

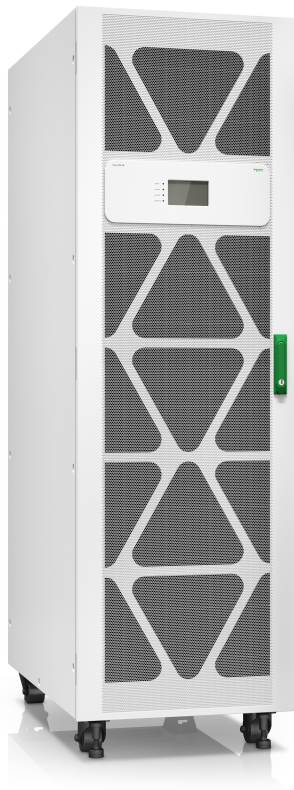
# Easy UPS 3M

## For Internal Batteries

### Installation

60-80 kVA 400 V

09/2019



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# Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

## DANGER

**DANGER** indicates a hazardous situation which, if not avoided, **will result in death or serious injury.**

**Failure to follow these instructions will result in death or serious injury.**

## WARNING

**WARNING** indicates a hazardous situation which, if not avoided, **could result in death or serious injury.**

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

## CAUTION

**CAUTION** indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury.**

**Failure to follow these instructions can result in injury or equipment damage.**

## NOTICE

**NOTICE** is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

**Failure to follow these instructions can result in equipment damage.**

## Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

## Electromagnetic Compatibility

### **NOTICE**

#### **RISK OF ELECTROMAGNETIC DISTURBANCE**

This is a product Category C3 according to IEC 62040-2. This is a product for commercial and industrial applications in the second environment - installation restrictions or additional measures may be needed to prevent disturbances. The second environment includes all commercial, light industry, and industrial locations other than residential, commercial, and light industrial premises directly connected without intermediate transformer to a public low-voltage mains supply. The installation and cabling must follow the electromagnetic compatibility rules, e.g.:

- the segregation of cables,
- the use of shielded or special cables when relevant,
- the use of grounded metallic cable tray and supports.

**Failure to follow these instructions can result in equipment damage.**

## Safety Precautions

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

All safety instructions in this document must be read, understood and followed.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Read all instructions in the Installation Manual before installing or working on this UPS system.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not install the UPS system until all construction work has been completed and the installation room has been cleaned.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- The product must be installed according to the specifications and requirements as defined by Schneider Electric. It concerns in particular the external and internal protections (upstream breakers, battery breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.
- After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

The UPS system must be installed according to local and national regulations. Install the UPS according to:

- IEC 60364 (including 60364-4-41 - protection against electric shock, 60364-4-42 - protection against thermal effect, and 60364-4-43 - protection against overcurrent), or
- NEC NFPA 70, or
- Canadian Electrical Code (C22.1, Part 1)

depending on which one of the standards apply in your local area.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Install the UPS system in a temperature controlled indoor environment free of conductive contaminants and humidity.
- Install the UPS system on a non-flammable, level and solid surface (e.g. concrete) that can support the weight of the system.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

The UPS is not designed for and must therefore not be installed in the following unusual operating environments:

- Damaging fumes
- Explosive mixtures of dust or gases, corrosive gases, or conductive or radiant heat from other sources
- Moisture, abrasive dust, steam or in an excessively damp environment
- Fungus, insects, vermin
- Salt-laden air or contaminated cooling refrigerant
- Pollution degree higher than 2 according to IEC 60664-1
- Exposure to abnormal vibrations, shocks, and tilting
- Exposure to direct sunlight, heat sources, or strong electromagnetic fields

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not drill or cut holes for cables or conduits with the gland plates installed and do not drill or cut holes in close proximity to the UPS.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ WARNING**

**HAZARD OF ARC FLASH**

Do not make mechanical changes to the product (including removal of cabinet parts or drilling/cutting of holes) that are not described in the Installation Manual.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

**NOTICE****RISK OF OVERHEATING**

Respect the space requirements around the UPS system and do not cover the product's ventilation openings when the UPS system is in operation.

