



**Socomes Modulys GP 2.0 (от 400 до 600 кВА) - руководство по эксплуатации. Юниджет.**

Постоянная ссылка на страницу: <https://www.uni-jet.com/catalog/ibp/on-line-ibp/socomes-modulys-gp-green-power-2.0/>

# ***MODULYS GP***

***Green Power 2.0*** range  
from 400 to 600 kVA

Installation and operating manual (EN)

# CERTIFICATE AND CONDITIONS OF WARRANTY

This SOCOMEC continuous power system is guaranteed against any manufacturing or material defects.

The warranty is valid for 12 (twelve) months from the commission date, provided activation is carried out by SOCOMEC personnel or personnel from a support centre authorised by SOCOMEC, and no more than 15 (fifteen) months from being shipped from SOCOMEC.

The warranty is valid throughout national territory. If the UPS is exported abroad, the warranty will only cover the parts used to repair faults.

The warranty is valid ex-works and covers labour and parts used to repair the faults.

The warranty shall not apply in the following cases:

- Failure due to unforeseen circumstances or force majeure (lightning, floods, etc.);
- Failure due to negligence or improper use (use outside limits: temperature, humidity, ventilation, electric power supply, applied load, batteries);
- Insufficient or inappropriate maintenance;
- When maintenance, repairs or modifications have not been carried out by SOCOMEC personnel, or personnel from a support centre authorised by SOCOMEC.
- If the battery has not been recharged in accordance with the terms indicated on the packaging and in the manual, in the event of long periods of storage or UPS inactivity.

SOCOMEC may, at its own discretion, opt for the repair of the product or the replacement of faulty or defective parts with new parts, or with used parts of equivalent quality to new parts with regard to function and performance.

Defective or faulty parts replaced free of charge must be made available to SOCOMEC, which becomes the sole owner.

Replacement or repair of parts, or any modifications to the product during the warranty period, will not extend the duration of the warranty.

SOCOMEC will not be responsible for damages under any circumstances (including, without limitations, damage for loss of earnings, interruption of activity, loss of information or other financial losses) arising from the use of the product.

These conditions are subject to Italian law. Any disputes fall under the jurisdiction of the Court of Vicenza.

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# 1. SAFETY STANDARDS

This user manual specifies installation and maintenance procedures, technical data and safety instructions for SOCOMEC. For further information visit the Socomec website: [www.socomec.com](http://www.socomec.com).



**NOTE!**

Any work carried out on the equipment must be performed by skilled, qualified technicians.



**NOTE!**

Before carrying out any operations on the unit read the installation and operating manual carefully. Keep this manual safe for future reference.



**DANGER!**

Failure to observe safety standards could result in fatal accidents or serious injury, and damage equipment or the environment.



**CAUTION!**

If the unit is found to be damaged externally or internally, or any of the accessories are damaged or missing, contact SOCOMEC. Do not operate the unit if it has suffered a violent mechanical shock of any kind.



**NOTE!**

Install the unit in accordance with clearances in order to prevent access to handling devices and guarantee sufficient ventilation (refer to 'Environmental requirements' chapter).



**NOTE!**

Only use accessories recommended or sold by the manufacturer.



**NOTE!**

When the equipment is transferred from a cold to a warm place wait approx. two hours before putting the unit into operation.



**NOTE!**

When carrying out electrical installation, all standards applicable specified by the IEC, in particular IEC 60364, and the electricity supplier must be observed. All national standards applicable to batteries must be observed. For further information refer to 'Technical specification' chapter.



**WARNING!**

Connect the protective earth (PE) conductor before making any other connections.



**NOTE!**

The installer is responsible for implementing the backfeed protection with the use of AC input line isolation devices external to the UPS. Refer to 'Electrical requirements' chapter.



**DANGER! RISK OF ELECTRIC SHOCK!**

Before carrying out any operations on the unit (cleaning and maintenance performances, connection of appliances, etc.) disconnect all power sources.



**DANGER! RISK OF ELECTRIC SHOCK!**

Internal parts and terminals of coupling cabinet and UPSs could be under voltage independently of the operating mode of coupling cabinet.



**DANGER! RISK OF ELECTRIC SHOCK!**

After disconnecting all power sources wait approx. 5 minutes for the complete discharge of the unit.



**NOTE!**

The UPS may be powered from an IT distribution system with a neutral conductor.



**NOTE!**

Any use other than the specified purpose will be considered improper. The manufacturer/supplier shall not be held responsible for damage resulting from this. Risk and responsibility lies with the system manager.

**NOTE!** 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 system where product failure is likely to cause substantial harm to people 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.



**NOTE!**

This is a product for commercial and industrial application – installation restrictions or additional measures may be needed to prevent disturbances.

## 1.1. DESCRIPTION OF SYMBOLS

All interior and exterior precautions and warnings on labels and plates on the equipment should be complied with.



**DANGER!** High voltage (black/yellow)



Protective earth terminal (PE)



Read the user manual before using the unit



It is forbidden for non-qualified personnel to work on the batteries.



Do not smoke, use naked flames or generate sparks in the vicinity of the accumulators.



Accumulators are heavy! Use suitable transport and lifting equipment to work safely.



Connecting accumulators in series creates hazardous voltages.



The electrolyte corrodes metals and burns the skin and all parts of the human body.



**WARNING!**

Risk of explosion! Avoid short circuits! Never place tools or metal objects on the accumulators.



Wear safety goggles and suitable clothing.



Read the user instructions carefully.  
Read the user manual before performing any operations.



Wear protective gloves and clothing.



In the event of contact with the eyes, wash immediately with plenty water and call a doctor. Call a doctor immediately in the event of accidents or illness.



The unit **MUST** be handled by at least two people.



Batteries and related parts contain lead. Lead is dangerous to health if ingested. Wash hands after handling!

We advise you to contact SOCOMEC beforehand to confirm the ability of these products to meet the required level of safety, performance, reliability and compliance with applicable laws, regulations and specifications.

## 2. ENVIRONMENTAL REQUIREMENTS AND HANDLING



### NOTE!

Before carrying out any operations on the unit read the Safety standards chapter carefully.

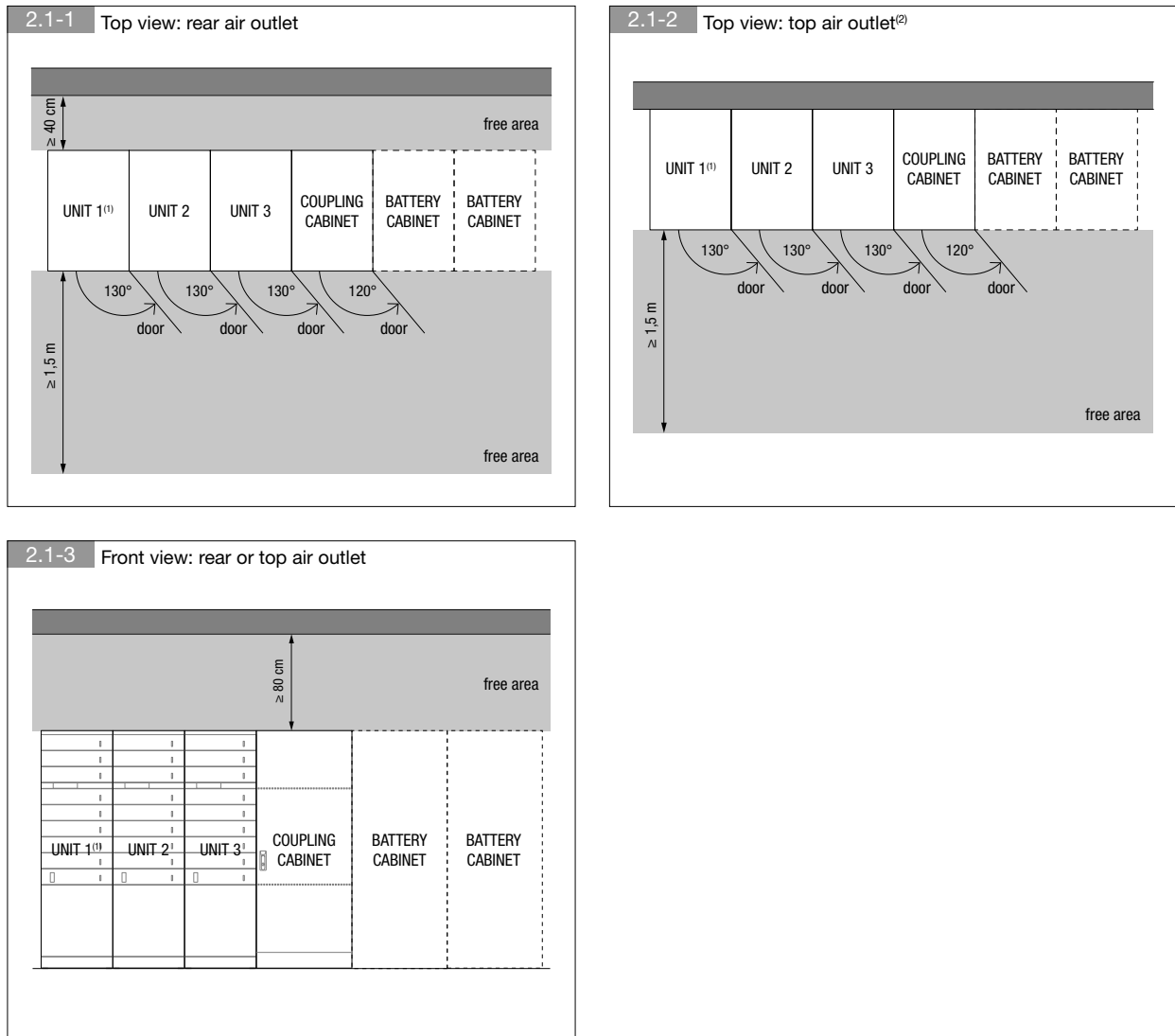
### 2.1. ENVIRONMENTAL REQUIREMENTS

The room must be:

- of a suitable size
- free from conductive, inflammable and corrosive items;
- not exposed directly to sunlight.

The floor must support the weight of the unit and guarantee its stability. The unit is designed for indoor installation only.

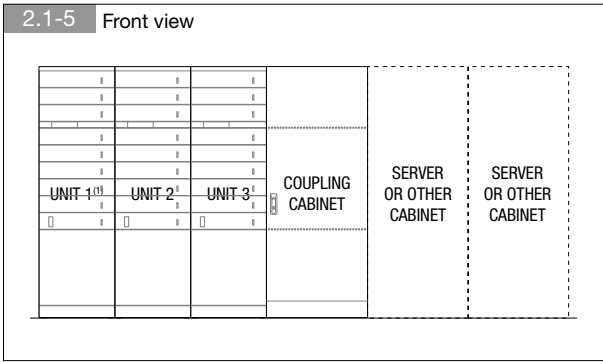
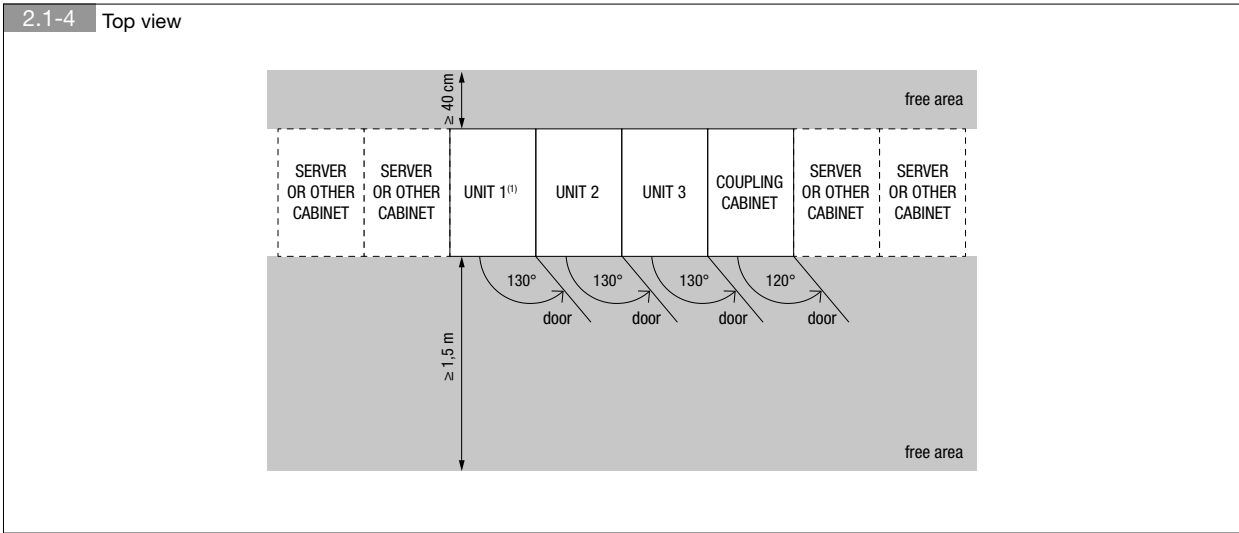
### ROOM POSITIONING



(1). Unit present in 600 kVA configuration.

(2). This configuration is possible only with top air-exhaust option. See standard features and options chapter.

IN-ROW CONFIGURATION



(1). Unit present in 600 kVA configuration.

2.2. HANDLING

- The packaging guarantees the stability of the unit during shipping and physical transfer.
- The unit 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 unit.
- Carry the packaged unit as close as possible to the installation site.



**WARNING! HEAVY WEIGHT!**

Move the unit using a fork lift truck taking the utmost caution at all times.



The unit **MUST** be handled by at least two people. The people **MUST** take position at the sides of the UPS with respect to the direction of movement.



Do not move the unit by putting pressure on the front door.



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

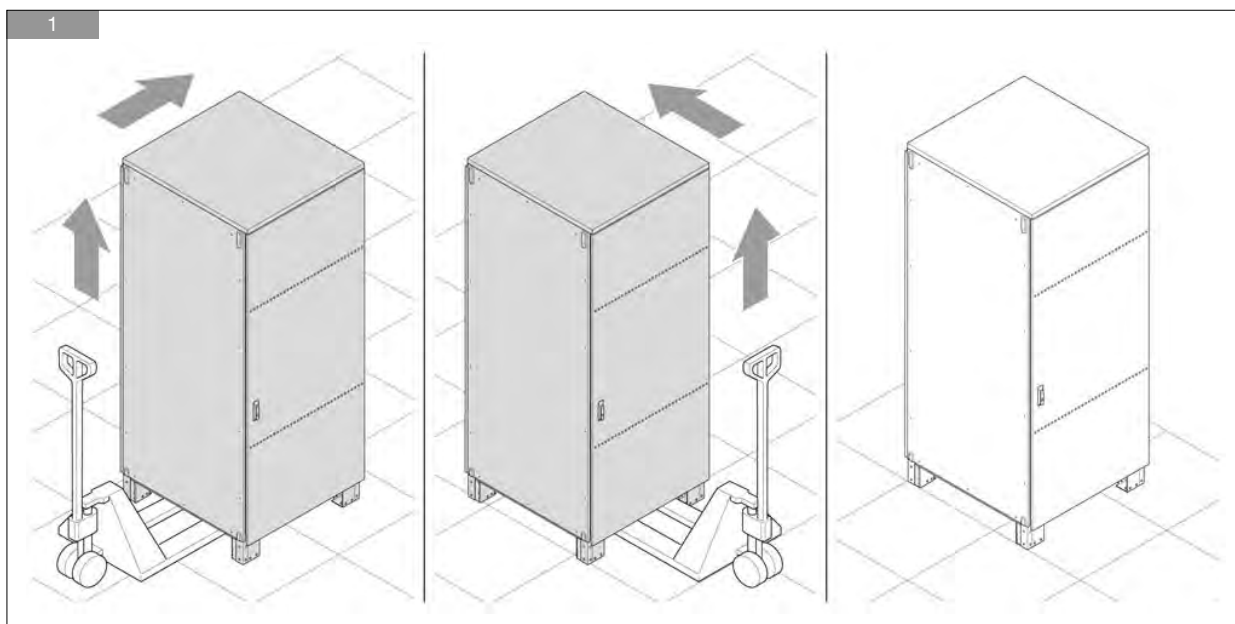


**WARNING!**

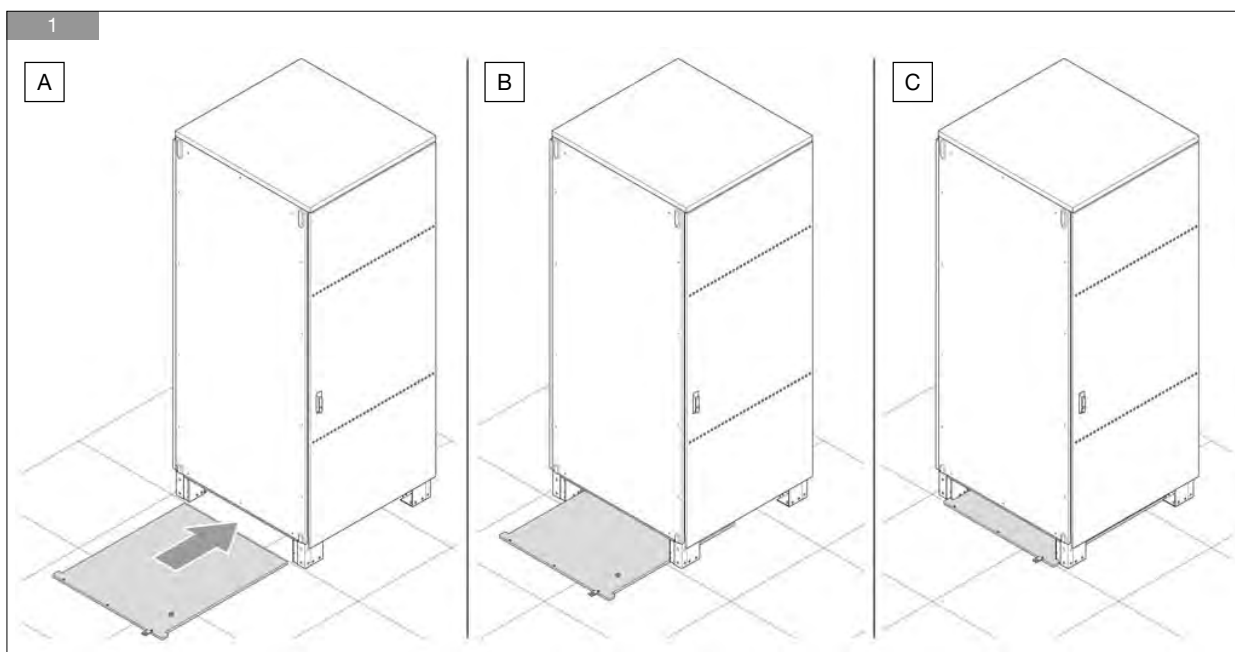
The following instructions must be carried out prior to moving the unit (after initial positioning). Failure to heed this warning could result in the unit falling over, equipment damage, injury and even death.



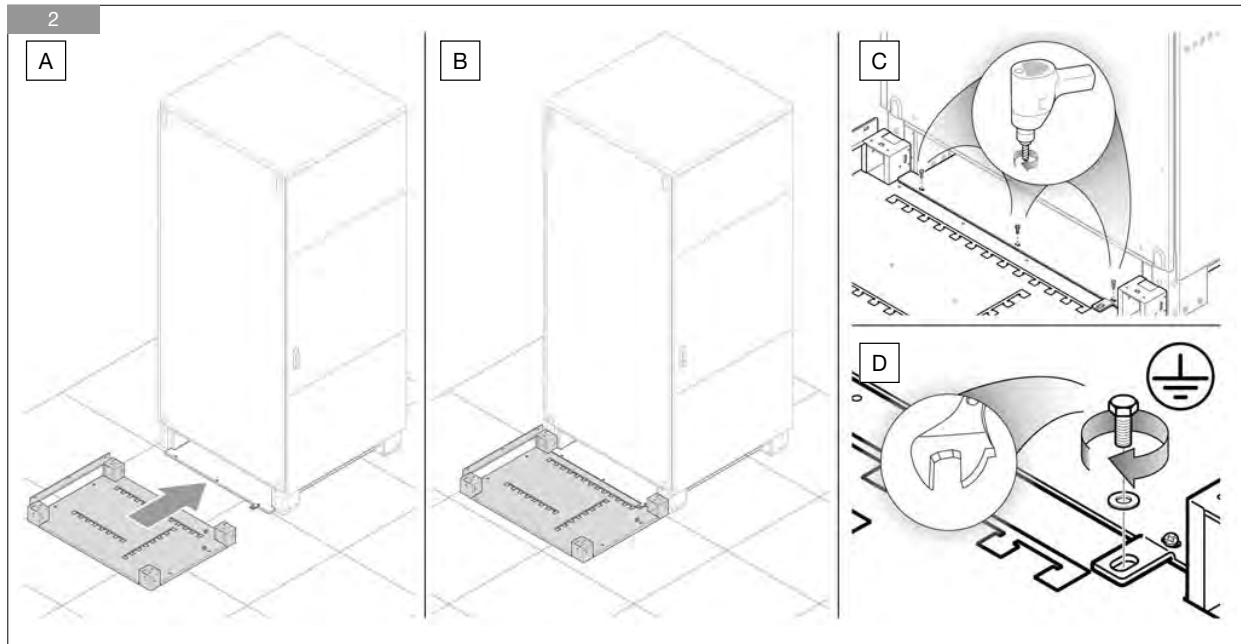
### COUPLING CABINET POSITIONING



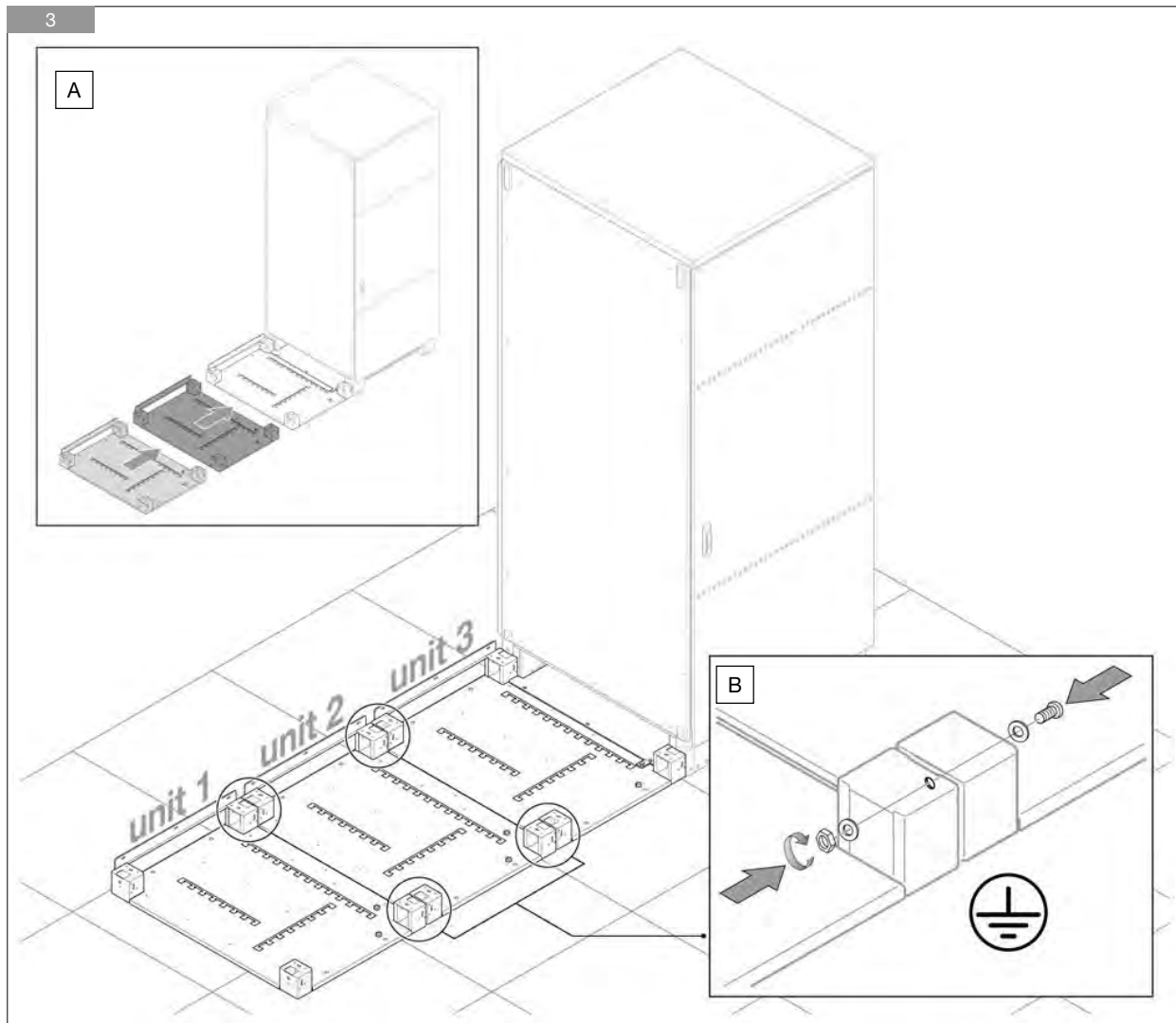
### BASE PLATE INSTALLATION



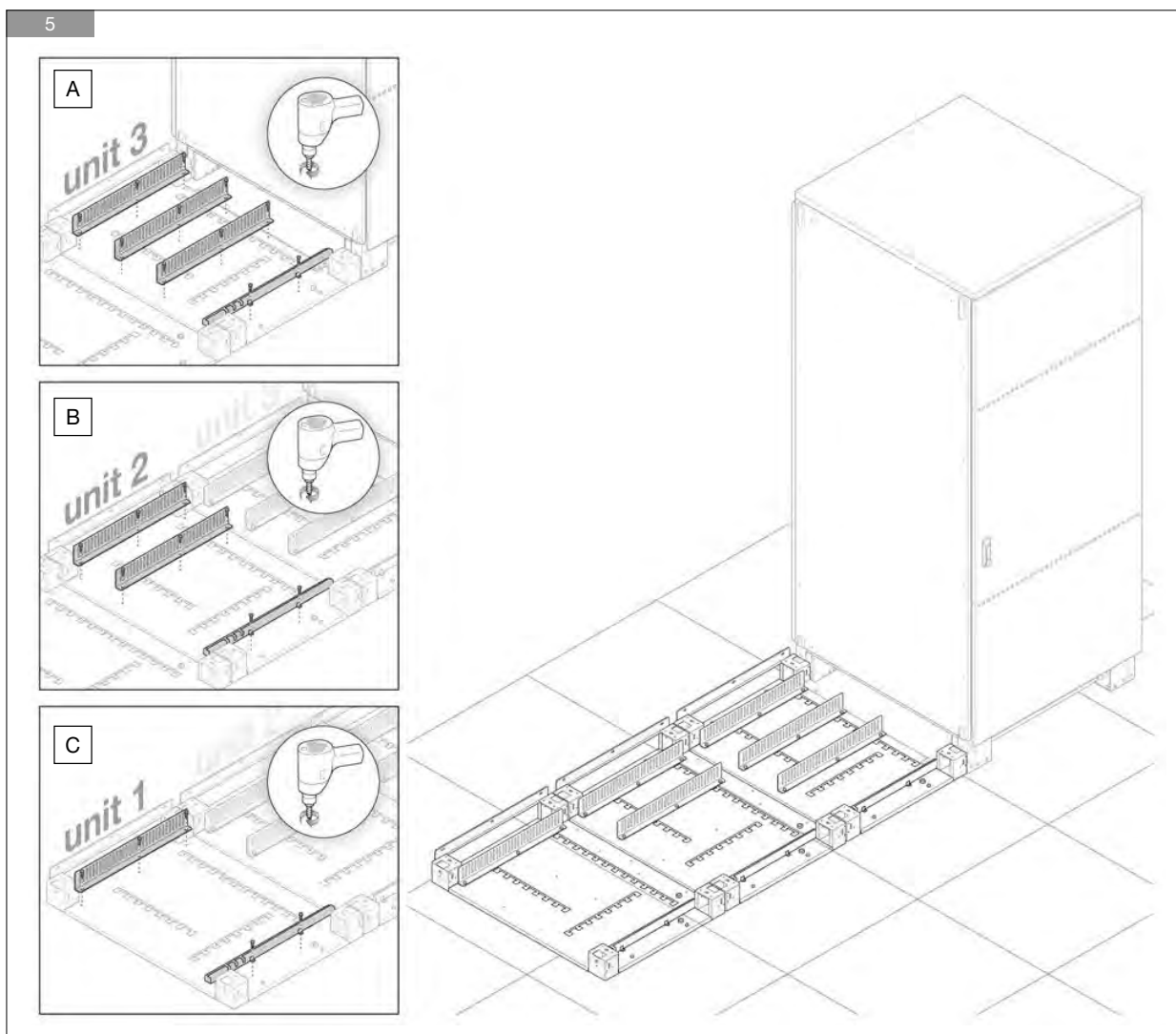
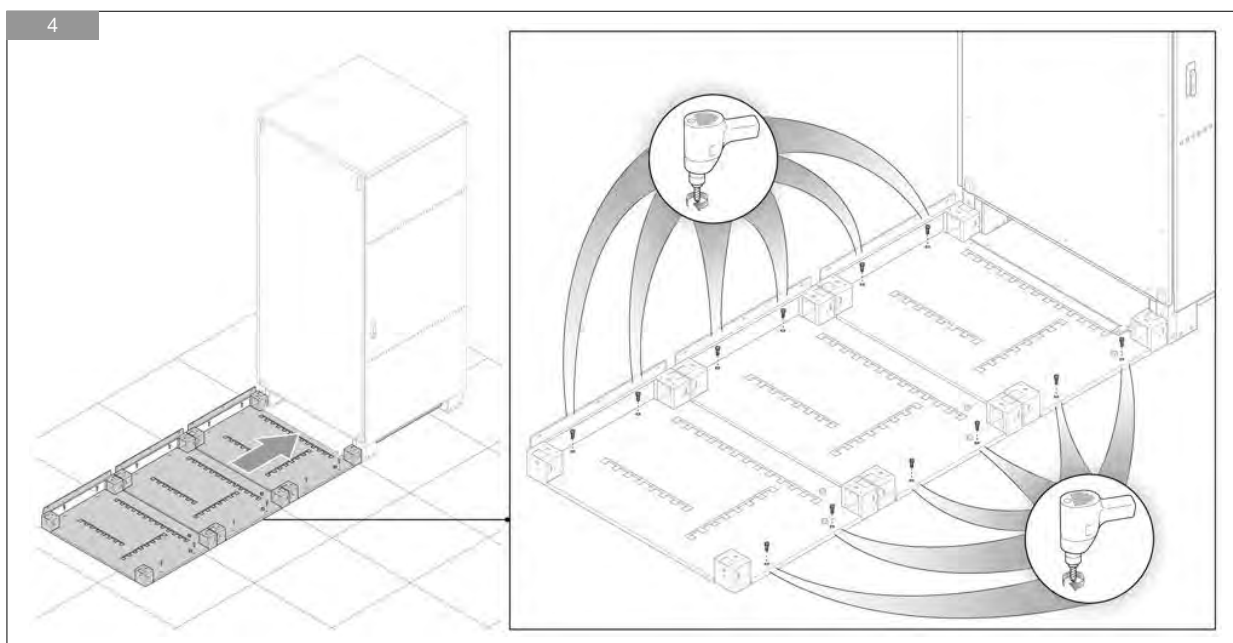
## 2. ENVIRONMENTAL REQUIREMENTS AND HANDLING



