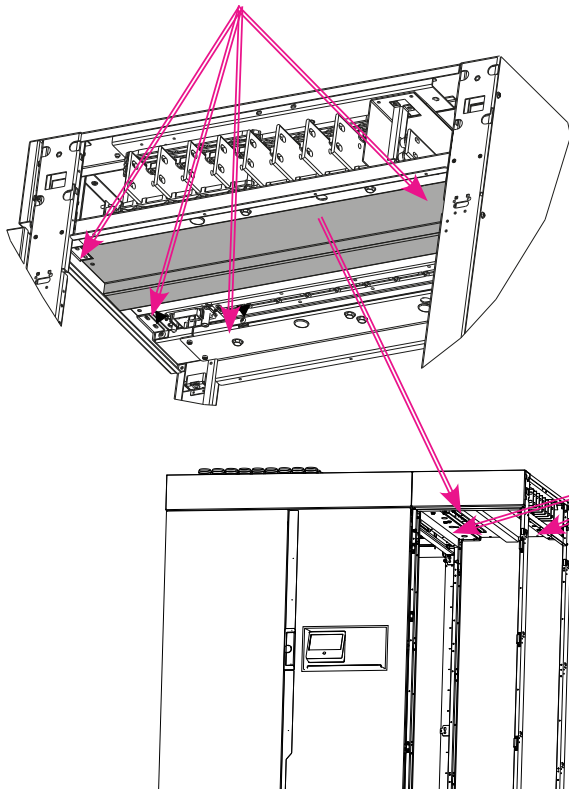


7.3. POWER CONNECTION

Removing the grids inside at the top of the Power SLOT to allow the installation of:

A. The battery interconnections.

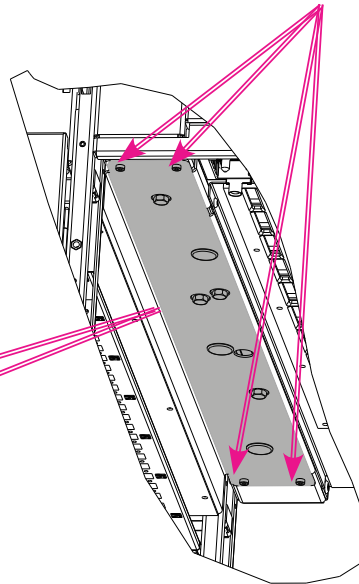
Remove the 5 M5 screws starting with the 3 at the front and the 2 at the back



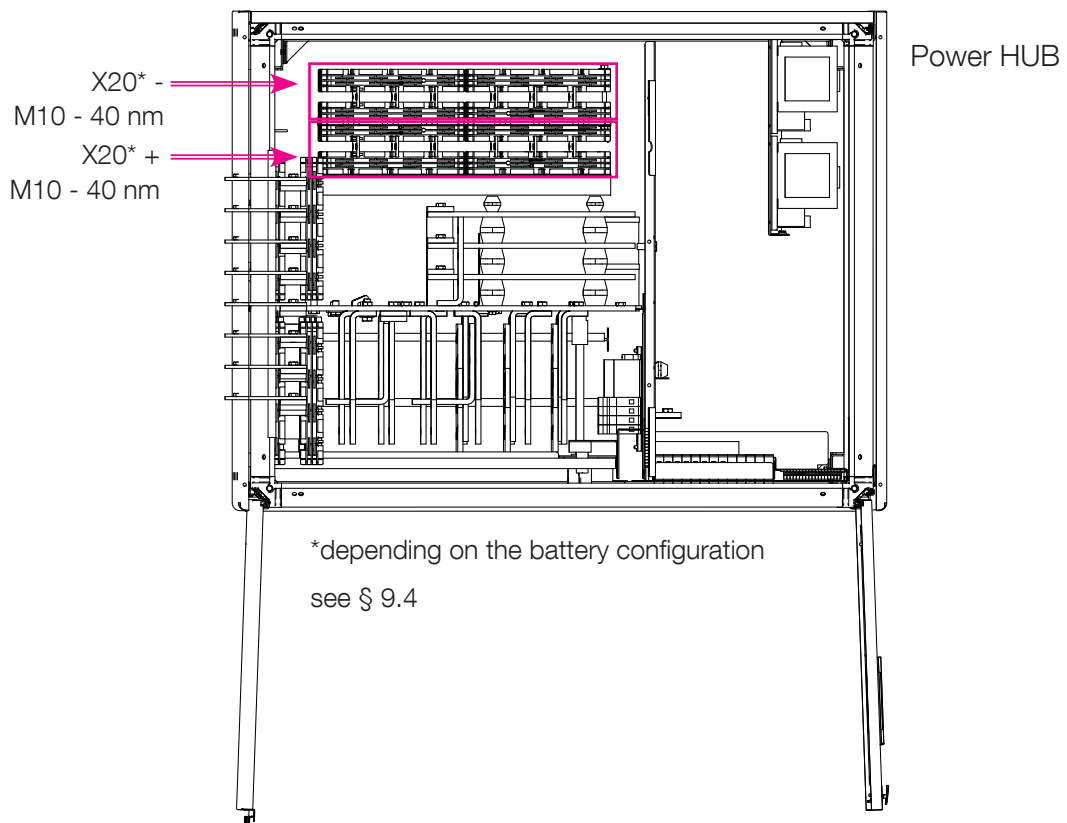
B. The splinting plates.

Remove 4 M5 screws on the left side

Remove 4 M5 screws on the right side



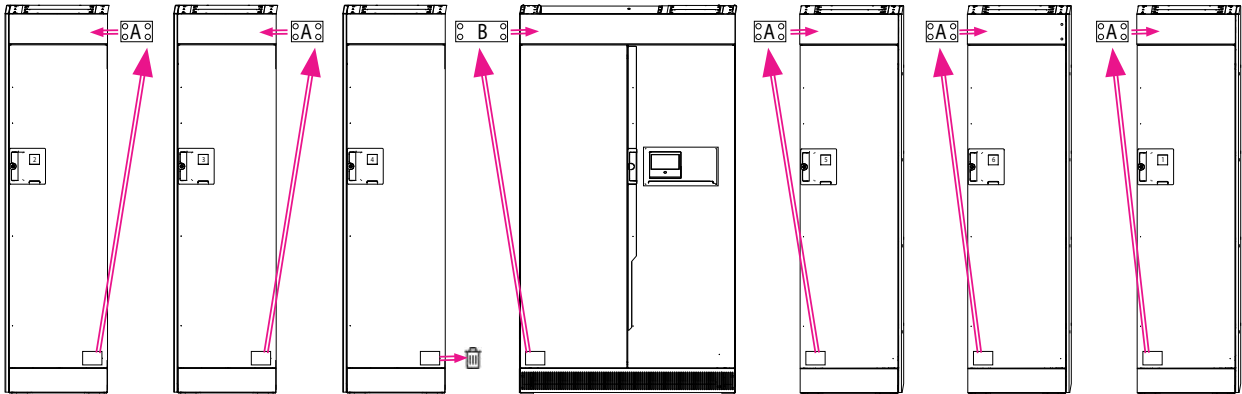
This must be done through the rear access, before placing the Power HUB against a wall or other cabinet



C. Power cabling between the Power HUB and Power SLOT.

Fit the 8 splinting (coupling) plates between the Power SLOT and the Power HUB, using part number EA224423 (A) on the right side of the Power SLOT and part number EA225123 (B) on the left side of the Power SLOT. Use splinting (coupling) plates part number EA224423 (A) between each Power SLOT enclosures.

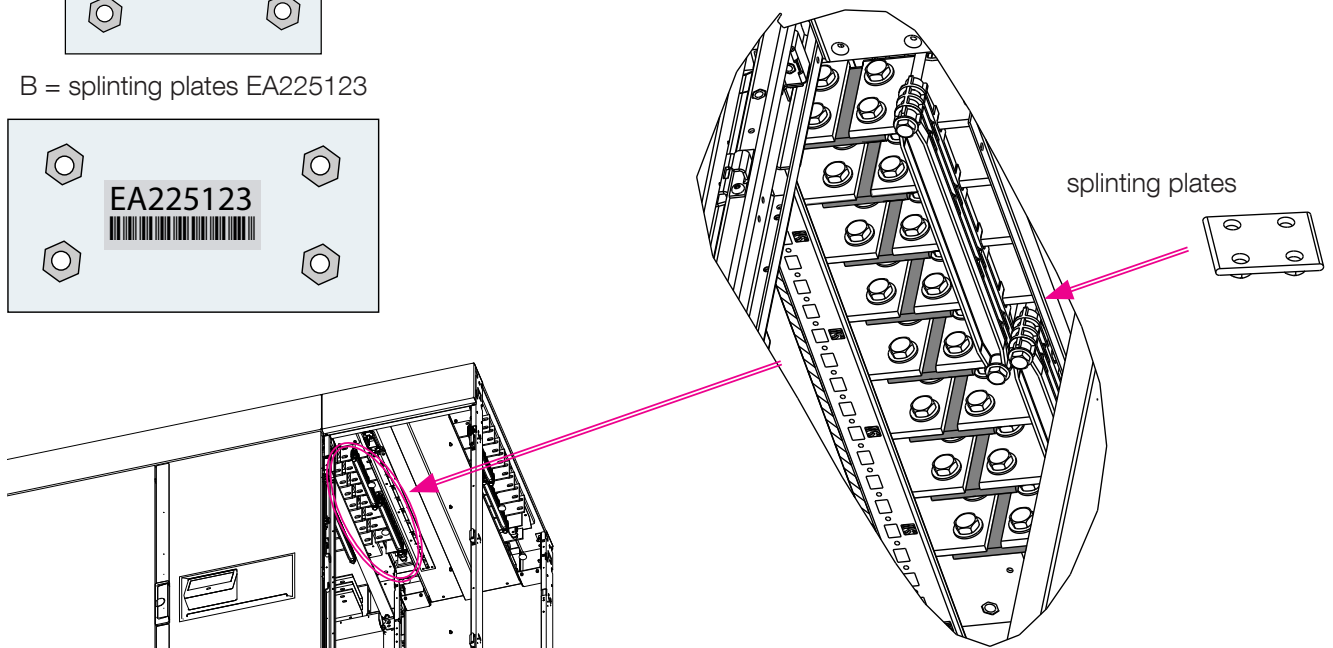
Use 4 M10 x 25 screws + contact washers for each splinting plate (tightening to 40 Nm).



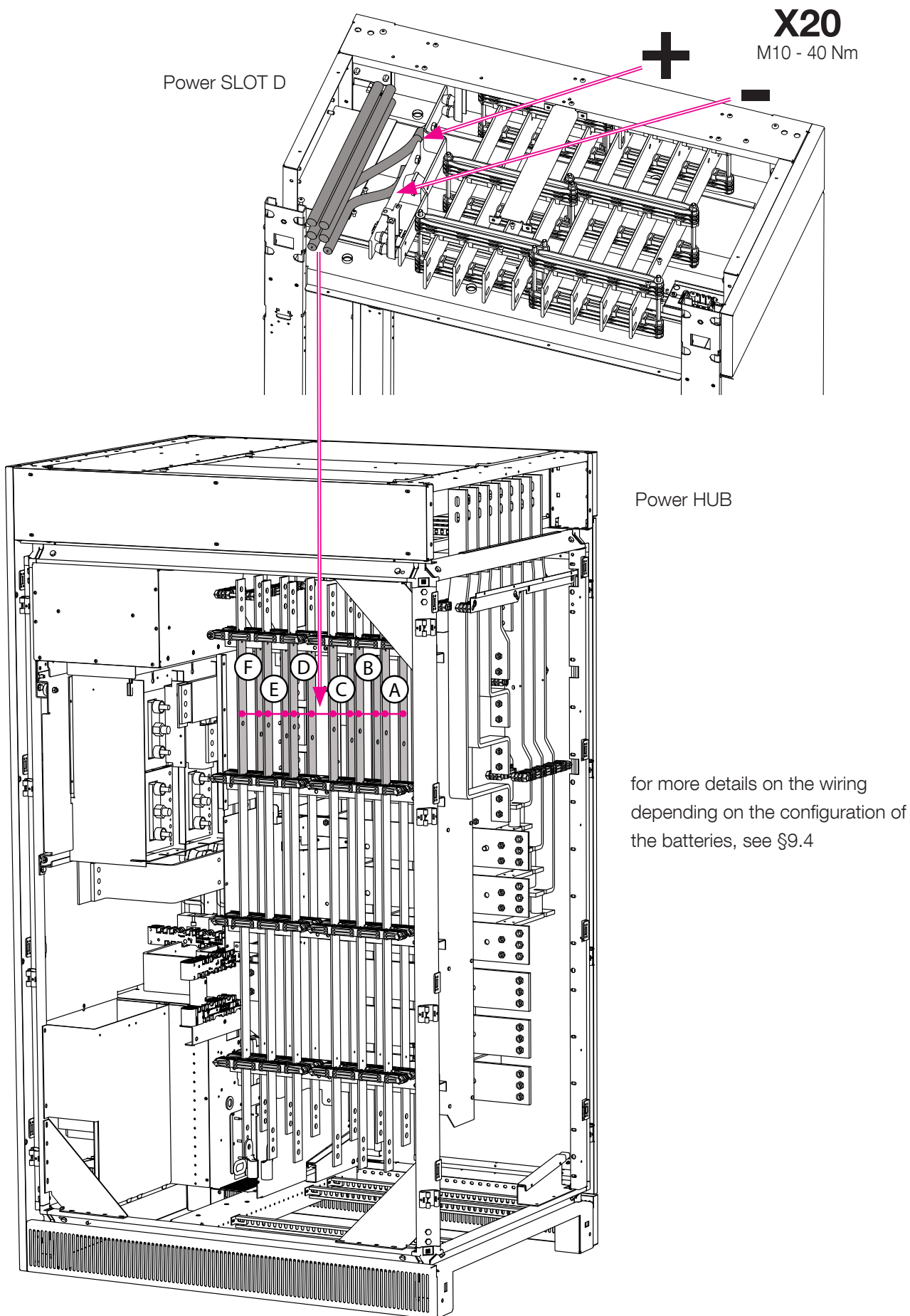
A = splinting plates EA224423



B = splinting plates EA225123



D. Connect the battery cables (between the Power SLOT and the Power HUB).



7.4. CONNECTING THE CONTROL CABLES

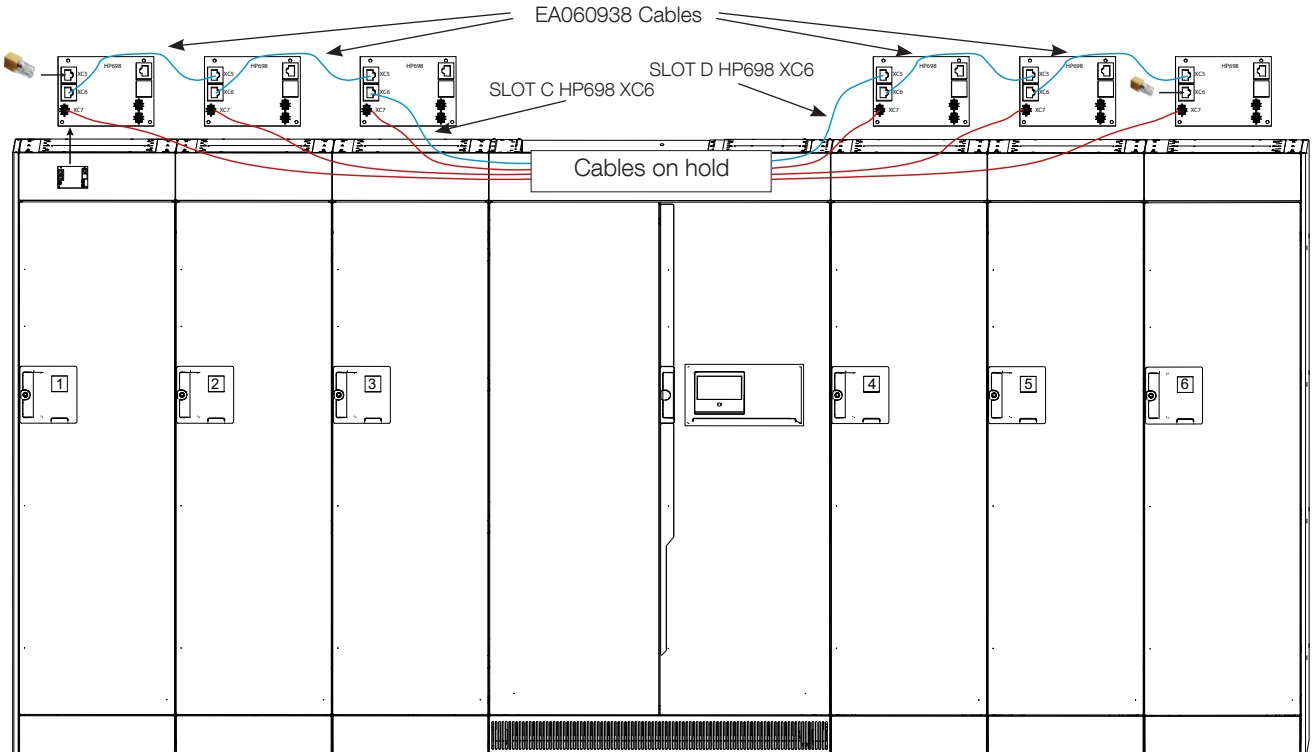
A. Connecting the RJ45 cables.

Two RJ45 sockets (XC5 and XC6) are available on a card (HP698) at the top of each Power SLOT and at the bottom of the Power HUB;

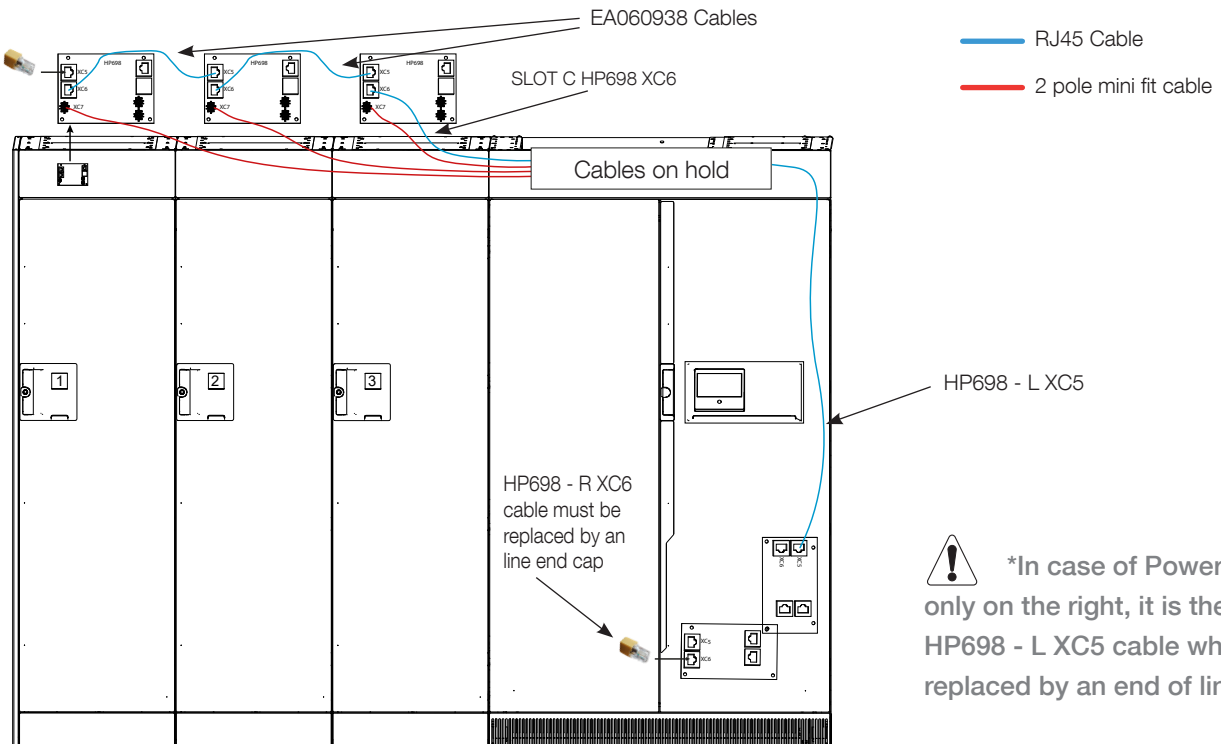
On the Power SLOT card, connect the RJ45 cable(s) as shown by the illustration below.