**Failure to follow these instructions can result in equipment damage.**

**NOTICE****RISK OF EQUIPMENT DAMAGE**

Do not connect the UPS output to regenerative load systems including photovoltaic systems and speed drives.

**Failure to follow these instructions can result in equipment damage.**

**Electrical Safety****⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Turn off all power supplying the UPS system before working on or inside the equipment.
- Before working on the UPS system, check for hazardous voltage between all terminals including the protective earth.
- The UPS contains an internal energy source. Hazardous voltage can be present even when disconnected from the mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- A disconnection device (e.g. disconnection circuit breaker or switch) must be installed to enable isolation of the system from upstream power sources in accordance with local regulations. The disconnection device must be easily accessible and visible.
- The UPS must be properly earthed/grounded and due to a high leakage current, the earthing/grounding conductor must be connected first.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

In systems where backfeed protection is not part of the standard design, an automatic isolation device (backfeed protection option or other device meeting the requirements of IEC/EN 62040–1 or UL1778 5th Edition – depending on which of the two standards apply to your local area) must be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must open within 15 seconds after the upstream power supply fails and must be rated according to the specifications.

**Failure to follow these instructions will result in death or serious injury.**

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to the equipment or is connected to an IT power distribution system, a label must be fitted at the UPS input terminals, and on all primary power isolators installed



remote from the UPS area and on external access points between such isolators and the UPS, by the user, displaying the following text (or equivalent in a language which is acceptable in the country in which the UPS system is installed):

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Risk of Voltage Backfeed. Before working on this circuit: Isolate the UPS and check for hazardous voltage between all terminals including the protective earth.

**Failure to follow these instructions will result in death or serious injury.**

## Battery Safety

**⚡⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Battery circuit breakers must be installed according to the specifications and requirements as defined by Schneider Electric.
- Servicing of batteries must only be performed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Do not dispose of batteries in a fire as they can explode.
- Do not open, alter, or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

**Failure to follow these instructions will result in death or serious injury.**

**⚡⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Batteries can present a risk of electric shock and high short-circuit current. The following precautions must be observed when working on batteries

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- Wear protective glasses, gloves and boots.
- Do not lay tools or metal parts on top of batteries.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.
- Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electric shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

**Failure to follow these instructions will result in death or serious injury.**

**⚡⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

When replacing batteries, always replace with the same type and number of batteries or battery packs.

**Failure to follow these instructions will result in death or serious injury.**

**NOTICE****RISK OF EQUIPMENT DAMAGE**

- Wait until the system is ready to be powered up before installing batteries in the system. The time duration from battery installation until the UPS system is powered up must not exceed 72 hours or 3 days.
- Batteries must not be stored more than six months due to the requirement of recharging. If the UPS system remains de-energized for a long period, Schneider Electric recommends that you energize the UPS system for a period of 24 hours at least once every month. This charges the batteries, thus avoiding irreversible damage.

**Failure to follow these instructions can result in equipment damage.**

# Specifications

## Input Specifications

	60 kVA			80 kVA		
<b>Voltage (V)</b>	<b>380</b>	<b>400</b>	<b>415</b>	<b>380</b>	<b>400</b>	<b>415</b>
Connections	L1, L2, L3, N, PE					
Input voltage range (V)	342–477 at full load <sup>1</sup>					
Frequency range (Hz)	40–70					
Nominal input current (A)	96	91	88	128	122	117
Maximum input current (A)	109	104	100	154	146	141
Input current limitation (A)	155			206		
Total harmonic distortion (THDI)	<3% for linear loads					
Input power factor	> 0.99					
Maximum short circuit rating	10 kA RMS					
Protection	Fuse					
Ramp-in	7 seconds					