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## 2. ENVIRONMENTAL REQUIREMENTS AND HANDLING

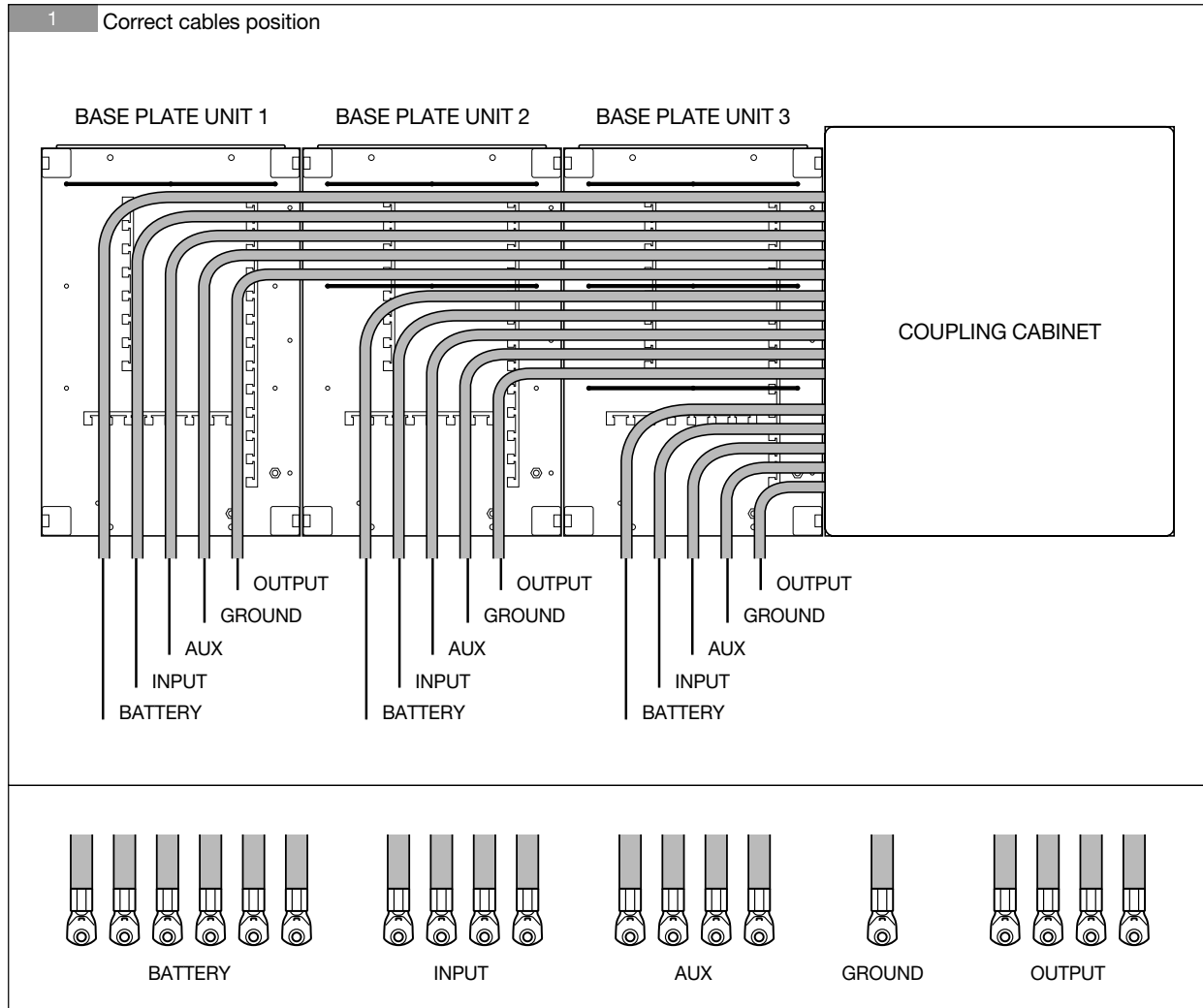


### CABLE POSITIONING ON BASE PLATE

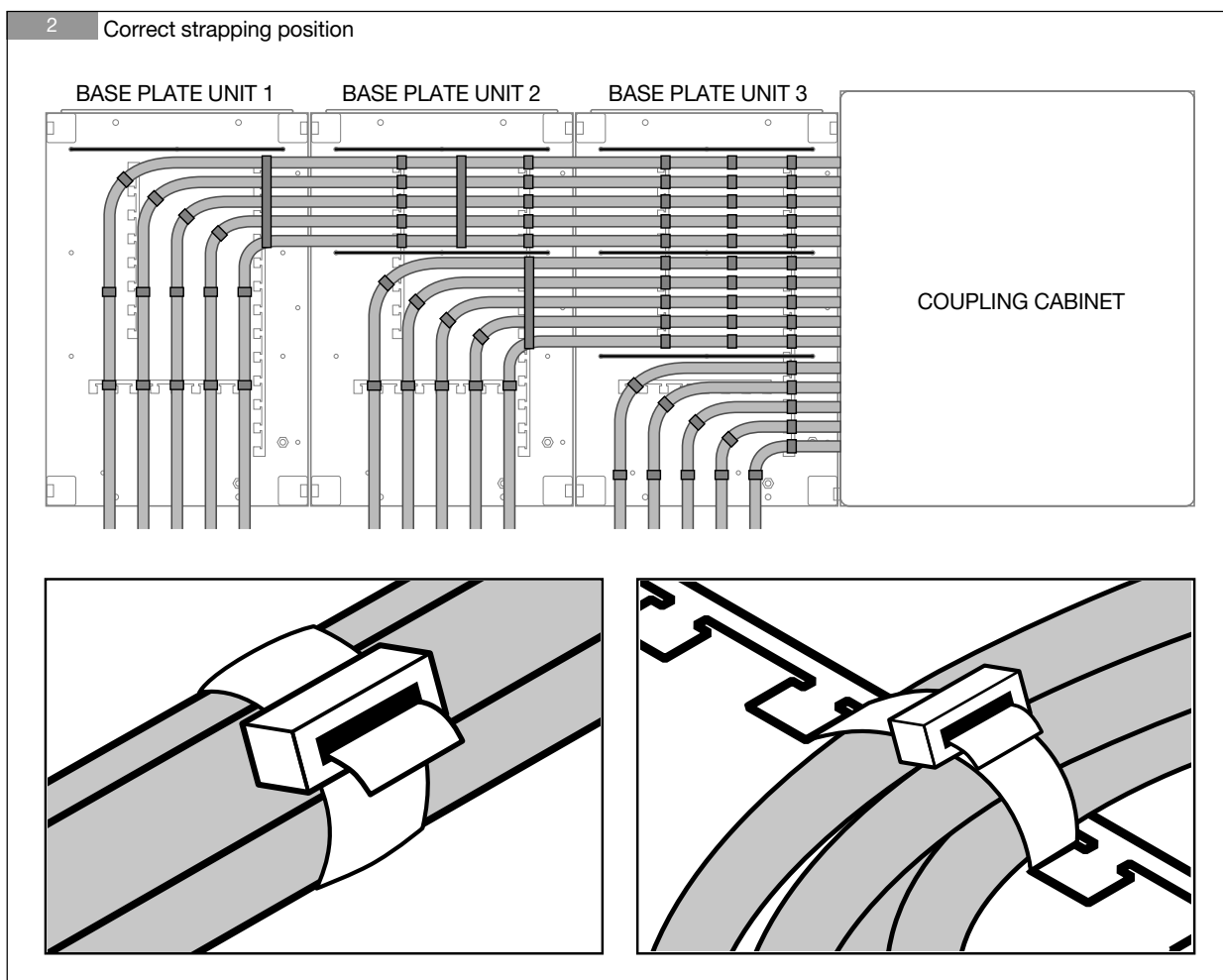


#### WARNING!

The below instructions must be respected to guarantee the correct operation of the UPS.

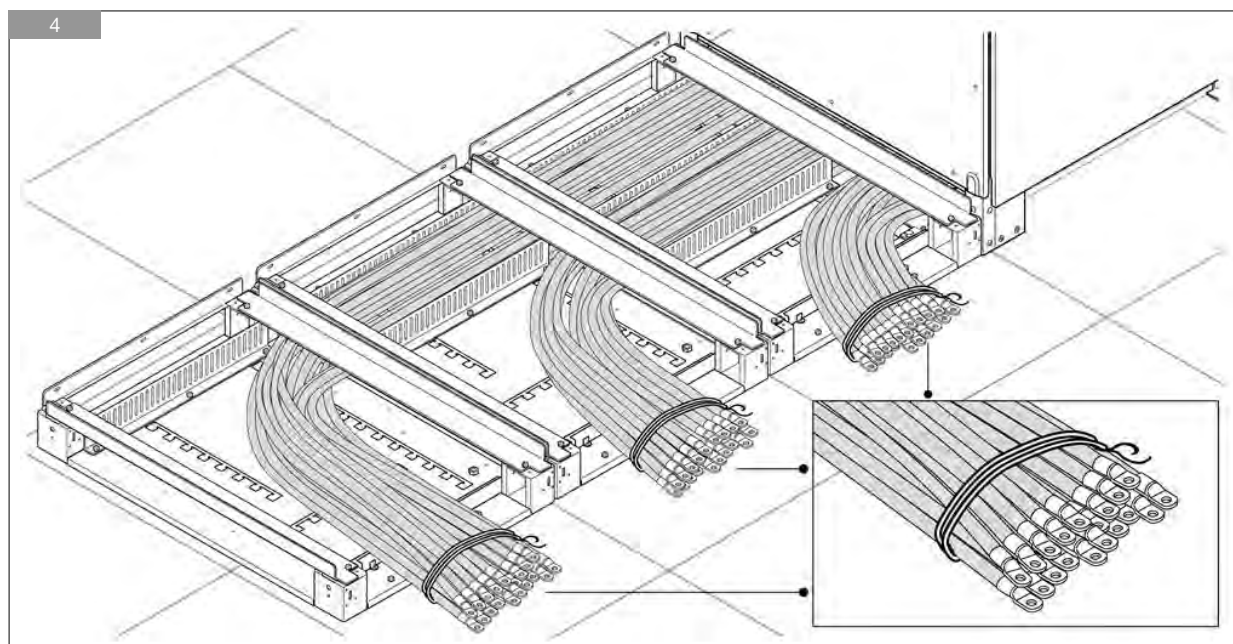
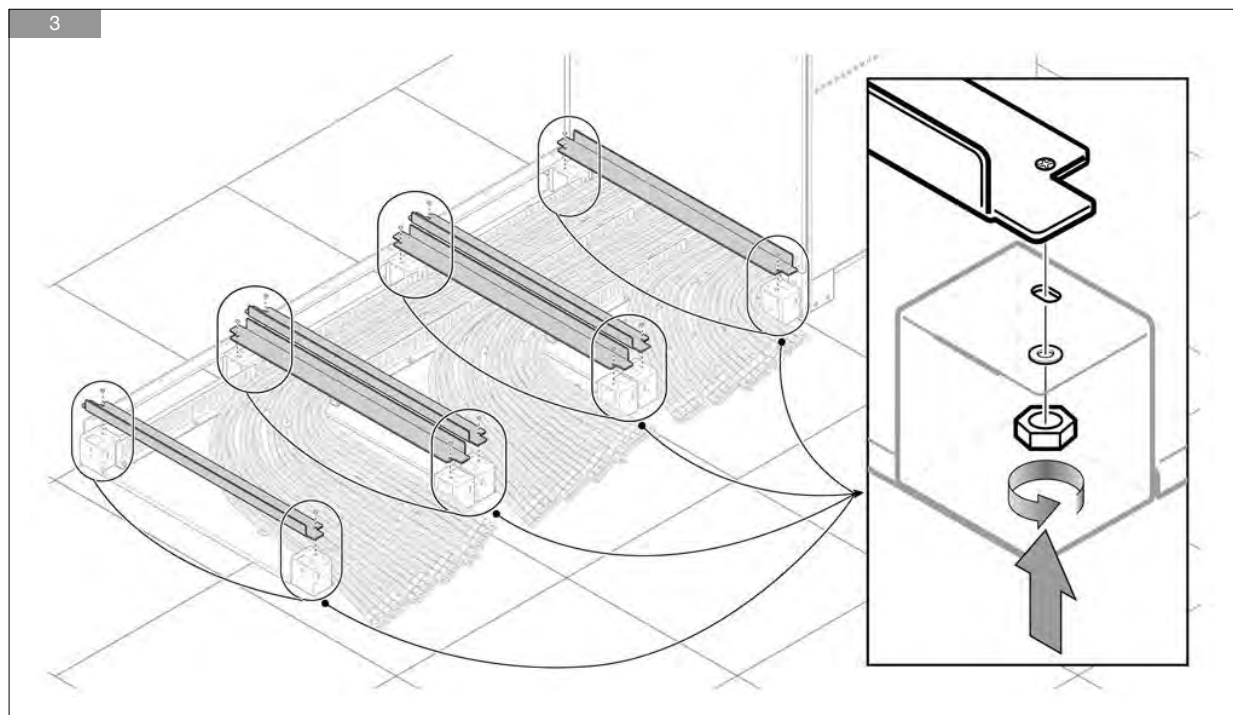


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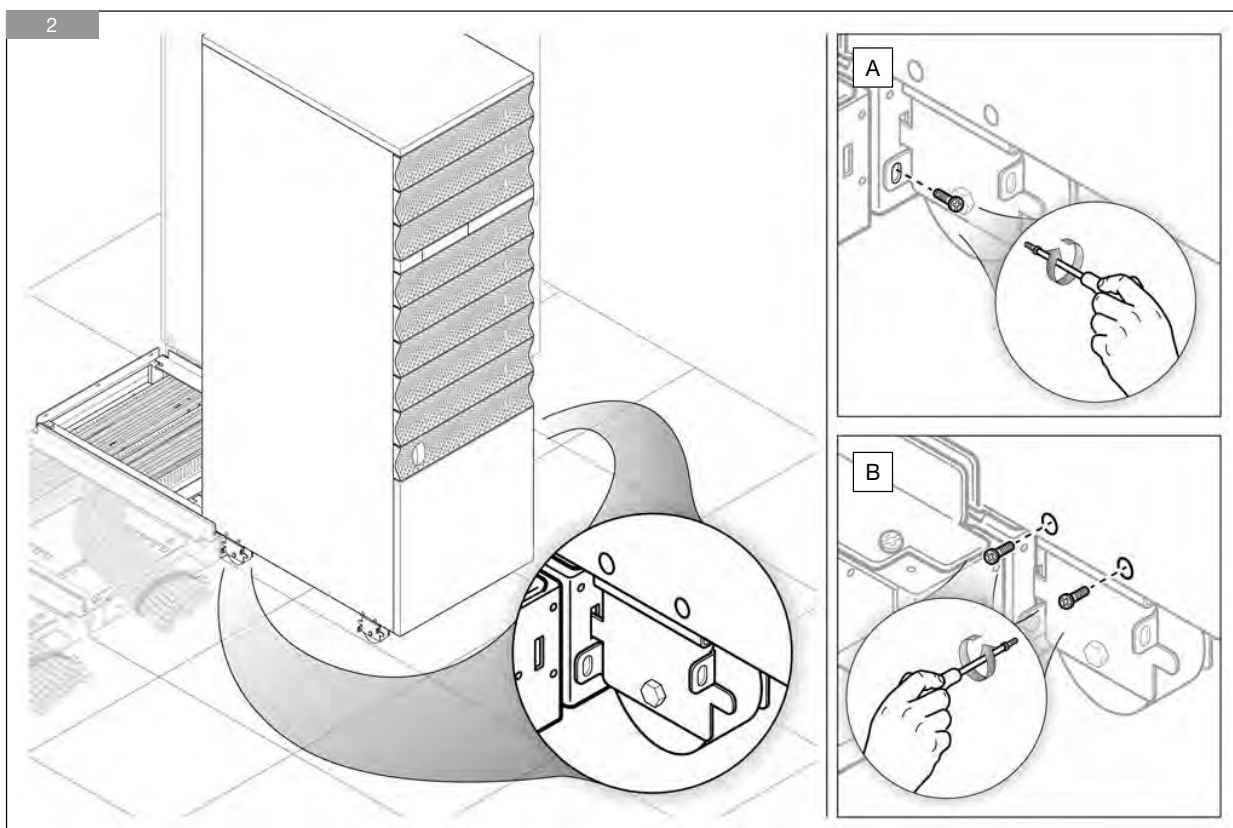
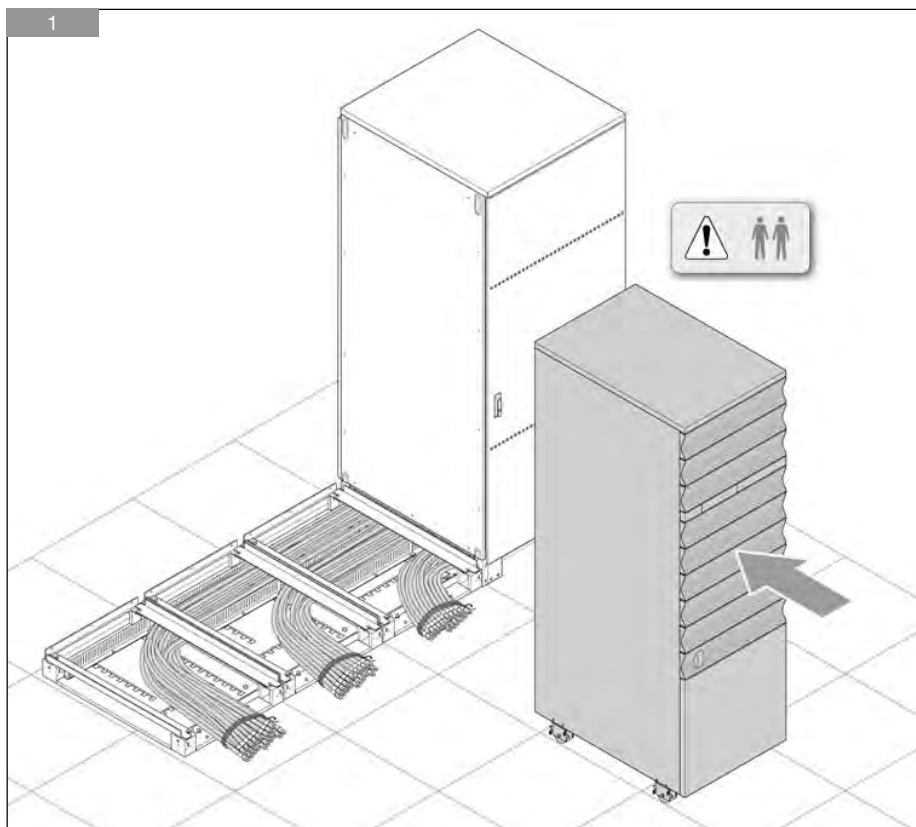


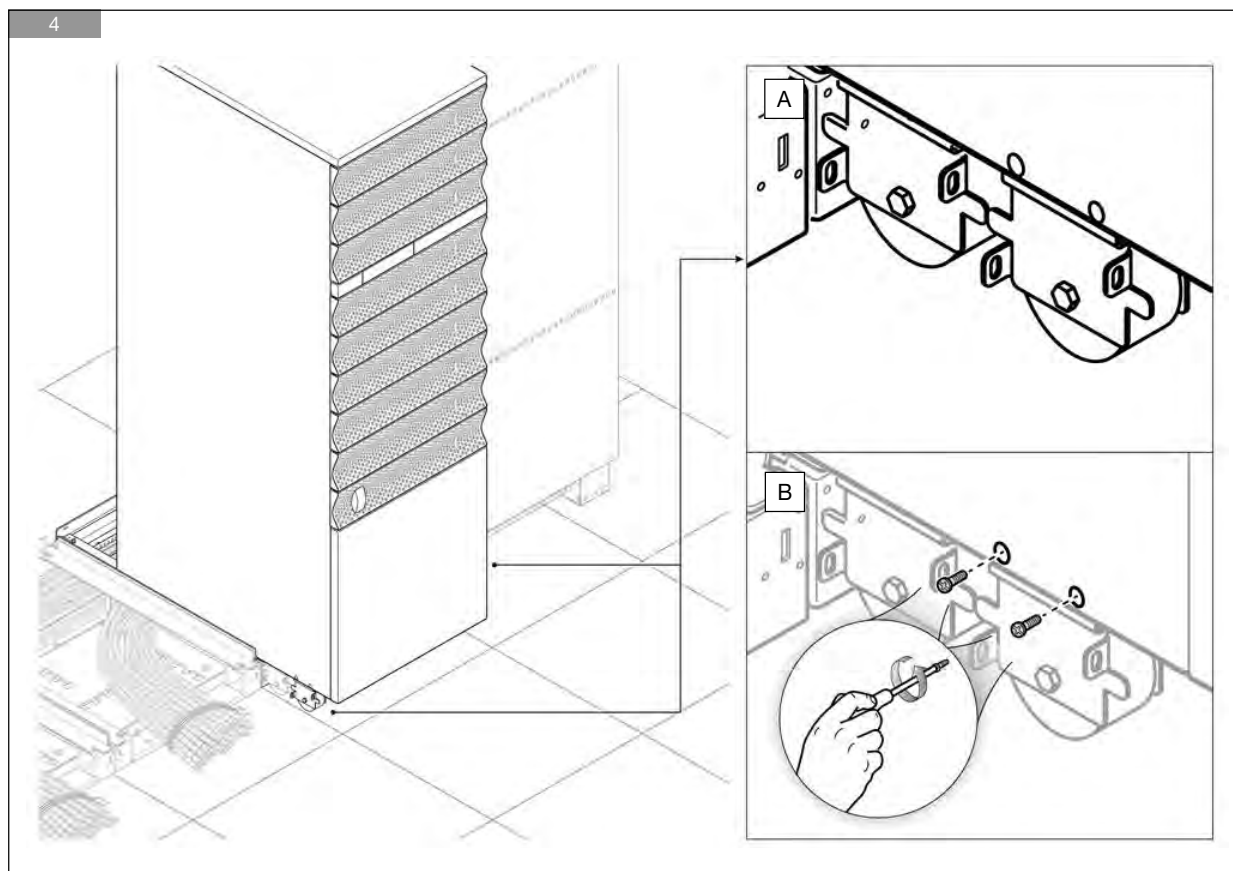
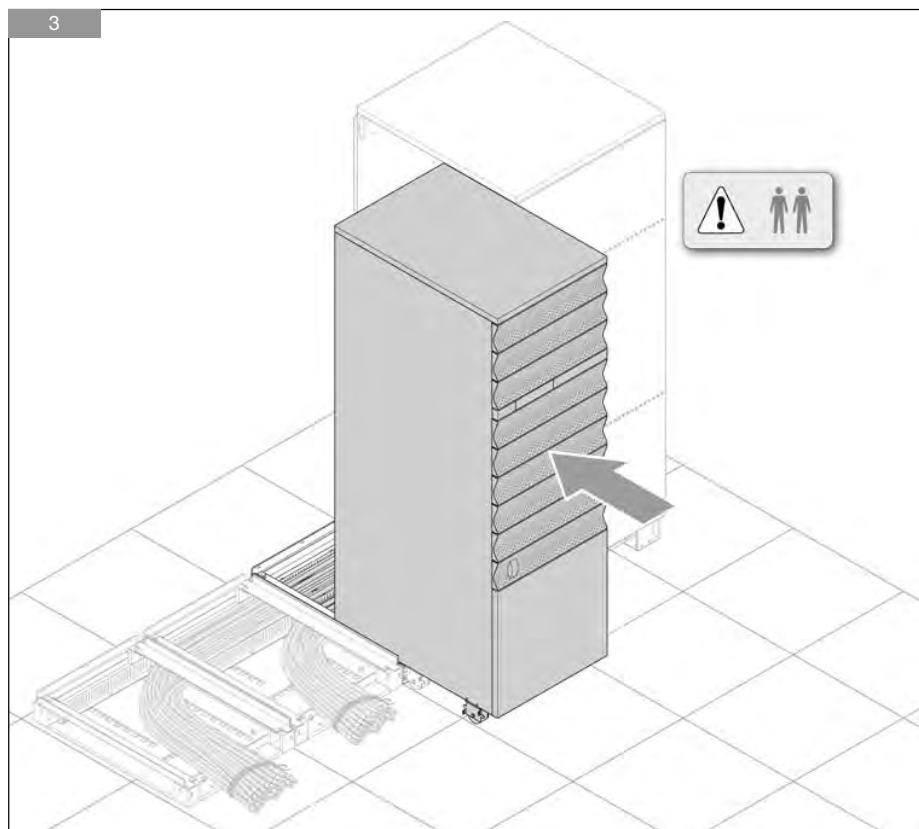
## 2. ENVIRONMENTAL REQUIREMENTS AND HANDLING