B. Connect line end cap (yellow, ref EA060528) as shown by the illustration below.

C. Connect the cables (for triggering of the K20 battery protection) coming from the Power HUB to XC7.



EXAMPLE WITH POWER SLOT ONLY ON THE LEFT*

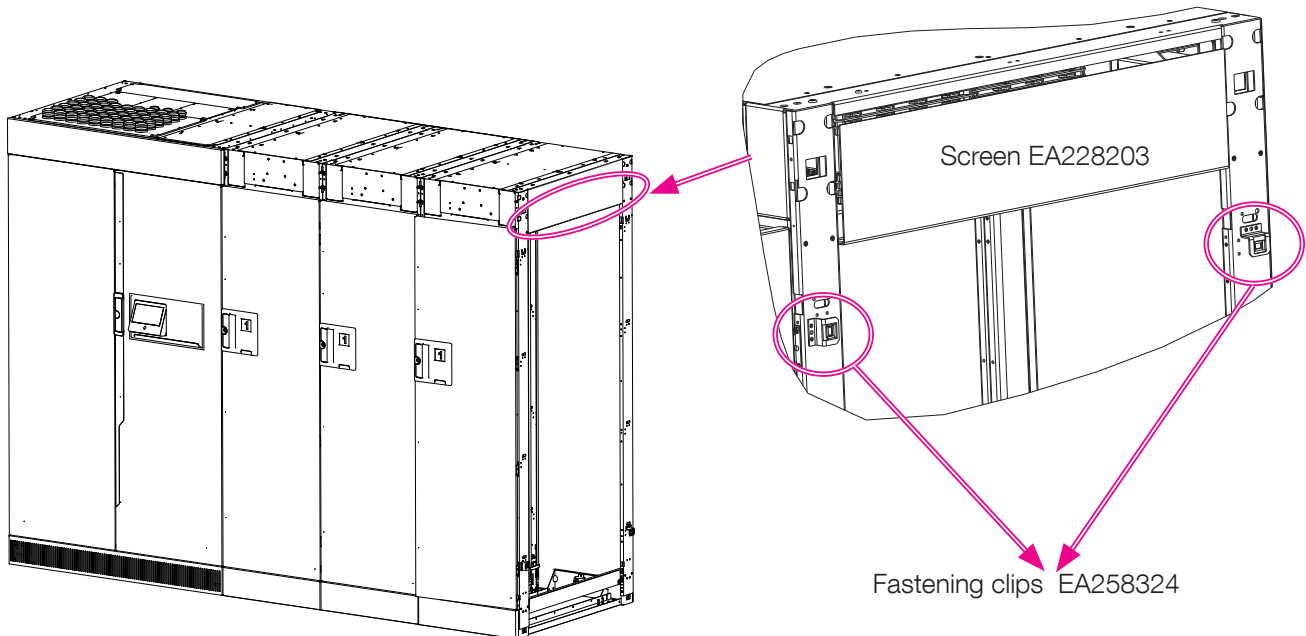


7.5. FITTING THE COVERING PANELS

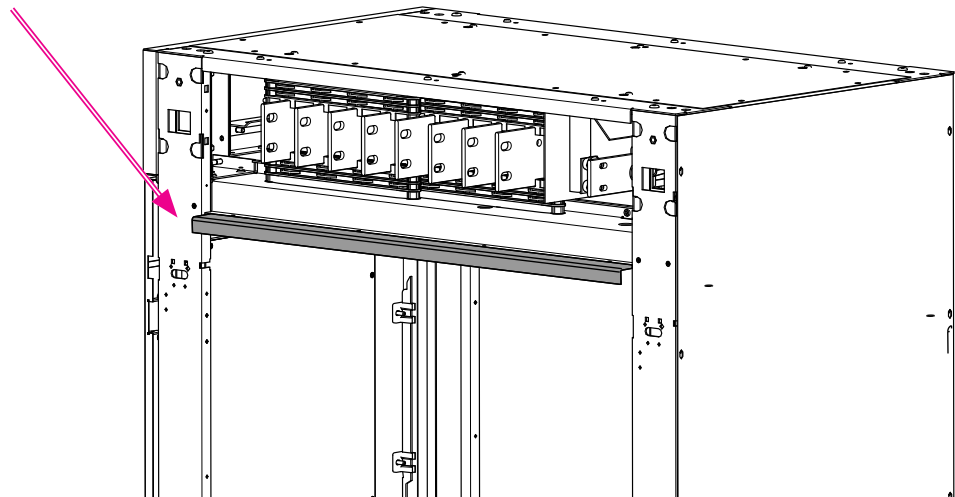
A. Put back in place the plates that were removed in § 7.3 paragraph A (plates for fitting the splinting plates).
Replace the 4 M5 screws on the left side and the 4 screws on the right side.

B. Fastening clip for panel and screen.

Fix the 8 fastening clips (E258324) for the side panels, left and right side (one the right way up and one upside down), which were removed as shown in § 7.1, paragraph D + polycarbonate screen (EA228203) on the last Power SLOT.

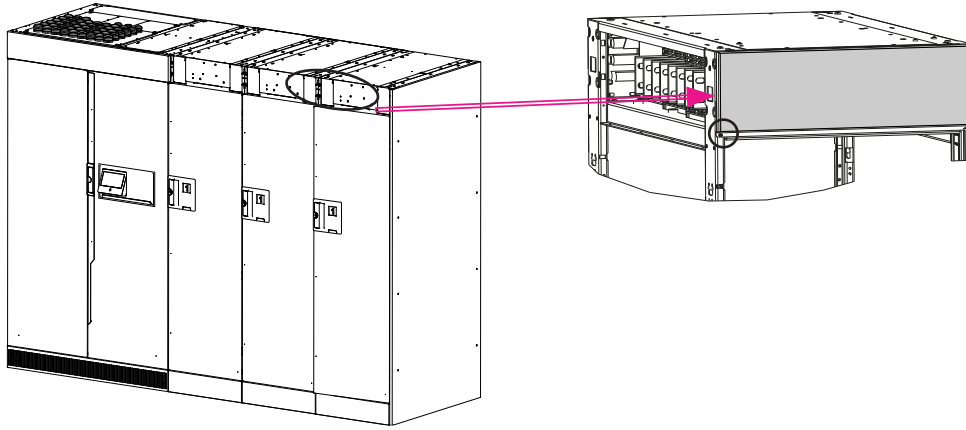


C. Mounting the EA226423 screen on the right of the Power SLOT which will be attached to the left of the Power HUB.



(and vice versa, on the left side of the Power SLOT which will go to the right of the Power HUB).

D. Positioning and fastening of the Power SLOT top paneling.



The top covering panel is clipped on the top of the SLOT.

E. Adjust the Power SLOT doors, if necessary, by loosening the 2 H-head screws on their 4 hinges.

7.6. IDENTIFICATION OF POWER SLOT



This operation must only be carried out by qualified technical personnel authorized by Socomec (wearing appropriate safety headgear, gloves, shoes and glasses)

Each module will take the identification number of its Power SLOT:

To set the ID number, turn the encoder dial on the back of the door and insert the numbered label in the space provided next to the handle (by opening the cabinet opening handle)

7.7. INSERTING A POWER MODULE



Insert the Power MODULE in its Power SLOT to check that the mechanical assembly is correct.



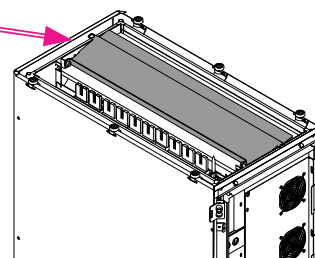
Make sure that the floor in front of the Power SLOT is flat so that the Power MODULE can be inserted correctly.



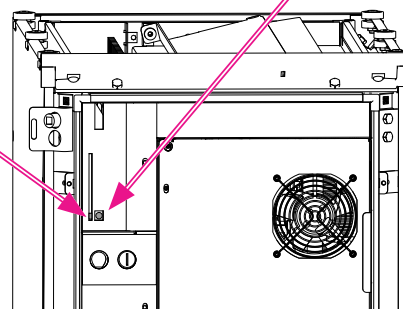
The Power SLOT doors on each side of the Power SLOT in which the Power MODULE will be inserted must be closed to prevent damage.

A. Points to be check on the Power MODULE.

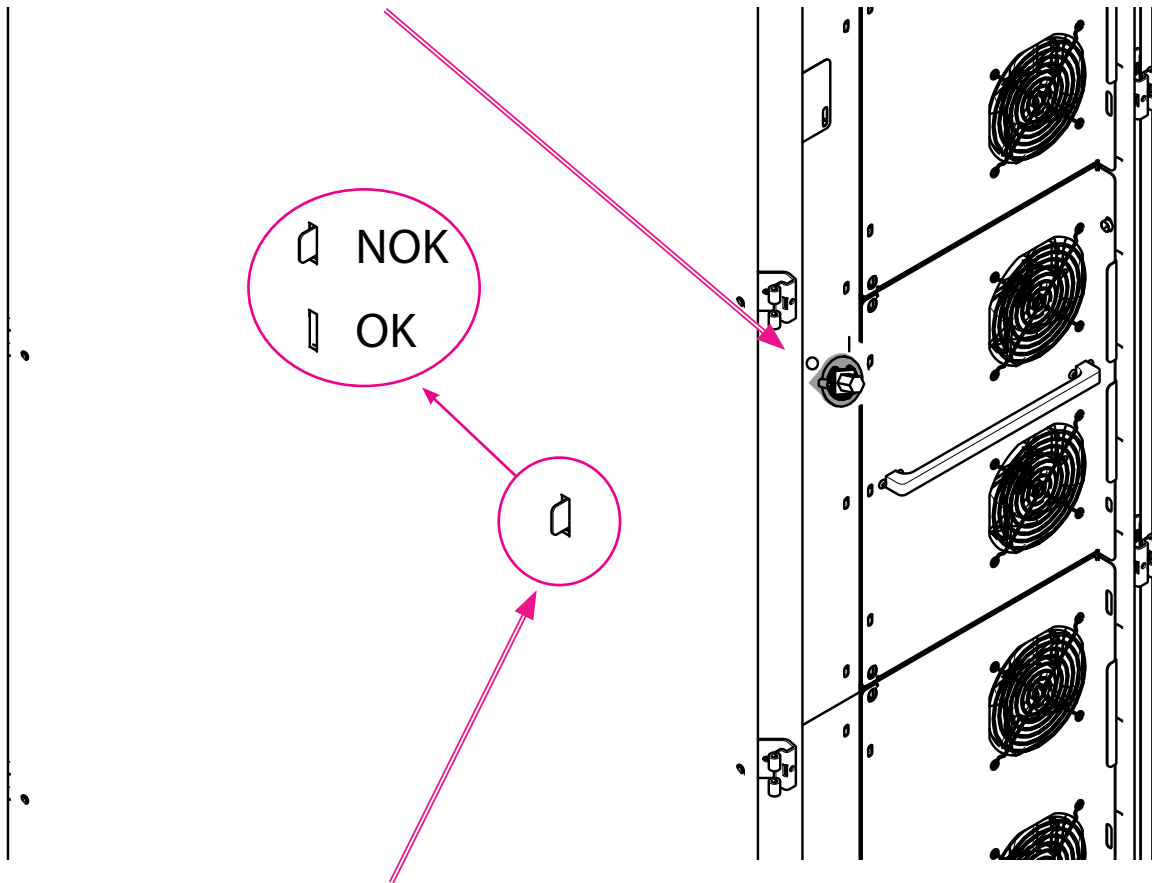
Check that the removable cover is open.



Check that the connection system is in the low position and that the 0 indicator is clearly visible.



Check that the battery switch Q200 is in position 0.



Check that the tab of the “heat run test” switch is fully inserted on the left side of the Power MODULE.



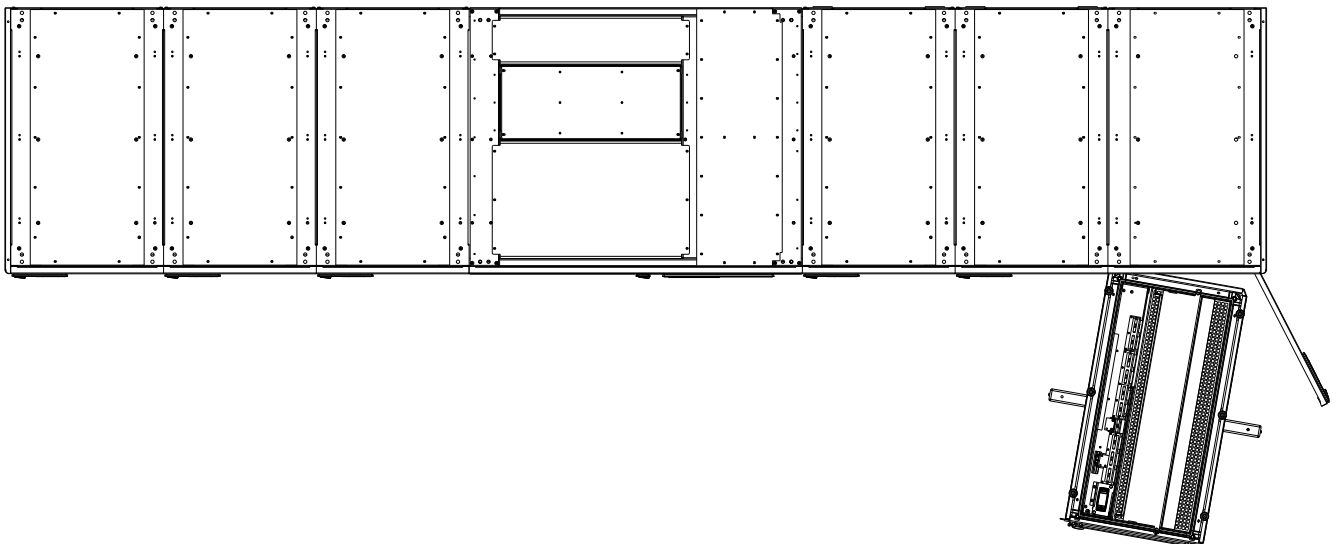
Check that all screws are tighten

B. Insertion.

Only the front wheels of the Power MODULE are steerable.

It is best to position the Power MODULE at a slight angle to take advantage of the chamfer at the back of the Power MODULE to facilitate easy insertion into the Power SLOT. The Power MODULE must then be straightened and pushed to the bottom of the Power SLOT.

The yellow stabilizers will automatically fold during insertion and unfold during extraction.



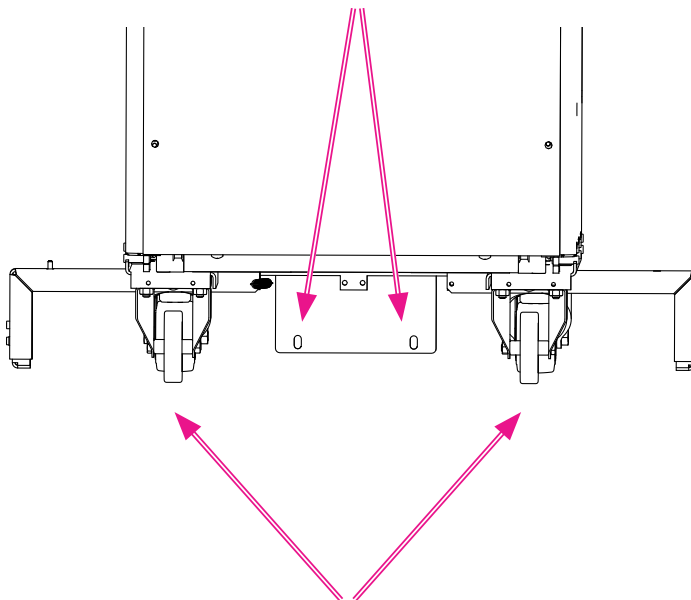
C. Verification.

The Power SLOT is correctly installed and adjusted to the floor if the Power MODULE trim panels are aligned with the Power SLOT uprights over the full height.

D. Locking of the Power MODULE.

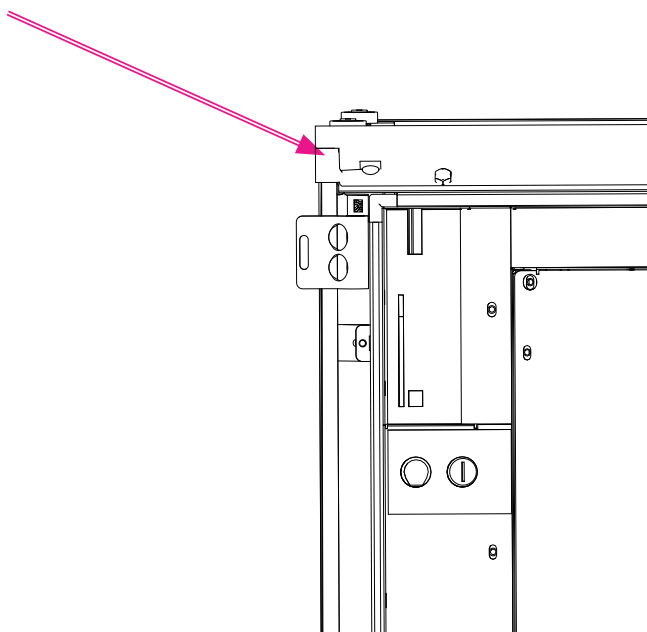
To ensure the Power MODULE locking and compliance with the standard resistance zone 2 – 4, please follow instructions:

- 2 TH M6x16 screws must be fixed (on the bottom front of the Power MODULE) on the Power SLOT.



The front wheel brakes should also be locked.

- 1 TH M6x16 screw must be fixed (on the top left of the Power MODULE) on the Power SLOT.



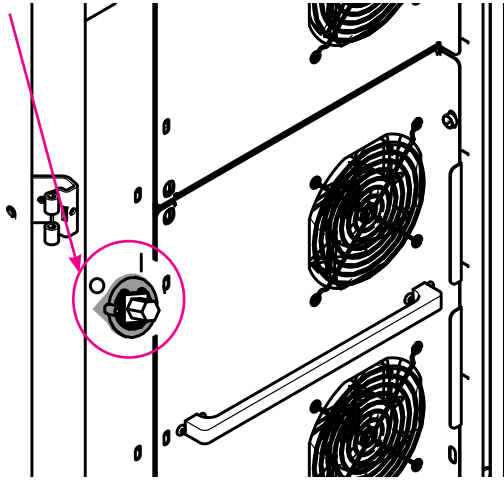
E. Power SLOT covering panel.

Finally, the bottom cover plate of the Power SLOT must be clipped in place.

7.8. EXTRACTING A POWER MODULE

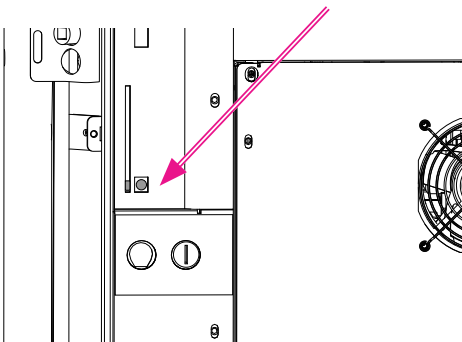
If required to extract a Power MODULE, please ensure it is OFF (refer to operating manual).

Open the hatch to ensure the module is OFF



Open the battery switch Q200 with the dedicated tool

Lower the connecting system to the low position with the dedicated tool and ensure that the 0 indicator is clearly visible



Refer to the chapter 7.7 for removing the Power SLOT covering panel, unlocking the front wheels and unscrewing

Module is now ready to be extracted from the Unit

7.9. IDENTIFICATION OF POWER MODULE



This operation must only be carried out by qualified technical personnel authorized by Socomec (wearing appropriate safety headgear, gloves, shoes and glasses)

Each module must have an identification number:

To set this number, turn the encoder dial on the back of the door and insert the numbered label in the space provided next to the handle (by opening the cabinet opening handle).

8. ELECTRICAL PROPERTIES

8.1. ELECTRICAL SAFETY

The installation and the system must comply with national plant regulations. The electrical distribution panel must have a protective device and emergency breaking system installed for the input mains and the auxiliary mains. If a differential switch is installed on the mains power switch (optional), it must be inserted upstream of the distribution panel.

8.2. BACKFEED PROTECTION

The MODULYS XL is preset for the installation of external protection devices against the backfeed of dangerous voltages on the auxiliary backup mains power supply line (AUX MAINS SUPPLY). The input power supply line (MAINS SUPPLY) is already equipped internally.

Warning labels must be affixed on all mains power disconnectors installed away from the MODULYS XL area, in order to remind support personnel that the circuit is connected to a UPS Unit (see also § 3 "Safety" of this manual and paragraph 4.9.3 of standard IEC62040-1). The label is supplied with the equipment.

For the connections, see picture on the next page.

STANDARD:

The backfeed protection is compliant with standard IEC 62040-1.

AIM:

The backfeed protection ensures personnel are safeguarded against the risk of accidental re-injection of power into the upstream circuit. The backfeed protection imposes the automatic opening of isolation device in the event the static commutator malfunctions.

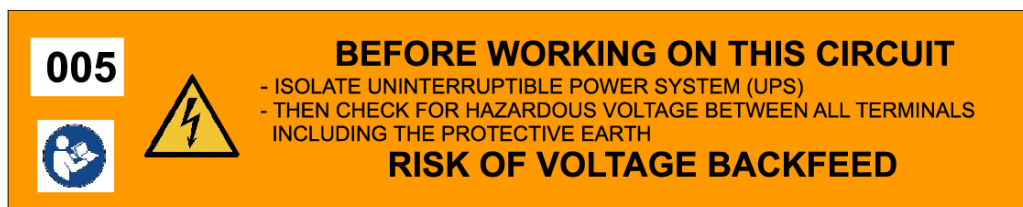
PRINCIPLE:

The backfeed protection consists of an electronic detection PCB fitted inside the MODULYS XL combined with an external electromechanical device for isolation from the power circuit (not supplied). For further details about the size of the protective device, please see § 8.7.

LABEL (SEE § 3.3):

A safety label is available in the equipment. It includes the following:

The operator shall affix the label on the electromechanical device for isolation from the power circuit.