## Bypass Specifications

	60 kVA			80 kVA		
<b>Voltage (V)</b>	<b>380</b>	<b>400</b>	<b>415</b>	<b>380</b>	<b>400</b>	<b>415</b>
Connections	L1, L2, L3, N, PE					
Overload capacity	110% for 60 minutes 130% for 10 minutes 130–150% for 1 minute					
Minimum bypass voltage (V)	266	280	291	266	280	291
Maximum bypass voltage (V)	475	480	477	475	480	477
Frequency (Hz)	50 or 60					
Frequency range (%)	±1, ±2, ±4, ±5, ±10. Default is ±10 (user selectable).					
Nominal bypass current (A)	91	87	83	122	115	111
Maximum short circuit rating	10 kA RMS					

## Output Specifications

	60 kVA			80 kVA		
<b>Voltage (V)</b>	<b>380</b>	<b>400</b>	<b>415</b>	<b>380</b>	<b>400</b>	<b>415</b>
Connections	L1, L2, L3, N, PE					
Overload capacity <sup>2</sup>	110% for 60 minutes 125% for 10 minutes 150% for 1 minute					
Output voltage regulation	± 1%					

1. 150–342 V with a linear derating of the load to 30%.  
2. At 30 °C.

	60 kVA			80 kVA		
	380	400	415	380	400	415
Dynamic load response	20 milliseconds					
Output power factor	1.0					
Nominal output current (A)	91	87	83	122	115	111
Total harmonic distortion (THDU)	<3% at 100% linear load <5% at 100% non-linear load					
Output frequency (Hz)	50 or 60					
Slew rate (Hz/sec)	Programmable: 0.5 to 2.0. Default is 0.5					
Output performance classification (according to IEC/ EN62040-3)	VFI-SS-111					
Load power factor	0.5 leading to 0.5 lagging without derating					

## Battery Specifications

	60 kVA	80 kVA
Charging power in % of output power	1–16%	1–24%
Maximum charging power (kW)	9600	19200
Nominal battery voltage (40 blocks) (VDC)	± 240	
Nominal float voltage (40 blocks) (VDC)	± 270	
End of discharge voltage (40 blocks) (VDC)	± 192	
Battery current at full load and nominal battery voltage (A)	133	176
Battery current at full load and minimum battery voltage (A)	166	222
Temperature compensation (per cell)	Programmable from 0–7 mV. Default is 0 mV	
Ripple current	< 5% C10	

## Recommended Upstream Protection

**NOTE:** For local directives which require 4–pole circuit breakers: If neutral conductor is expected to carry a high current, due to line-neutral non-linear load, the circuit breaker must be rated according to expected neutral current.

	60 kVA		80 kVA	
	Input	Bypass	Input	Bypass
Breaker type	Compact NSX160F TM125D (LV430631)	Compact NSX100F TM100D (LV429630)	Compact NSX160F TM160D (LV430630)	Compact NSX160F TM160D (LV430630)
In setting	125	100	160	160
Ir setting	125	100	160	144
Im setting	800 (fixed)	800 (fixed)	1250 (fixed)	1250 (fixed)

## Recommended Cables Sizes

<b>⚠ DANGER</b>
<b>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</b> All wiring must comply with all applicable national and/or electrical codes. The maximum allowable cable size is 50 mm <sup>2</sup> . <b>Failure to follow these instructions will result in death or serious injury.</b>

Cable sizes in this manual are based on table B.52.5 of IEC 60364–5–52 with the following assertions:

- 90 °C conductors
- An ambient temperature of 30 °C
- Use of copper conductors
- Installation method C

PE size is based on table 54.2 of IEC 60364–4–54.

If the ambient temperature is greater than 30 °C, larger conductors are to be used in accordance with the correction factors of the IEC.