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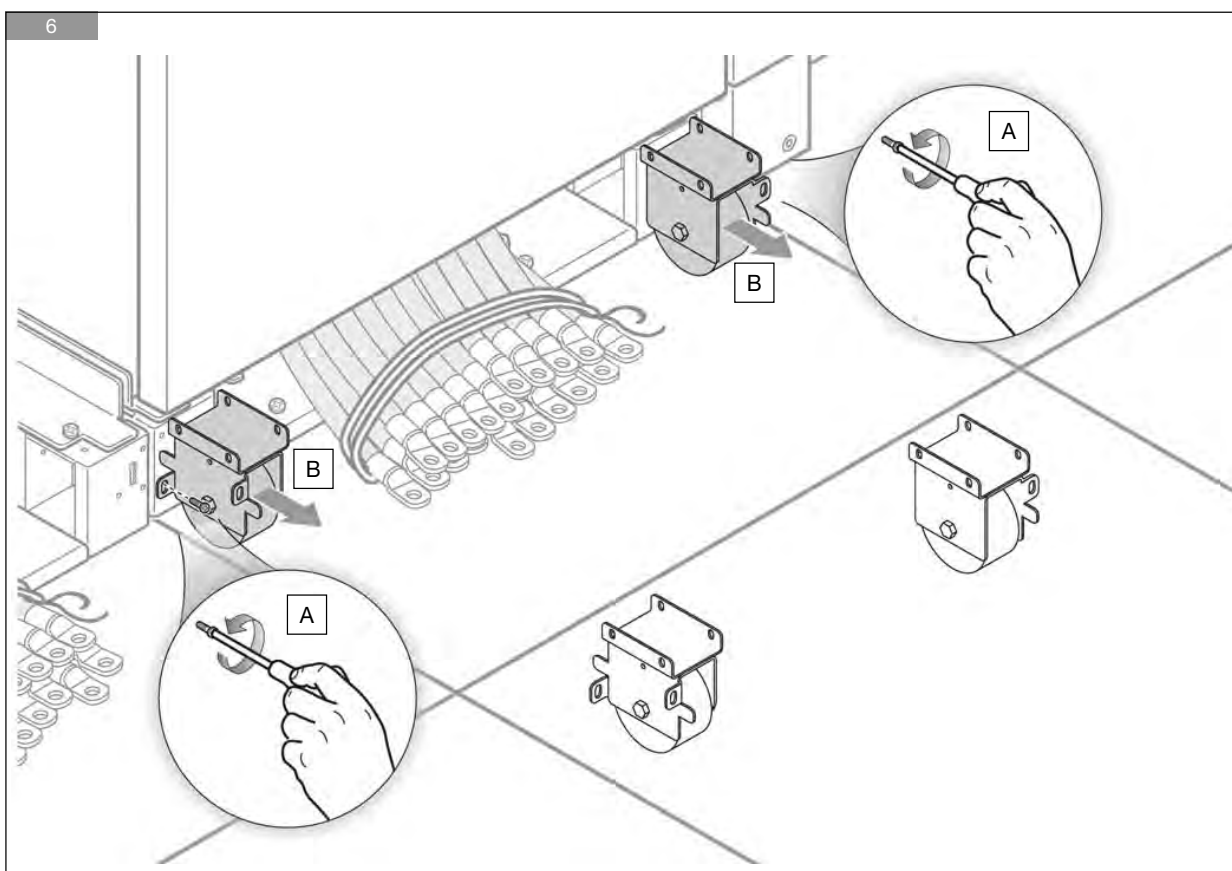
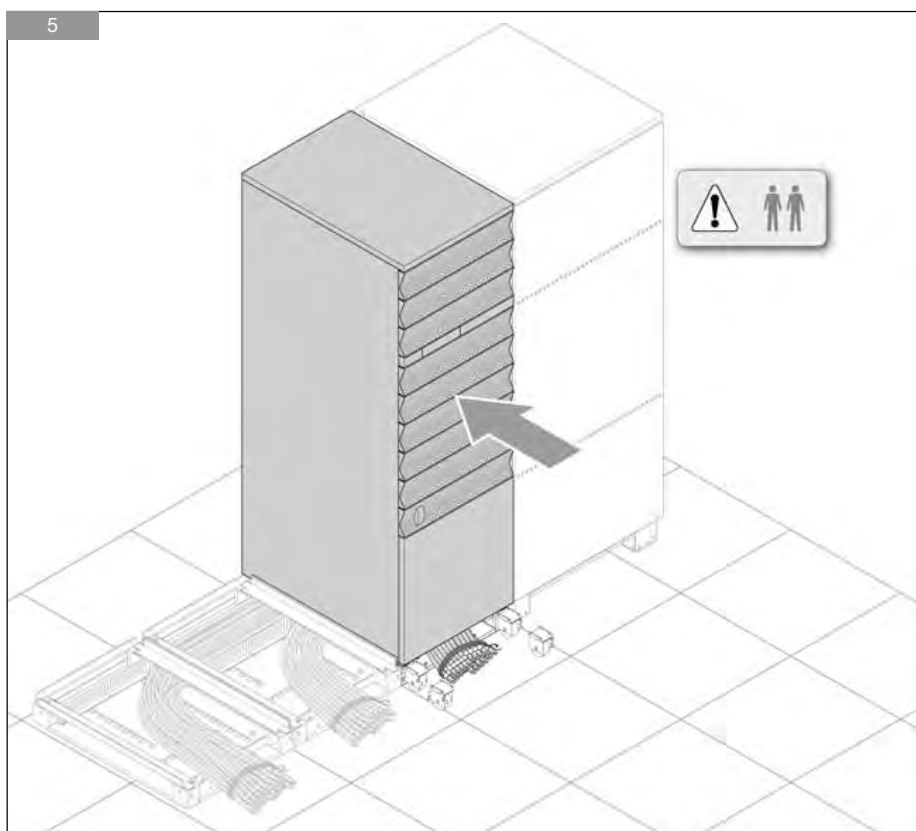
### UPS POSITIONING

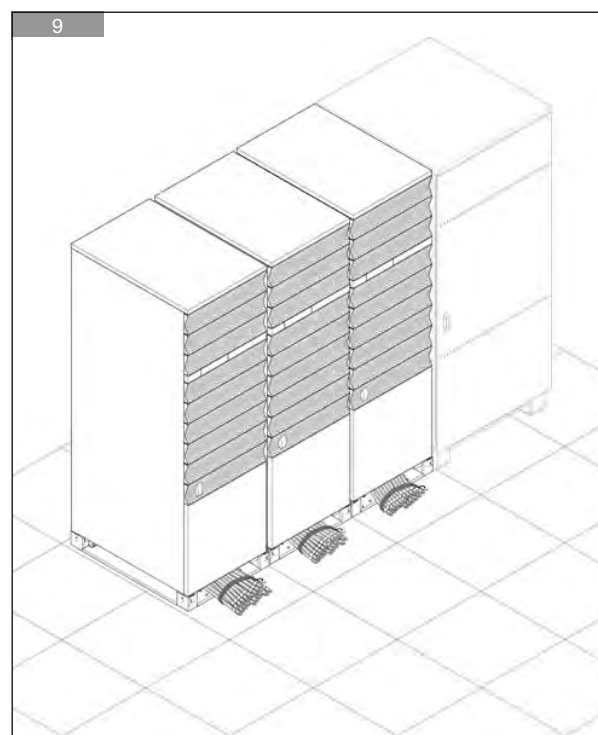
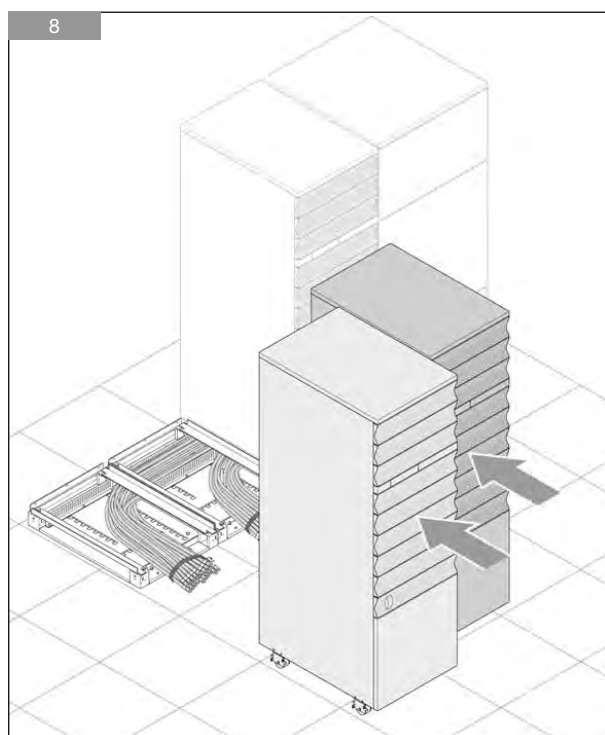
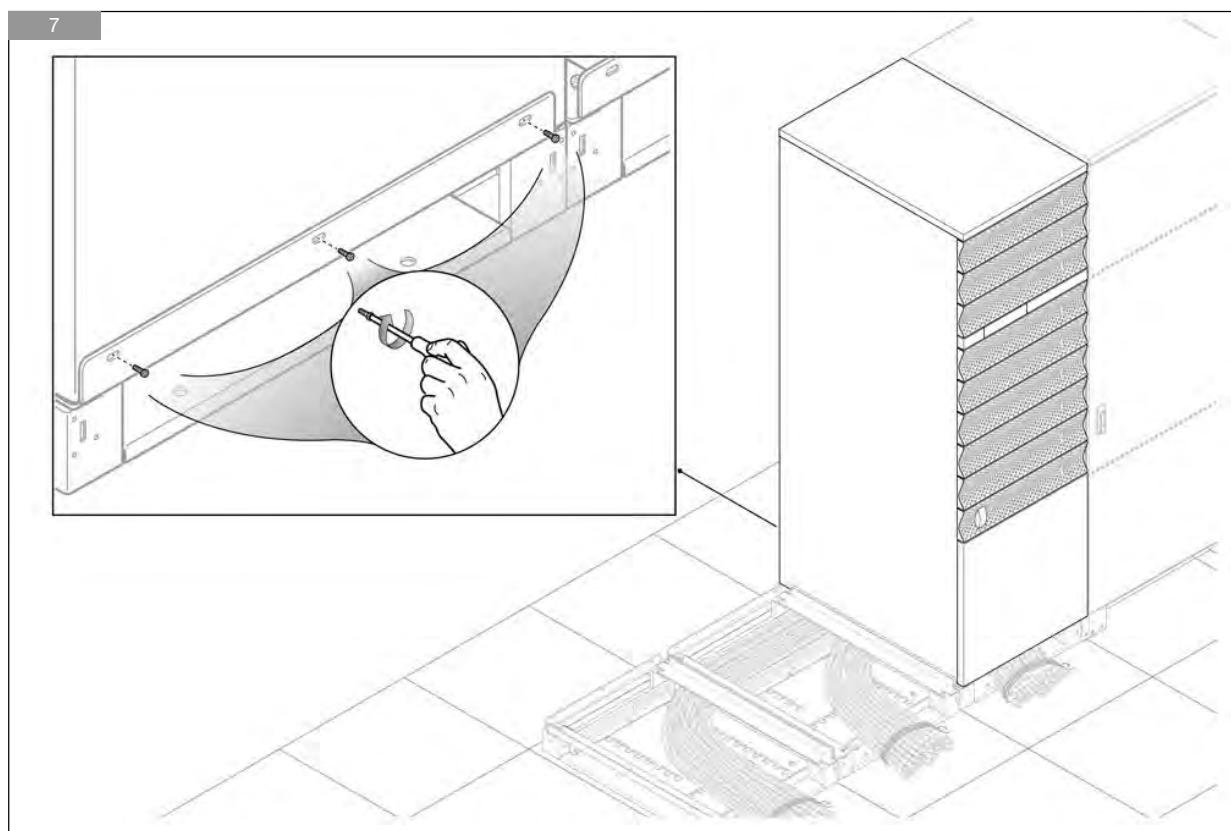




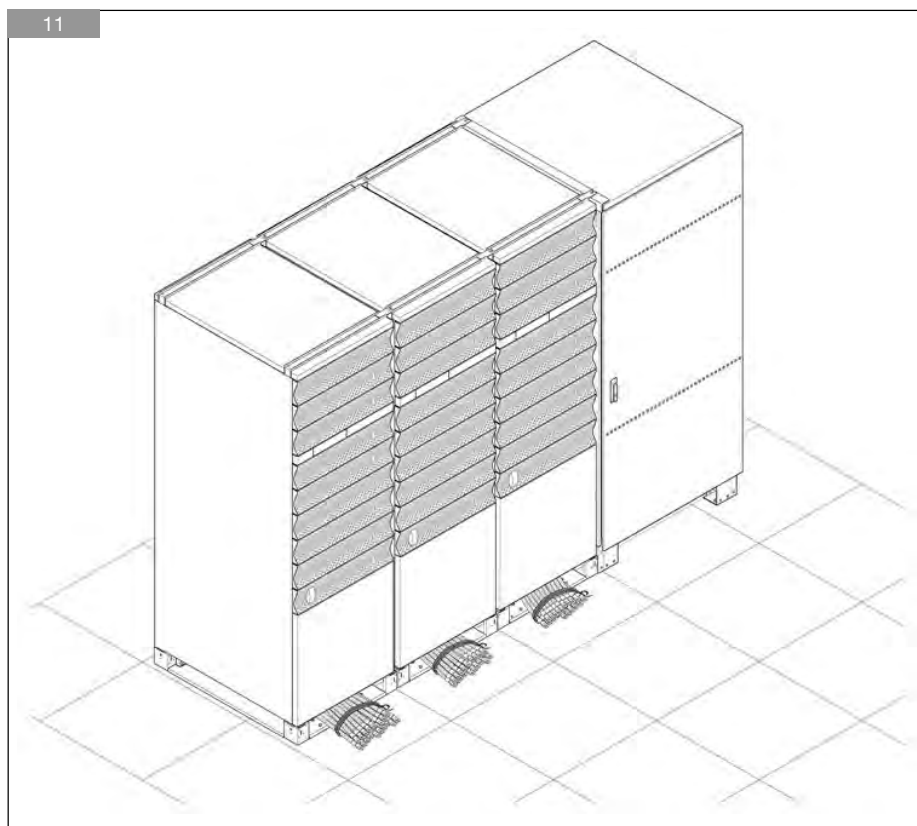
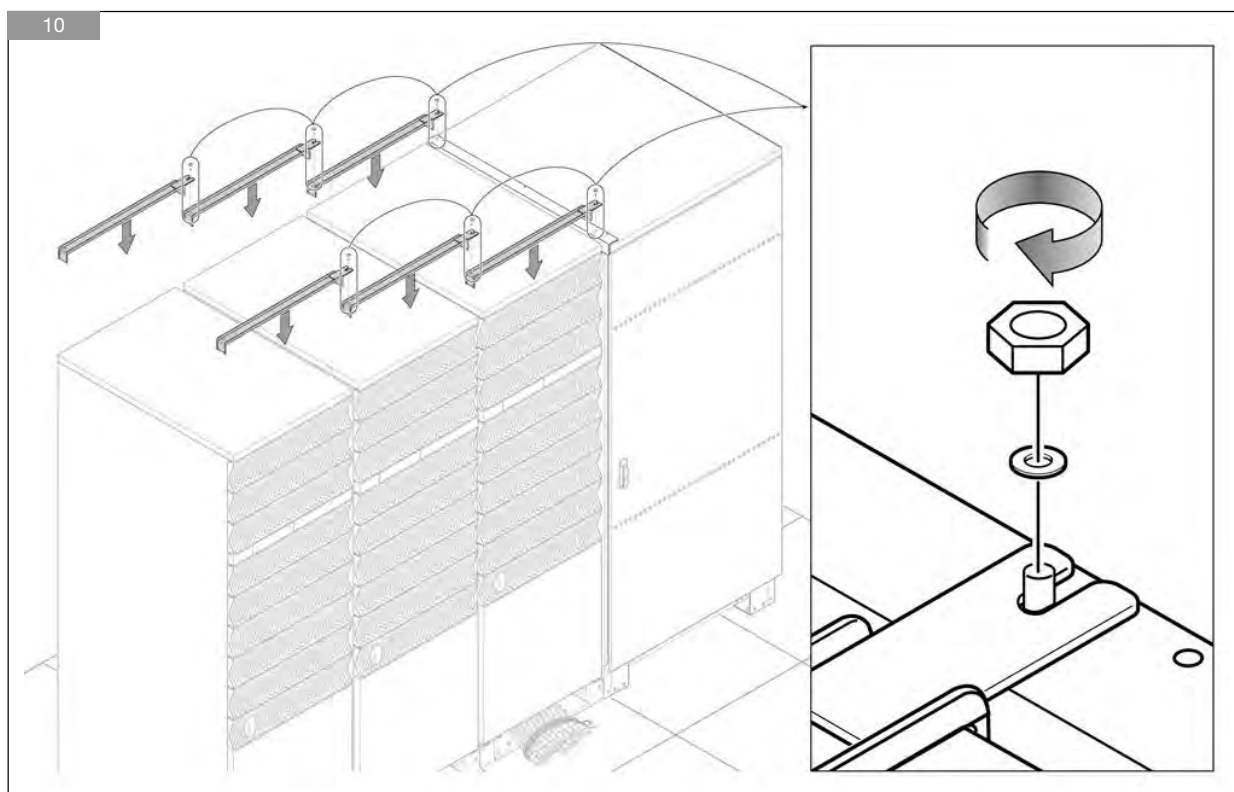


## 2. ENVIRONMENTAL REQUIREMENTS AND HANDLING





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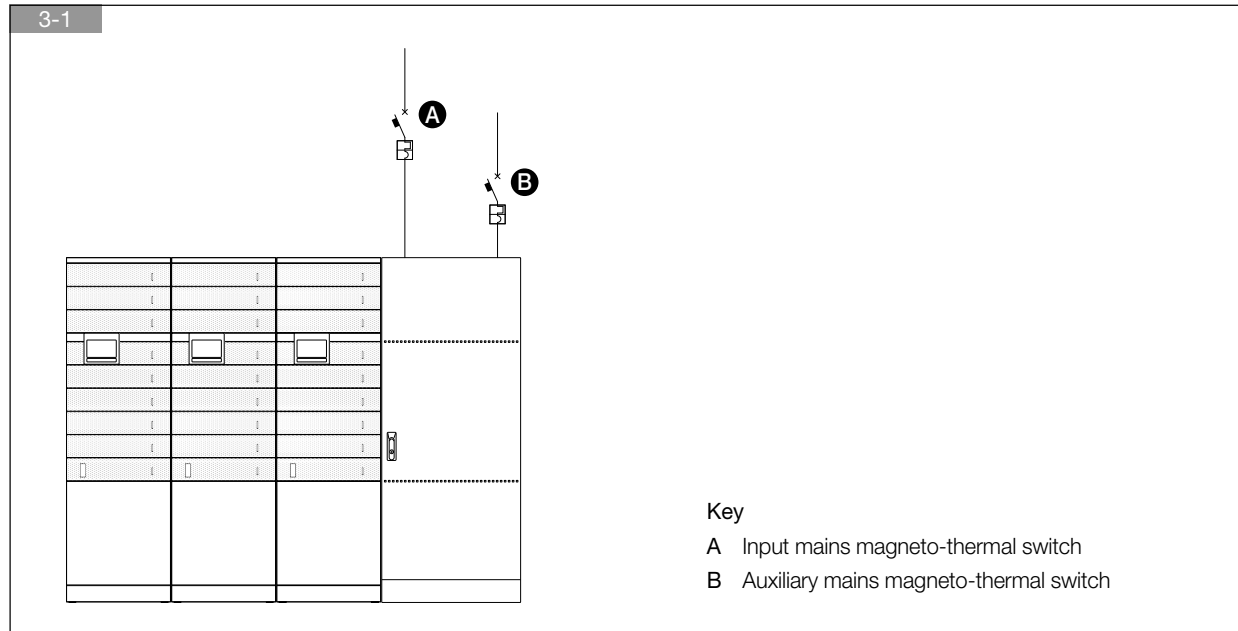


### 3. ELECTRICAL INSTALLATION



#### NOTE!

Before carrying out any operations on the unit read the Safety standards chapter carefully.



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#### 3.1. ELECTRICAL REQUIREMENTS

The installation and system must comply with national plant regulations.

The electrical distribution panel must have a sectioning and protection system installed for input and auxiliary mains.

RCD is not necessary when the UPS is installed in a TN-S system.

RCD is not allowed on TN-C systems.

If a RCD is required a B-type should be used.

Size of input protection devices									
Model rating	Breaker Input <sup>(1)</sup>	Breaker Aux. Mains <sup>(1)(4)</sup>	RCD <sup>(3)</sup>	Input/Output cable core size		Aux cable core size		Battery cable core size	
(kVA)	(A)	(A)	(A)	(mm <sup>2</sup> )		(mm <sup>2</sup> )		(mm <sup>2</sup> )	
	Max	Max	Min	flexible cable	rigid cable	flexible cable	rigid cable	flexible cable	rigid cable
				max <sup>(2)</sup>	max <sup>(2)</sup>	max <sup>(2)</sup>	max <sup>(2)</sup>	max <sup>(2)</sup>	max <sup>(2)</sup>
400	800	800	1.0	2x240	2x240	2x240	2x240	2x70	2x70
600	1000	1000	1.5	2x240	2x240	2x240	2x240	2x70	2x70

1. Circuit breaker switch recommended with magnetic intervention threshold  $\geq 10 \text{ In}$  (curve C). It is necessary to use a D curve selective breaker if an optional external transformer is used. The min value depends on the size of the power cables in the installation, while the max value is limited by the UPS cabinet.

2. Determined by the size of the terminals.

3. Caution! Use type B four-pole selective (S) residual current detectors. Load leakage currents are to be added to those generated by the UPS and during transitory phases (power failures and power returns) short current peaks may occur. If loads with high leakage current are present, adjust the residual current protection. It is advisable in all cases to carry out a preliminary check on the earth current leakage with the UPS installed and operational with the definitive load, so as to prevent the RCD tipping over.

4. The conditional short circuit current ( $I_{cc}$ ) according to IEC 62040-1 is 50KA rms, provided that the UPS is protected by a MCCB with adequate breaking capability and current limiting capability under short circuit conditions. Contact SOCAMEC for detailed information.



#### NOTE!

To ensure the integrity of the bypass thyristors  $I_{2t}$  must be lower than 400 kA<sup>2</sup>s and peak current must be lower than 9 kA for 20 ms. Contact SOCAMEC for detailed information.



The UPS is designed for transient overvoltages in category II installations. If the UPS is part of the building's electrical circuit, or is likely to be subject to transient overvoltages in category III installations, additional external protection must be provided, either on the UPS or in the AC power supply network powering the UPS.



**WARNING!**

As specified in 62040-3 Appendix 3: Non-linear Load Reference, in the event of three-phase non-linear loads connected downstream of the UPS, the neutral current on the load can be 1.5 - 2 times higher than the phase current. This must be considered when estimating the correct size of the output and the auxiliary neutral cables.



**WARNING!**

Protective earthing conductor (PE) must have sufficient current-carrying capacity. The PE cable core size must be chosen according to the PROTECTIVE CURRENT RATING of the earth circuit which depends on the provision and location of protective overcurrent devices.



**NOTE!**

3-Phase 4-Wire Input Power is required. The unit can be installed in TN, TT and IT AC distribution systems (IEC 60364-3).

## BACKFEED PROTECTION

The UPS is set up 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 current rating of the switching device has to follow the instruction outlined in chapter 'Electrical Requirements'.




**DANGER! RISK OF ELECTRIC SHOCK!**

The installer must attach the warning label in order to warn electrical technicians about dangerous backfeed situations (not caused by the UPS).

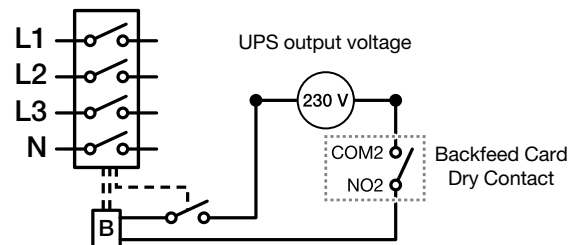
3.1-1 Warning label (supplied with the equipment)

**Before working on this circuit**

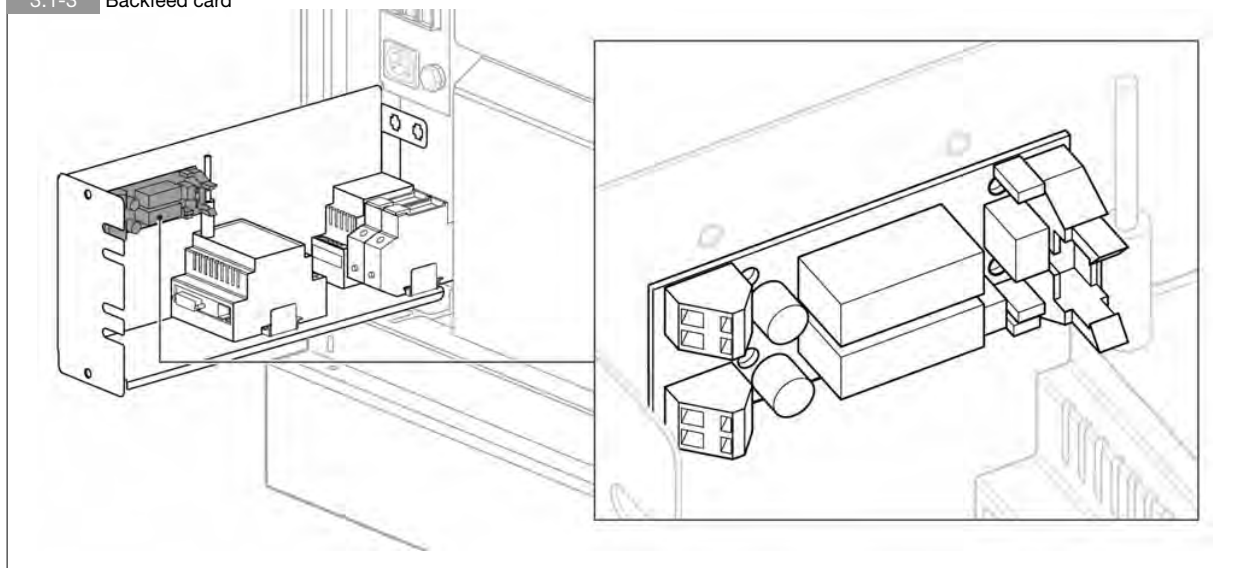
- Isolate the Uninterruptible Power System (UPS)
- Then check for Hazardous Voltage between all terminals including the protective earth

 **Risk of Voltage Backfeed**

3.1-2 Backfeed electrical diagram



3.1-3 Backfeed card







## NOTE!

Use a 220-240 V release coil with integrated travel limit contact to pilot the input protection systems. If a trip coil without an integrated end-of-travel contact is used, an early auxiliary contact must be added (see figure 3.1-2). Electrical data of the contacts: 2 A 250 Vac.

Function	Connector name	V OUT	Internal fuse	Detail
BKF AUX	XB2	230 V RMS	2 A time delay	COM2 <sup>(1)</sup> NO2

1. COM2 is connected to the neutral (NO1 and COM1 are not used)



The backfeed protection for the input mains supply (MAINS SUPPLY) is incorporated inside the UPS modules as standard.

## 3.2. CABLE POSITIONING



## NOTE!

This recommendation must be considered for cables outside the system.



## WARNING!

The cables must be installed on trays according to the following diagrams. The trays must be positioned near the UPS.



## WARNING!

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



## WARNING!

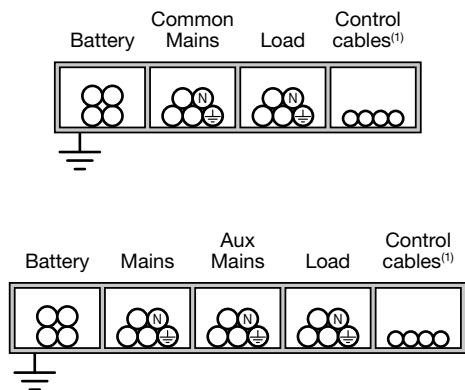
Power cables and control cables **MUST NEVER** be installed in the same duct.



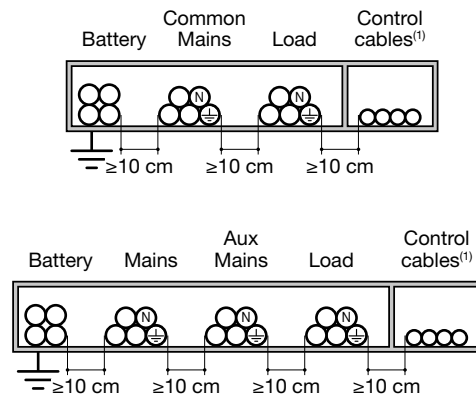
## WARNING!

Risk of electromagnetic interference between battery cables and output cables.