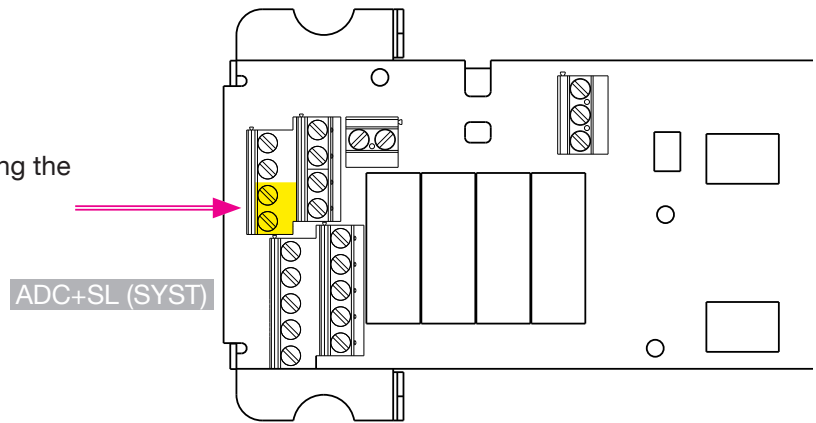


CONNECTION (ON THE ADC+SL (SYST) CARD SEE § 9.6):

IN3+ and IN3- terminals (XB4 7-8):

In: Backfeed Status

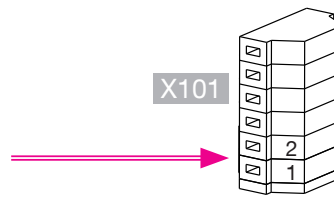
Connection of the auxiliary contact indicating the status of the power isolating device.



X101 terminals 1-2 (NO):

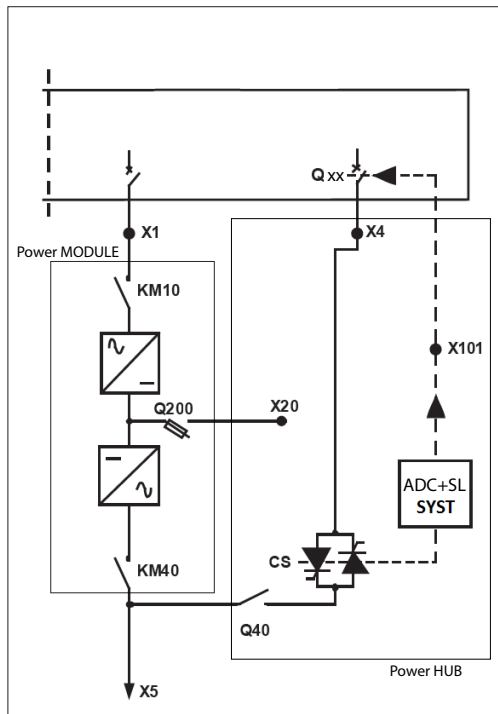
Out: Backfeed Tripping coil

Connection of the 220V-240V trip coil of the electromechanical device for isolation from the power circuit.



(SEE § 9.6)

FUNCTIONAL DIAGRAM



Qxx: switch of the installation used to trigger the backfeed (Q4 on diagram
“Single-wire electrical diagram” see § 2.4)

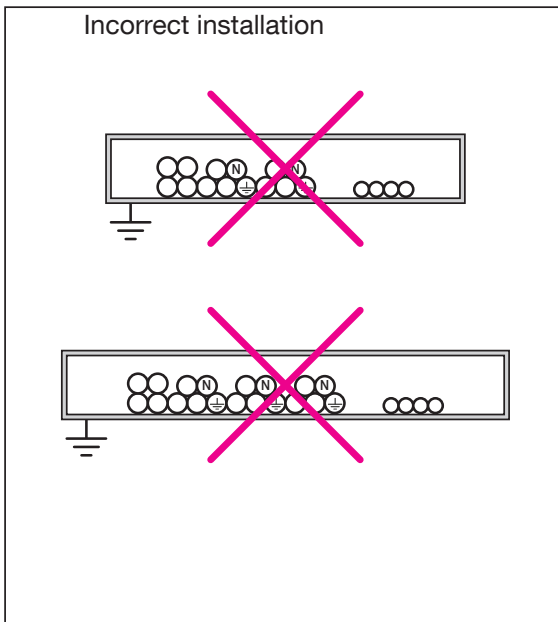
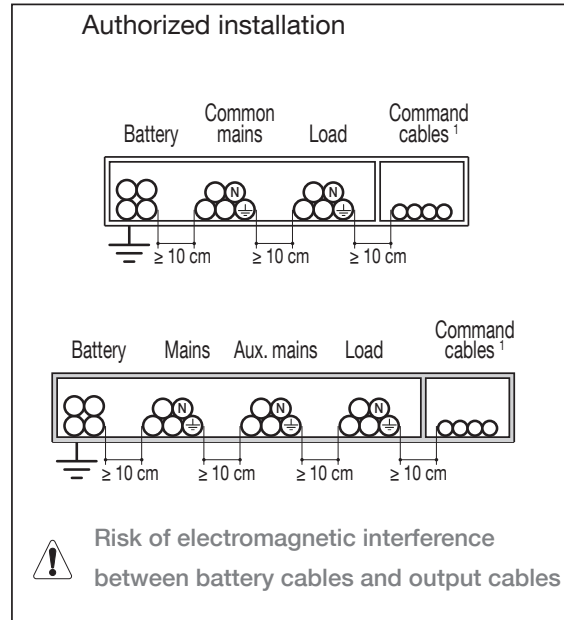
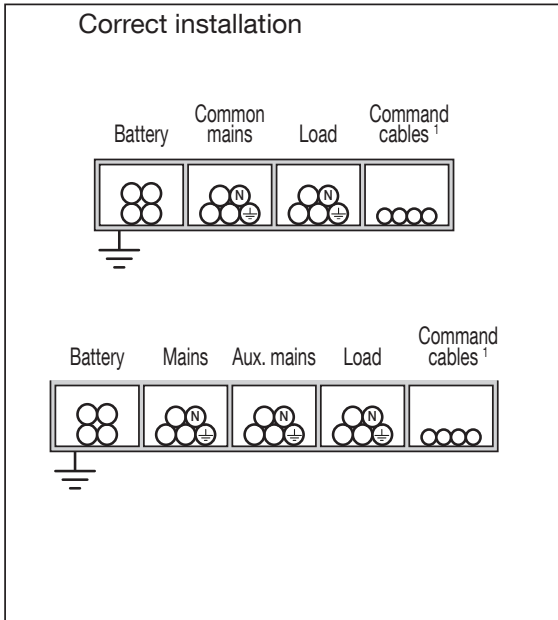
8.3. GENERAL RULES FOR CABLE INSTALLATION ON TRAYS



The cables must be installed on trays as indicated in the following diagrams. The trays must be positioned near the MODULYS XL UPS Unit.



All metal and suspended trays or those in raised flooring **MUST** be connected to earth and to the various cabinets.



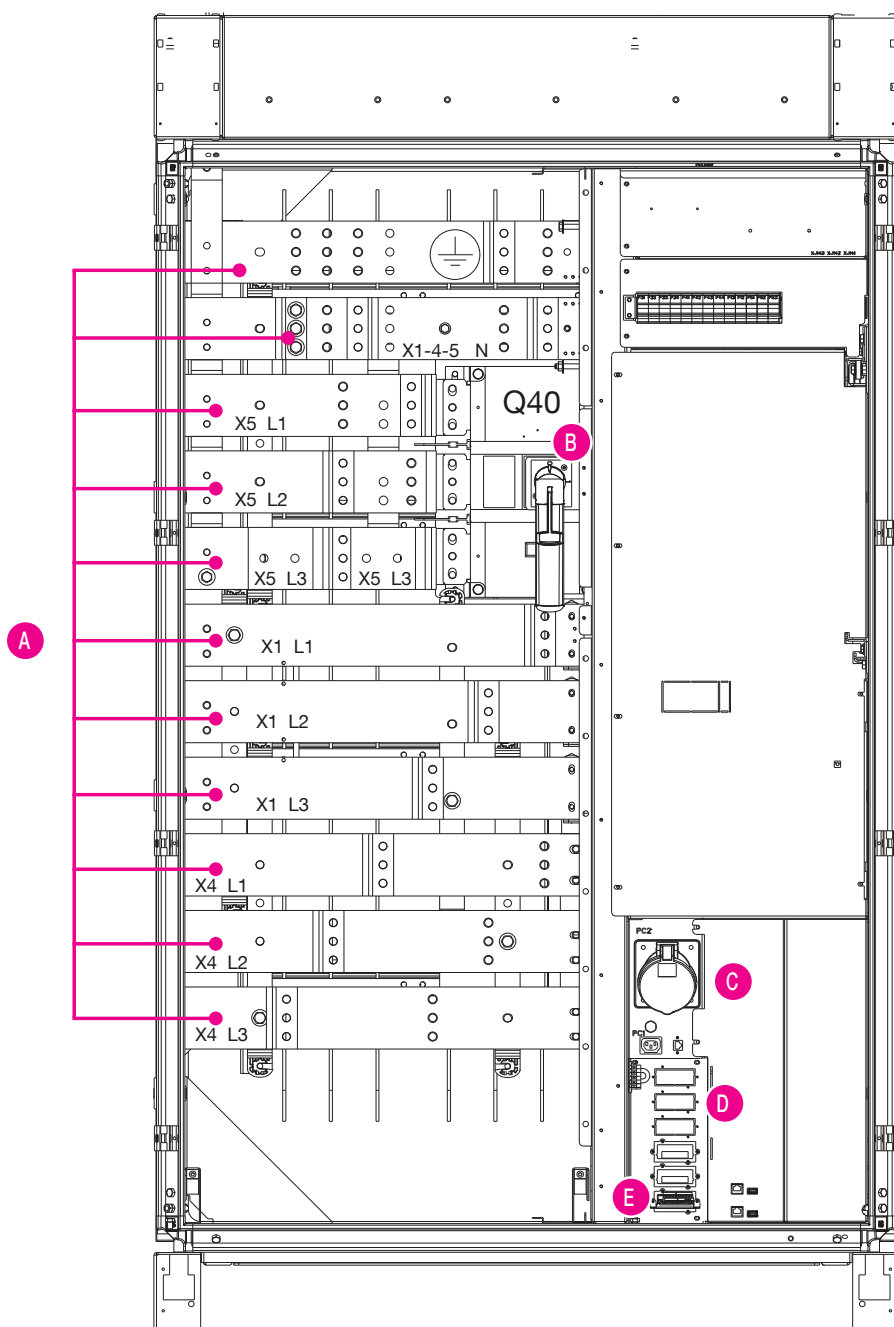
¹ Command cables: connections between the cabinets and each unit, alarm signals, connection to the BMS (Building Management System), emergency stop, connection to generator.



Do not route control and power cables close to other equipment sensitive to electromagnetic fields.

8.4. IDENTIFYING SWITCHING AND CONNECTION DEVICES

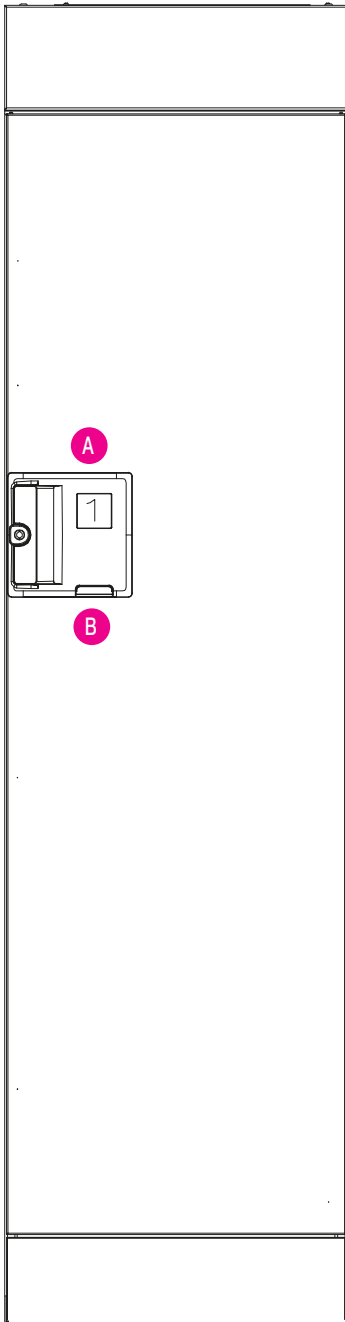
Power HUB



Key:

- A Power connections
- B Switch Q40
- C Power MODULE external power plug (for Maintenance only)
- D Slot for optional communication cards
- E Com Slot (ADC+SL present in standard, see §10)

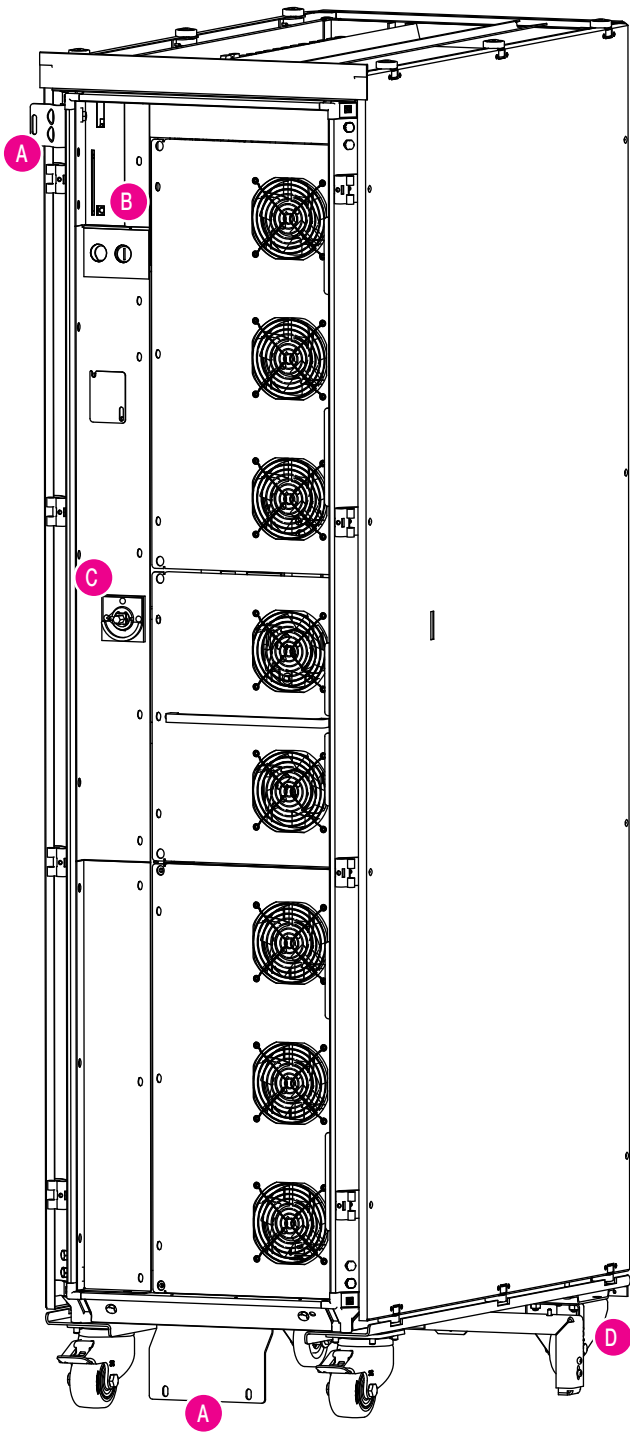
Power SLOT



Key:

- A Power SLOT number Display
- B Assignment of Power SLOT number (on the PCB in the rear)

Power MODULE



Key:

- A Connection required to comply with seismic regulations
- B Connection system
- C Battery switch
- D 2 Stabilizer wheels

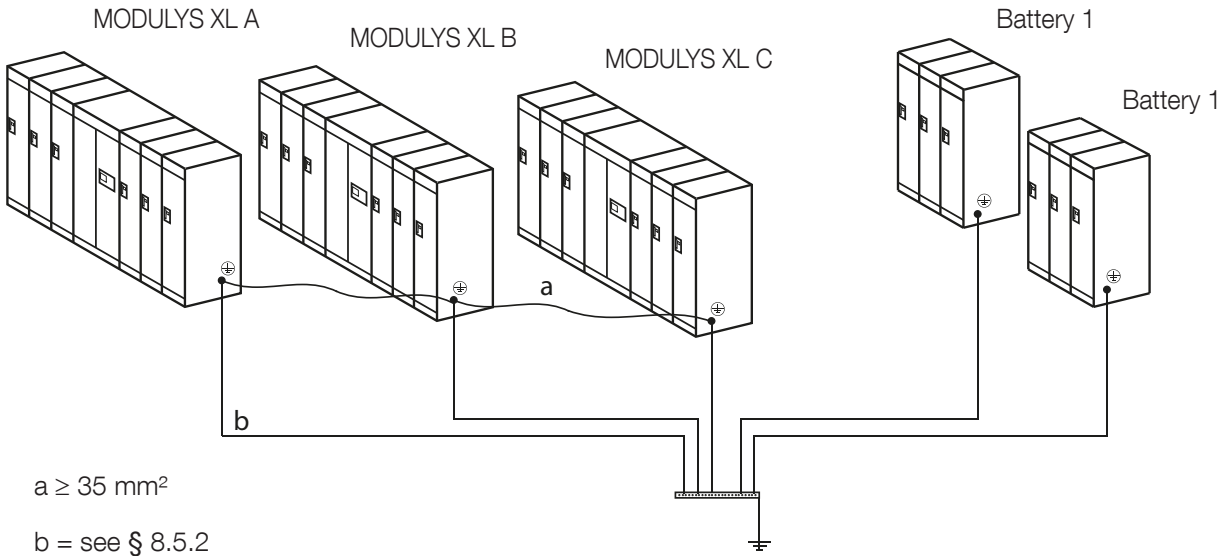
8.5. EXTERNAL CONNECTIONS

8.5.1. CONNECTING EARTH CABLES

IMPORTANT: due to EMI filters*, there are “HIGH LEAKAGE CURRENTS”.

As a consequence, it is imperative to connect earthing cables before mains cables.

* EMI filters = protection against electromagnetic disturbances.



The grounding of the auxiliary cabinets must be made directly to the reference earth.

Never use the UPS Unit cabinet as a grounding structure.

8.5.2. EARTH CABLE CROSS-SECTION

We recommend a ground wire cross section of at least half the phase cross section of the cable AND to comply with national standards (for example NFC 15100 in France).

8.5.3. LEAKAGE CURRENT (RATING OF THE EARTH LEAKAGE CURRENT DEVICE)

The minimum “off-delay relays” recommended is 3 A .

8.5.4. EARTHING SYSTEMS AND UPS UNIT

In TNC: UPS Unit output neutral must be grounded.

In TNS: when opening a 4-phase switch between the UPS Unit output and the transformer upstream of the bypass system, grounding must be present to reference the neutral to ground.

8.5.5. NEUTRAL CABLE CROSS-SECTION

The following must be checked:

- a) the minimum cross-section of the neutral cable must be at least equal to active poles (L1-L2-L3),
- b) the balancing of the loads across the three phases,
- c) the values that will trip the protective devices.

8.6. VALUES OF CURRENTS FOR CABLE SIZING

NOTE: these values are only indicative for standard systems.

8.6.1. INPUT RECTIFIER CURRENTS FOR MODULYS XL

Operating conditions are as follows:

- The MODULYS XL is operating at rated power with 10kW batteries charging.

MODULYS XL power output (kVA)	200		400		600		800		1000		1200
Number of Power SLOT enclosures	1+1	2	2+1	3	3+1	4	4+1	5	5+1	6	
Maximum rectifier input current	N* x 340A										

* N: number of Power MODULE elements

8.6.2. MEAN CURRENT SUPPLIED BY THE BATTERY WHEN DISCHARGING

The mean current value has to be taken into account for sizing connecting cables between the battery and the MODULYS XL.

Example with VRLA batteries 43 blocks 200kW

Power MODULE power (kVA)	200
Mean current (A)	441

For others VRLA battery configurations, please have a look on the project folder or use:

$$\text{Mean current}_{\text{Nbr blocs}} \text{ (A)} = 441\text{A} \times 43 \text{ blocks} / \text{Nbr blocks}$$

8.6.3. BYPASS CURRENT (OR OUTPUT CURRENT TO THE LOAD)

Operating conditions are as follows:

- Rated Input/output power supply voltage is 3 x 400V. For 380V or 415V, the current value must be multiplied by 1.052 and 0.964 respectively,,
- The MODULYS XL is operating at rated power.

UPS Unit power output (kVA)	200		400		600		800		1000		1200
Number of Power MODULE elements	1+1	2	2+1	3	3+1	4	4+1	5	5+1	6	
Bypass current or output current	289	577		866		1155		1443		1732	

Note: sizing of cables and protections upstream of the bypass must take into account the following:

- overloads caused by non-linear loads,
- occasional overloads tolerated by the MODULYS XL UPS Unit (i.e., 1.1 In for 1h, 1.25 In for 10 mn or 1.5 In for 1 mn).

8.7. SIZING OF CIRCUIT BREAKERS

CIRCUIT BREAKER ON RECTIFIER INPUT, BYPASS INPUT AND COMMON RECTIFIER AND BYPASS INPUT

Values are only indicative as per the following conditions:

- the rectifier and bypass input voltage is 3x400V,
- the length of cabling between the circuit breaker and the *MODULYS XL* UPS Unit is <10 metres:

Rectifier input

MODULYS XL power output (kVA)	400		600		800		1000		1200
Configuration	N	N+1	N	N+1	N	N+1	N	N+1	N
Number of Power MODULE elements	2	3	3	4	4	5	5	6	6
Circuit breaker rating	800	1250	1250	1600	1600	2000	2000	2500	2500

Note 3: the actuator must be set based on the number of Power MODULE elements according to the formula $N \times 340A$.

N: number of Power MODULE elements.

Bypass input

MODULYS XL power output (kVA)	400		600		800		1000		1200
Configuration	N	N+1	N	N+1	N	N+1	N	N+1	N
Number of Power MODULE elements	2	3	3	4	4	5	5	6	6
Circuit breaker rating	800	1000	1000	1600	1600	2000	2000	2000	2000

Note 1: The rating of the circuit breakers must be set accordingly to the rated voltage and tolerances associated.