### 60 kVA UPS

	Cable Size per Phase (mm <sup>2</sup> )	Neutral Cable Size (mm <sup>2</sup> ) <sup>3</sup>	PE Cable Size (mm <sup>2</sup> )
Input	35	2x25	16
Bypass	25		16
Output	25	2x25	16
Battery	50	50	25

### 80 kVA UPS

	Cable Size per Phase (mm <sup>2</sup> )	Neutral Cable Size (mm <sup>2</sup> ) <sup>3</sup>	PE Cable Size (mm <sup>2</sup> )
Input	50	2x50	25
Bypass	50		25
Output	50	2x50	25
Battery	2x50	2x50	50

## Recommended Bolts and Cable Lugs

Cable Size (mm <sup>2</sup> )	Bolt Size	Cable Lug Type
16	M8	KST TLK16-8
25	M8	KST TLK25-8
35	M8	KST TLK35-8
50	M8	KST TLK50-8

3. Neutral conductor is sized to handle 1.73 times phase current in case of high harmonic content from non-linear loads. If non or less harmonic currents are expected, neutral conductor can be sized accordingly but not less than the phase conductor.

## Torque Specifications

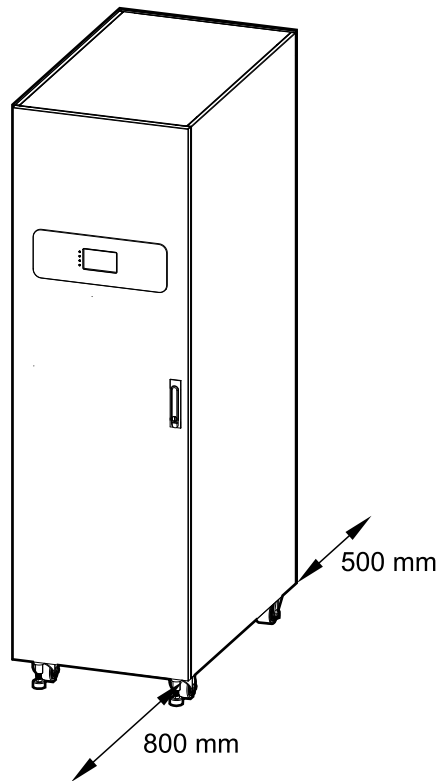
Bolt Size	Torque
M8	17.5 Nm

## UPS Weights and Dimensions

UPS	Weight kg	Height mm	Width mm	Depth mm
60 kVA	311	1970	600	1000
80 kVA	339	1970	600	1000

## Clearance

**NOTE:** Clearance dimensions are published for airflow and service access only. Consult with the local safety codes and standards for additional requirements in your local area.



## Environmental

	Operation	Storage
Temperature	0 °C to 40 °C	-15 °C to 40 °C for systems with batteries -25 °C to 55 °C for systems without batteries
Relative humidity	0–95% non-condensing	
Elevation derating according to IEC 62040–3	Power derating factor: 0–1500 m: 1.000 1500–2000 m: 0.975	< 15000 m above sea level (or in an environment with equivalent air pressure)
Audible noise	<65 dBA at full load and an ambient temperature of 30 °C <sup>4</sup>	
Protection class	IP20 (dust filter as standard)	
Color	RAL 9003	

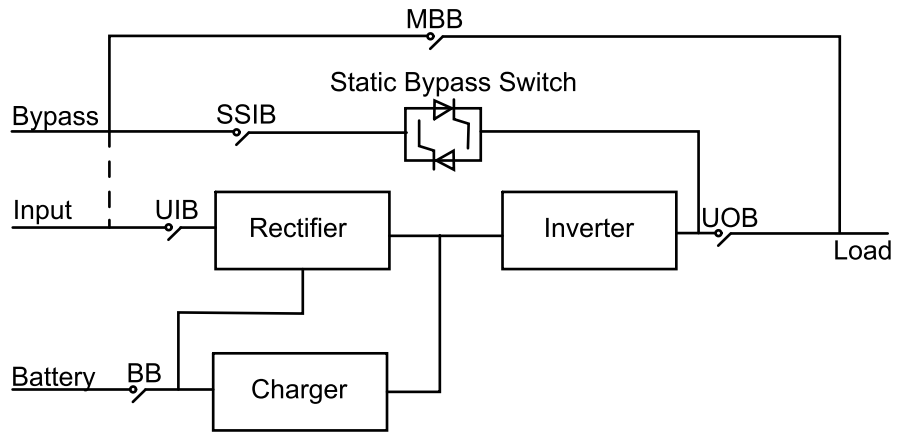
## Heat Dissipation

	60 kVA		80 kVA	
	W	BTU/hr	W	BTU/hr
Normal operation	3084	10523	4296	14659
Battery operation	2958	10093	4352	14850
ECO mode	540	1843	696	2375