3.2-1 Correct installation



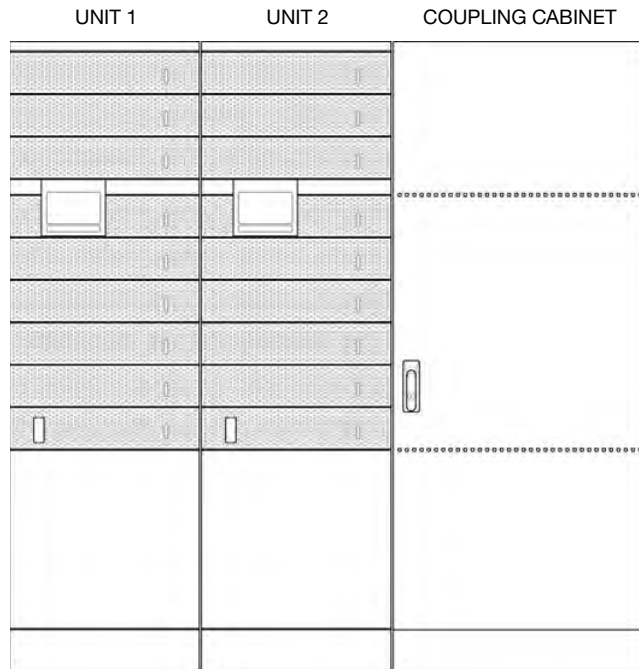
3.2-2 Acceptable installation



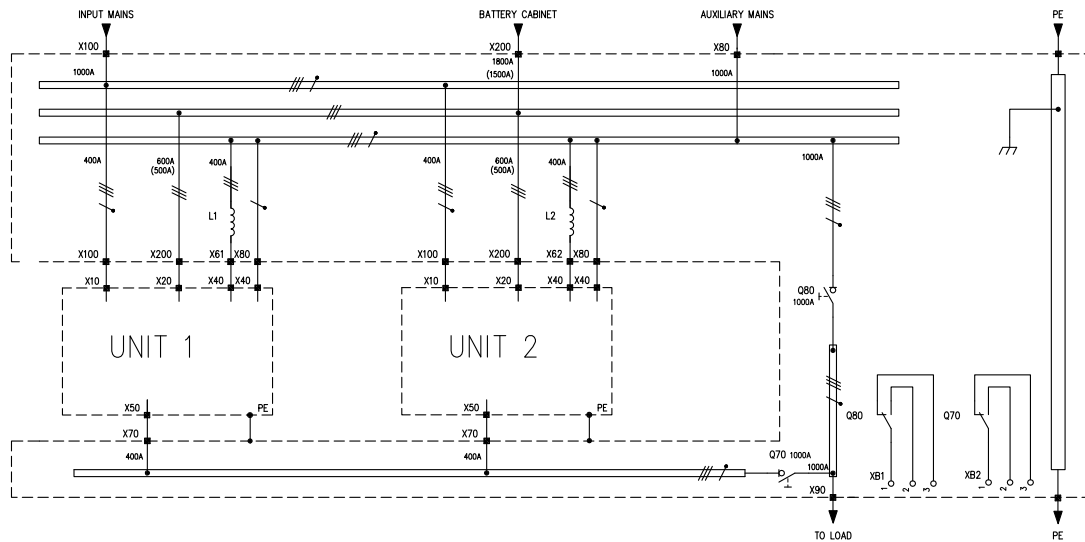
1. Control cables: connections between the cabinets and each unit, alert signals, remote mimic panel, connection to the BMS (Building Management System), emergency stop, connection to generator.

## 4. OVERVIEW

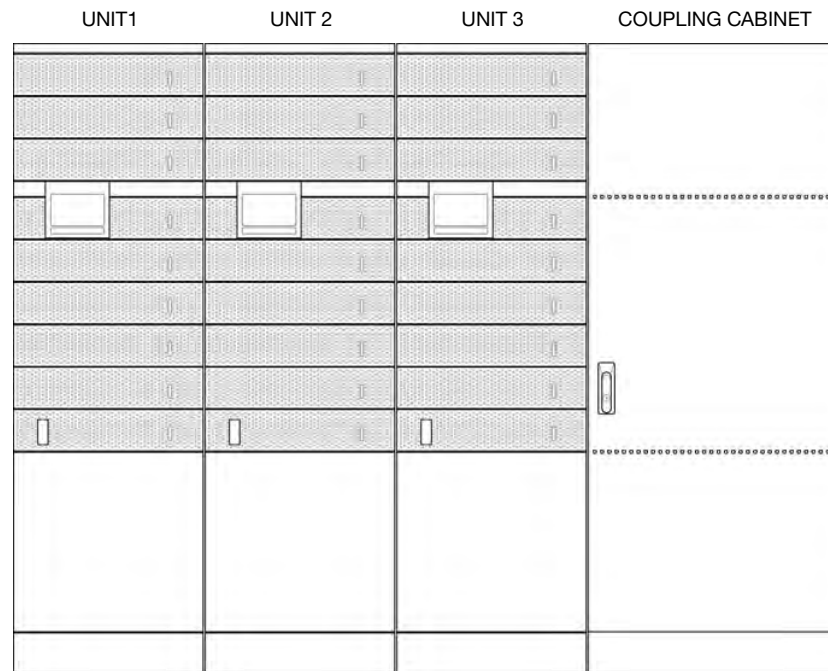
4-1 MODULYS GP 400 kVA



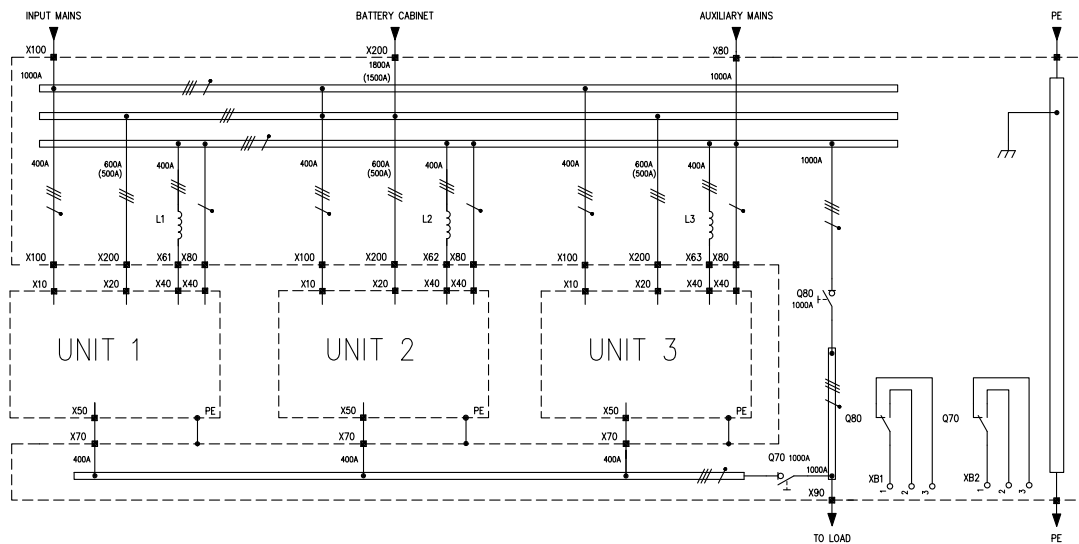
Wiring diagram



## 4-2 MODULYS GP 600 kVA

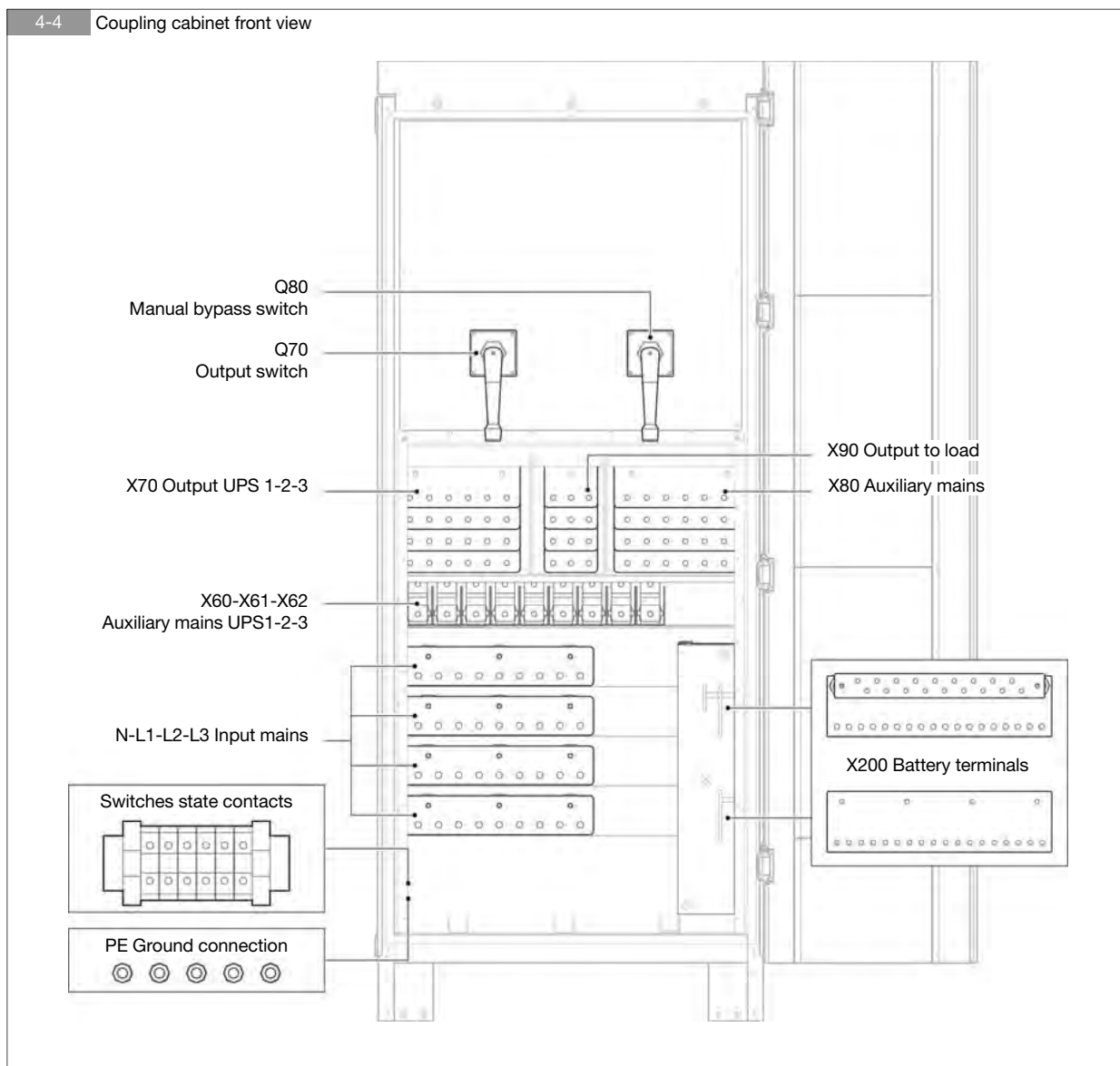
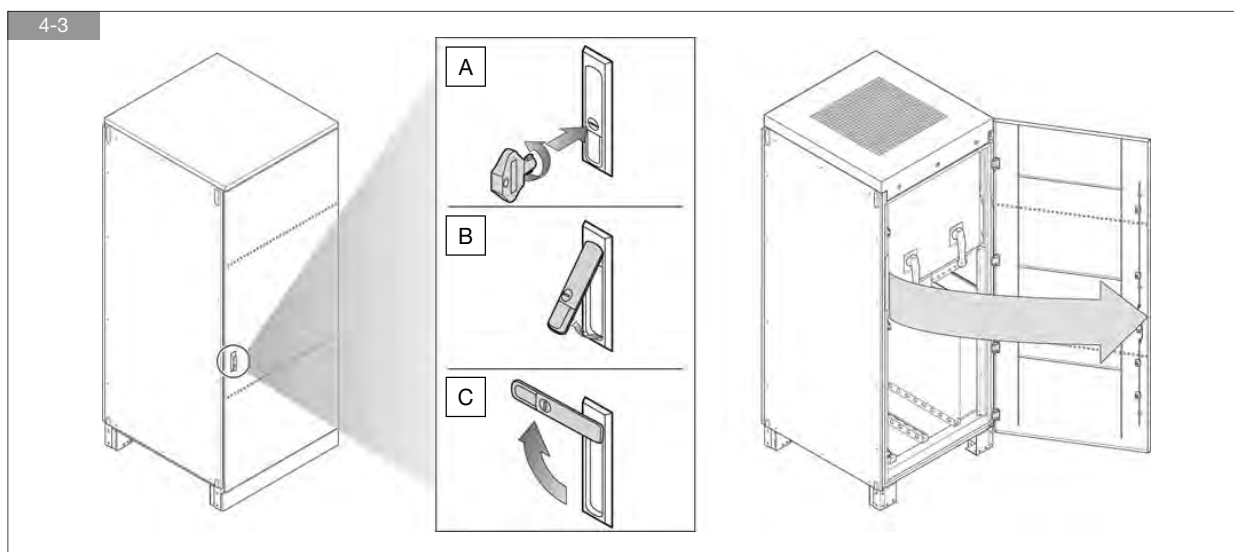


Wiring diagram



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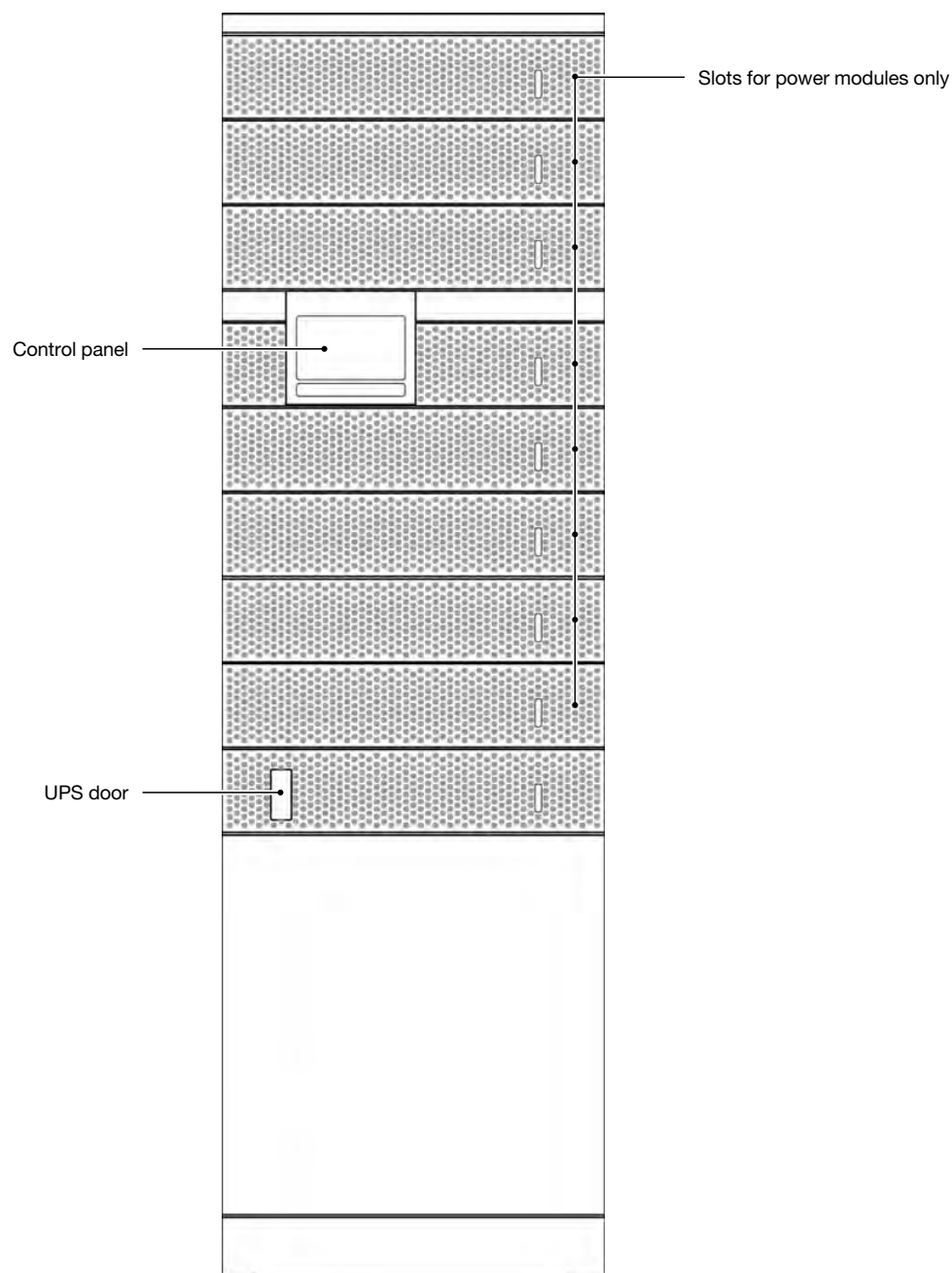
**WARNING!**

The units is provided without any input, aux mains, output and maintenance bypass switch.

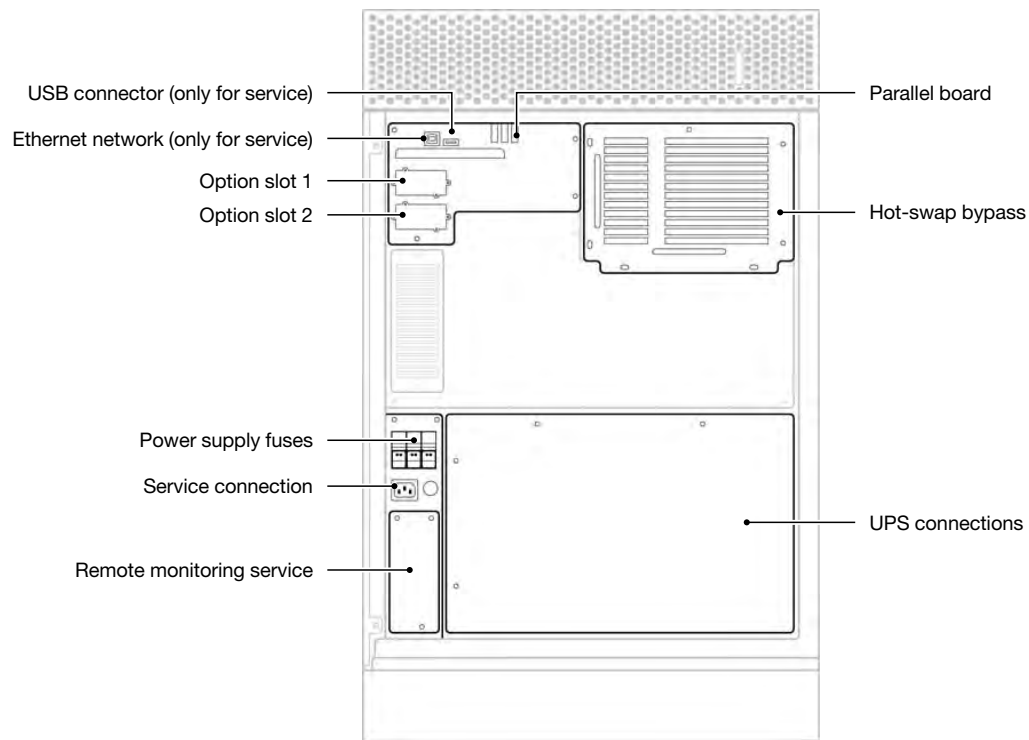
**WARNING!**

The units has no output switch and therefore the shutdown function (UPS Power OFF) is performed by the output switch (Q70) located in the coupling cabinet.

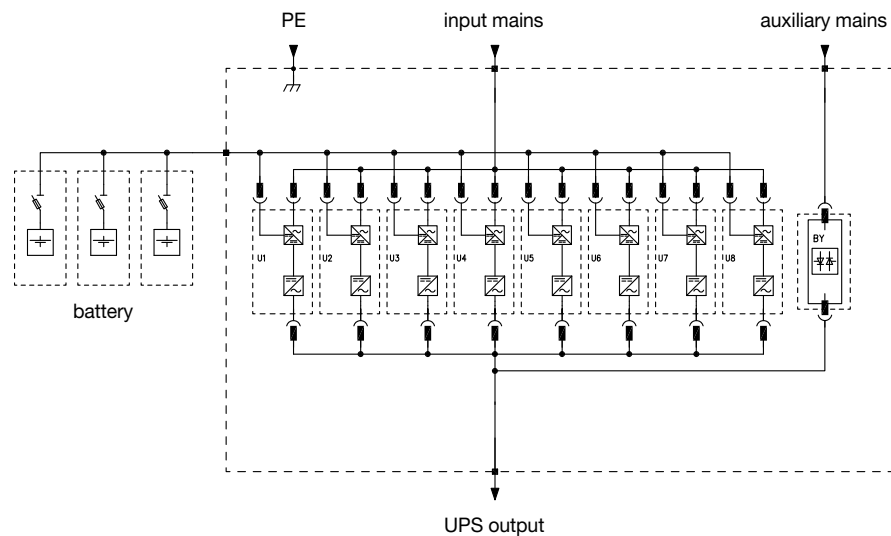
4-5



4-6
























































Wiring diagram



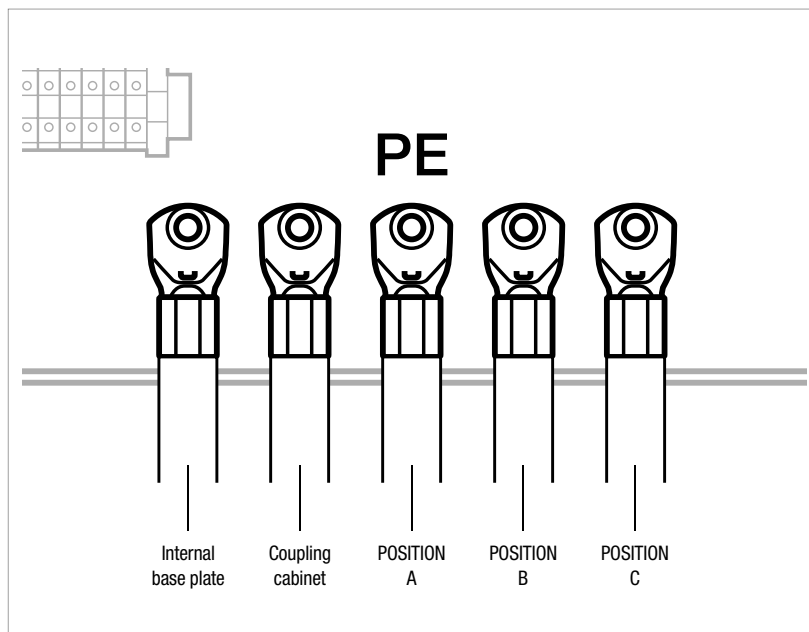
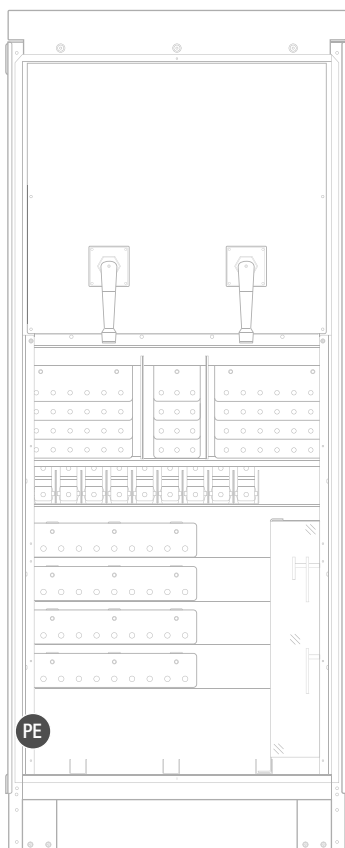
# ENGLISH



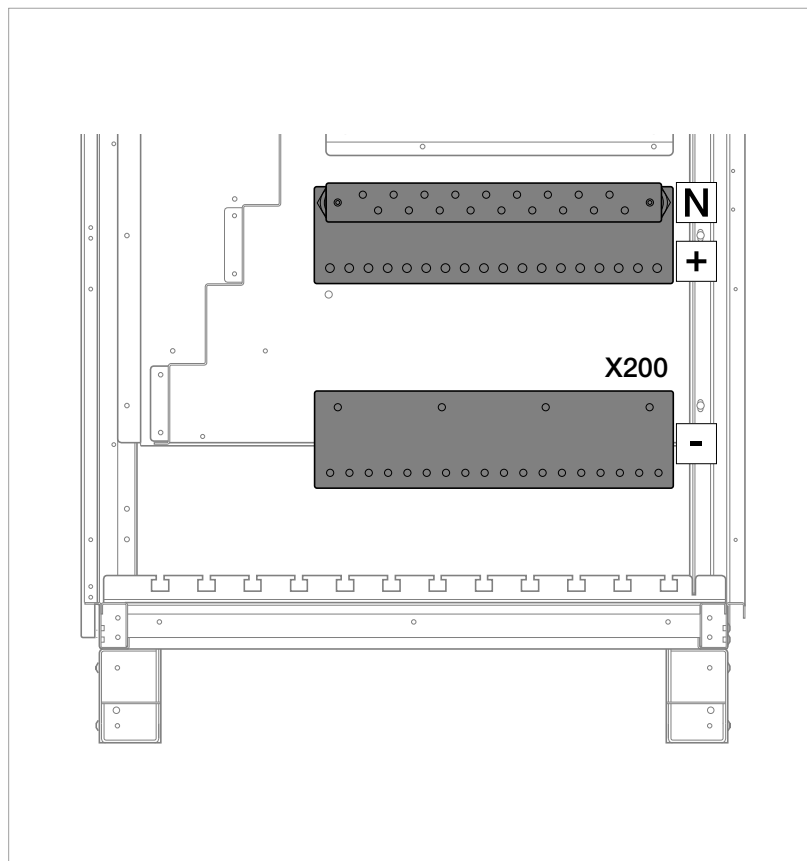
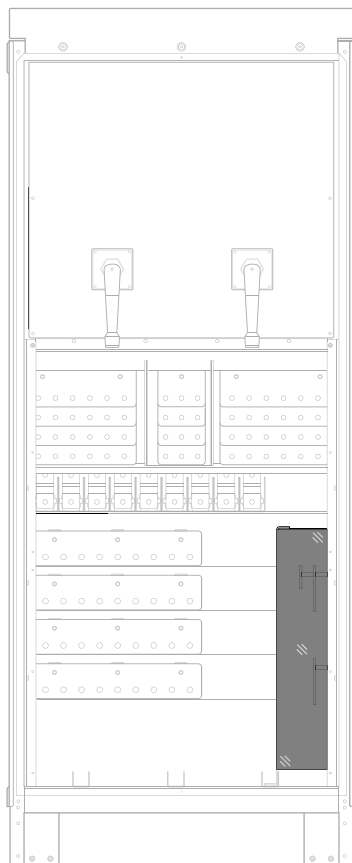
POSITION C	POSITION B	POSITION A	COUPLING CABINET
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			

## 5.1. CONNECTIONS

## GROUND CONNECTION

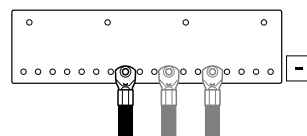
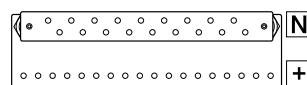
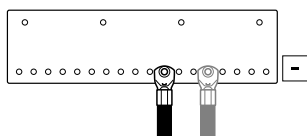
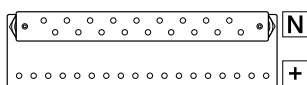
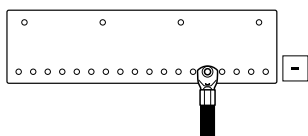
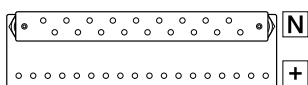