Note 2: Ensure that the bypass circuit breaker trigger curve takes into account the overload capability.

Note 3: When the bypass and rectifier inputs are combined (common input), the general input protection rating must be at least equivalent to the highest values.



In the event of a fault, the protection must open in less than 100 ms.

8.8. PROTECTION AND CROSS-SECTION OF BATTERY CABLES

The size of protective devices depends on the power and back-up time of the system. Protective devices other than the ones defined may cause electrical hazard or damage to the equipment.



Please consult us.

Use double insulated cables 90°

9. CONNECTION

9.1. INSTALLATION PROCEDURES AND INSTRUCTIONS



Before carrying out work on the terminal board or on UPS Unit internal parts, ensure that the MODULYS XL is switched off, disconnect the power supply, open the external battery cabinet disconnectors, isolate the system, disconnect the Power MODULE and wait 5 minutes.



Start the connection (located at the back of the cabinet) using the battery cables.



Risk of electrocution!

- Only qualified and authorized personnel are allowed to work on or to install/disassemble the product.
- The instructions are valid together with the operating instructions of the product.
- The product is designed only for the application specified in the operating instructions.
- Accessories can be used with the product only if approved or specified by Socomec.
- Before proceeding with the implementing, mounting, commissioning, configuration, cleaning, decommissioning, dismantling, wiring or maintenance operations, the product and the installation must be powered off. However, specific instructions for a product may allow live intervention under certain conditions, means, qualifications and authorizations.
- The product is not to be repaired by the user.
- Contact Socomec for any questions regarding the disposal of the product.
- For other languages please contact Socomec or your local distributor.
- Failure to follow the product instructions and this safety information may result in personal injury, electric shock, burns, death or damage to property.

9.2. TERMINAL CONNECTIONS CHARACTERISTICS (POWER HUB)

	Designation	∅ drill hole	Centre-centre distance	Screws	Max. section per pole	Clamping torque
PE	PE	13mm x3	50 mm	M12	6 x 240 mm ² or 5 x 300 mm ² or 4 x 400 mm ²	70 Nm
X1	Rectifier mains input 3PH					
X4	Bypass mains input 3PH+N					
X5	Load Output 3PH+N					
X2	Battery input	See § 9.4				



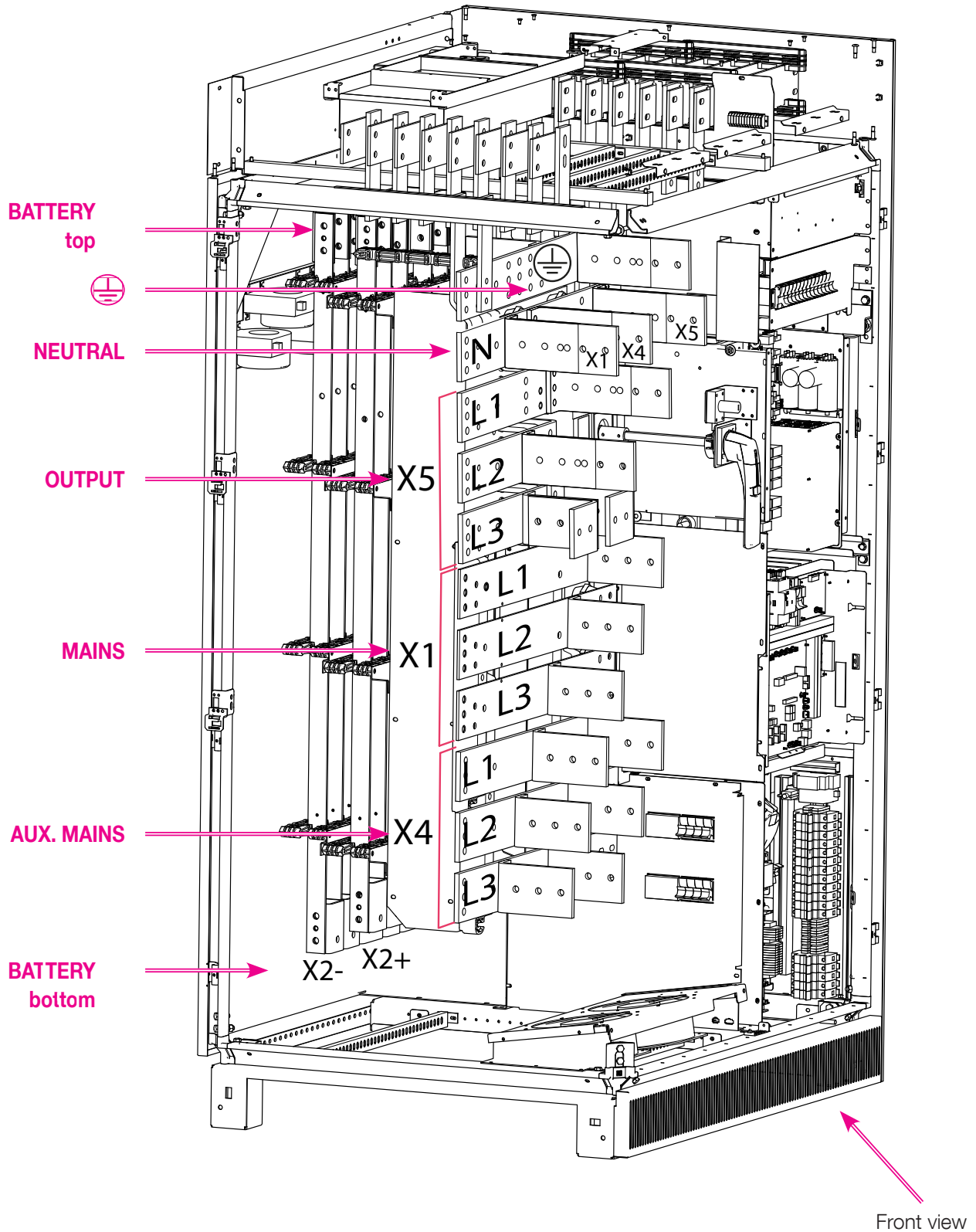
Double insulated cables 90° cables should be used; please consult us for other requirements.

9.3. NETWORK POWER CABLING IN POWER HUB

- ⚠ Ensure the Power HUB switches are “open” before starting connection.
- ⚠ It is recommended to start connections with the battery cables.

9.3.1. CONNECTIONS IF THE MAINS AND AUX MAINS ARE CONNECTED SEPARATELY

CABLE ENTRY FROM THE BOTTOM

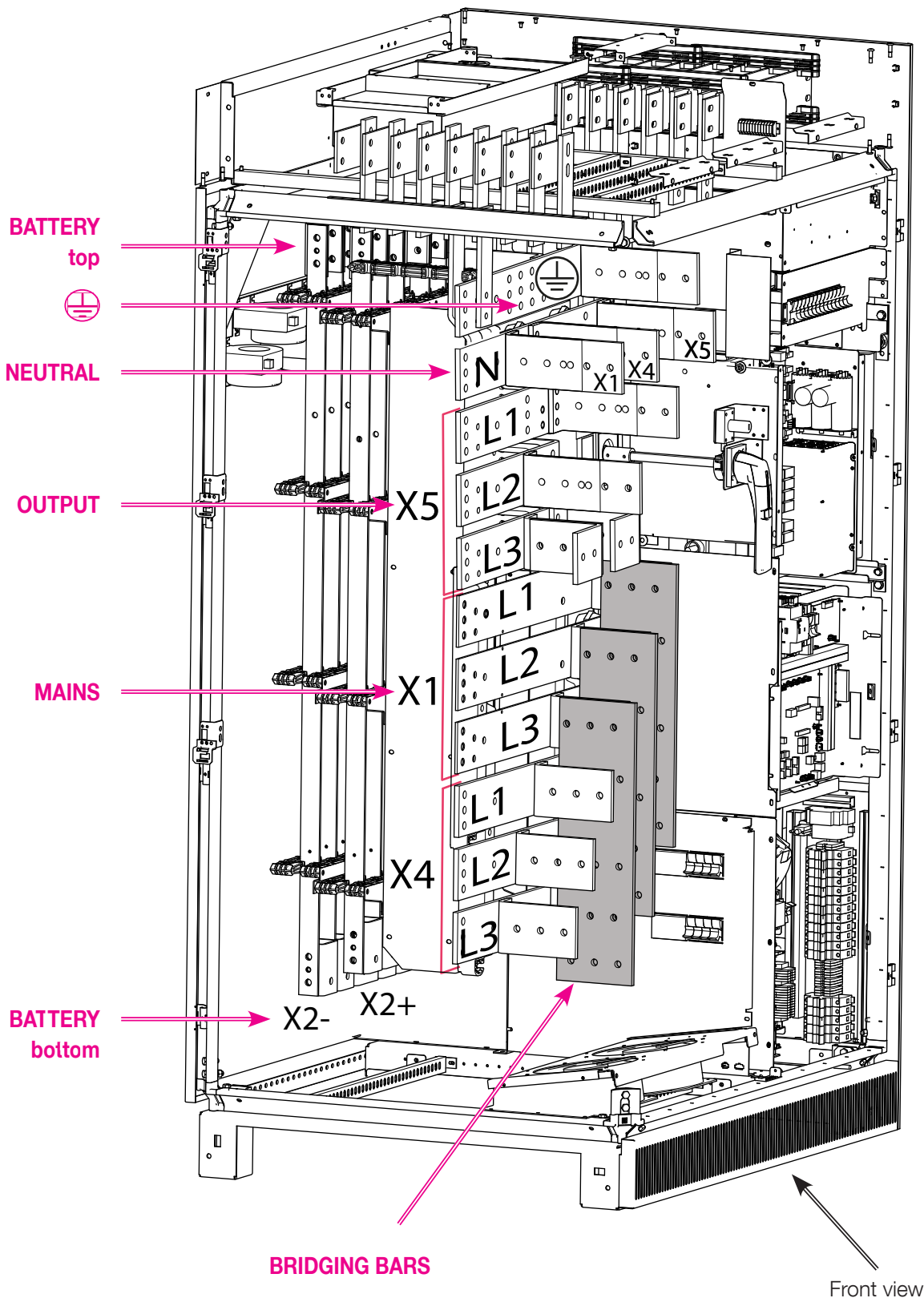


9.3.2. MAINS AND AUX MAINS ARE CONNECTED IN COMMON (OPTIONAL)



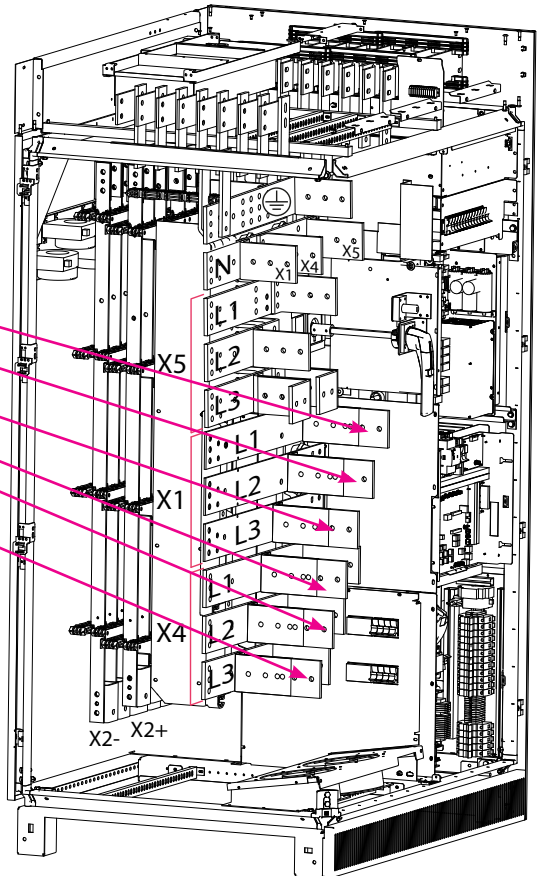
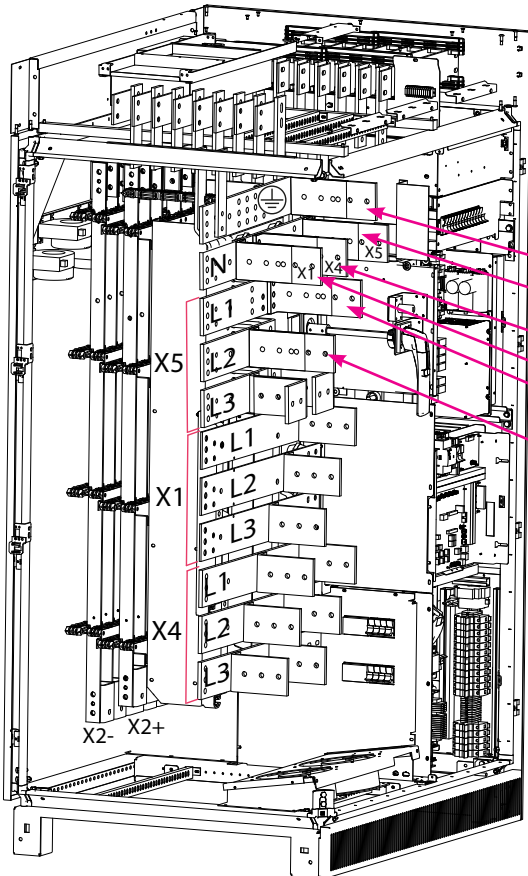
To change network power cabling from separate mains to common mains, connect the terminals between X1 and X4 with bridging bars (using M12 screws, with a clamping torque of 70nm).

CABLE ENTRY FROM THE BOTTOM



9.3.3. MAINS CABLE ENTRY FROM THE TOP

9.3.4. MAINS CABLE ENTRY FROM THE BOTTOM



To modify “cable entry from the bottom” to “cable entry from the top”, replace the PE / N / X5 (L1 and L2 only) terminal connections with the terminal X1/X4 connections (using M12 screws, with a clamping torque of 70nm).

9.3.5. CABLE ENTRY FROM THE TOP THROUGH CABLE GLANDS



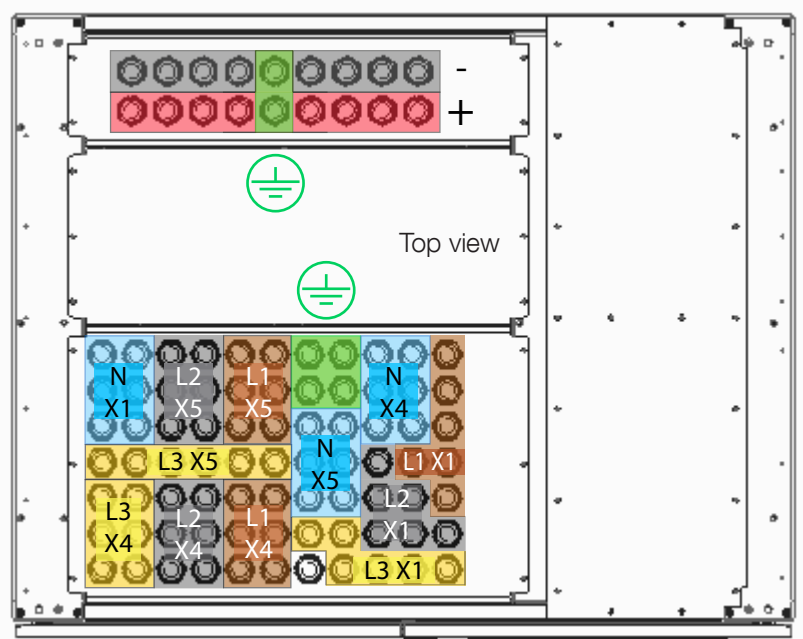
If you are using 6 x 240 mm² cables (maximum number of cables), please follow this cable gland configuration to simplify connection.



The cable glands should be passed through the 5 mm aluminum plate.



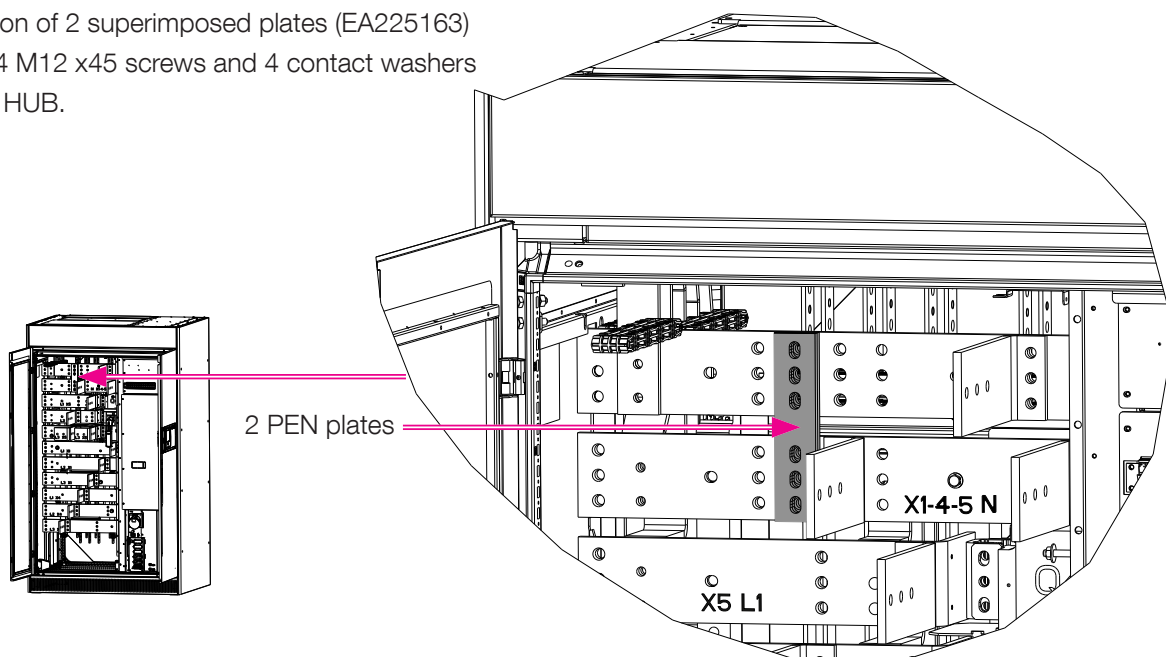
Only AC ground should be connected to the UPS. Please follow chapter 8.5.1 for DC ground.



9.3.6. OPTIONAL CONFIGURATIONS

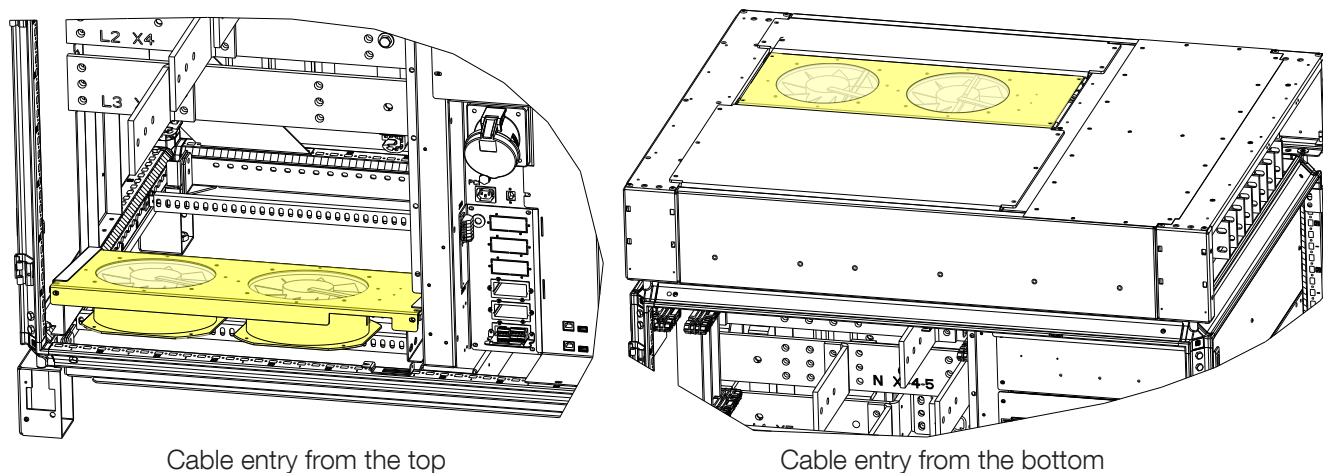
PEN

Implementation of 2 superimposed plates (EA225163) fastened by 4 M12 x45 screws and 4 contact washers in the Power HUB.



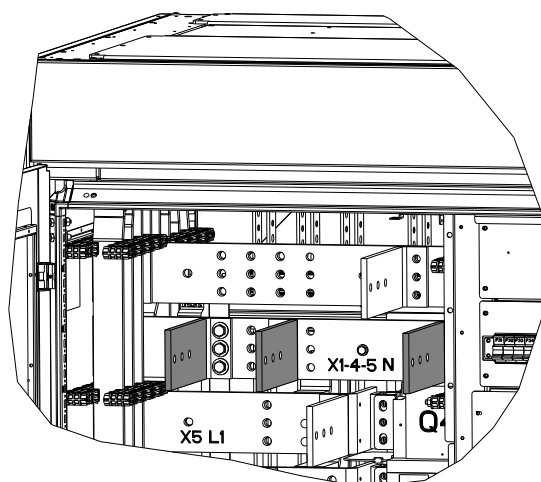
FANS SUBASSEMBLY

If there is UR fuse protection (on request) on both rectifier input circuits, it will be necessary to equip the Power HUB with a fan subassembly for the connection area.