4. According to ISO 3746.

# Overview

## Overview of Single UPS



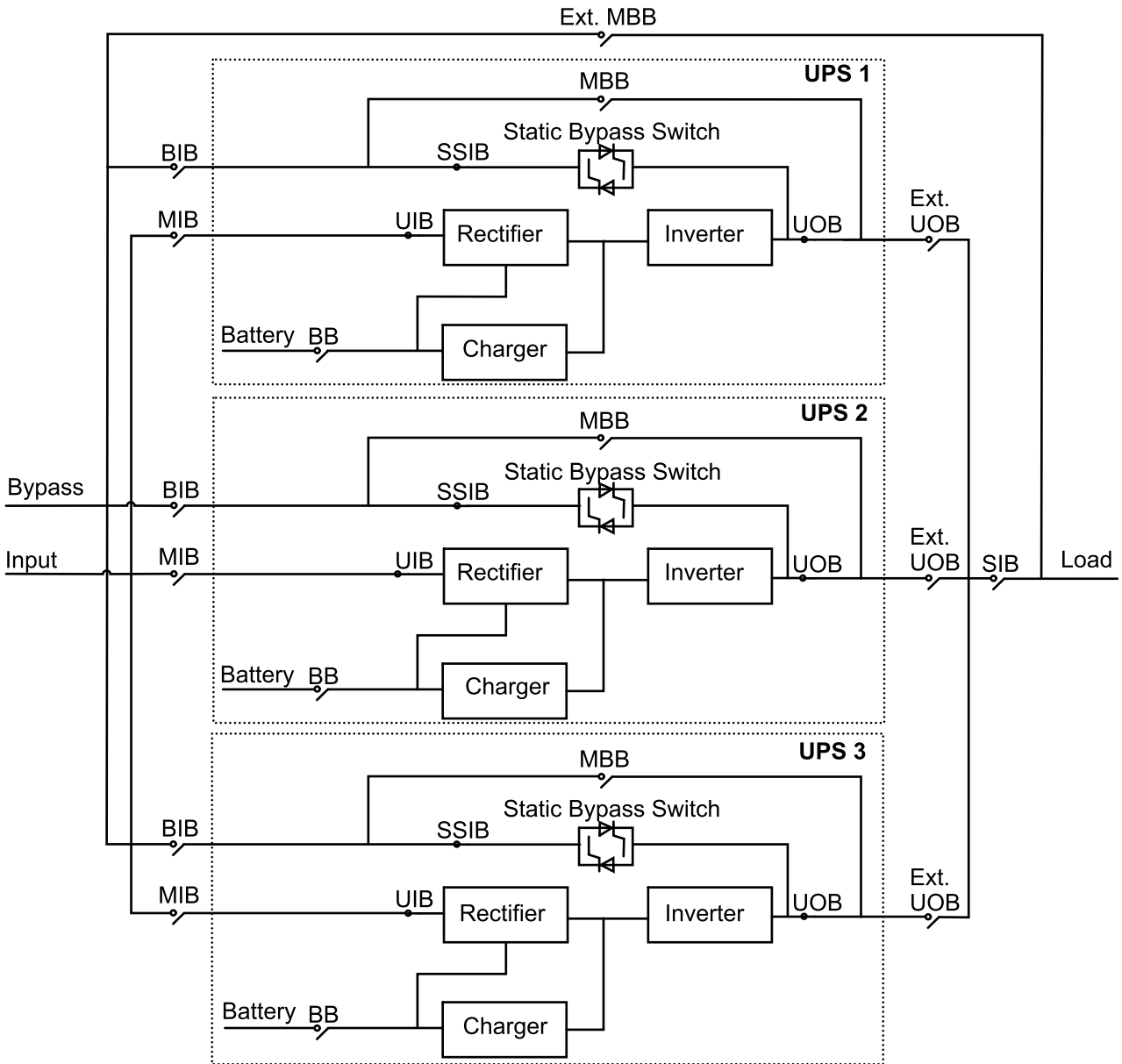
UIB	Unit input breaker
SSIB	Static switch input breaker
UOB	Unit output breaker
MBB	Maintenance bypass breaker
BB	Battery breaker