## BATTERY CONNECTION

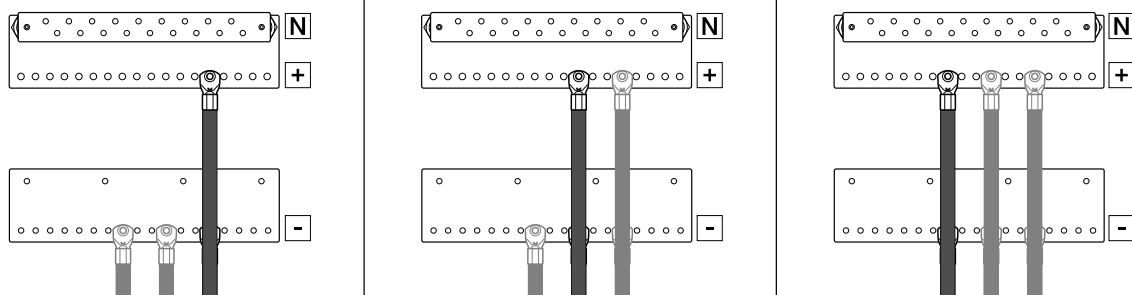


ENGLISH

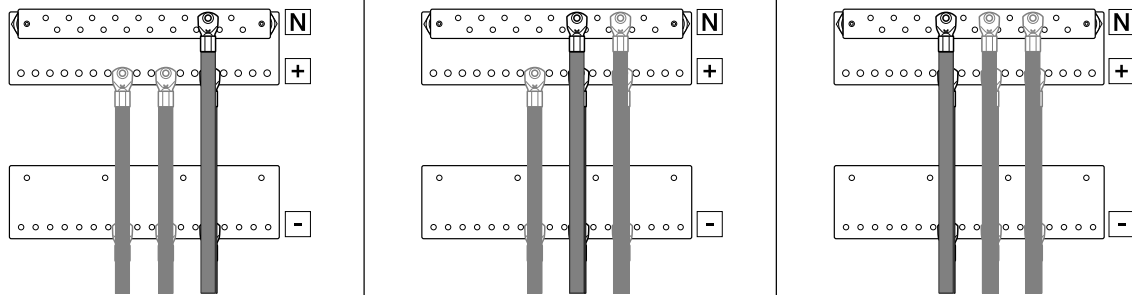
Negative connection positions A, B, C



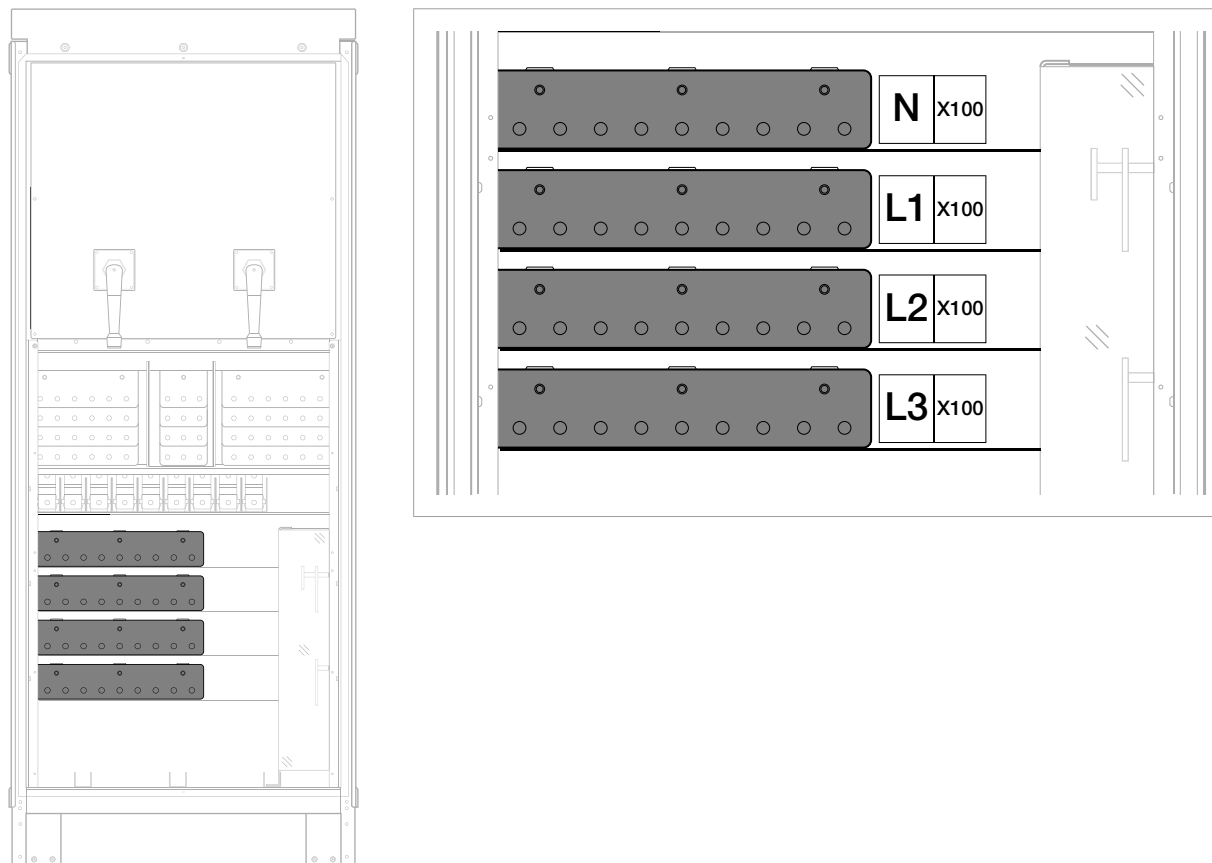
Positive connection positions A, B, C



Neutral connection positions A, B, C

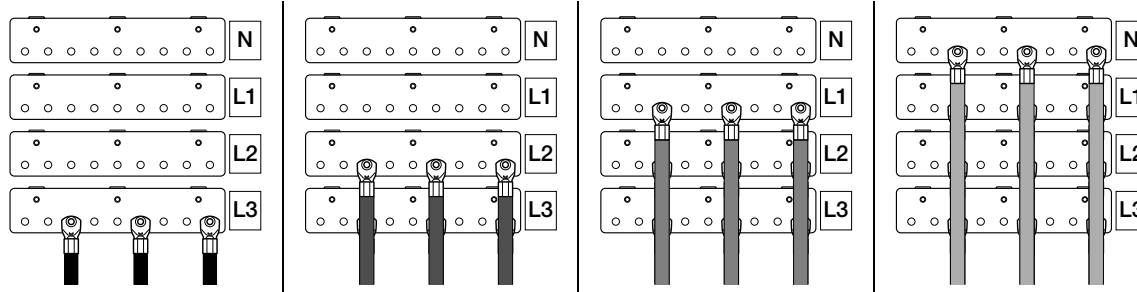


## INPUT MAINS CONNECTION

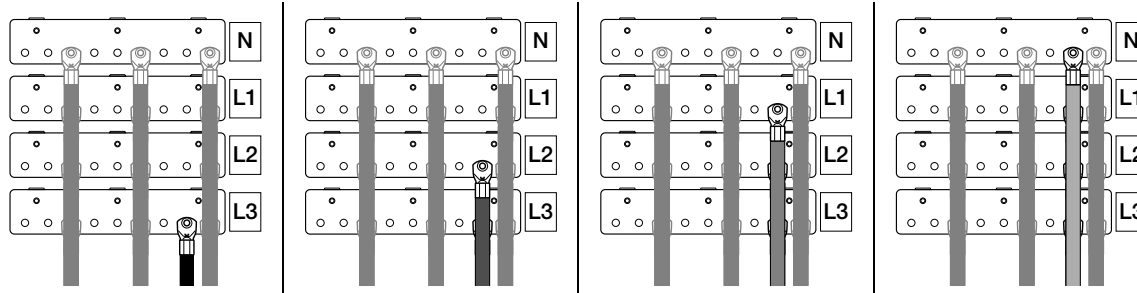


ENGLISH

Connect L3-L2-L1-N input mains

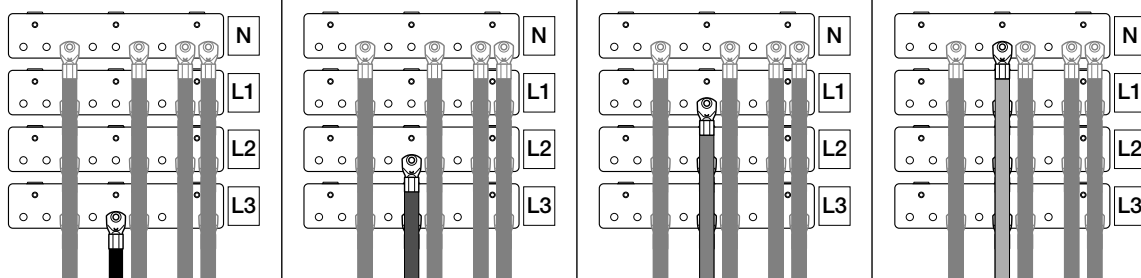


Connect L3-L2-L1-N input mains position A

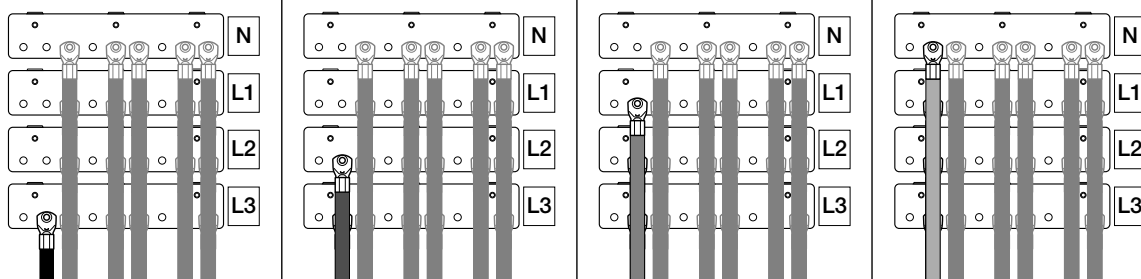




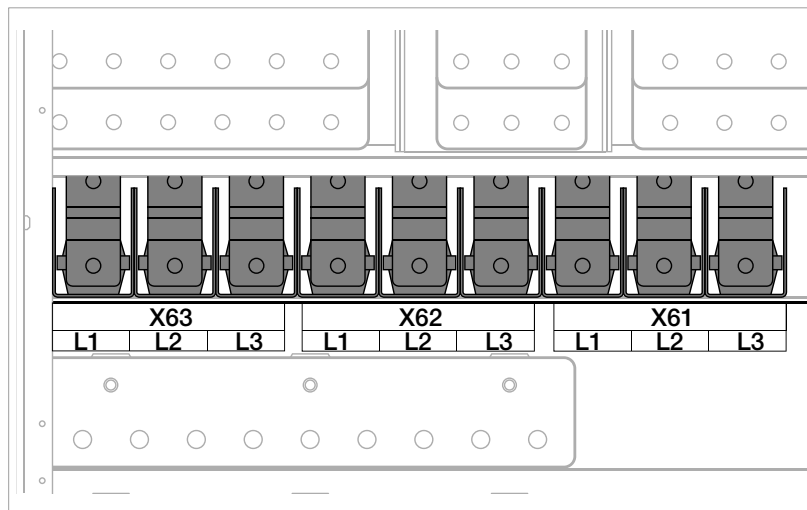
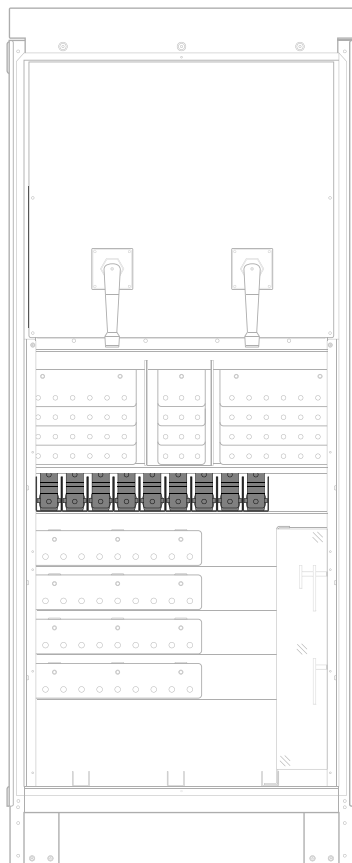
Connect L3-L2-L1-N input mains position B



Connect L3-L2-L1-N input mains position C

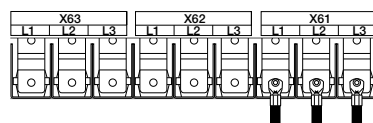
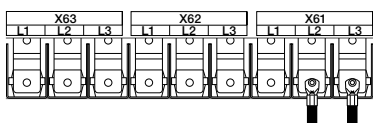
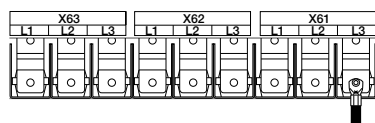


## AUX MAINS CONNECTION

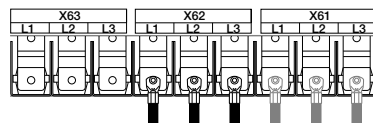
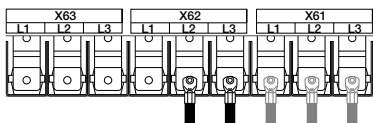
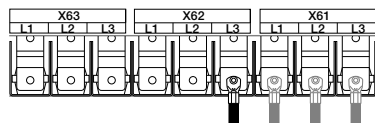


ENGLISH

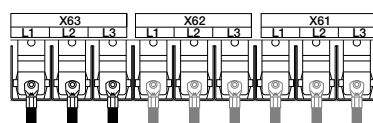
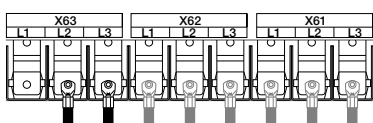
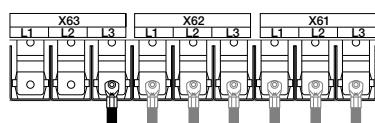
Connect L3-L2-L1 auxiliary mains position A



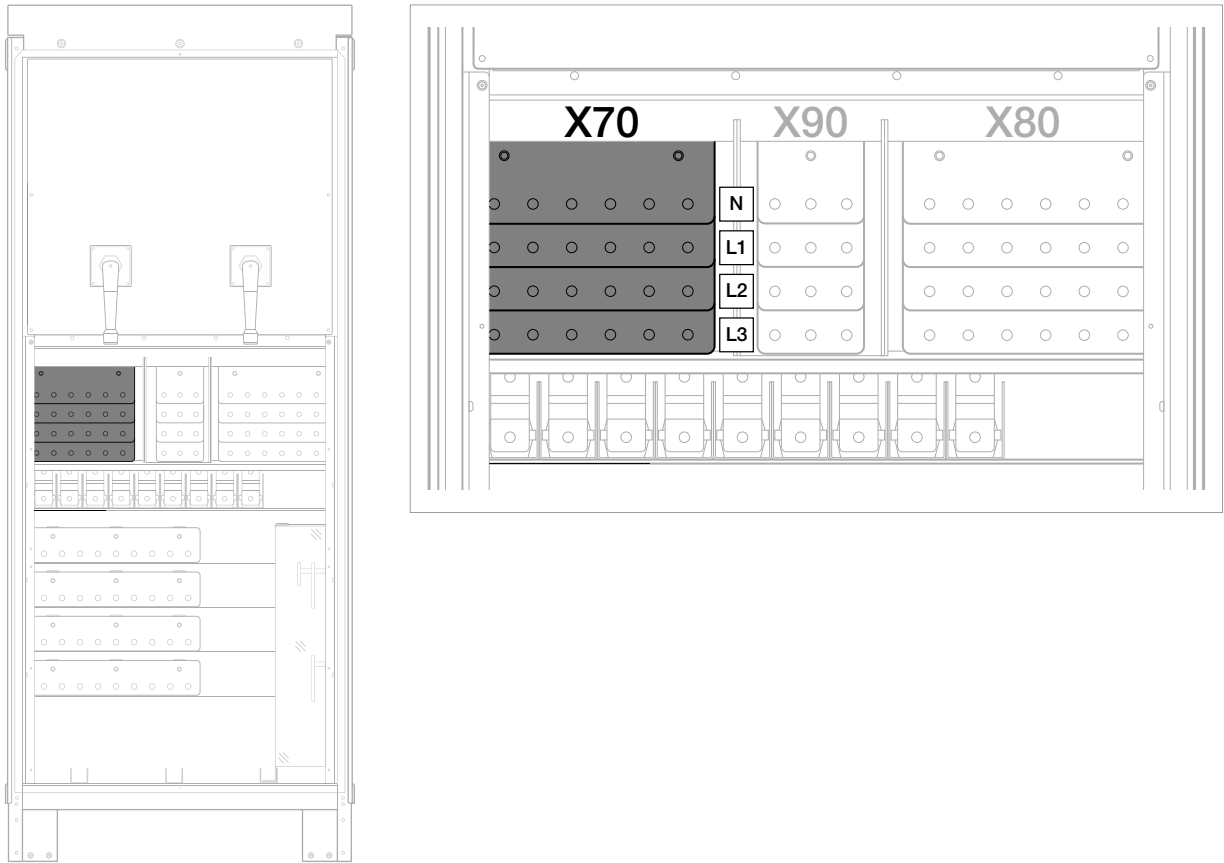
Connect L3-L2-L1 auxiliary mains position B



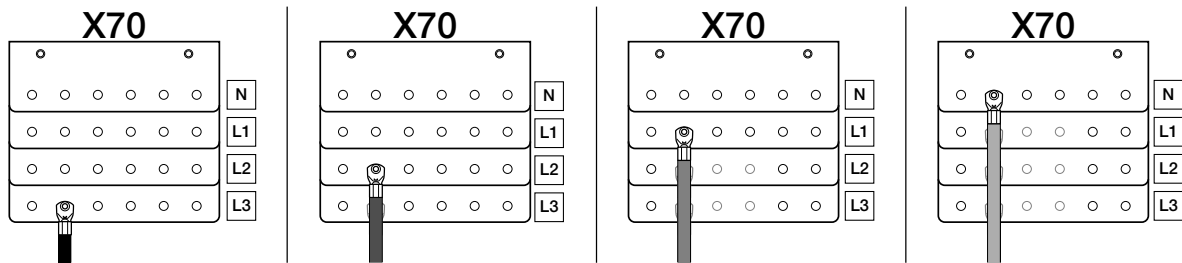
Connect L3-L2-L1 auxiliary mains position C



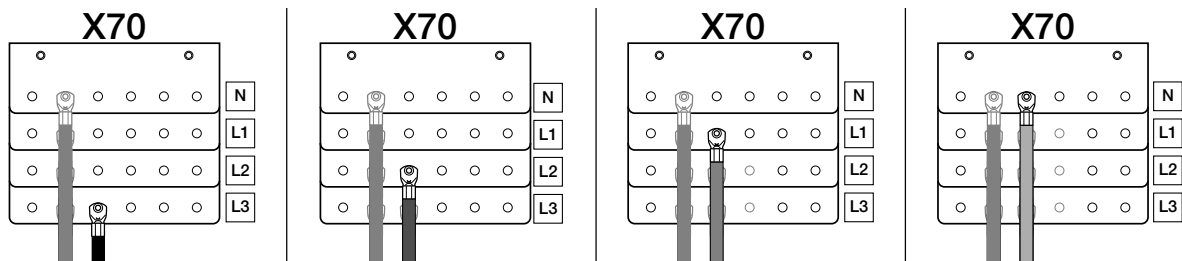
## UNIT OUTPUTS



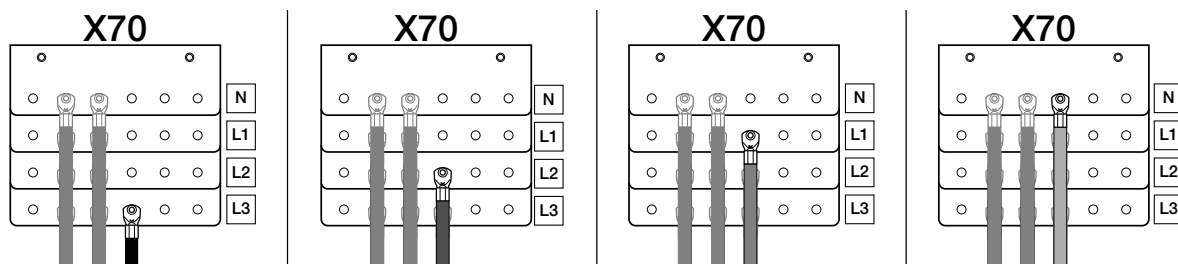
Connect L3-L2-L1-N output position A



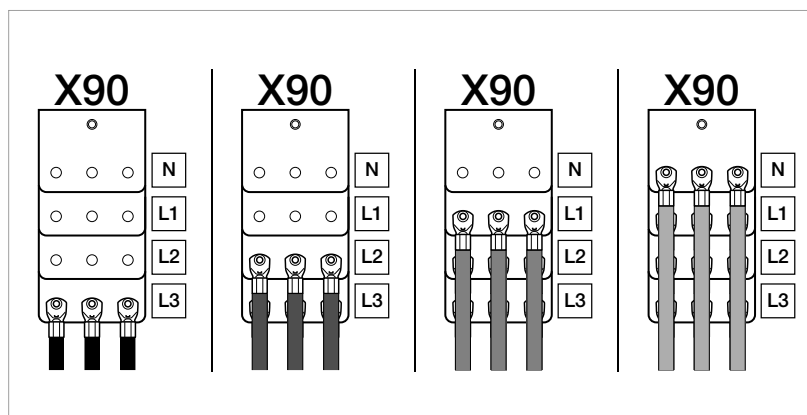
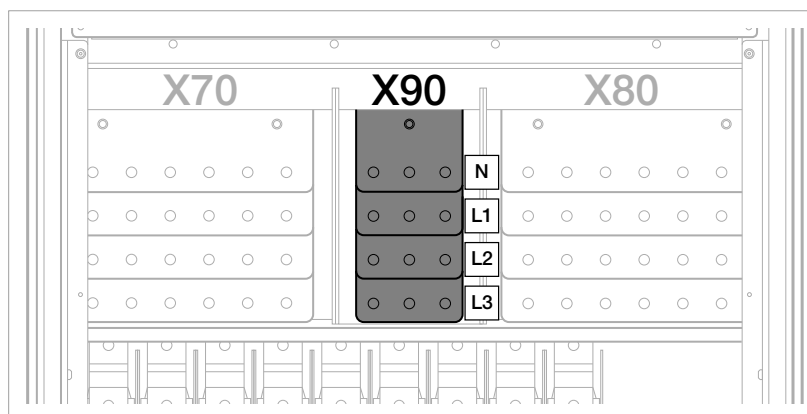
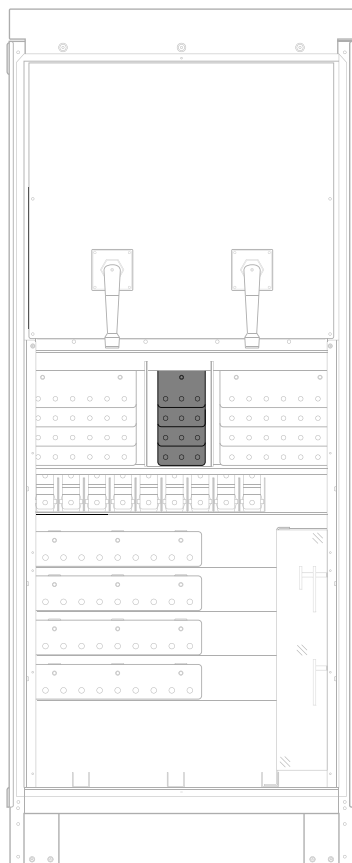
Connect L3-L2-L1-N output position B