4-WIRE RECTIFIER INPUT

The UPS unit operates on 3 wire system; however, if the neutral is present at the rectifier input, it is possible to recover the neutral using a plate added to the neutral plates.



9.4. EXTERNAL BATTERY CABINET CONNECTION



Before carrying out any operation, ensure that:

- the battery protections located inside the battery cabinet are open,
- The MODULYS XL is not live and all mains or battery switches are open,
- the switches upstream of the MODULYS XL are open.



Use double insulated cables or the cables supplied with the unit to connect the MODULYS XL to the Battery cabinet.



Cabling errors with inversion of the battery polarity may cause permanent damage to the equipment.



If cabinets not supplied by the manufacturers of the MODULYS XL are used, it is the responsibility of the installer to check the electrical compatibility and the provision of suitable protective devices between the MODULYS XL and the battery cabinet (fuses and switches of sufficient capacity to protect the cables from the MODULYS XL to the battery cabinet). As soon as the MODULYS XL is switched on (before closing the battery switches) the battery parameters must be verified accordingly (voltage, capacity, number of elements, etc.) on the mimic panel menu.



For safety reasons during transport and handling, the batteries are disconnected at each rack (or by sections not exceeding 150 V). Take all necessary precautions when reconnecting the cables.



Connection must be performed by authorized staff, who have been previously trained. Connections to be performed are :

- grounding of the battery cabinet,
- polarities + and – to the inverter,
- between battery sections and/or between shelves.

IMPORTANT:



Before closing the battery protection, be sure that the rectifier has started up!

BATTERY TERMINAL CONNECTIONS CHARACTERISTICS (POWER HUB)

Designation		Max. section per pole	Screws	Clamping torque
X2 entry from the bottom	Distributed	Up to 6 batteries with max 1 x 240mm ² per battery	M12	70 Nm
	Shared all Power SLOT enclosures	Max 10 x 240mm ² for the battery		
	Shared 2 Power SLOT enclosures	Up to 3 batteries with max 2 x 240mm ² each group		
	Shared 3 Power SLOT enclosures	Up to 2 batteries with max 4 x 240mm ² each group		
X2 entry from the top	Distributed	Up to 6 batteries with max 1 x 240mm ² per battery		
	Shared all Power SLOT enclosures	Max 8 x 240mm ² for the battery		
	Shared 2 Power SLOT enclosures	Up to 3 batteries with max 2 x 240mm ² each group		
	Shared 3 Power SLOT enclosures	Up to 2 batteries with max 4 x 240mm ² each group		



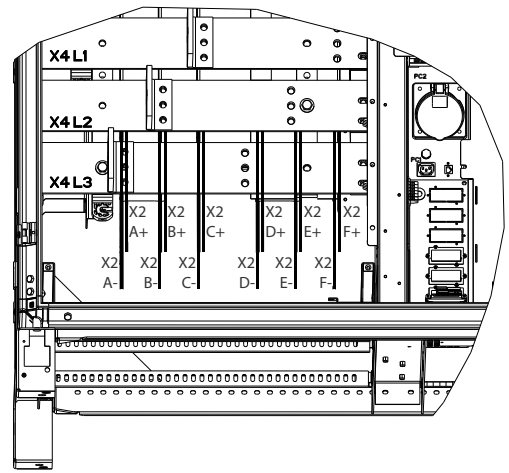
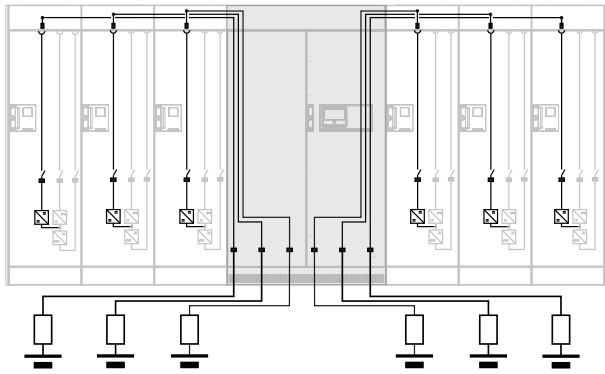
Depending on the type of connection chosen, the bridging bars must be moved before installing the Power HUB cabinet.



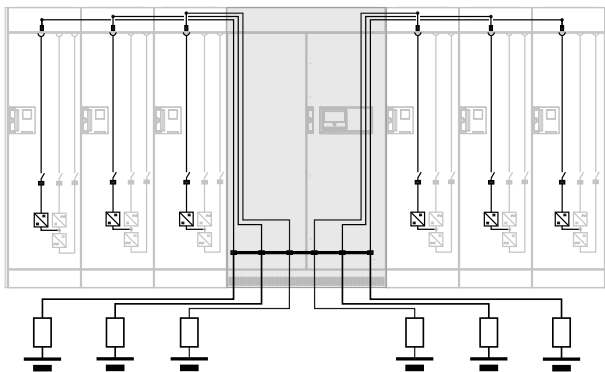
In the case of cabling from the top, the bridging bars used to connect the batteries shared must be moved to the top battery connection terminals.

EXEMPLE WITH CABLE ENTRY FROM BOTTOM

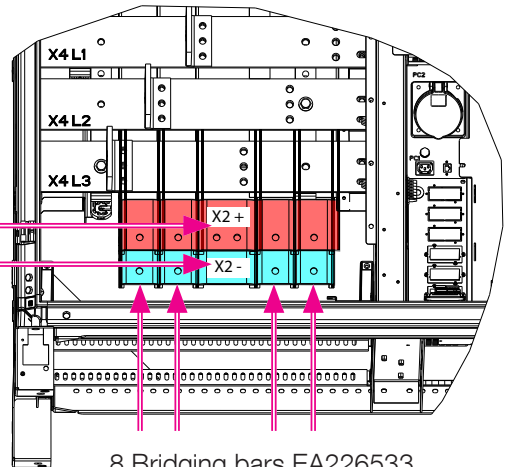
Distributed battery



Flexible battery sharing for all Power SLOT enclosures

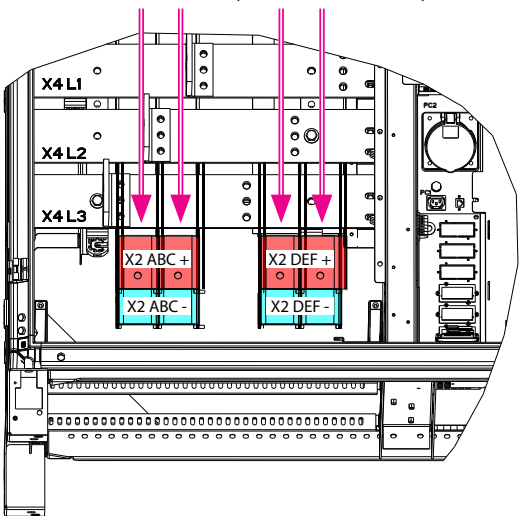
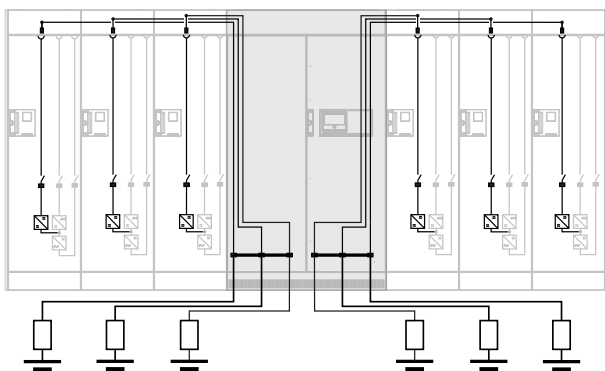


2 Bridging bars EA226543
1 for the + pole
1 for the - pole

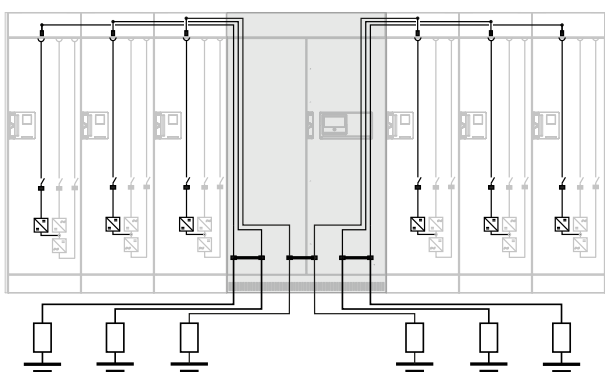


8 Bridging bars EA226533
4 for the + pole, 4 for the - pole

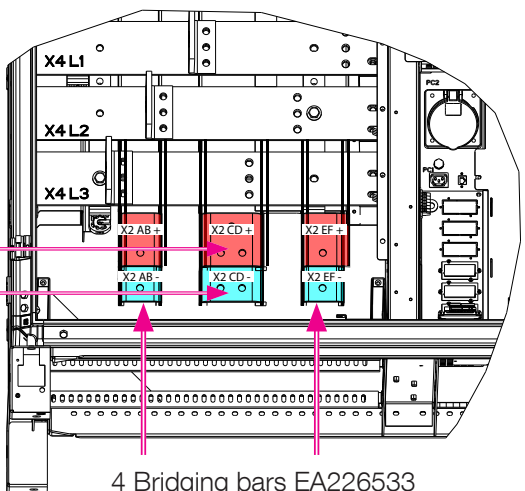
Flexible battery sharing for 3 Power SLOT enclosures



Flexible battery sharing for 2 Power SLOT enclosures



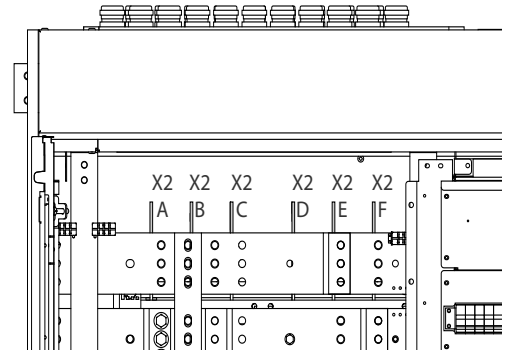
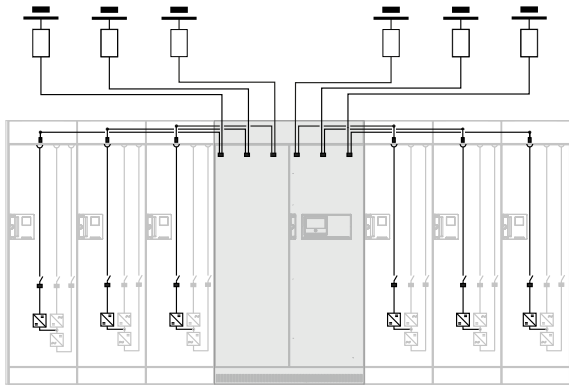
2 Bridging bars EA226543
1 for the + pole
1 for the - pole



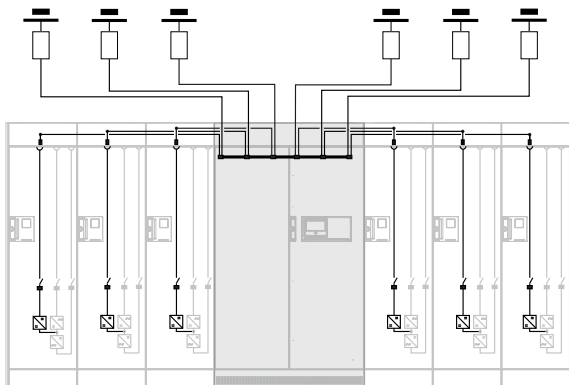
4 Bridging bars EA226533
2 for the + pole, 2 for the - pole

EXEMPLE WITH CABLE ENTRY FROM THE TOP

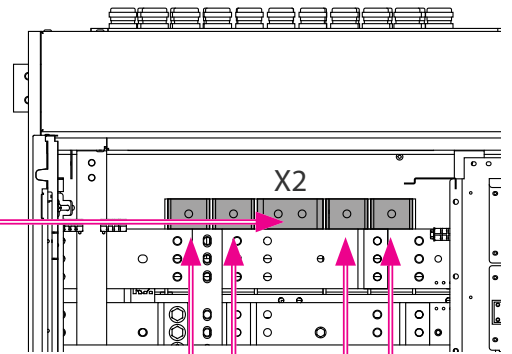
Distributed battery



Flexible battery sharing for all Power SLOT enclosures

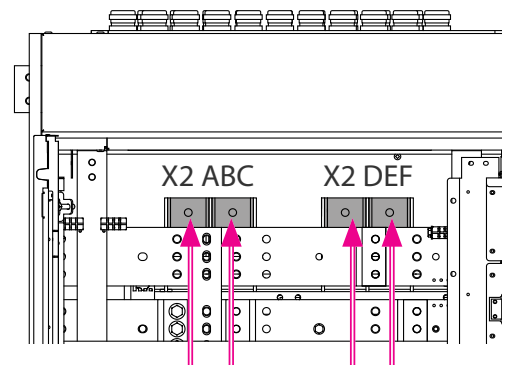
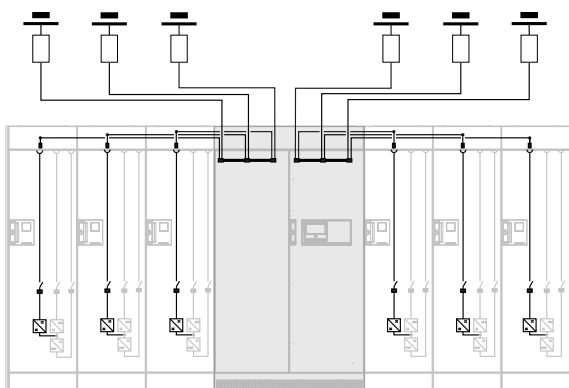


2 Bridging bars
EA226543
1 for the + pole
1 for the - pole



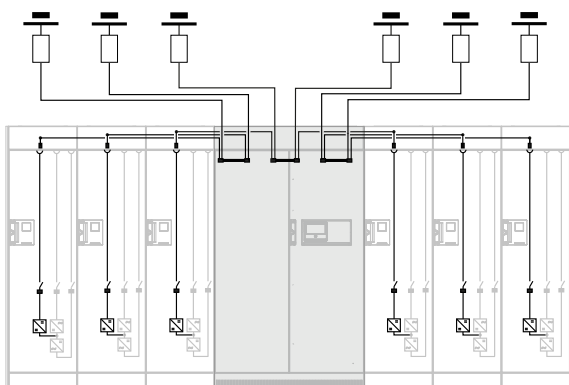
8 Bridging bars EA226533
4 for the + pole, 4 for the - pole

Flexible battery sharing for 3 Power SLOT enclosures

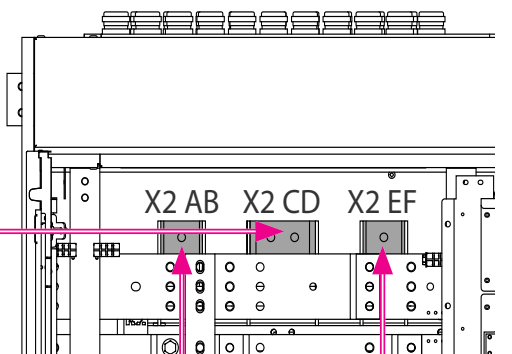


8 Bridging bars EA226533
4 for the + pole, 4 for the - pole

Flexible battery sharing for 2 Power SLOT enclosures



2 Bridging bars
EA226543
1 for the + pole
1 for the - pole



4 Bridging bars EA226533
2 for the + pole, 2 for the - pole

9.5. AUTOMATIC TRIPPING OF BATTERY PROTECTION Q20

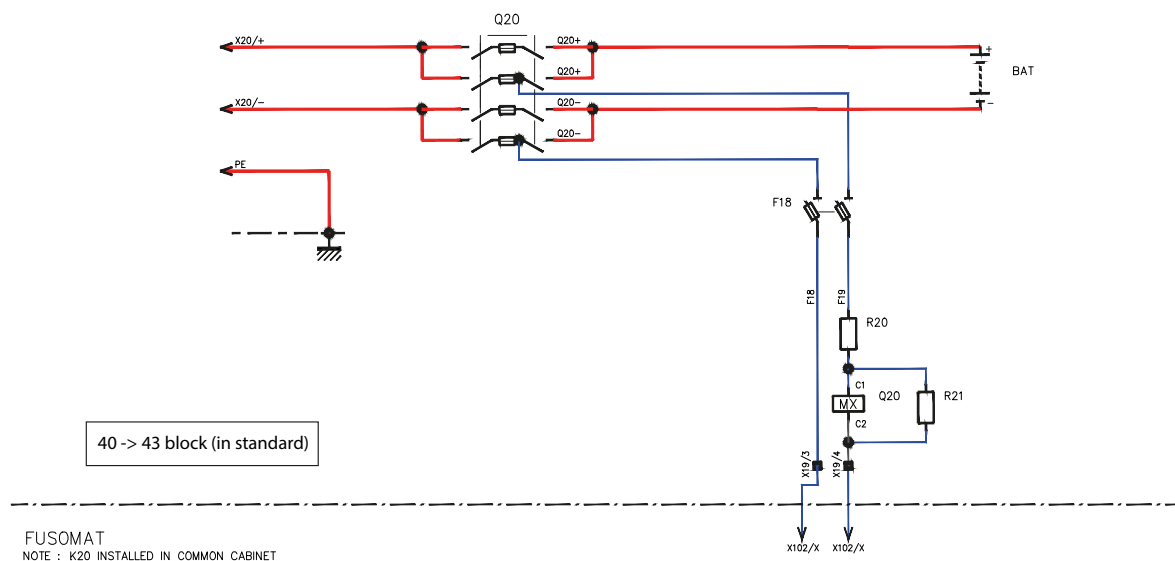
The “opening/closing” position of Q20 is not indicated. DC voltage coming from the battery is monitored.

MODULYS XL detects the presence or absence of the battery to inform the user and manage the corresponding states / alarms; It is therefore not necessary to reassemble the position of the battery protection Q20.

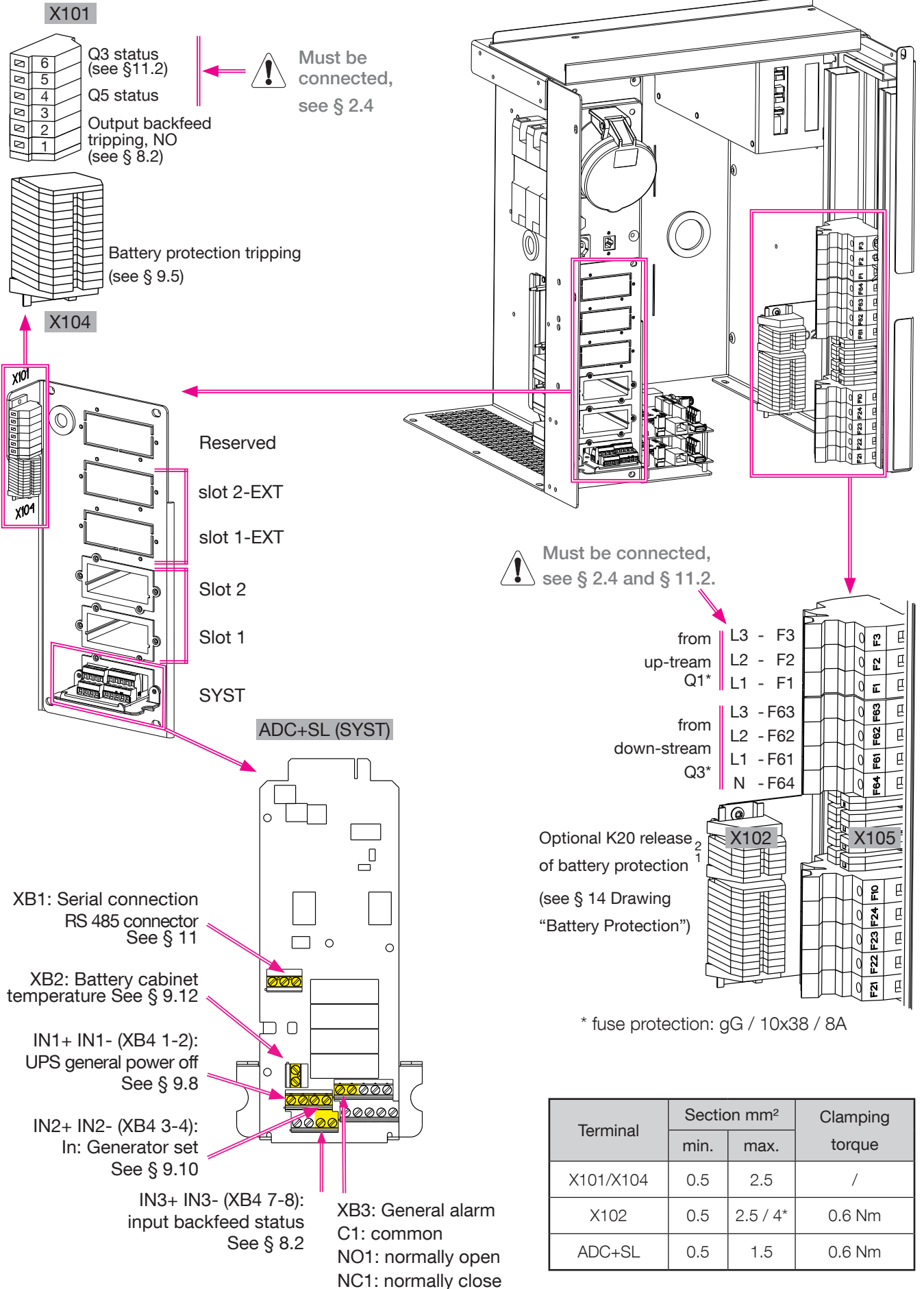
If using an MCCB, the status of the battery opening circuit is indicated on X104 (see § 9.6)

This option enables Q20 to be opened following an UPS general power OFF or a slow discharge.