# Overview of Parallel System

**NOTE:** In parallel systems with an external maintenance bypass breaker Ext. MBB, the maintenance bypass breakers MBB must be padlocked in the open position.

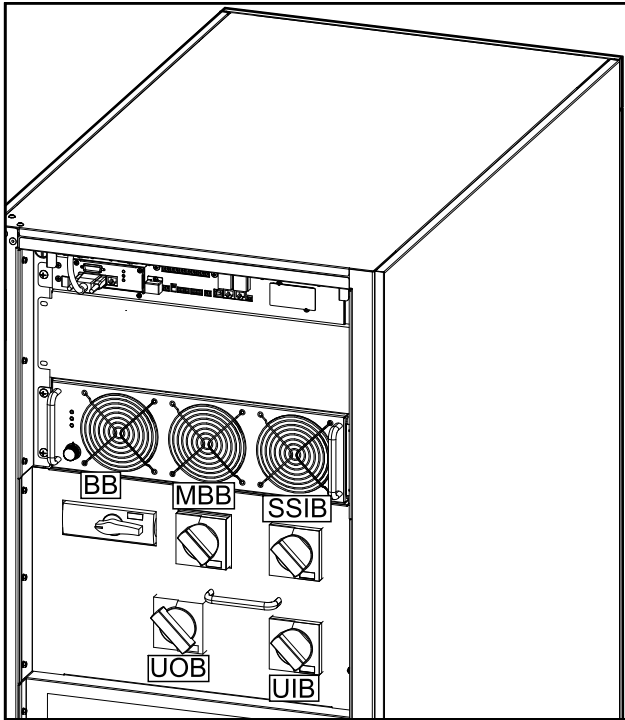
## UPSs for Internal Batteries



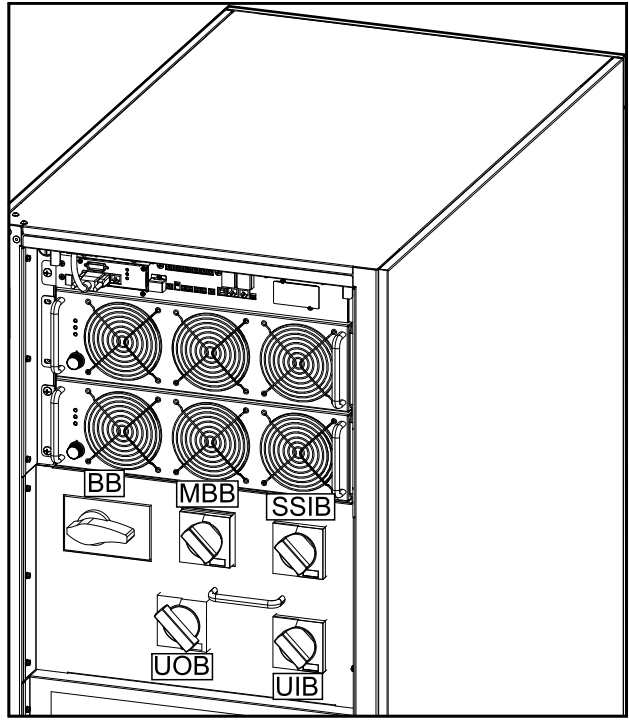
MIB	Mains input breaker
BIB	Bypass input breaker
UIB	Unit input breaker
SSIB	Static switch input breaker
UOB	Unit output breaker
Ext. UOB	External unit output breaker
MBB	Maintenance bypass breaker
Ext. MBB	External maintenance bypass breaker
SIB	System isolation breaker
BB	Battery breaker