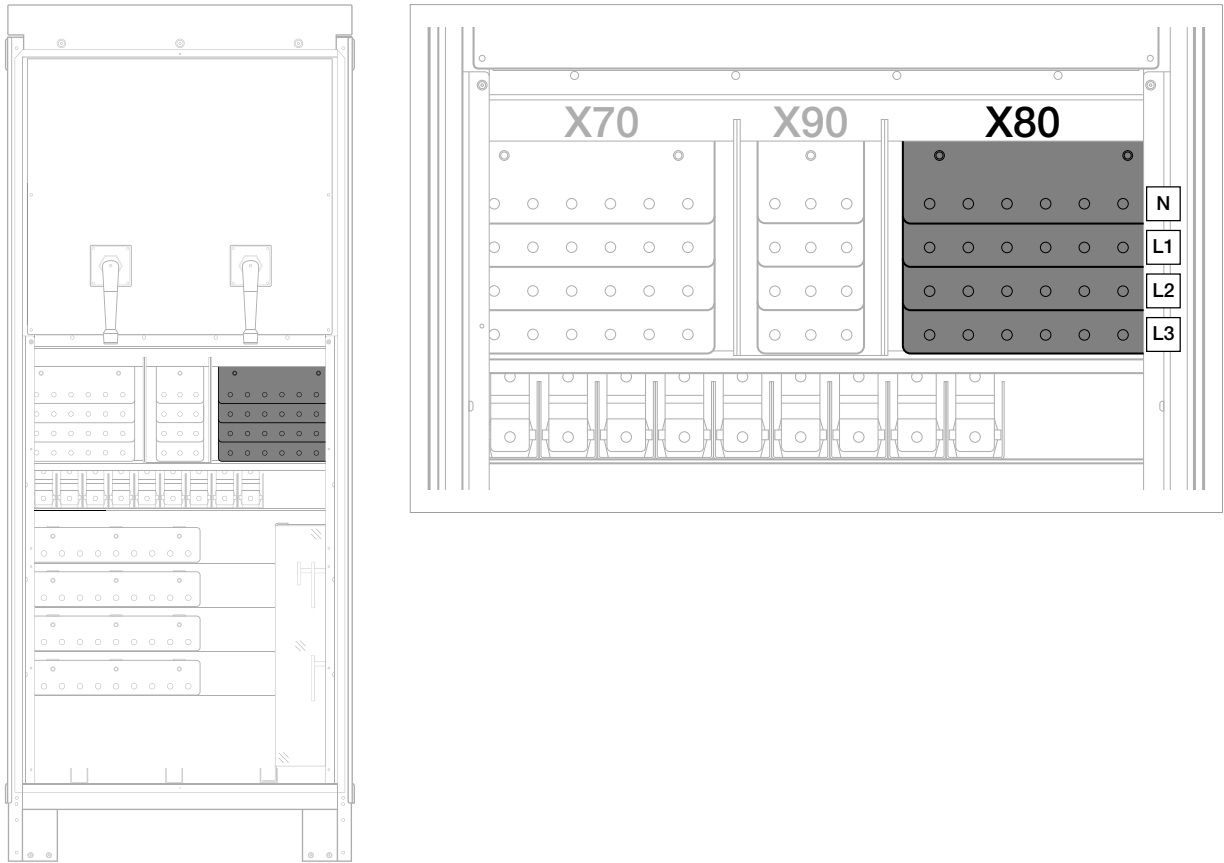
Connect L3-L2-L1-N output position C



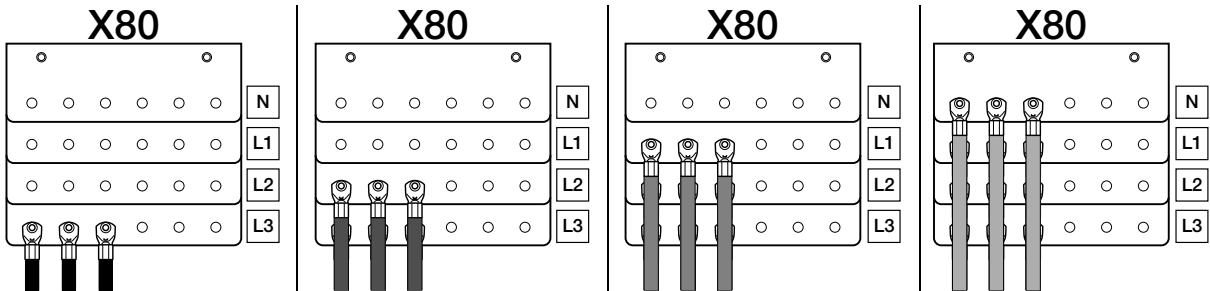
## OUTPUT TO LOAD



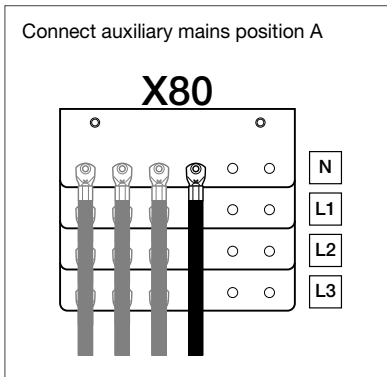
## PRINCIPAL AUXILIARY MAINS



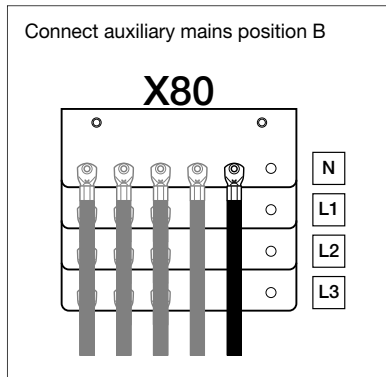
Connect auxiliary mains



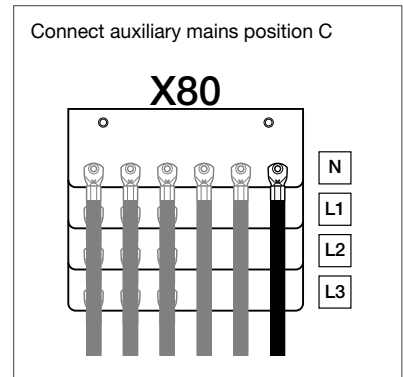
Connect auxiliary mains position A



Connect auxiliary mains position B

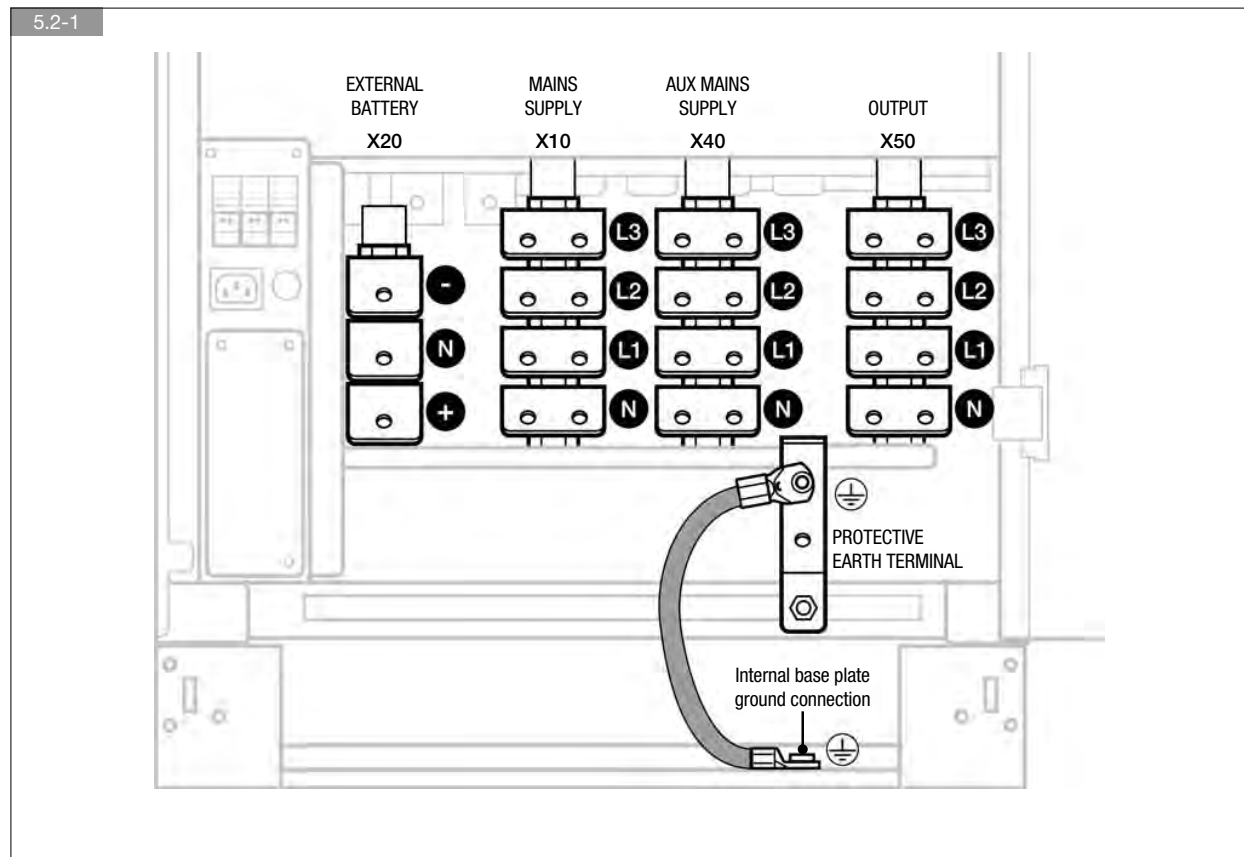


Connect auxiliary mains position C

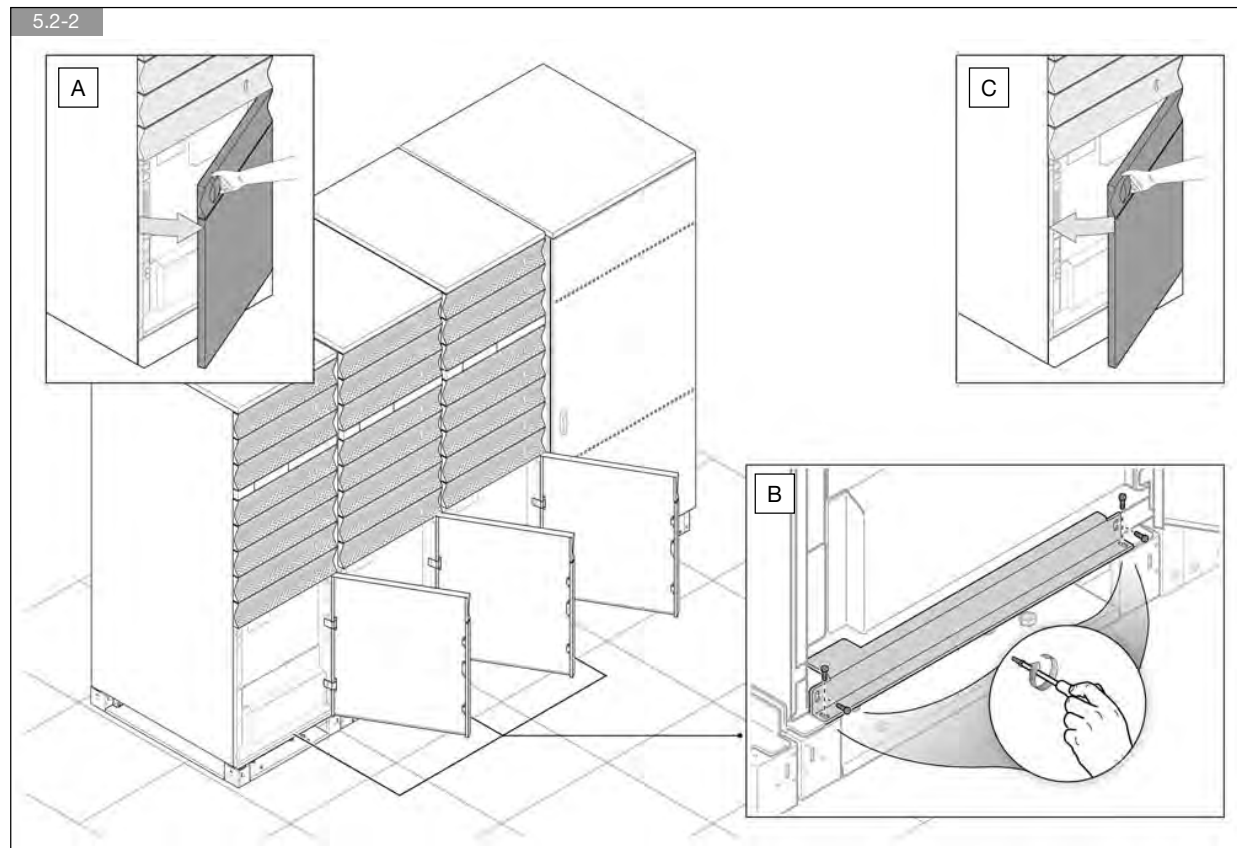


Block reference				
Reference terminal	Input/Output	Detail reference terminal	Screw to install	Recommended tightening torque [Nm]
X100	INPUT MAINS	N	M12	40 - 45
		L1	M12	40 - 45
		L2	M12	40 - 45
		L3	M12	40 - 45
	INPUT MAINS UNIT 1-2-3	N	M12	40 - 45
		L1	M12	40 - 45
		L2	M12	40 - 45
		L3	M12	40 - 45
X80	AUXILIARY MAINS	N	M12	40 - 45
		L1	M12	40 - 45
		L2	M12	40 - 45
		L3	M12	40 - 45
X61 X62 X63	AUXILIARY MAINS UNIT 1-2-3	L1	M10	20 - 26
		L2	M10	20 - 26
		L3	M10	20 - 26
X70	OUTPUT UNIT 1-2-3	N	M10	20 - 26
		L1	M10	20 - 26
		L2	M10	20 - 26
		L3	M10	20 - 26
X90	OUTPUT TO LOAD	N	M12	40 - 45
		L1	M12	40 - 45
		L2	M12	40 - 45
		L3	M12	40 - 45
X200	BATTERY	+	M10	20 - 26
		-	M10	20 - 26
		N	M10	20 - 26

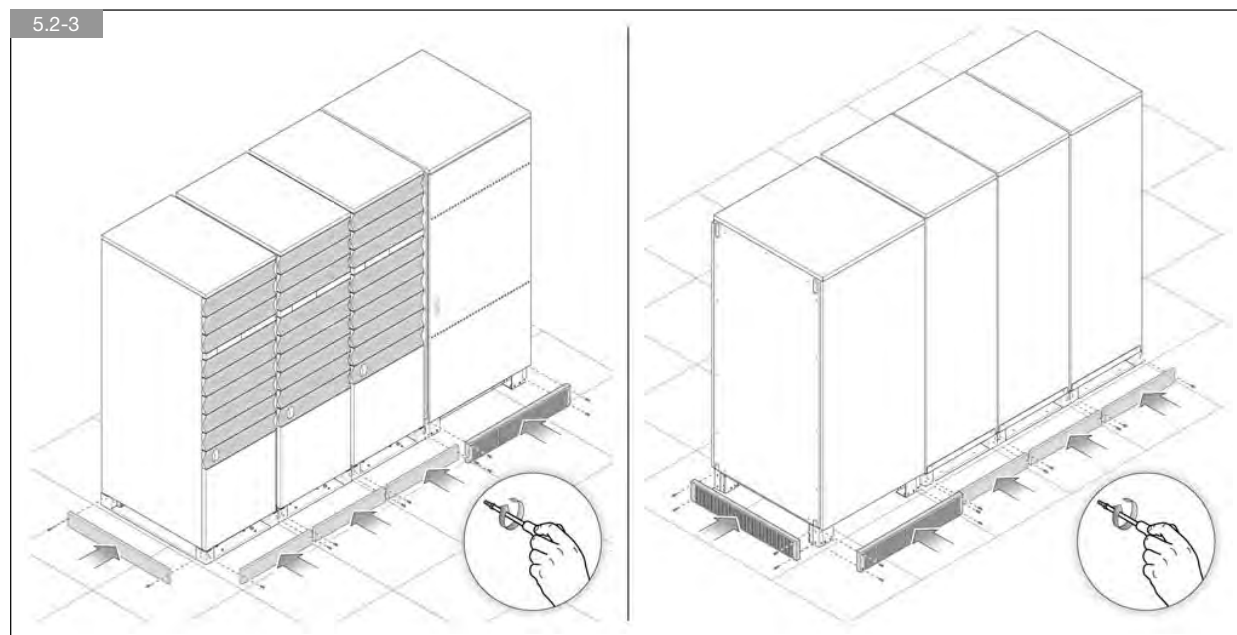
## 5.2. MAINS AND AUXILIARY MAINS CONNECTED SEPARATELY



## AFTER CONNECTING



ENGLISH





## 5.3. EXTERNAL BATTERY CONNECTION



**NOTE!**  
For further information refer to the battery cabinet manual.

- Remove the plastic terminal block protection.
- Connect the protective earth (PE) cable.
- Connect the cables between the coupling cabinet terminals (X200) and battery cabinet terminals.



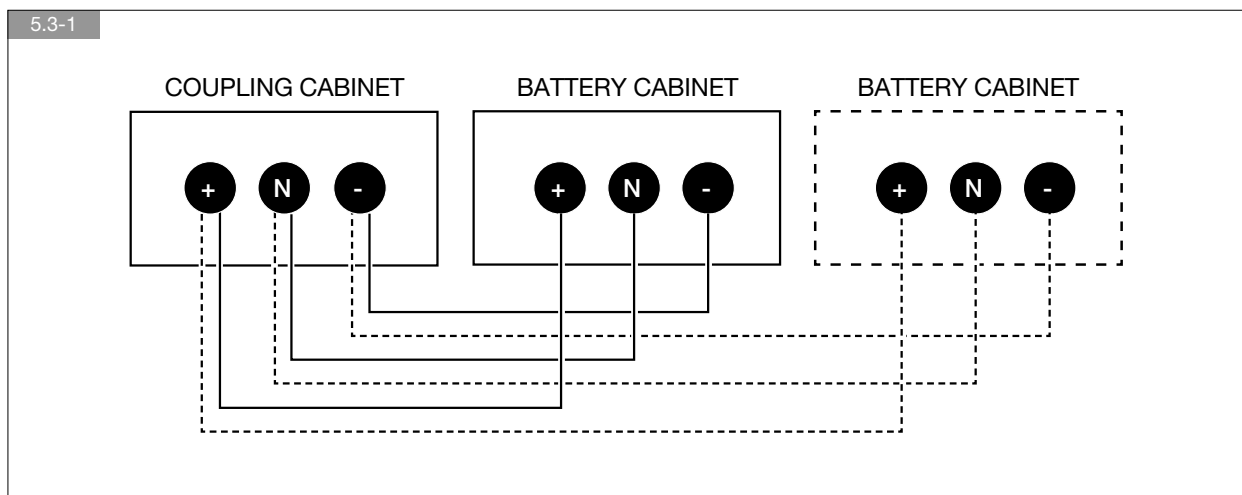
**WARNING!**  
Strictly observe:  
- the polarity of each individual string (refer to the figure below);  
- the cable cross section (refer to 'Electrical requirements' chapter).



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



Reassemble the plastic terminal block protection.



**NOTE!**  
When battery cabinets not supplied by Socomec are used, the installer is responsible for:  
- checking electrical compatibility;  
- checking the presence of appropriate protective devices (fuses and switches that ensure the cables are protected from the UPS to the battery cabinet).  
Once the UPS is switched on – before closing the battery switches – check the battery parameters on the control panel menu. For further information, refer to 'Menu' chapter.



**NOTE!**  
Not all battery/capacity combinations are available.

## 5.4. OTHER CONNECTIONS

**NOTE!**

Before carrying out any operations on the unit read the Safety standards chapter carefully.

**WARNING! RISK OF TIPPING OVER!**

Before carrying out any operations, ensure the UPS is secured at the feet.

**WARNING! RISK OF TIPPING OVER!**

The modules must be inserted from the bottom upwards and removed from the top downwards to ensure the unit remains stable.

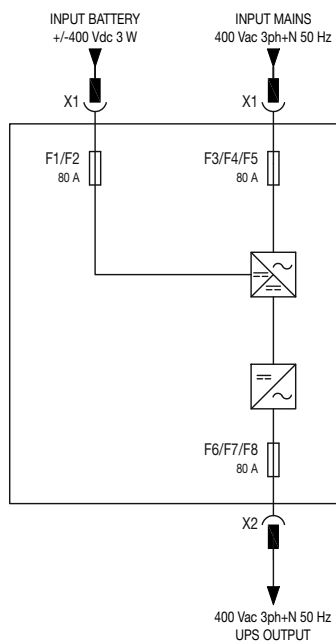
**WARNING!**

Before removing any module, ensure that the remaining power modules can support the load.

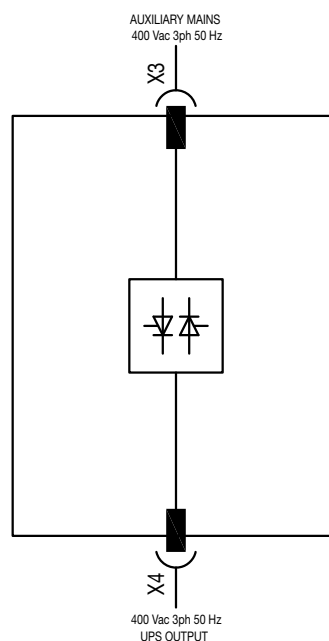
**WARNING!**

It is only possible to remove the bypass module when the UPS is in normal mode or in maintenance bypass mode (refer to 'operating modes' chapter). Before removing the bypass ensure that the units are not in bypass mode.