Exemple with FUSOMAT protection (see § 14 for other protections).



9.6. TERMINALS



9.7. COMPLETION OF THE INSTALLATION



Do not forget to put the protective screens back on.

9.8. EXTERNAL "UPS GENERAL POWER OFF" CONNECTION

A « UPS general power OFF » contact can be connected to ADC+SL (SYST) card (See §9.6).

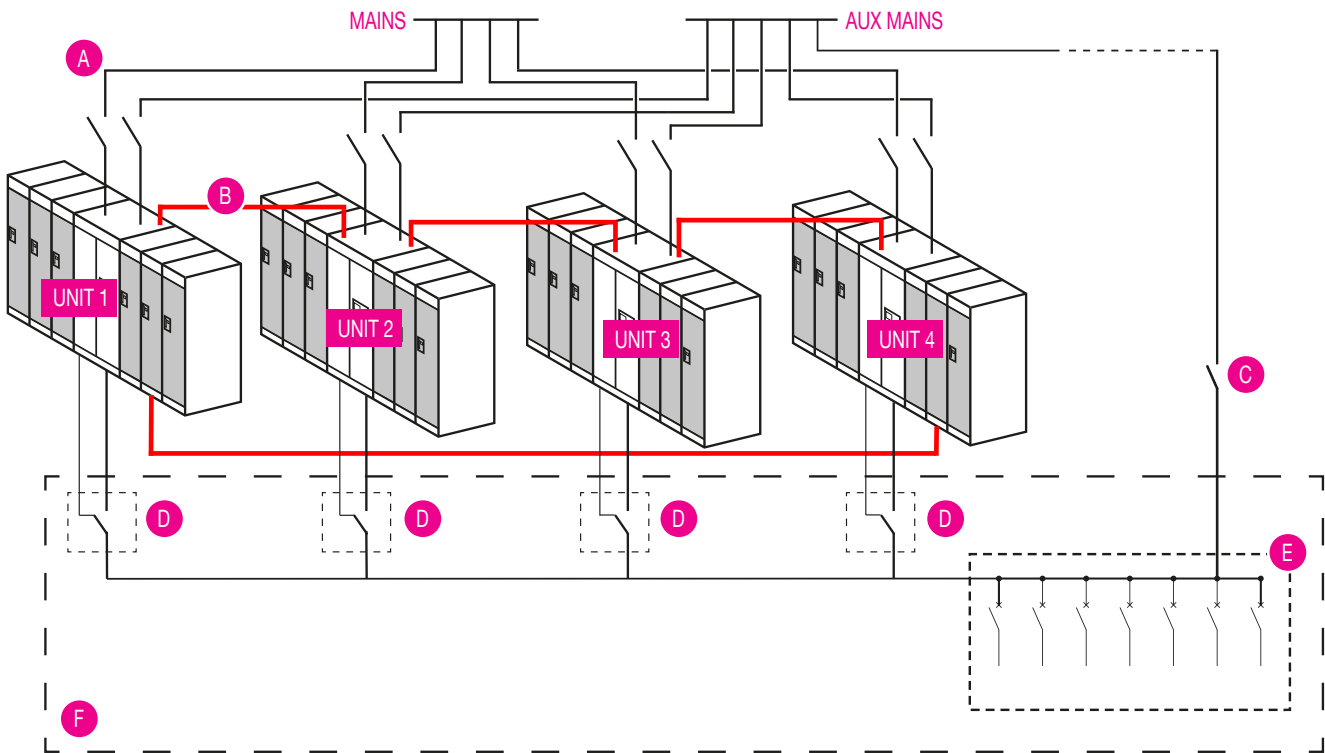
The UPS general power OFF causes:

- Load power supply cut
- Inverter, Rectifier and automatic bypass shutdown
- Disconnection of battery if the additional Mx Coil is mounted (option). Otherwise, battery remains connected

This situation does not meet all cases of "emergency shutdown".

Connect a dry NO contact to terminals IN1+ and IN1- on ADC+SL (SYST) card of each Power HUB.

9.9. PARALLEL CONFIGURATION



Key:

- | | |
|---|--------------------------|
| A Inputs protections Q1 (rectifier) Q4 (Bypass or common) | D Coupling switches (Q3) |
| B "Parallel bus" cable (RJ45) | E Distribution |
| C Maintenance bypass Q5 | F PDU |

9.10. GEN-SET CONTACT CONNECTION

GENERATOR SET information allows the MODULYS XL to modify its behavior when the generator set supplies the UPS Unit. The corresponding input is located on terminals IN2+ and IN2- on the ADC+SL (SYST) card (see § 9.5), When used, this feature allows the following adaptation:

- Power walk-in to avoid load step on the generator (configurable ramp)
- Battery charge current limitation (configurable)
- Bypass voltage/frequency tolerances enlargement (configurable)
- Inhibition of the synchronization to the bypass line (on demand)
- Possibility to lock the transfer to the bypass line (on demand)
- Advanced genset management

9.11. GALVANIC ISOLATION TRANSFORMER

If an external isolation transformer cabinet is required, the following instructions should be followed:

- The protection cable marked with the ground symbol should be connected directly to the distribution panel,
- The transformer can either be connected to the MODULYS XL input or output.



If the neutral is not connected to the bypass input, please contact us.

For details of the connections, refer to the transformer terminal board diagram available on the MODULYS XL door.

9.12. CONNECTING THE BATTERY CABINET TEMPERATURE PROBE

One sensor per unit

In standard, Modulys XL delivers one input to connect a battery temperature sensor

- use the specific kit available with the UPS Unit,
- fix the probe in the battery room or inside the battery cabinet,
- connect the temperature probe on XB2 on ADC+SL (SYST) card (See § 9.6); without cabling distance limits and without the need to observe polarity, by using a 2 x 1 mm² double isolation cable,

Multiple sensors per unit (option)

When several battery temperature sensors are required, the UPS is delivered with 6 sensors. The number of sensors to connect depends on the number of battery sets and their coupling to the UPS.

- connect the temperature probes on the X107 terminal by using a 2 x 1 mm² double isolation cable
 - X107 1 - 2: Temperature sensor 1
 - X107 3 - 4: Temperature sensor 2 if required
 - X107 5 - 6: Temperature sensor 3 if required
 - X107 7 - 8: Temperature sensor 4 if required
 - X107 9 - 10: Temperature sensor 5 if required
 - X107 11 - 12: Temperature sensor 6 if required

A SOCOMEC technician should configure all sensors with the batteries associated.

10. COMMUNICATION

10.1. MULTIPLE COMMUNICATION OPTIONS

The MODULYS XL UPS Unit can manage various serial, contact and Ethernet communication channels at the same time. The 2 communication slots available allow the use of signalling accessories and cards.

Each communication channel is independent; simultaneous connections can thus be made to have various levels of remote signalling and monitoring (see § 11 "options" for a detailed evaluation of the functionality of the cards that can be installed in the slot).

The table below shows the possible connections between the UPS Unit communication channels and the external devices.

Possible options

	slot 1	slot 2	slot 1 - EXT	slot 2 - EXT
ADC + Serial Link interface	•	•	a	b
NetVision	•	•	a	b
Modbus TCP	•	•	a	b
IoT Gateway	•	•	a	b
BACnet	•	•	a	b
External gateway for LIB	•	•		

a: possible only if slot 1 is equipped with an ADC + Serial Link interface.

b: possible only if slot 2 is equipped with an ADC + Serial Link interface.

for localisation, please see § 8.4 "Identifying switching and connection devices".

Profibus / Profinet gateways are connected to an ADC + Serial Link card.

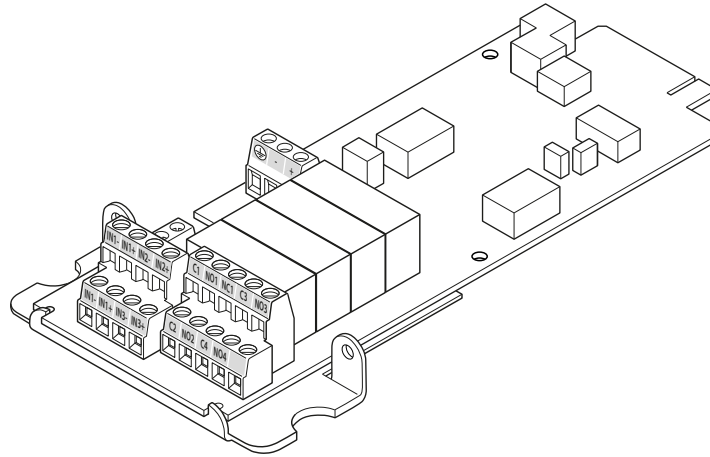
11. OPTIONS

11.1. ADC + SERIAL LINK INTERFACE

The ADC+SL (Advanced Dry Contact + Serial Link) is an optional slot board that provides:

- 4 relays for external device activation (can be set as normally closed or normally open),
- 3 free inputs to signal external contacts to the UPS Unit,
- 1 connector for an external temperature sensor (optional),

The board is plug&play: the UPS Unit is able to recognize its presence and configuration and manages the ADC outputs and the inputs accordingly. It is possible to create a customized operating mode using the XpertSoft tool. For more details, please see the Quick Start Guide of this card.



11.2. EXTERNAL SWITCH

For the safety of the equipment, the open or closed status of the output switches (Q3 and Q5) must be connected to terminal block X101; see § 2.4 and § 9.6.

In case no Q3 on a single MXL installation, shunt X101 5-6 in order to simulate the auxiliary contact (similar to a Q3 always closed)

To supply voltage to certain optional features, the input voltages (to be tapped upstream of the primary network power switch Q1) and the output voltages (to be tapped downstream of the output switch Q3) must be connected to the fuse holders:

F1 to F3:

- Li-ion battery option for SAMSUNG & VISION brand only

F61 to F64:

- ACS option for a connection between SOCOMEC UPS Unit
- PROFIBUS option
- PROFINET option
- Li-ion battery option for SAMSUNG brand only
- Long distance parallel wiring

see § 2.4 and § 9.6.

11.3. ISOLATION CONTROLLER

This device continually checks the transformer isolation, displaying an alarm message on the mimic panel.

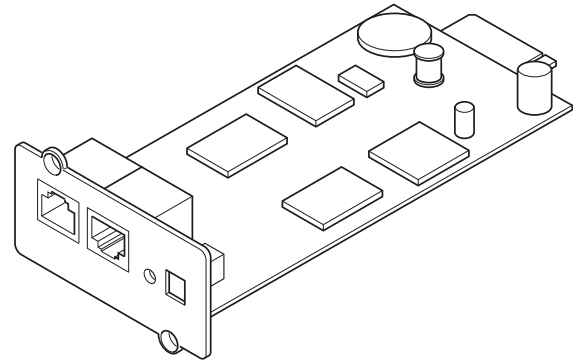
11.4. EXTERNAL MAINTENANCE BYPASS

This device will electrically exclude and isolate the MODULYS XL UPS Unit (e.g. for maintenance operations) without interrupting the power supplied to the load (please see § 2.4 and § 9.6).

11.5. NET VISION CARD

NET VISION is a communication and management interface designed for business networks. The UPS Unit behaves exactly like a networked peripheral. It can be managed remotely, and allows the shutdown of network workstations.

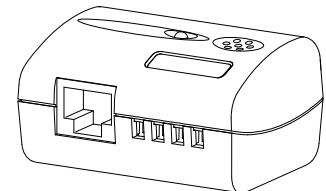
NET VISION provides a direct interface between the UPS Unit and LAN network avoiding dependence on the server and supports SMTP, SNMP, DHCP and many other protocols. It interacts via the web browser.



11.5.1. EMD

The EMD (Environmental Monitoring Device) is a device to be used in conjunction with the NET VISION interface and provides the following features:

- temperature and humidity measurements + dry contact inputs,
- alarm thresholds configurable via Web browser,
- notification of environmental alarms via email and SNMP traps.



11.6. ACS CARD

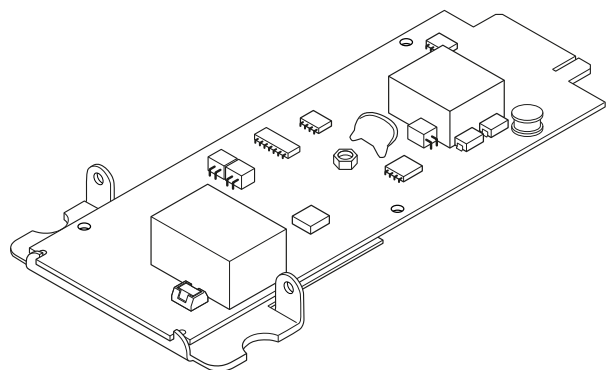
ACS (Automatic Cross Synchronisation) card is used to receive a synchronisation signal from an external source and manage it for the UPS Unit where it is installed, and provide a synchronising signal, where requested, to another UPS.

11.7. MODBUS TCP CARD

With the MODBUS TCP card fitted in the options slot, the UPS Unit can be monitored from remote stations using the appropriate protocol (MODBUS TCP - IDA).

11.8. BACNET CARD

With the BACnet card fitted in the options slot, the UPS Unit can be monitored from remote stations using the appropriate protocol (BACnet - IDA).



12. PREVENTIVE MAINTENANCE



All operations on the equipment must be carried out solely by Socomec personnel or by authorized service personnel.

Maintenance requires accurate functionality checks of the various electronic and mechanical parts and, if necessary, the replacement of parts subject to wear and tear (batteries, fans and condensers). It is recommended to carry out periodic specialized maintenance (annually), in order to keep the equipment at the maximum level of efficiency and to avoid the installation being taken out of service with possible damage/risks. In addition, attention should be paid to any preventive maintenance requests that the equipment may automatically display with an alarm/warning message.

12.1. BATTERIES

The state of the battery is fundamental to the operation of the UPS Unit.

Thanks to the Expert Battery System, the information relating to the state and the conditions of use of the battery are processed in real time and the recharging and discharging procedures are selected automatically in order to optimize battery life expectancy and offer maximum performance.

Furthermore, during the operating life of the battery, the MODULYS XL™ stores statistics on the conditions of use of the battery for analysis.

Since the expected life of the batteries is very much dependent on operating conditions (number of charging and discharging cycles, load rate, temperature), a periodic check by authorized personnel is recommended.



When replacing the batteries, use the same type and configuration by placing them in the appropriate containers so as to avoid the risk of acid leakage.



The replaced batteries must be disposed of at authorized recycling and disposal centres.



Do not open the plastic cover of the batteries as they contain harmful substances.

12.2. FANS

The service life of the fans used to cool the power parts depends on the use and the environmental conditions (temperature, dust).

Preventive replacement by an authorized technician is recommended after 7 years (in normal operating conditions).



When needed, fans must be replaced as per specifications by Socomec.

12.3. CAPACITORS

The equipment houses electrolytic capacitors (used in the rectifier and inverter section) and filtering capacitors (used in the output section), whose service life depends on use and environmental conditions.

The average expected service life of these components is shown below:




- electrolytic capacitors: 7 years,
- filtering capacitors: 7 years.

In any case the actual state of the components is checked during preventive maintenance.

12.4. POWER SUPPLIES

The average expected service life of the power supplies is 10 years

13. TECHNICAL SPECIFICATIONS

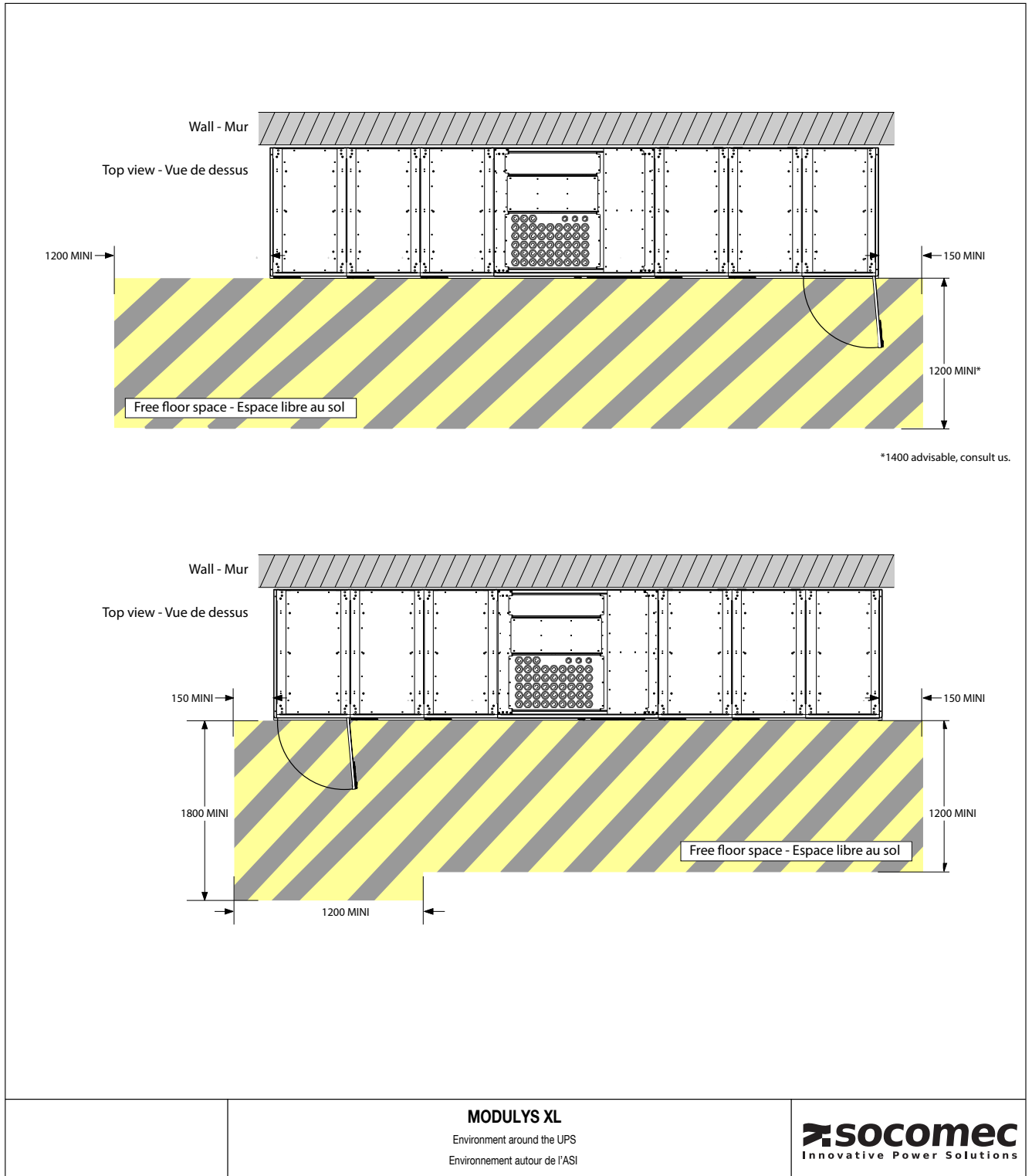
MODULYS XL	kVA	200	400	600	800	1000	1200
Electrical specifications - Rectifier input							
Mains voltage (power rating, Power Factor $\cos \phi = 1$)	400 V 3-ph						
Voltage tolerance ⁽¹⁾	200V to 480V						
Input frequency	45 - 65 Hz						
Input Power factor	> 0.99						
THDI (at full load and rated voltage)	< 2.5 % (with THDV input < 1 %)						
Electrical specifications - Output							
Output voltage on inverter	3 x 380/400/415 V with neutral						
Frequency	50 / 60 Hz (± 0.02 % if no mains power supply)						
Power rating kW / kVA	200	400	600	800	1000	1200	
Overload:							
• 10 minutes	250 kW	500 kW	750 kW	1000 kW	1250 kW	1500 kW	
• 1 minute	300 kW	600 kW	900 kW	1200 kW	1500 kW	1800 kW	
Crest factor	3:1						
Total voltage distortion	ThdU < 1 % with linear load						
Inverter short-circuit capacity	820 A	1640 A	2460 A	3280 A	4100 A	4920 A	
Electrical specifications - Bypass input							
Bypass rated voltage	Output rated voltage						
Bypass voltage tolerance	$\pm 15\%$ (Configurable)						
Input frequency	50 / 60 Hz						
Maximum overload capacity admitted	110 % 60 min, 125 % 10 min, 150 % 1 min						
Bypass short-circuit capacity	Up to 45 500 A peak						
Rated short-time withstand current I _{cw}	100 kA without fuses						
Environment							
Operating temperature	0 to 40 °C (25 °C recommended)						
Storage temperature range	-20 to 70 °C						
Relative humidity (condensation-free)	Up to 95 %						
Max. altitude	1000 m						
Acoustic noise	< 75 dBA						
Airflow	m ³ / h	2100	4200	6300	8400	10500	12600
Heat dissipation (max) in worst conditions	W	10400	20800	31200	41700	52100	62500
	BTU/h	35464	70928	106392	142197	177661	213125
Standards							
Appliance classes	Protective Class I (IEC 62477-1)						
Safety	IEC 62040-1						
EMC	IEC 62040-2						
Product certification	  						
Protection degree	IP20 (others on request)						

These levels of performance are given for information purposes at nominal load (resistive)