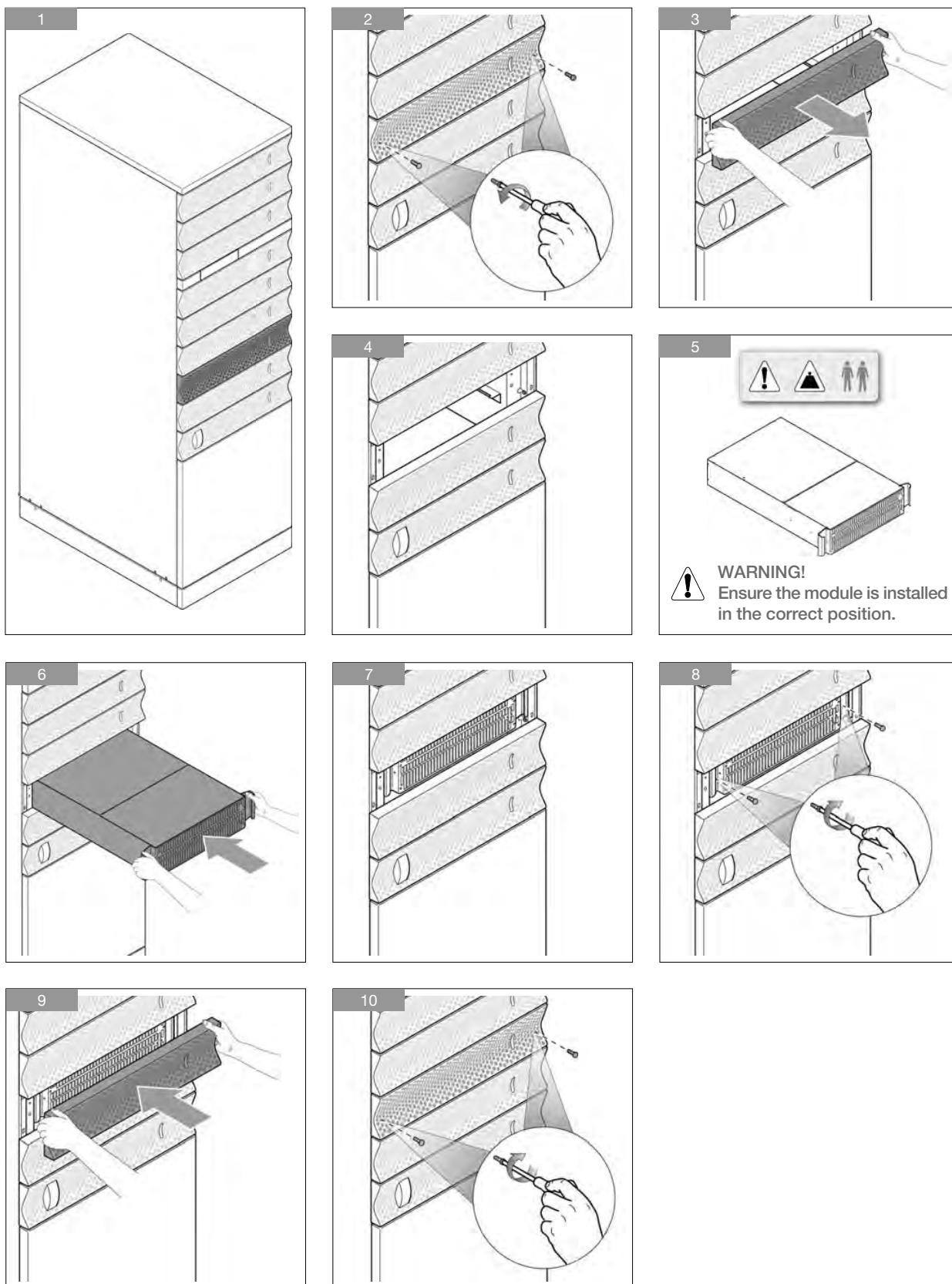
5.4-1 Power module electrical diagram



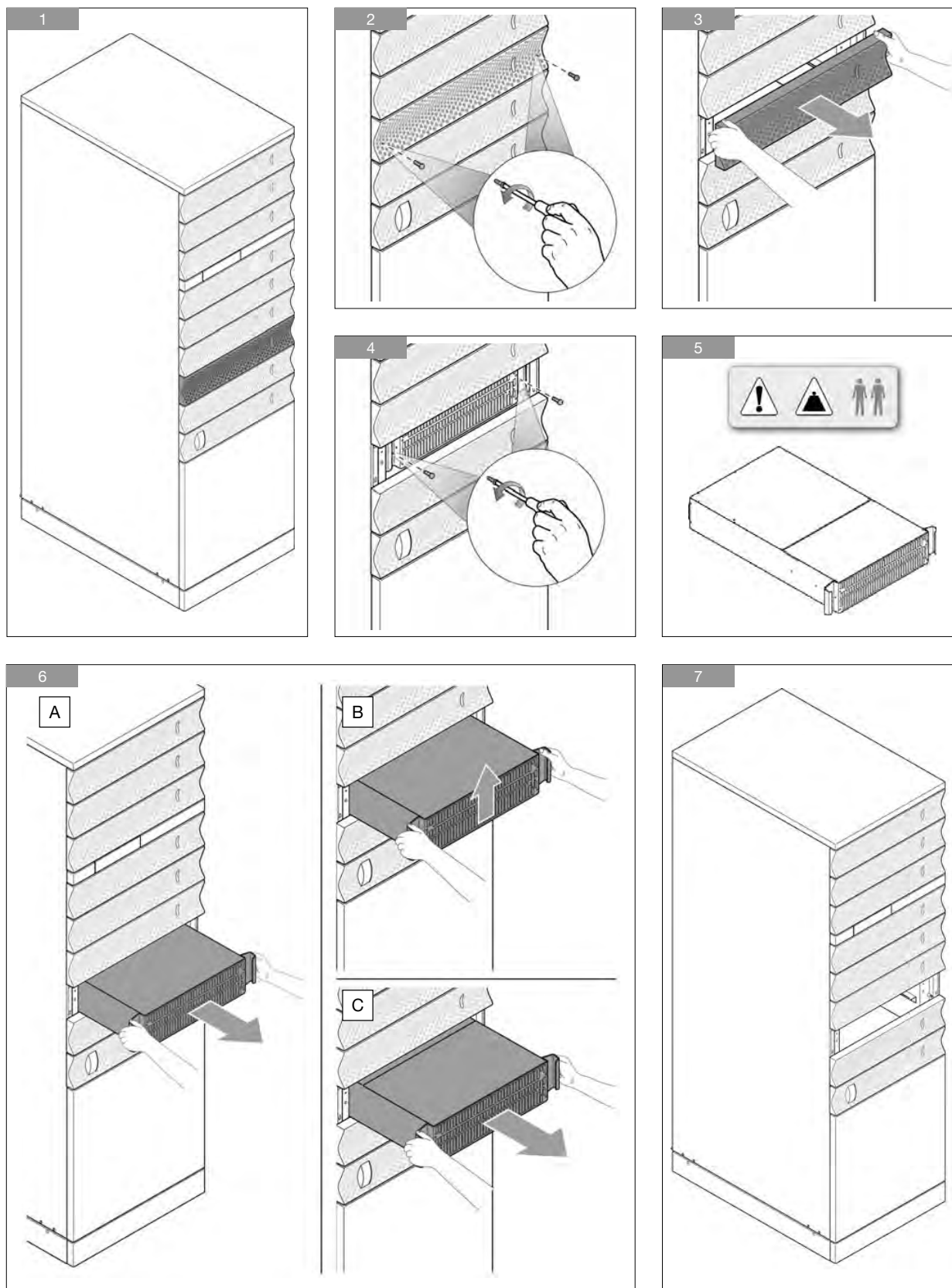
5.4-2 Bypass module electrical diagram



## POWER MODULE INSERTION

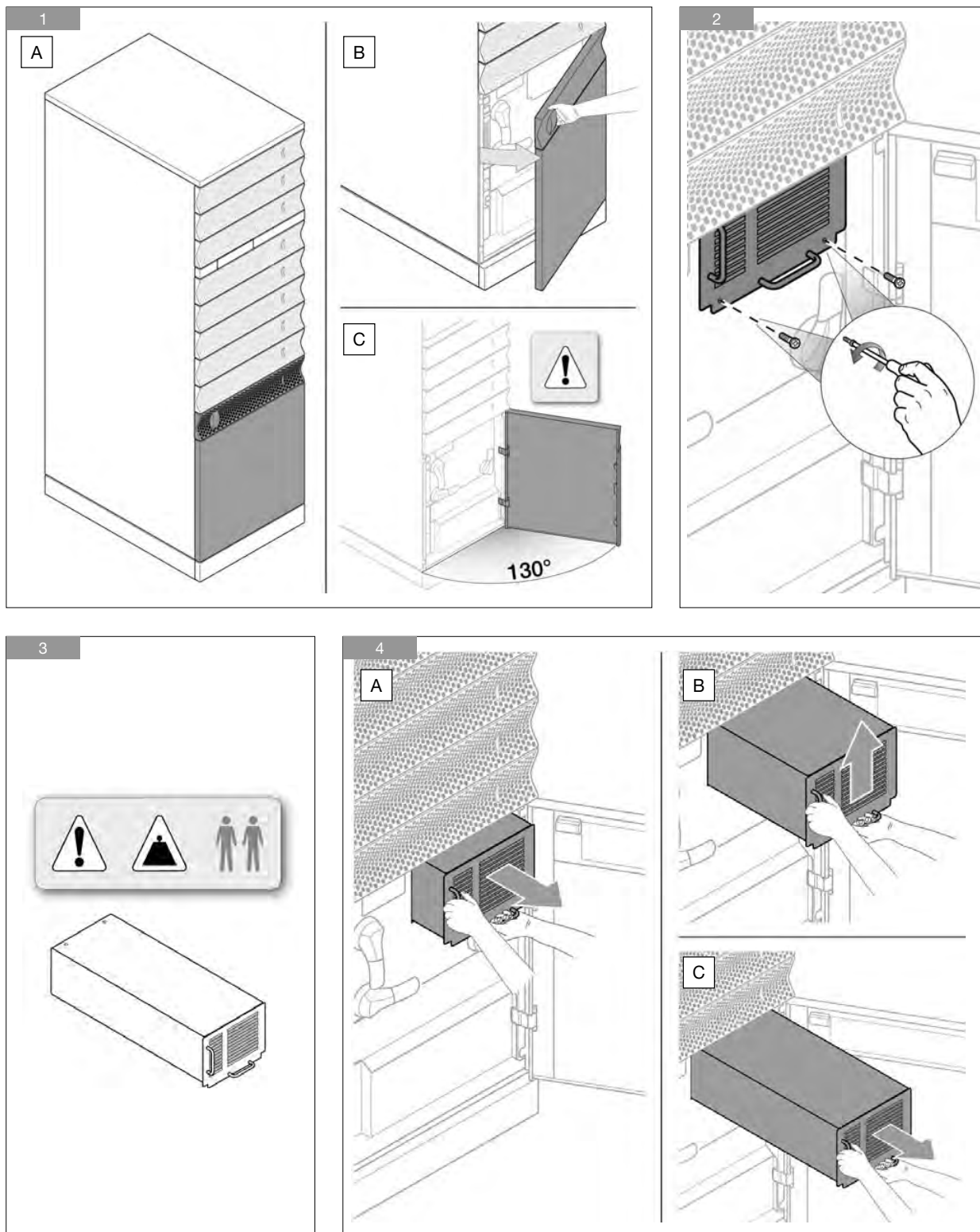


## POWER MODULE REMOVAL

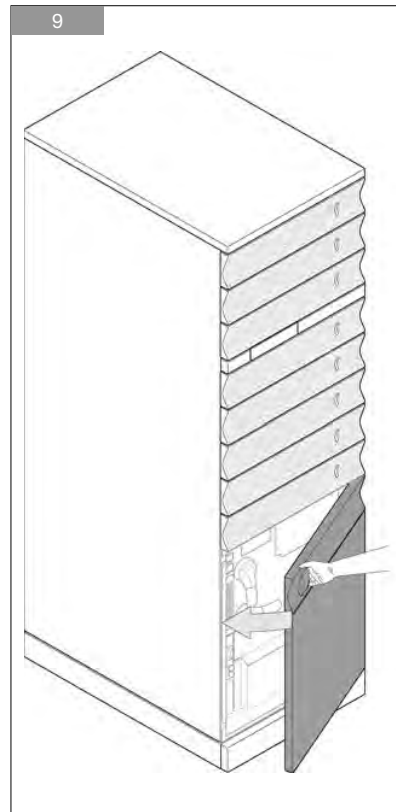
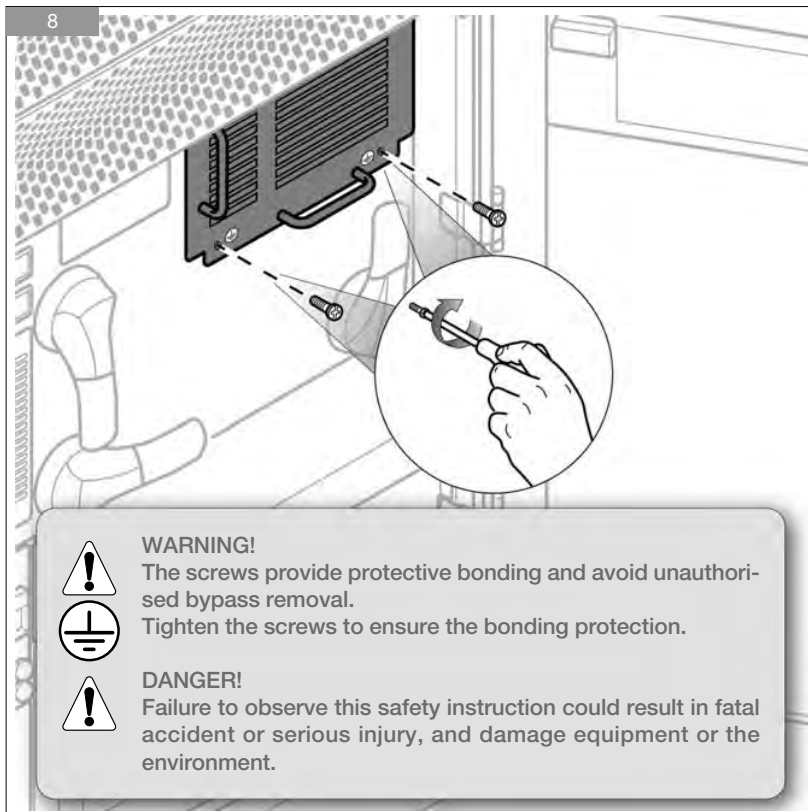
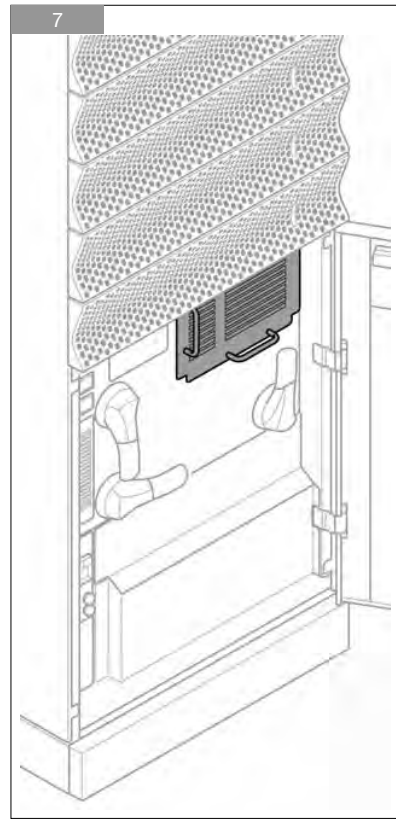
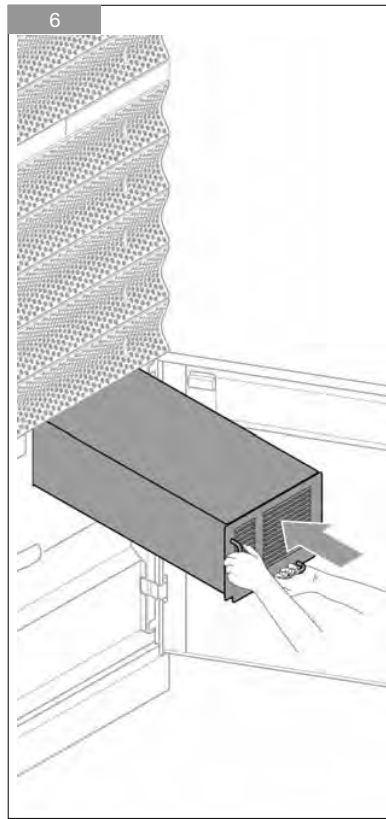
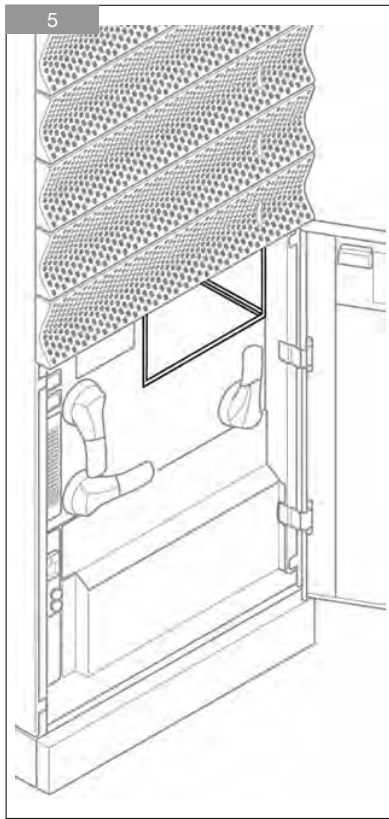


ENGLISH

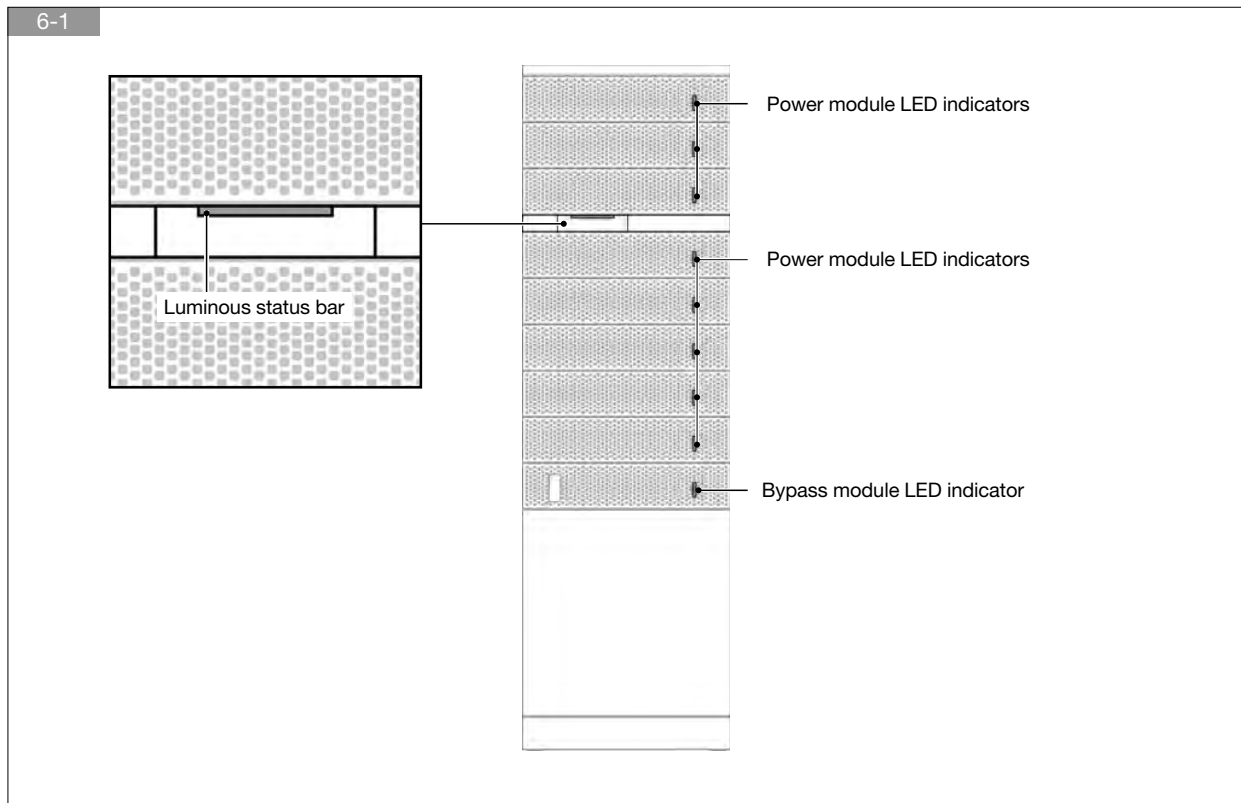
## BYPASS MODULE REPLACEMENT







## 6. CONTROL PANEL

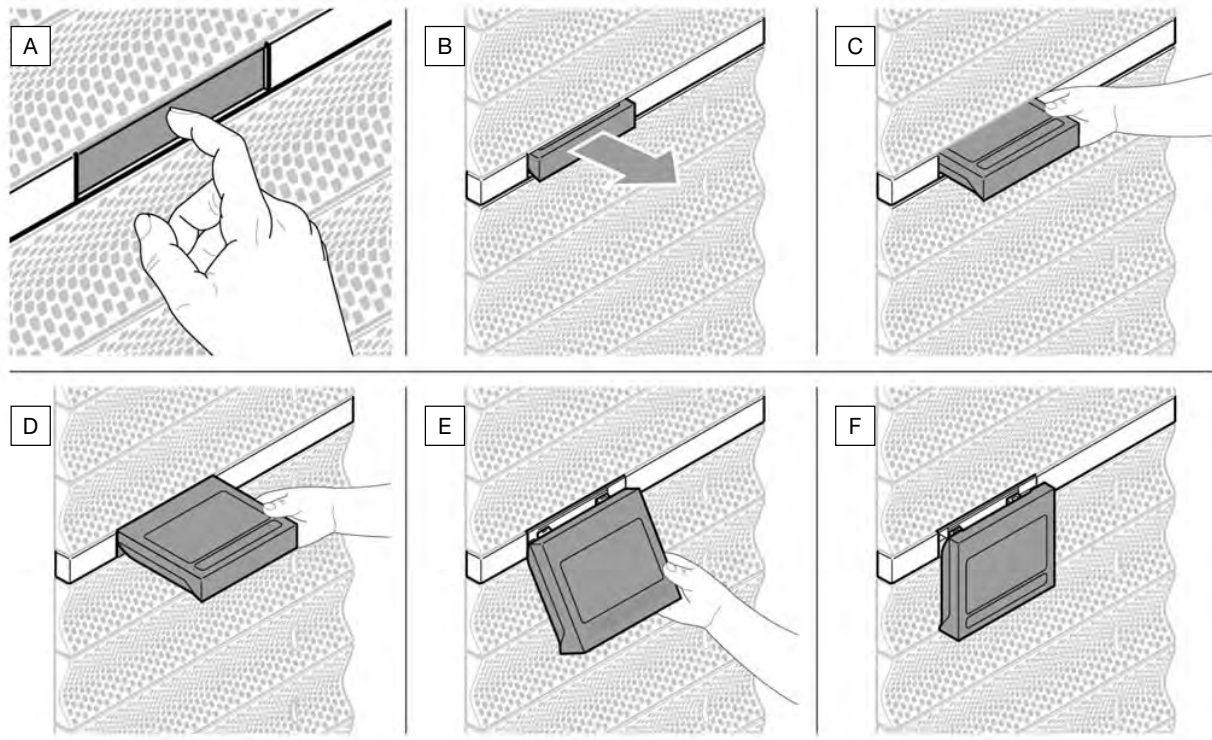


LED indicator		
Colour	Power module	Bypass module
Green	Module on inverter	Bypass ready to start
Flashing green	-	Load on bypass
Yellow	Module ready to start	Maintenance bypass
Flashing yellow	Module initialising	Load on inverter or bypass and transfer impossible/locked
Red	Module stopped due to alert	Bypass alert present
Flashing red	Initialising failure	Bypass blocked with alert
Flashing green yellow and red	No communication	No communication

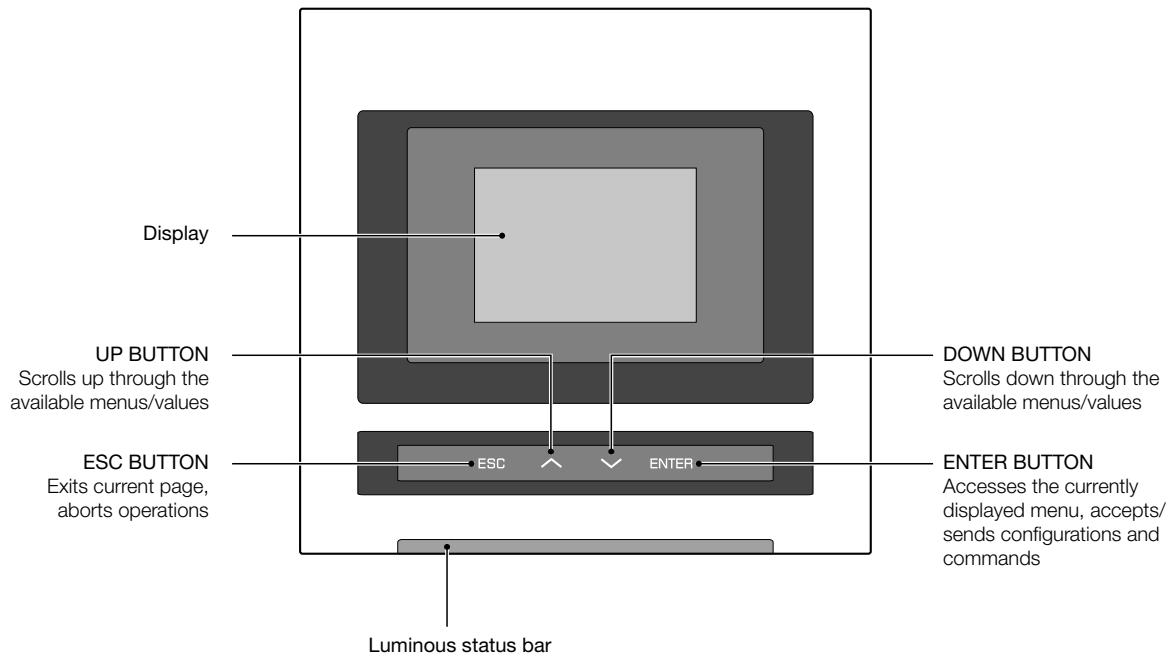
Control panel luminous status bar indicator	
Colour	Status
Green	Load protected on inverter
Flashing green	UPS in startup procedure phase or battery test
Yellow	Load supplied with warning (Bypass, maintenance bypass or battery)
Flashing yellow	Maintenance request/in progress
Flashing green and yellow	Load supplied and preventive alert present
Red	Load not supplied: output switched OFF due to an alert
Flashing red	Load supplied, but the output will stop in few minutes (imminent stop)
Flashing yellow and red	Load supplied, but no more protected A critical alert has occurred
Flashing green yellow and red	No communication



## 6-2 Control panel extraction



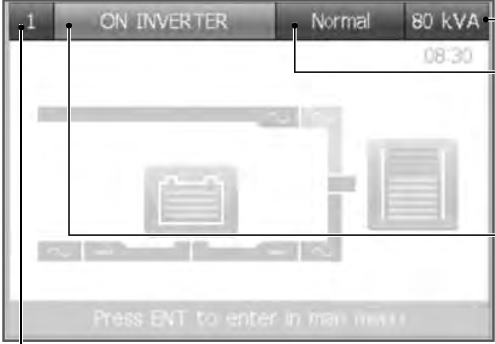
## 6-3



# 7. MENU

## 7.1. DISPLAY OVERVIEW

**7.1-1 Status bar**



The diagram shows a status bar with the following elements:

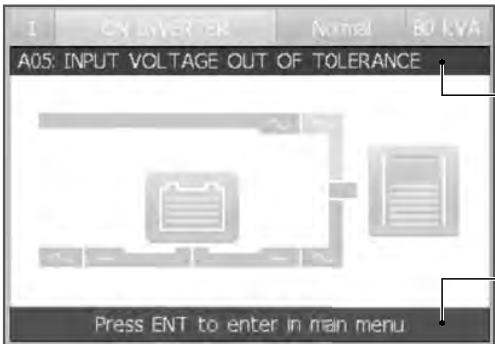
- 1**: Unit panel reference
- ON INVERTER**: Operating mode indicator
- Normal**: Current operating mode
- 80 kVA**: UPS Rated Power (kVA)
- 08:30**: Time display
- Press ENT to enter in main menu**: Navigation instruction

**Operating modes:**  
**Normal** (Normal mode), **Service** (Maintenance Mode), **Isolated** (output breaker/relays open), **eco auto** (Eco mode), **eco** (Eco mode command executed), **Standby** (stand-by command executed), **e Saver** (Energy-Saver Mode)

**Unit status:**  
 • Displayed messages: UPS STARTING, UPS STOPPING, ON MAINT. BYPASS, IMMINENT STOP, ON BATTERY, BATTERY TEST, ON INVERTER, ON AUTO BYPASS, UNIT AVAILABLE, STANDBY, LOAD OFF.

Status bar color	
Flashing green/yellow/red	no information available
Green	load supplied
Flashing green	start procedure in progress/battery test in progress
Yellow	on battery/forced on bypass (with eco mode off)/maintenance alert/redundancy lost
Flashing yellow	bypass procedure in progress/maintenance period expired/maintenance mode/bypass mode with an alert present
Red	load not supplied
Flashing red	stop procedure in progress/output supply switch-off is imminent
Flashing yellow/red	load supplied but no protected
Flashing green/yellow	maintenance alert/an alert is present with load supplied by the inverter
Grey (off)	inactive UPS

**7.1-2 Alerts area and Message area**



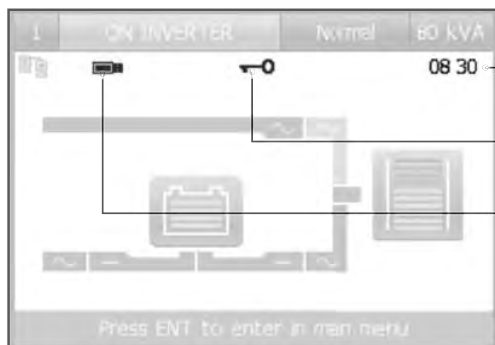
The diagram shows the alerts and message area with the following elements:

- A05: INPUT VOLTAGE OUT OF TOLERANCE**: Active alert message
- Press ENT to enter in main menu**: Navigation instruction

**Alerts area**  
 Present when an alert is active.  
 Enter **ALARMS** menu to display the complete alerts list.

**Message area**  
 Always present, displays a help message to guide the user through the display functions.

## 7.1-3 Status icons



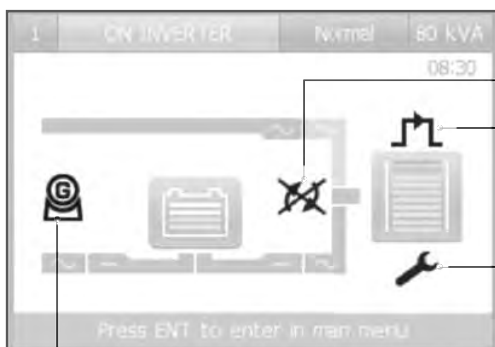
*Note: status icons and Time are only visible if there are no pending alerts, as the alert bar overwrites the icons when active.*

**Time:**  
UPS current time (hours and minutes, with ':' flashing).

**Key icon:**  
Displayed if the keypad has been locked.

**USB icon:**  
Displayed if a USB memory stick is inserted.  
It must be formatted with FAT32 filesystem.

## 7.1-4 Additional Icons



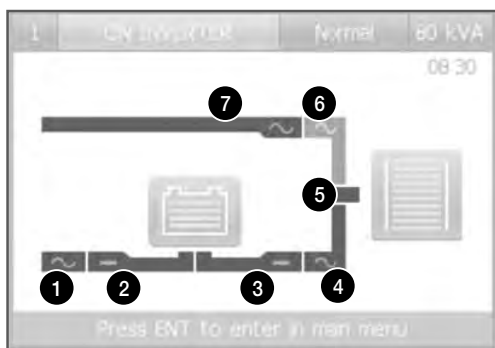
Operating on GenSet

On Maintenance Bypass

Bypass mode (or Eco Mode) not possible

**Commissioning Code** not inserted (refer to 'Menu functions description' paragraph) or Scheduled Inspection warning: machine inspection required call SOCOMEC support service

## 7.1-5 Mimic panel

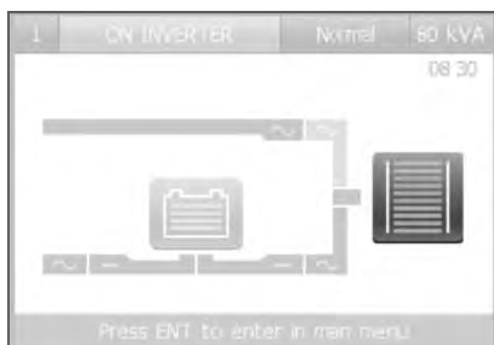
**Bars**

1. Rectifier input.
2. Rectifier output.
3. Inverter Input or Battery Output.
4. Inverter Output.
5. Unit output.
6. Output from static switch
7. Bypass input.

**Bar colour identify the energy flow:**

- **blue:** active/mains present
- **grey:** mains not present

## 7.1-6 Load level



## 7.1-7 Battery status

**Battery charging**

Bar colour: green; level reached is continuous, other levels flashing

**Battery charging**

Bar colour: green; level reached is continuous, other levels flashing

**Battery charged**

Bar colour: green

**Battery discharged****Battery open****Battery alert**

If there is a pending battery charger alert the border turns yellow



## 7.2. MENU TREE

FIRST LEVEL	SECOND LEVEL	THIRD LEVEL
ALARMS / STATUS	SYSTEM	
	UNIT 1	
	UNIT 2	
	UNIT 3	
	UNIT	
	MODULE 1 <sup>(1)</sup>	
	MODULE 2 <sup>(1)</sup>	
	MODULE 3 <sup>(1)</sup>	
	MODULE 4 <sup>(1)</sup>	
	MODULE 5 <sup>(1)</sup>	
	MODULE 6 <sup>(1)</sup>	
	MODULE 7 <sup>(1)</sup>	
	MODULE 8 <sup>(1)</sup>	
	BYPASS	
MEASUREMENTS	OUTPUT MEASUREMENTS	
	BATTERIES MEASUREMENTS	
	INPUT MEASUREMENTS	
	BYPASS MEASUREMENTS	
	SUBUNIT MEASUREMENTS	
CONTROLS	ALARMS RESET	
	UPS PROCEDURES	
	ECO MODE	
	ENERGY SAVER	
	BATTERY TEST	
	LED BAR TEST	
SETTINGS	PREFERENCES	LANGUAGE
		DATE AND TIME
		BUZZER
		DISPLAY
		PASSWORD
		REMOTE CONTROLS
	UPS SETTINGS	OUTPUT
		BATTERIES
		BACKFEED
		REDUNDANCY
		SCHEDULING
		PARALLEL SYSTEM
	SLOT OPTIONS	BATTERY TEMPERATURE PROBE
		RS485 PORT SLOT 1
		RS485 PORT SLOT 2

FIRST LEVEL	SECOND LEVEL	THIRD LEVEL
HISTORY LOG	EVENT LIST	
	STATISTICS	
SERVICE	DEVICE IDENTIFICATION	
	COMMISSIONING CODE	
	SERVICE COMMANDS	
	NETWORK PARAMETERS	
	FIRMWARE VERSION	

(1). Displayed if the module is present.

## 7.3. MENU FUNCTIONS DESCRIPTION

### KEYPAD LOCKING

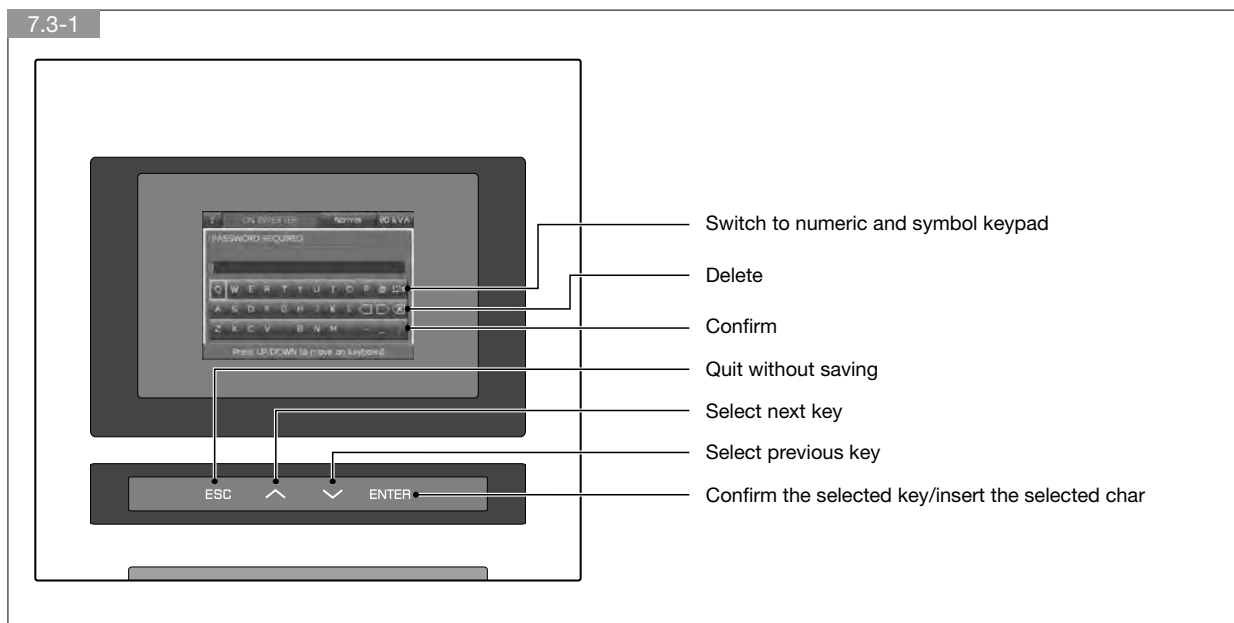
The keypad can be locked by pressing the buttons in the following sequence:

**ESC → UP → DOWN → ENTER**

To unlock the keypad, the buttons must be pressed in the reverse sequence:

**ENTER → DOWN → UP → ESC**

These sequences work only on Mimic Panel page.



### ENTERING PASSWORDS

Some operations and settings require a password in order to be performed. If this is the case, a padlock is displayed at the top right of the page. After inserting a valid password, the padlock opens and the operation can be performed. When a password is required, a virtual keyboard is displayed. The default password is **SOCO**.

### ALARMS menu

This menu displays all pending UPS alerts. Use the **ALARMS RESET** command in the **COMMANDS** menu to reset alerts. If there is more than one page, press UP/DOWN to scroll pages.

### MEASUREMENTS menu

This menu displays all UPS measurements relating to the input stage, output stage, batteries and auxiliary mains (bypass). If there is more than one page, press UP/DOWN to scroll pages.

## COMMANDS menu

This menu contains the commands that can be sent to the UPS. Some of them are password protected.

If a command is not available, a **COMMAND FAILURE** message appears.

## SETTINGS menu

This menu contains all the machine settings. There are the following sub-menus:

- **PREFERENCES:** user preferences such as language, date and time, display brightness, buzzer;
- **UPS SETTINGS:** critical machine settings for output, batteries and transformer.



Wrong configuration in **UPS SETTINGS** could damage the load or the batteries.

- **SLOT OPTIONS:** configurations of available optional boards, which can be fitted to the front slots.

System critical parameters are password protected and should be changed by specialist personnel only.

## BATTERY SETTINGS menu

This is the menu for battery configuration. The list can be scrolled through to see the full list of battery settings. If batteries are not available, only the first element of the list is shown. When one of the battery settings is edited, all settings below in the list have to be checked and confirmed. The battery settings are saved only when the last battery setting is confirmed. To change battery configurations enter the menu: **MAIN MENU > SETTINGS > UPS SETTINGS > BATTERIES**.

In the case of UPSs connected in parallel enter the menu: **UNIT MENU > BATTERY SETTINGS**.



These parameters for battery settings are critical: number of cells, capacity, charge current. Risk of damage to load or batteries.

## HISTORY LOG menu

**EVENT LIST** menu: it shows the list of UPS alerts and events that have occurred. Last 150 events can be displayed. Press UP/DOWN to scroll the list.

**STATISTICS** menu: the system reports some measurements (output load, input apparent power, internal temperature) in graphical format. These values can be used to analyse the situation over the last 14 days or in shorter periods (last 24 hours, last hour or last minute). Enter the required menu and press UP/DOWN to scroll through different periods. The last page shows the minimum, maximum and average values of the selected measurement. This information provides an enhanced evaluation of the equipment operating mode, verifying whether certain critical operating situations are repetitive or only random.