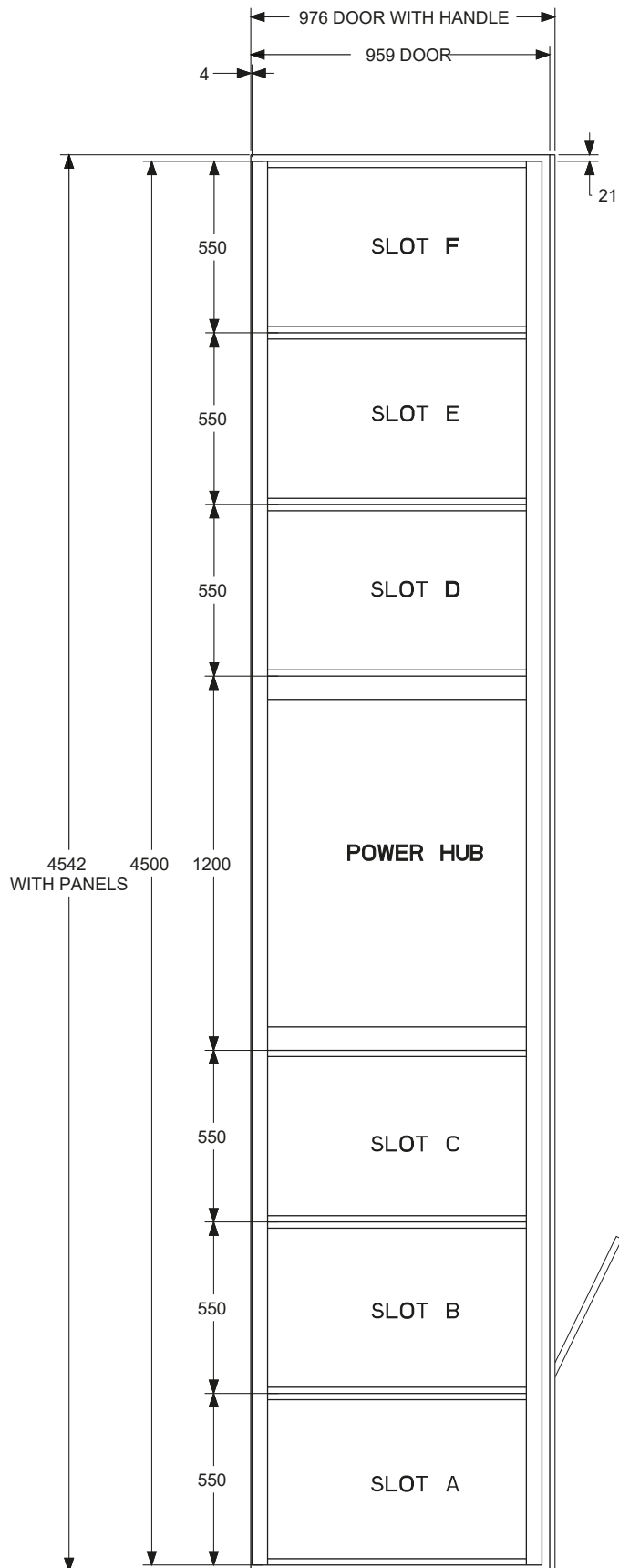
⁽¹⁾ Condition apply – consult us

14. APPENDIX

14.1. DRAWING 1: ENVIRONMENT AROUND THE UPS UNIT



14.2. DRAWING 2: MODULYS XL UNIT DIMENSIONS



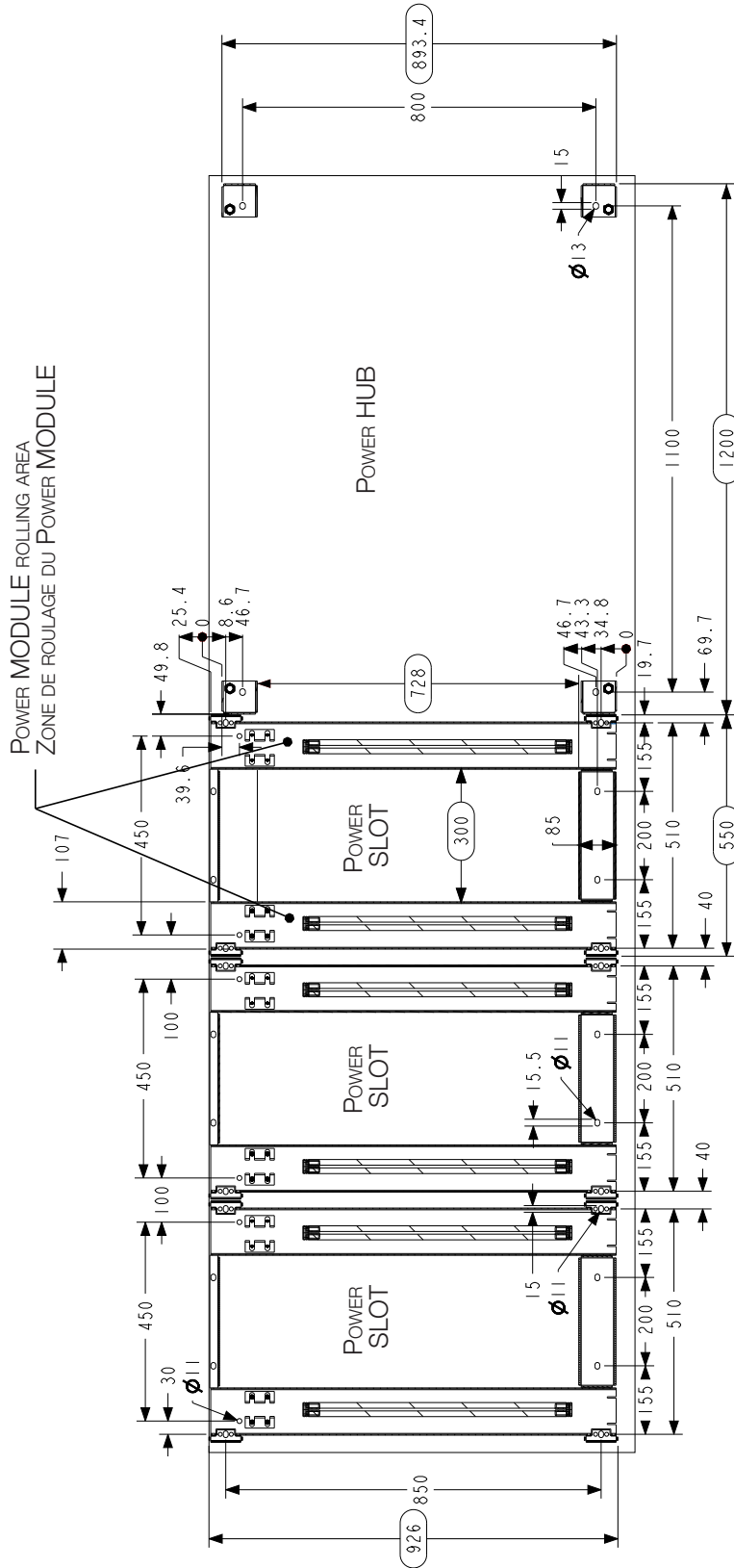
SOCOMEc
Innovative Power Solutions



MODULYS XL
Dimensions de l'Unité
UNIT dimensions

Dimensional tolerances per cabinet: ± 2mm

14.3. DRAWING 3: MODULYS XL FLOOR FASTENING

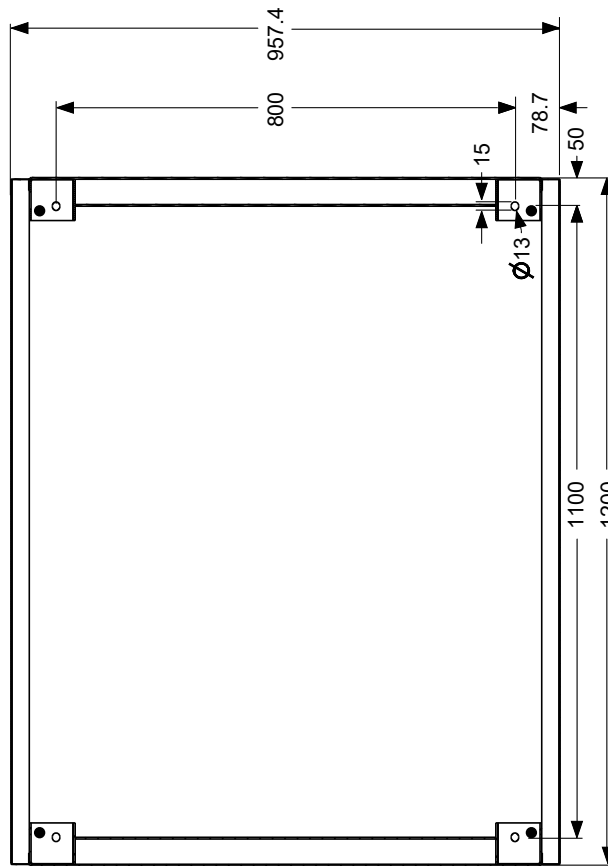


Dimensional tolerances per cabinet: $\pm 2\text{mm}$



MODULYS XL
Emprise au sol de l'Unité
Unit footprint

14.4. DRAWING 4: POWER HUB FLOOR FASTENING

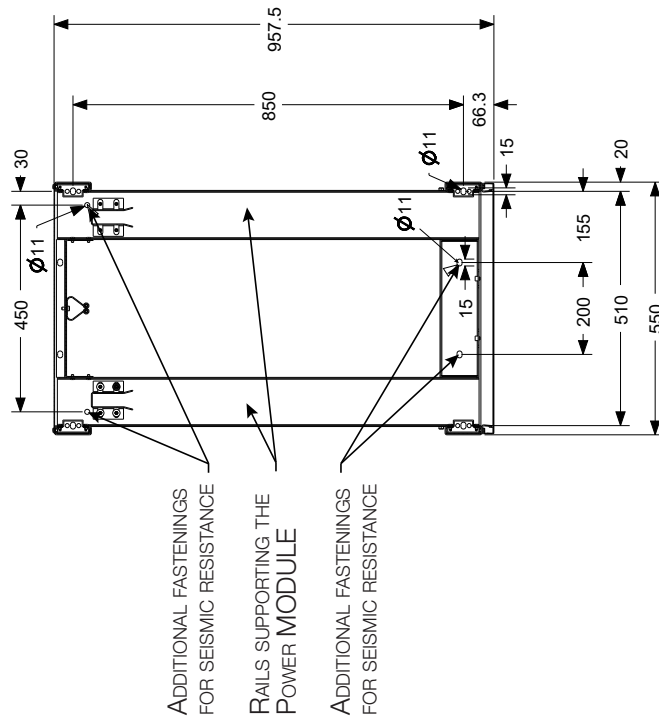


Dimensional tolerances per cabinet: ± 2 mm

MODULYS XL
Empreinte au sol Power HUB
Power HUB footprint

SOCOMEc
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14.5. DRAWING 5: POWER SLOT FLOOR FASTENING

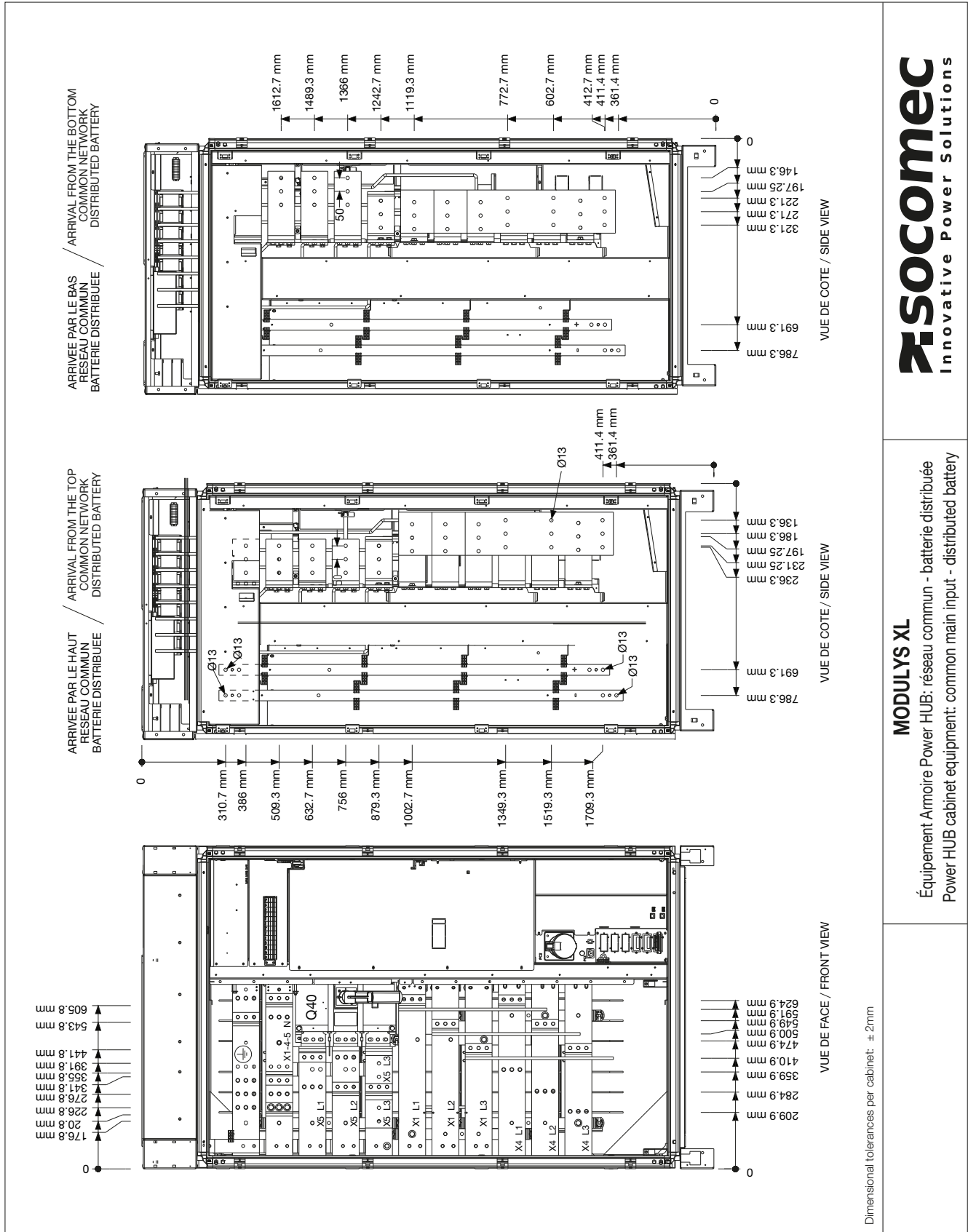


Dimensional tolerances per cabinet: $\pm 2\text{mm}$

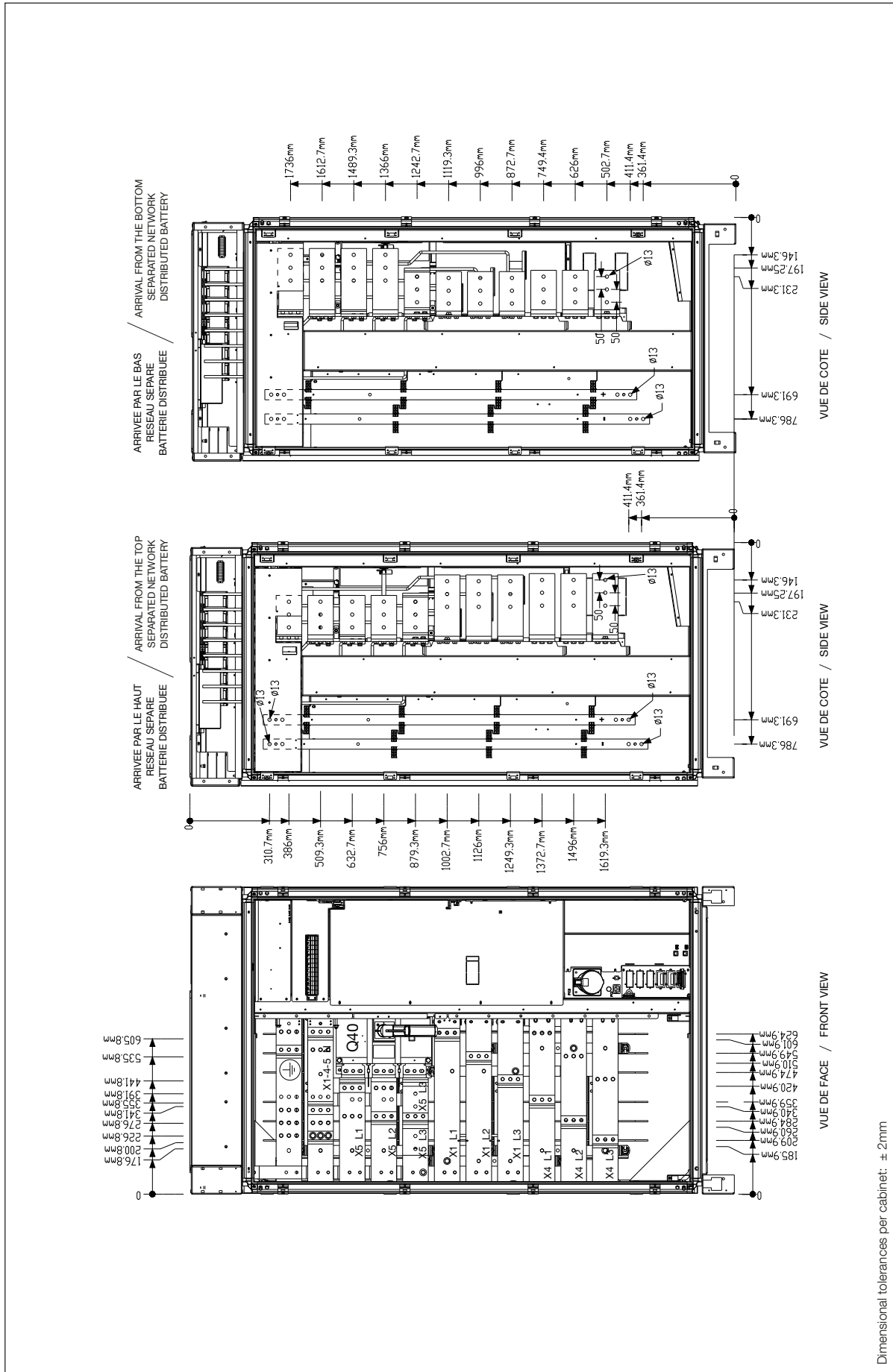
MODULYS XL
 Empreinte au sol Power SLOT
 Power SLOT footprint

socomec
 Innovative Power Solutions

14.6. DRAWING 6: POWER HUB, COMMON MAINS INPUT



14.7. DRAWING 7: POWER HUB, SEPARATED MAINS INPUT

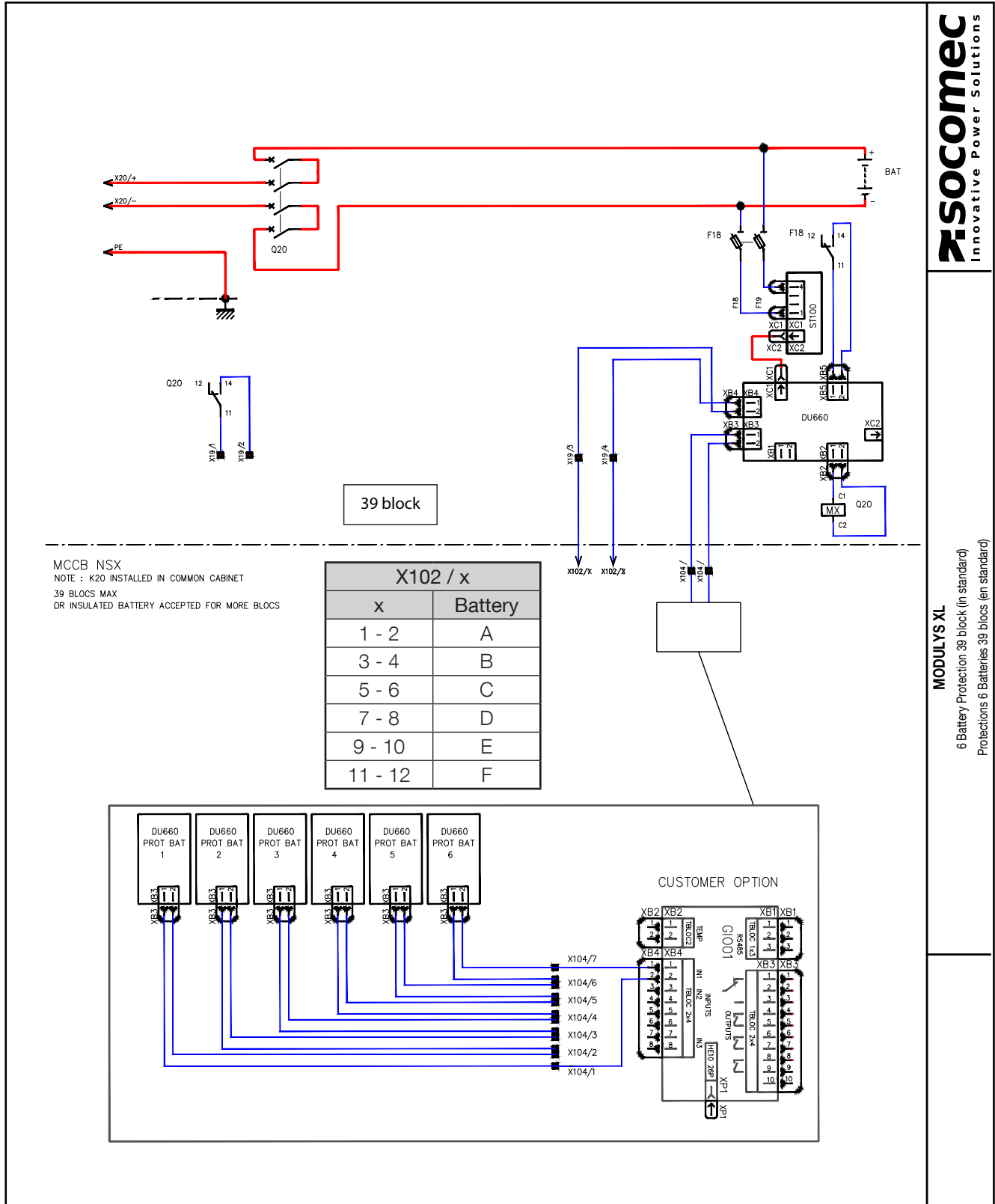


Dimensional tolerances per cabinet: ± 2mm



MODULYS XL
 Équipement Armoire Power HUB: réseau séparé - batterie distribuée
 Power HUB cabinet equipment: separated main input - distributed battery