## SERVICE menu

This menu is reserved for support service personnel and holds UPS identification data, utilities for SW upgrades.

## COMMISSIONING CODE

To complete equipment activation, a warranty activation code is required. To insert the **Commissioning Code** go to **MAIN MENU > SERVICE > COMMISSIONING CODE**.

If the **Commissioning Code** is not inserted an alert symbol is shown on mimic panel (🚨).

The **Commissioning Code** is provided directly by the relevant Support Centre upon communication of the serial number. When the Support Centre is contacted for the **Commissioning Code**, detailed information can be obtained on the UPS functions available and on scheduled preventive maintenance programmes.



## 7.4. SPECIAL PARALLEL CONFIGURATION FEATURES

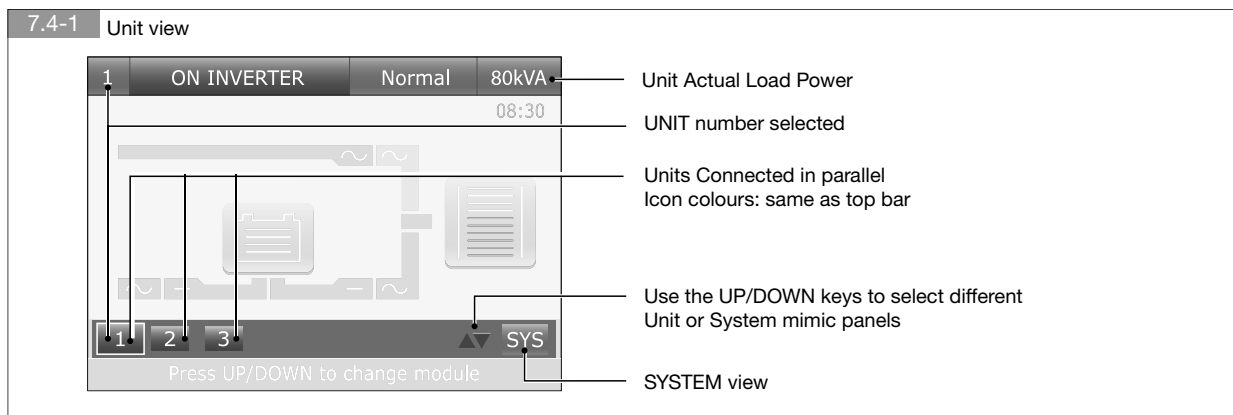
### Intelligent communication module (ICM)

Intelligent Communication Module (ICM) allows the hierarchical supervision both of my Unit and the whole System.

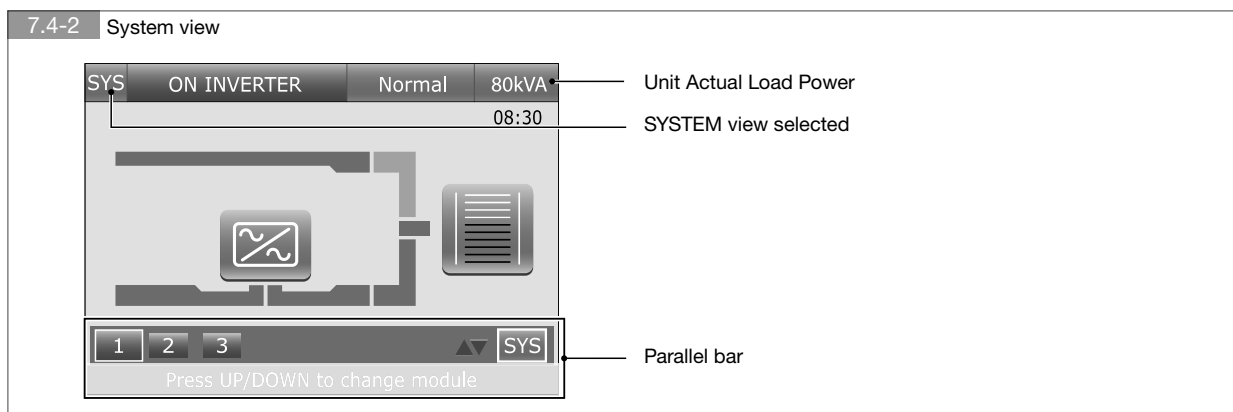
In the UPS parallel configuration, an additional navigation bar is displayed on the mimic panel page, where all connected Units status appear.

Press UP/DOWN keys to switch between SYSTEM and my UNIT view.

The selected view is shown on the upper left corner: SYS for SYSTEM and 1/2/3 for my UNIT.



The **1** symbol (number surrounded by white edge) indicates the Unit number of the UPS upon which the display is fitted (the display is fitted on UPS #1 in this example).



The **SYS** symbol (label surrounded by white board) indicates the System view which the display is fitted.

Press ENTER to show the current menu list.

Note: all the other icons have the same meaning as described starting from chapter 7.1 but at SYSTEM level.

## 7.5. MENU TREE

FIRST LEVEL	SECOND LEVEL	THIRD LEVEL	SYSTEM	UNIT IN A SYSTEM
ALARMS	SYSTEM		X	
	UNIT1		X	
	UNIT2		X	
	UNIT3		X	
	UNIT			X
	MODULE 1			X
	MODULE 2			X
	MODULE 3			X
	MODULE 4			X
	MODULE 5			X
	MODULE 6			X
	MODULE 7			X
	MODULE 8			X
	BYPASS			X
STATUS	SYSTEM		X	
	UNIT1		X	
	UNIT2		X	
	UNIT3		X	
	UNIT			X
	MODULE 1			X
	MODULE 2			X
	MODULE 3			X
	MODULE 4			X
	MODULE 5			X
	MODULE 6			X
	MODULE 7			X
	MODULE 8			X
	BYPASS			X
MEASUREMENTS	OUTPUT MEASURES		X	X
	BATTERIES MEASURES		X	X
	INPUT MEASURES		X	X
	BYPASS		X	X
	SUBUNIT MEASURES			X
CONTROLS	ALARMS RESET	Alarms Reset	X	X
	UPS PROCEDURES	Automatic Start Procedure	X	
		Automatic Stop Procedure	X	
		On Mainten. Bypass Procedure	X	
	ECO MODE	Activate Eco Mode	X	
		Return to Normal Mode	X	
	BATTERY TEST	Battery Test	X <sup>(1)</sup>	X <sup>(2)</sup>
	LED BAR TEST	Led Bar Test	X	X

FIRST LEVEL	SECOND LEVEL	THIRD LEVEL	SYSTEM	UNIT IN A SYSTEM
SETTINGS	PREFERENCES	LANGUAGE	X	
		DATE AND TIME	X	
		BUZZER	X	
		DISPLAY		X
		PASSWORD	X	
		REMOTE COMMANDS	X	
	UPS SETTINGS	OUTPUT	X	
		BATTERIES	X <sup>(1)</sup>	X <sup>(2)</sup>
		BACKFEED	X	
		REDUNDANCY	X	
		PARALLEL SYSTEM	X	X
	SLOT OPTIONS	BATTERY TEMPERATURE PROBE	X	X
		RS485 PORT SLOT 1		X
		RS485 PORT SLOT 2		X
HISTORY LOG	EVENT LIST		X	
	STATISTICS	Ups Overloads (< 5 sec)	X	
		Ups Overloads (>= 5 sec)	X	
		Ups On Battery ( < 2 min)	X	
		Ups On Battery ( 2 .. 5 min)	X	
		Ups On Battery ( > 5 min)	X	
		Working Time on Genset	X	
SERVICE	DEVICE IDENTIFICATION	SERIAL NUMBER	X	X
		SOCOMECS REF		X
		USER DEVICE REF	X	
		USER DEVICE LOCATION	X	
	COMMISSIONING CODE		X	
	SERVICE COMMANDS	REPORT ON USB		X
		POSTPONE CHECK-UP WARNING	X	
	NETWORK PARAMETERS	DHCP		X
		IP ADDRESS		X
		SUBNET MASK		X
		GATEWAY		X
		MAC ADDRESS		X
				X
	FIRMWARE VERSION	COMM. BOARD		X
		MODULE 1...8		X
		BYPASS		X
		PARALLEL		X
		ACS		X
		HMI		X

(1). In case of Common Batteries

(2). In case of Distributed Batteries

## 8. OPERATING PROCEDURES



### NOTE!

Before carrying out any operations on the unit read the Safety standards chapter carefully.



### NOTE!

With the stop procedure the load will be disconnected.



### NOTE!

Letters indications is referred to the visual diagram at chapter 'Electrical installation'.

### 8.1. SWITCHING ON

- Connect the input and auxiliary mains to the coupling (A and B).
- Wait until the displays switch on.
- Enter **MAIN MENU > COMMANDS > UPS PROCEDURES**.
- Select **Automatic Start Procedure** and press **ENTER**.
- Carry out the operations indicated on the display.

### 8.2. SWITCHING OFF

This operation interrupts the power supply to the load. The UPS and the battery charger will be shutdown.

- Enter menu **MAIN MENU > COMMANDS > UPS PROCEDURES**.
- Select **Automatic Stop Procedure** and press **ENTER**.
- Carry out the operations indicated on the display. This operation cannot be aborted.



### NOTE!

The controlled shutdown of each server connected to the LAN can be managed by shutdown software.

### 8.3. BYPASS OPERATIONS

#### SWITCHING ONTO MAINTENANCE BYPASS

This operation creates a direct connection between the UPS input and output, excluding the equipment control part. This operation is performed in the event of:

- standard maintenance
- serious failure has occurred.



### WARNING! LOAD POWERED BY AUXILIARY MAINS!

Your load is exposed to mains disturbances.

- Enter menu **MAIN MENU > COMMANDS > UPS PROCEDURES**.
- Select **ON MAINT. BYPASS** and press **ENTER**.
- Carry out the operations indicated on the display.

#### SWITCHING ON FROM MAINTENANCE BYPASS

- Connect the input mains to the coupling (A and B).
- Wait until the displays switch on.
- Enter **MAIN MENU > COMMANDS > UPS PROCEDURES**.
- Select **Automatic Start Procedure** and press **ENTER**.
- Carry out the operations indicated on the display.

## 8.4. EXTENDED OUT OF SERVICE

When the UPS is deactivated for some time, the batteries must be recharged regularly. They have to be recharged every three months.

- Check output switch **Q70** (output load) into position **0**.
- Connect the input and auxiliary mains to the coupling (**A** and **B**).
- Wait until the displays switch on.
- Close the external battery breaker/fuses.
- Wait until the batteries are fully charged. Check in the menu **MAIN MENU > MEASUREMENT > BATTERIES MEASUREMENT**.
- Open the external battery breaker/fuses.
- Disconnect the input and auxiliary mains to the coupling (**A** and **B**).

## 8.5. EMERGENCY SHUTDOWN



### NOTE!

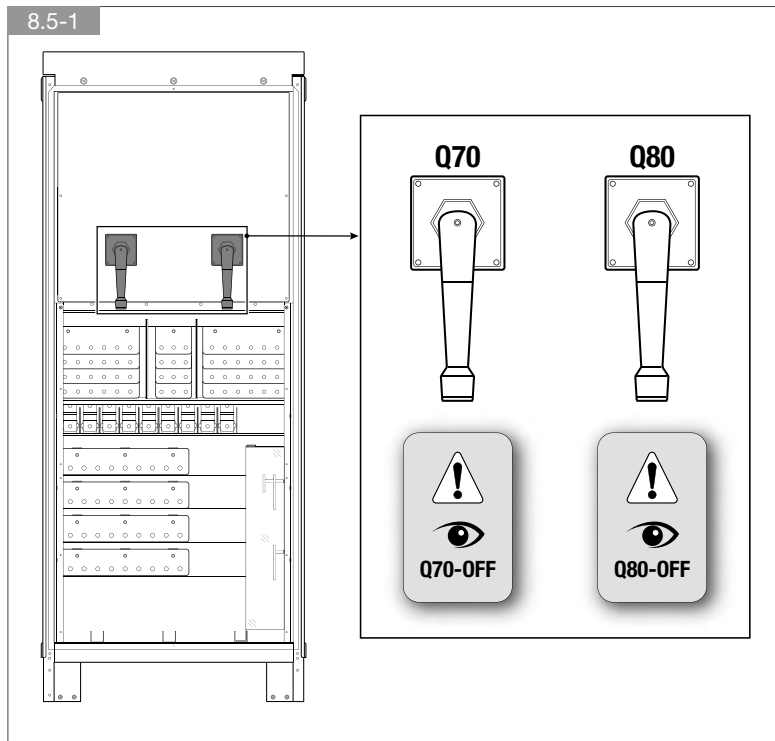
This operation interrupts the supply to the output load from both inverters and automatic bypass.

### UPS POWER OFF

Put the switches **Q70** and **Q80** at position **0** (located on the coupling cabinet).

### REMOTE UPS POWER OFF

If an external main switch is present, it is possible to interrupt the power supply to the output load using the ADC board. Refer to 'Standard features and options' chapter.



## 9. OPERATING MODES

### 9.1. ON LINE MODE

A special feature of the UPS is the ONLINE double conversion in conjunction with low distortion mains power absorption. In ON LINE mode, the UPS can supply a voltage that is fully stabilised in frequency and amplitude, regardless of any interference in the mains power supply, within the most stringent classification of UPS regulations.

ONLINE operation provides three operating modes according to mains and load conditions:

- **Inverter mode**

This is the most frequent operating condition: energy is drawn from the primary mains power supply and converted and used by the inverter to generate the output voltage to power the connected loads.

The inverter is constantly synchronised in frequency with the auxiliary mains to enable load transfer (due to an overload or inverter shutdown) without any break in the power supply to the load.

The battery charger supplies the energy required to maintain or recharge the battery.

- **Bypass mode**

In the event of inverter failure, the load is automatically transferred onto the auxiliary mains without any interruption in the power supply.

This procedure may occur in the following situations:

- in the event of a temporary overload, the inverter continues to power the load. If the condition persists, the UPS output is switched on to the auxiliary mains via automatic bypass. Normal operation, which is from the inverter, returns automatically a few seconds after the overload disappears.
- When the voltage generated by the inverter goes outside the limits due to a major overload or a fault on the inverter.
- When the internal temperature exceeds the maximum value allowed.

- **Battery mode**

In the event of a mains failure (micro interruptions or extended power cuts), the UPS continues to power the load using the energy stored in the battery.

### 9.2. HIGH EFFICIENCY MODE

The UPS has a selectable, programmable economy operating mode (ECO MODE) that can increase overall efficiency by up to 99% for energy saving purposes. If the power supply fails, the UPS will automatically switch onto the inverter and continue to supply power to the load by drawing energy from the battery.

This mode does not provide perfect stability in frequency and voltage like the NORMAL MODE. Therefore the use of this mode should be carefully evaluated according to the level of protection required by the application. With the optional board Net Vision specific daily or weekly time intervals can be selected and programmed to power applications directly from the auxiliary mains.

ECO MODE operation provides very high efficiency, since the application is powered directly from the auxiliary mains via the automatic bypass under normal operating conditions.

To activate follow the correct procedure in the control panel.

### 9.3. CONVERTER MODE

In converter mode the UPS can supply a fully stabilised sinusoidal output voltage with a different frequency from the input power line (50Hz or 60Hz is available as output frequency value).



**NOTE!**

Only set this mode on UPS units with the auxiliary mains (AUX MAINS) disconnected! Do not set this mode on UPS units with common mains lines as it could damage the load!

### 9.4. OPERATION WITH MAINTENANCE BYPASS

If the internal maintenance bypass is activated using the appropriate procedure, the load is powered directly from the maintenance bypass, while the UPS is separate from the power supply and can be switched off.

This operating mode can be selected for maintenance to be carried out on the system, so that the necessary actions can be performed by service personnel without having to disconnect the power supply to the load.

### 9.5. OPERATION WITH MOTOR GENERATOR (GENSET)

The UPS can be operated in conjunction with a generator (GENSET) over the ADC interface (refer to 'Standard features and option' chapter). With a generator, the frequency and voltage ranges of the auxiliary mains can be increased to accept the instability of the GE and at the same time to avoid operation from the battery or risks of out-of-synchronisation switching on to the bypass.

## 10. STANDARD FEATURES AND OPTIONS

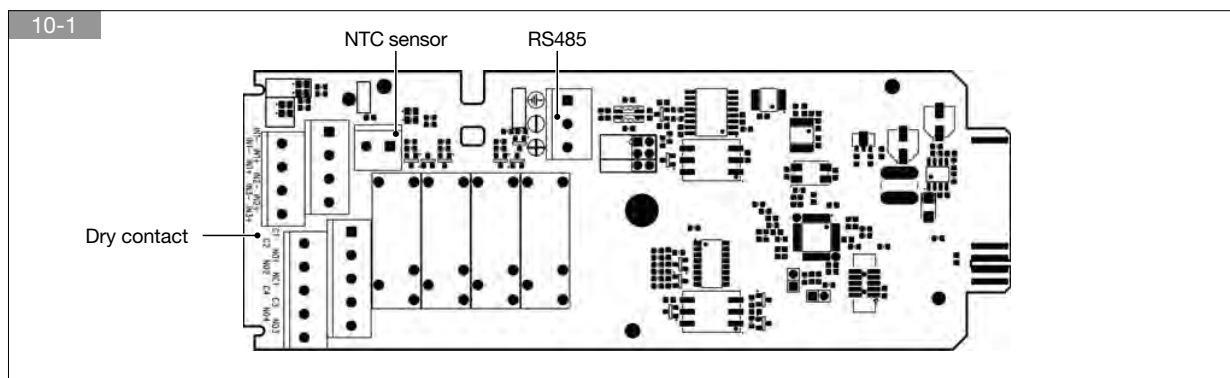
Features	Type	Availability
ADC+SL card	Communication	Available as option
Net Vision card	Communication	Available as option
MODBUS RTU / MODBUS TCP	Communication	Available as option
Top air exhausted	Mechanical	Available as option
Top entry cables	Mechanical	Available as option
Kit cable	Electrical	Available as option

### ADC+SL CARD

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

- 4 relays for external device activation (can be set as normally closed or normally open)
- 3 free inputs to report external contacts to UPS
- 1 connector for external temperature sensor<sup>(1)</sup> (optional)
- RS485 insulated serial link providing MODBUS RTU protocol
- 2 leds indicating the board status

The board is plug&play: the UPS is able to recognize its presence and configuration (up to 4 standard operating modes can be selected using the two jumpers XJ2 and XJ3, refer to the UPS manual for more details) and manages the ADC outputs and the inputs accordingly. It's possible to create a custom operation mode through XpertSoft tool.



STANDARD configuration (default) XJ2: OFF - XJ3: OFF			
IN/OUT	Description	Filter (s)	Status
IN1	UPS Power Off	1	NO
IN2	Supply from GenSet	1	NC
IN3	Insulation Fault	10	NC
OUT1	General Alarm	10	NO/NC
OUT2	Battery Discharging	30	NO
OUT3	Battery Low / Imminent UPS stop alarm	10	NO
OUT4	Load on Bypass	10	NO

OPTIONS SUPERVISOR configuration XJ2: ON - XJ3: OFF			
IN/OUT	Description	Filter (s)	Status
IN1	UPS Power Off	1	NO
IN2	Fan Failure	10	NO
IN3	Battery disconnected	10	NC
OUT1	General Alarm	10	NO/NC
OUT2	Battery Discharging	30	NO
OUT3	Redundancy lost	10	NO
OUT4	Battery disconnected	1	NO



SAFETY configuration XJ2: OFF - XJ3: ON			
IN/OUT	Description	Filter (s)	Status
IN1	UPS Power Off	1	NO
IN2	Insulation Fault	1	NC
IN3	Charger Disable/Enable	10	NC
OUT1	General Alarm	10	NO/NC
OUT2	UPS Power Off activated	1	NO
OUT3	Battery Low / Imminent UPS stop alarm	10	NO
OUT4	Insulation Fault	1	NO

ENVIRONMENTAL configuration XJ2: ON - XJ3: ON			
IN/OUT	Description	Filter (s)	Status
IN1	UPS Power Off	1	NO
IN2	Programmable Alarm	10	NC
IN3	Battery Temperature Alarm	10	NC
OUT1	General Alarm	10	NO/NC
OUT2	Battery Temperature Alarm	10	NO
OUT3	Overload or Redundancy lost	10	NO
OUT4	Programmable Alarm	10	NO

(1). The ADC card has the possibility of connecting an external NTC sensor, to measure the external battery cabinet temperature.

### NET VISION CARD

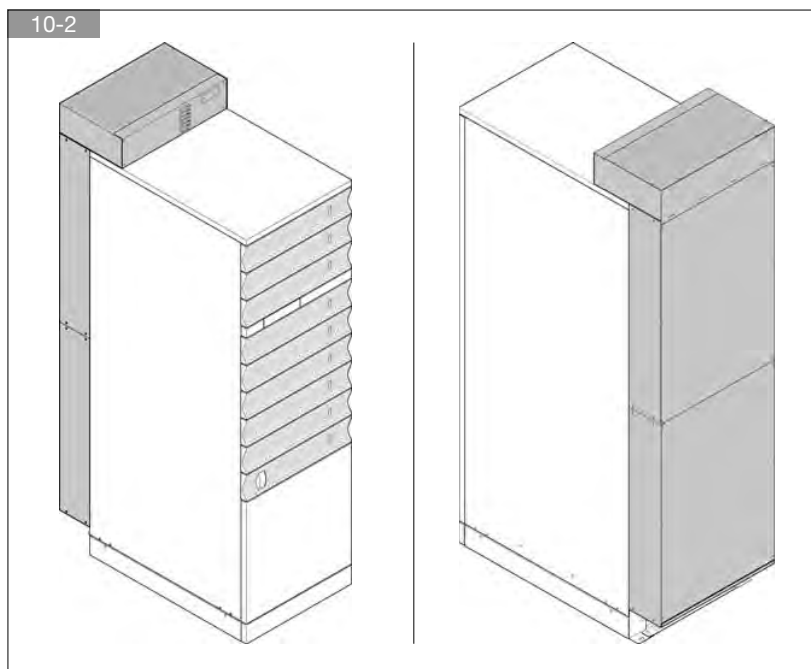
NET VISION is a communication and management interface designed for business networks. The UPS behaves exactly like a networked peripheral, it can be managed remotely, and allows the shutdown of network workstations.

NET VISION allows a direct interface between the UPS and LAN network avoiding dependence on the server and support SMTP, SNMP, DMCP and many other protocols. it interacts via the web browser.

### MODBUS RTU / MODBUS TCP

With the RTU/TCP card fitted in the options slot, the UPS can be monitored from remote stations using the appropriate protocol (RTU/TCP).

### TOP AIR EXHAUST



# 11. MAINTENANCE



## NOTE!

Before carrying out any operations on the unit read the Safety standards chapter carefully.



## NOTE!

Any work carried out on the equipment must be performed by qualified technicians authorised by SOCOMEC.

Routine maintenance carried out annually is recommended in order to provide optimum operating efficiency and avoid dequpment downtime.

Maintenance consists of thorough functionality checks on:

- electronic and mechanical parts;
- dust removal;
- battery inspection;
- software updating;
- environmental checks.

## BATTERIES

The condition of the battery is fundamental to UPS operation.

During the operating lifetime of the battery, the UPS stores statistics on the conditions of use of the battery for analysis.

The expected life time of the batteries is very much dependent on operating conditions:

- number of charging and discharging cycles;
- load rate;
- temperature.



## NOTE!

Batteries must only be replaced with batteries recommended or sold by the manufacturer. Batteries must only be replaced by qualified technicians.



## BEWARE!

Used batteries contain harmful substances. Do not open the plastic cover!



## NOTE!

Used batteries have to be placed in the appropriate containers to avoid leakage acid. They should only be entrusted to a specialist waste disposal company.

## FANS & CAPACITORS

The lifespan of consumable parts such as fans and capacitors (AC and DC) depends on whether or not the use and environmental conditions (premises, usage or load type) are abnormal or harsh for the equipment.

It is advisable to replace consumables as follows<sup>(1)</sup>:

Consumable part	Years
Fan	5
AC and DC capacitor	5

1. Based on operation of the unit according to the manufacturer's specification.

## 12. TECHNICAL SPECIFICATIONS

Model		M4-C-400-83-0	M4-C-600-83-0
Power	kW	400	600
Power	kVA	400	600
Input			
Input mains voltage		3ph + N 340 V to 480 V (+20/-15%) up to -40% @ 50% of nominal load	
Input mains frequency	Hz	50/60 +/-10%	
Input power factor		≥ 0.99 <sup>(1)</sup>	
Total harmonic input current distortion (THDi)		≤ 3% (@: Pn, Resistive load, Mains THDv ≤ 1%)	
Output			
Output voltage (three phase + neutral)	V	380/400/415 <sup>(2)</sup> selectable	
Frequency	Hz	50/60 selectable	
Total output voltage distortion (THDv)	%	≤ 1% (Ph/Ph); ≤ 2% (Ph/N) (@: Pn, Resistive load)	
Overload <sup>(3)</sup>	%	125% for 10 minutes, 150% for 1 minute	
Crest Factor		≥ 2.7	
Bypass			
Bypass input voltage	V	Nominal output voltage ±15% (±20% if GENSET is used)	
Bypass input frequency	Hz	50/60 +/-2% selectable (±8% if GENSET is used)	
Stored energy mode of operation			
Number of battery blocks (VRLA)		From 18+18 to 24+24	
Environmental			
Operating temperature	°C	0 to 35 °C <sup>(4)(5)</sup>	
Storage temperature	°C	-5 to +50 °C	
Relative humidity	%	95% condensation-free	
Altitude (max)	m	1000 ( 3000 with derating)	
Acoustic noise at 1m	dBA	61	64
Required cooling capacity	m³/h	7300	10500
Dissipated power (max)	W	27500	39500
Dissipated power (max)	BTU/h	93870	134800
Dimensions and Weight			
Coupling Dimensions (W x D x H)	mm	810 x 890 x 1975	
Coupling	kg	327	
Unit Dimensions (W x D x H)	mm	600 x 890 x 1975	
Unit empty cabinet	kg	228	
UPS module	kg	33	
Bypass module	kg	25	
Standard			
Safety		IEC 62040-1	
EMC		IEC 62040-2 (C2)	
Performance		IEC 62040-3 (VFI-SS-111)	
Product Certifications		CE	
Degree of protection standard		IP20	

(1).  $P_{out} \geq 50\% S_n$ .

(2). 360 V with  $P_{out} = 90\% P_n$ .

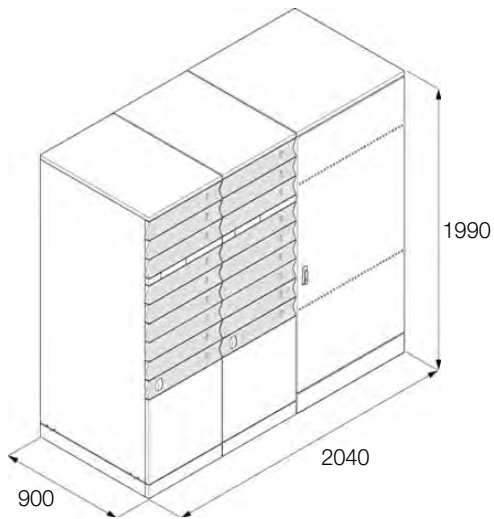
(3). Initial Condition  $P_{out} \leq 80\% P_n$

(4). For best battery lifetime the suggested temperature range is  $15\text{ °C} \div 25\text{ °C}$ .

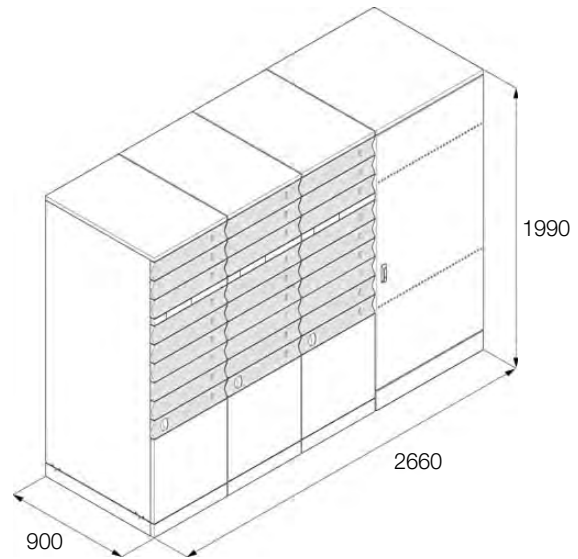
(5). According to EN62040-3

## 12. TECHNICAL SPECIFICATIONS

12-1 MODULYS GP 400 kVA



12-2 MODULYS GP 600 kVA



ENGLISH





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