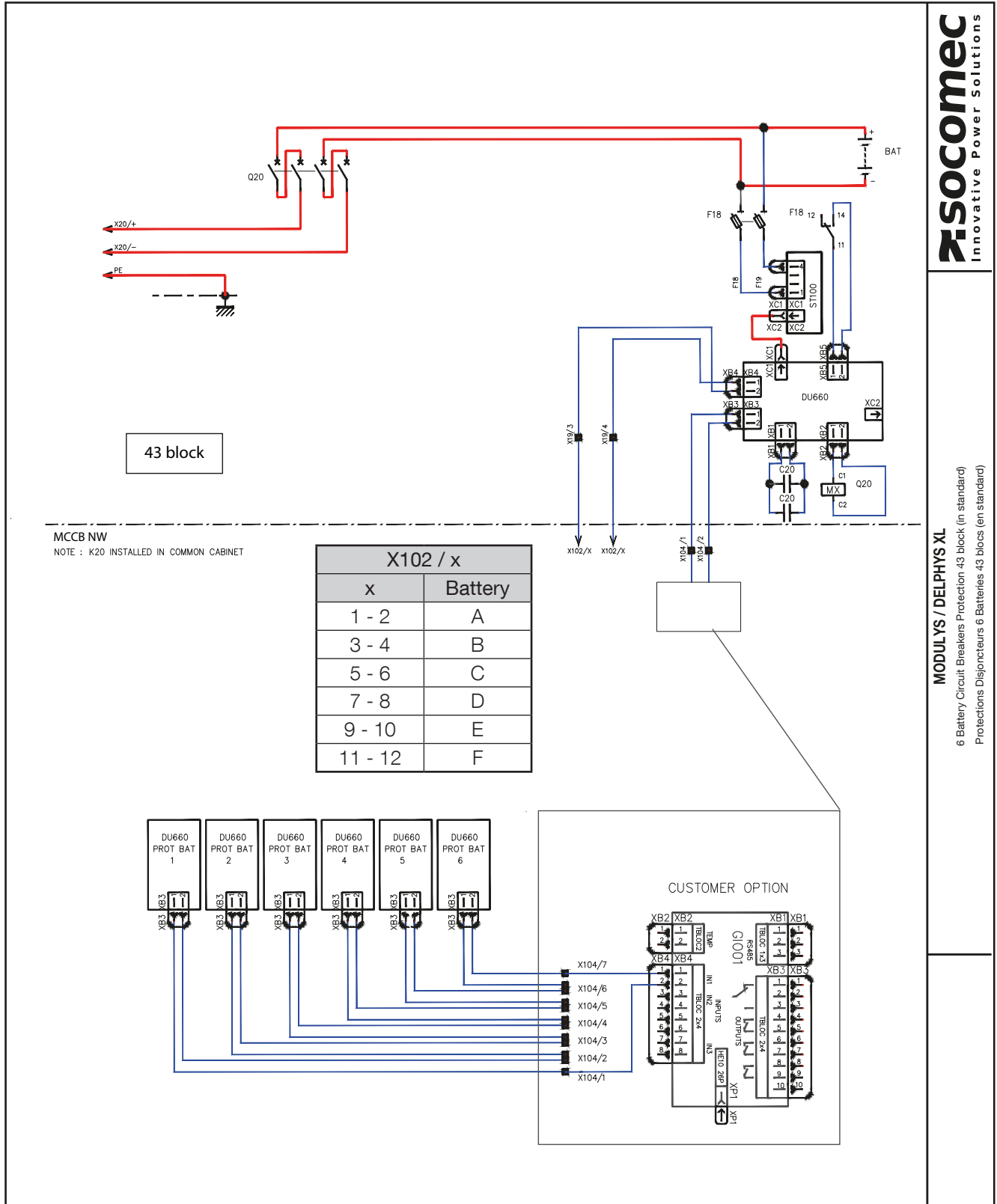
14.8. DRAWING 8: BATTERY PROTECTION



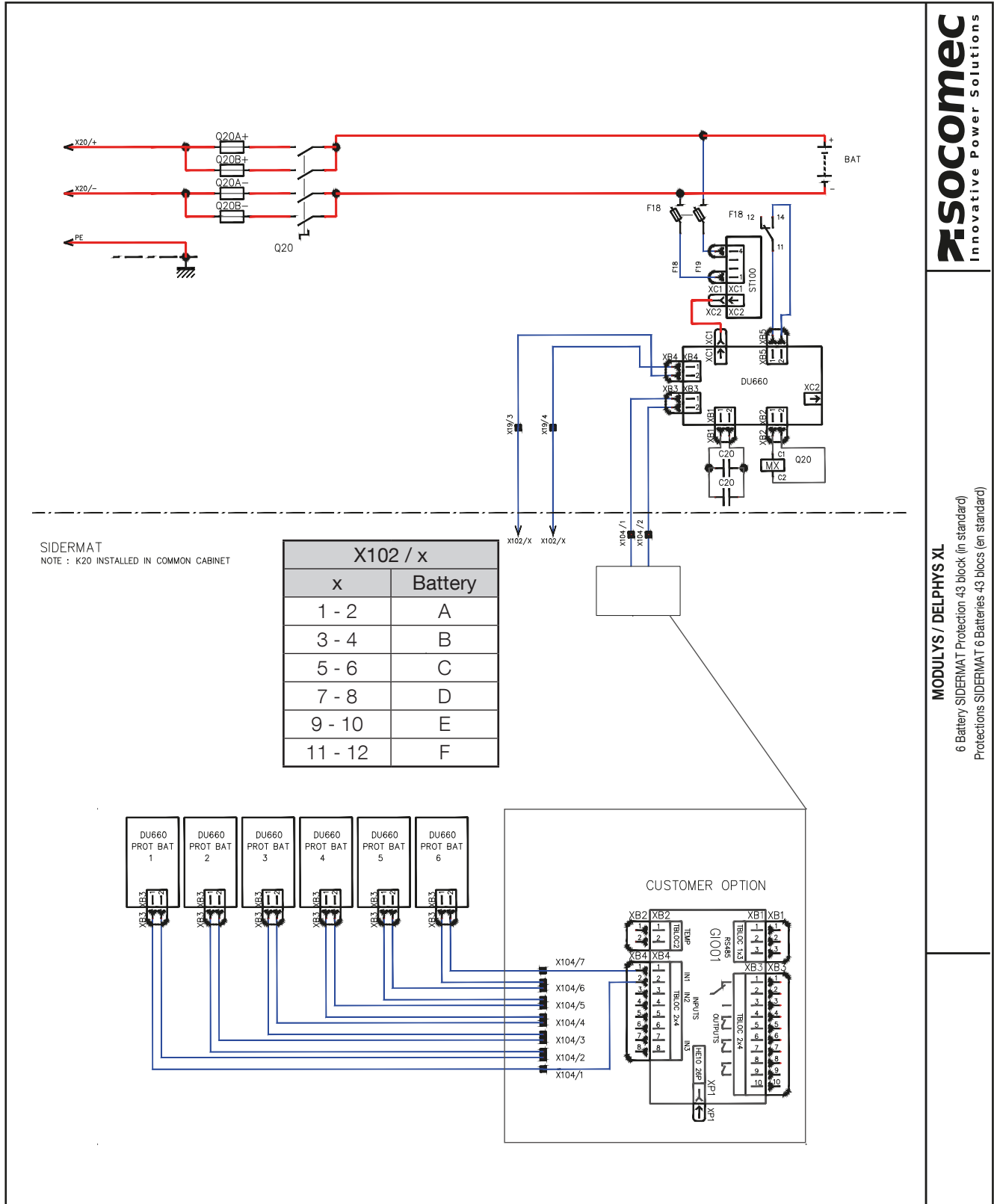
MCCB NSX
 NOTE : K20 INSTALLED IN COMMON CABINET
 39 BLOCS MAX
 OR INSULATED BATTERY ACCEPTED FOR MORE BLOCS

X102 / x	
x	Battery
1 - 2	A
3 - 4	B
5 - 6	C
7 - 8	D
9 - 10	E
11 - 12	F

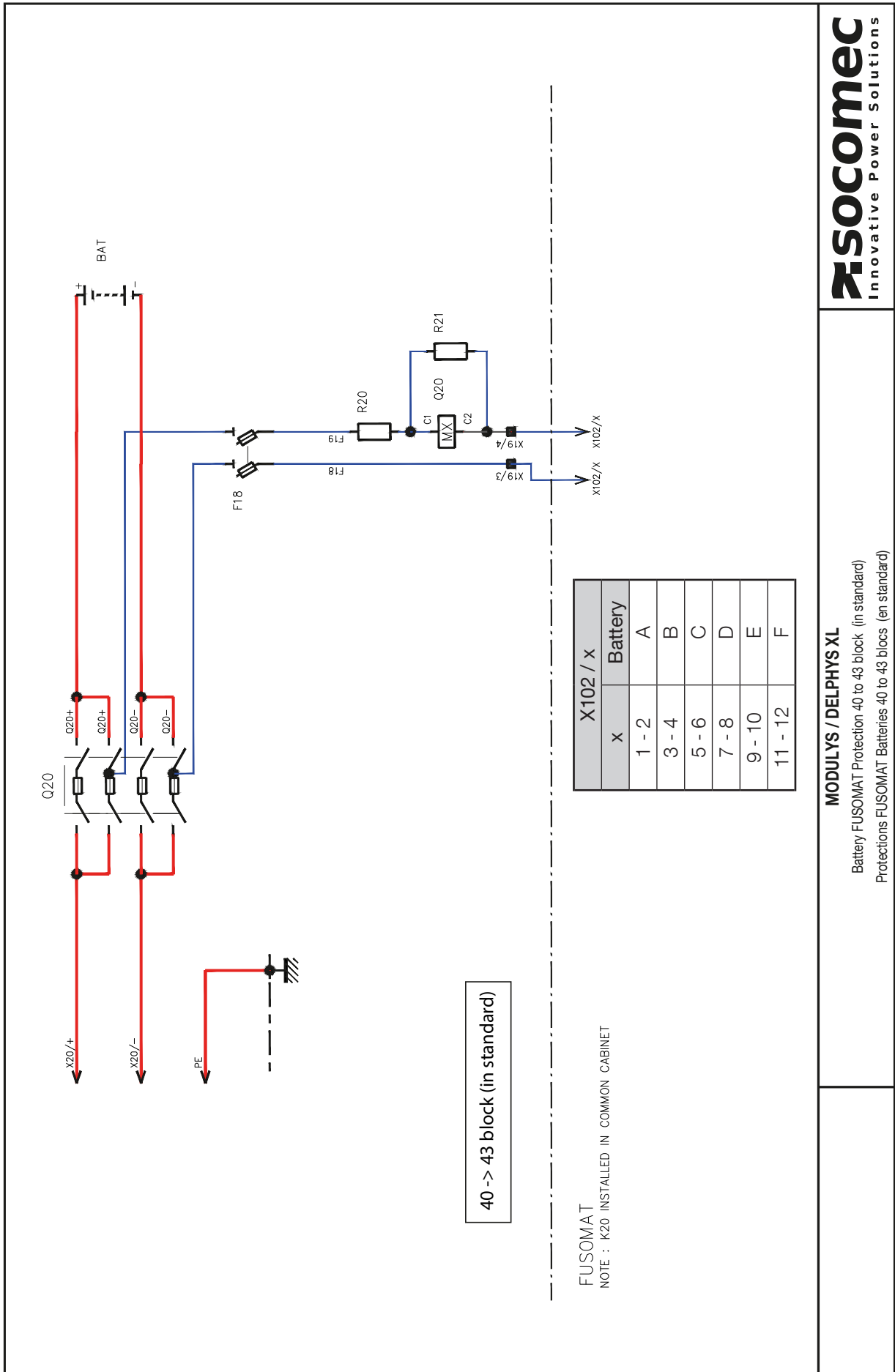
14.9. DRAWING 9: BATTERY PROTECTION



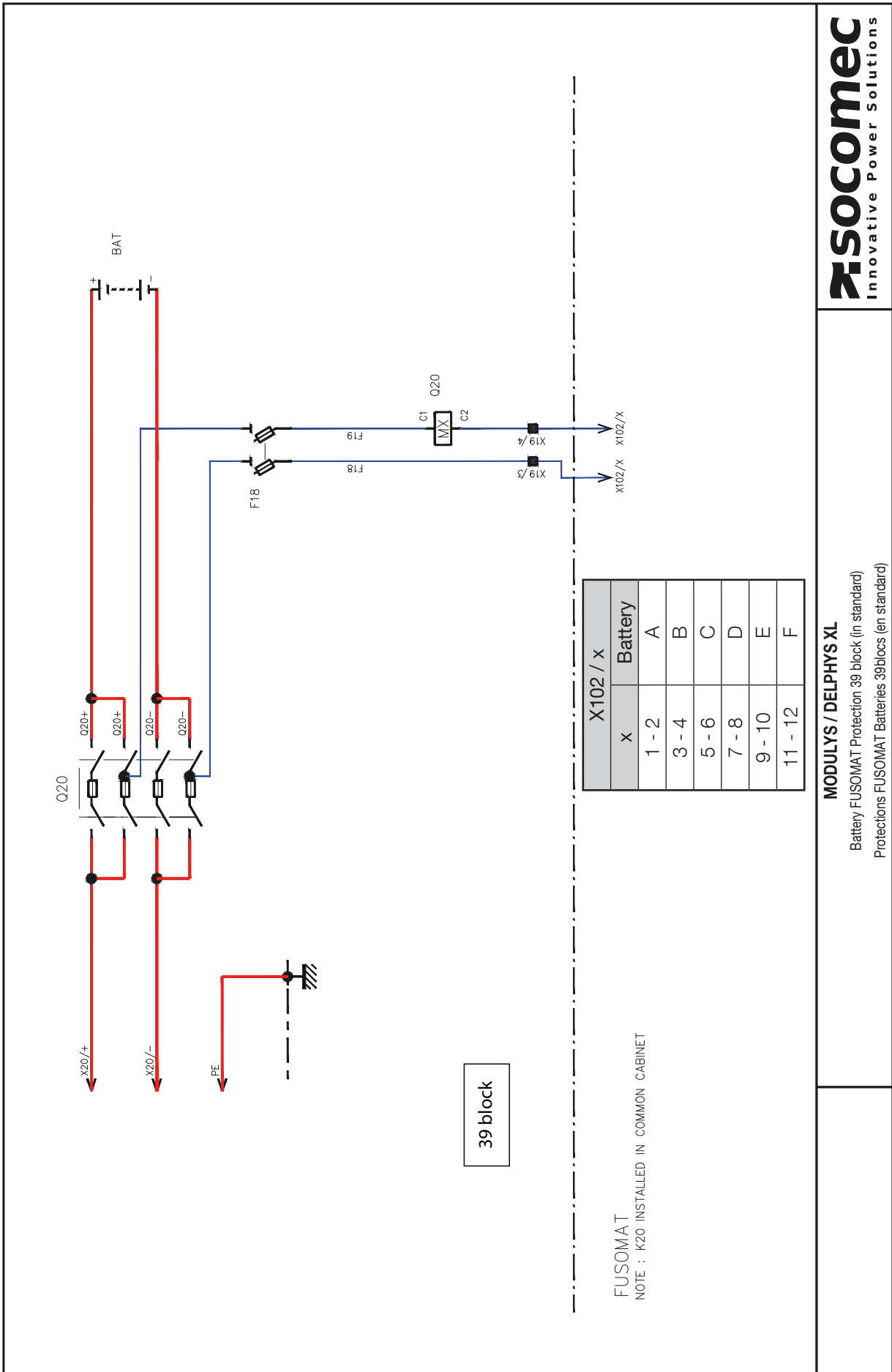
14.10. DRAWING 10: BATTERY PROTECTION



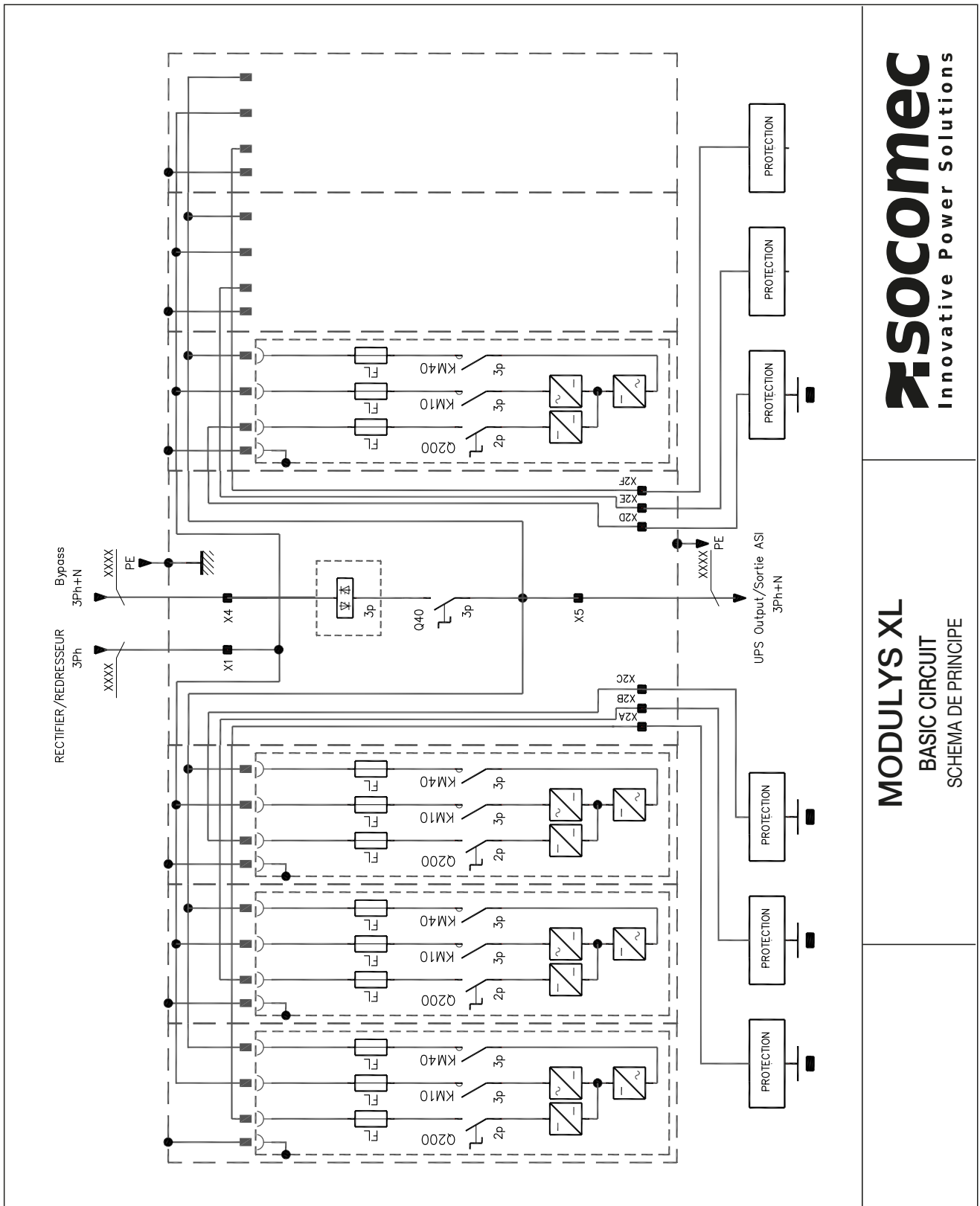
14.11. DRAWING 11: BATTERY PROTECTION



14.12. DRAWING 12: BATTERY PROTECTION



14.13. DRAWING 13: BASIC CIRCUIT (EXAMPLE)



SOCOMEc
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MODULYS XL
BASIC CIRCUIT
SCHEMA DE PRINCIPE

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3,600 employees
worldwide

10 % of sales revenue
dedicated to R&D

400 experts
dedicated to service provision

Your power management expert



POWER
SWITCHING



POWER
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HEAD OFFICE

SOCOMEK GROUP

SAS SOCOMEK capital 10 607 040 €
R.C.S. Strasbourg B 548 500 149
B.P. 60010 - 1, rue de Westhouse
F-67235 Benfeld Cedex
Tel. +33 3 88 57 41 41 - Fax +33 3 88 57 78 78
info.scp.isd@socomec.com

www.socomec.com



UK OFFICE

SOCOMEK U.K. Limited

Power Conversion (UPS)
7-9 Lakeside Business Park,
Broadway Lane, South Cerney,
Gloucestershire, GL7 5XL.
Tel. +44 (0) 333 015 3002
info.uk@socomec.com

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