# Location of Breakers

Front View of the 60 kVA UPS for Internal Batteries



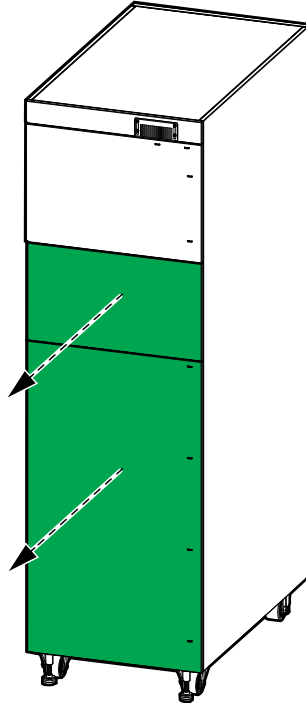
Front View of the 80 kVA UPS for Internal Batteries



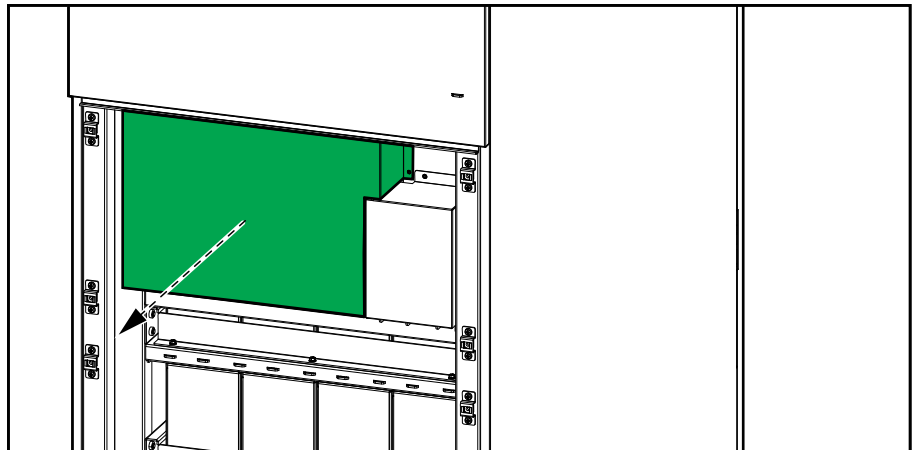
# Connect the Power Cables

1. Ensure that all breakers are in the OFF (open) position.
2. Remove the two bottom rear panels.

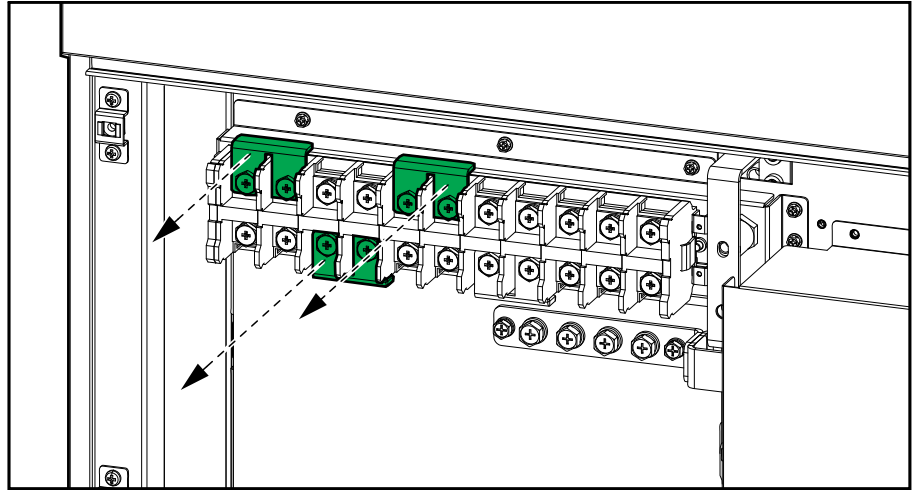
## Rear View of the UPS



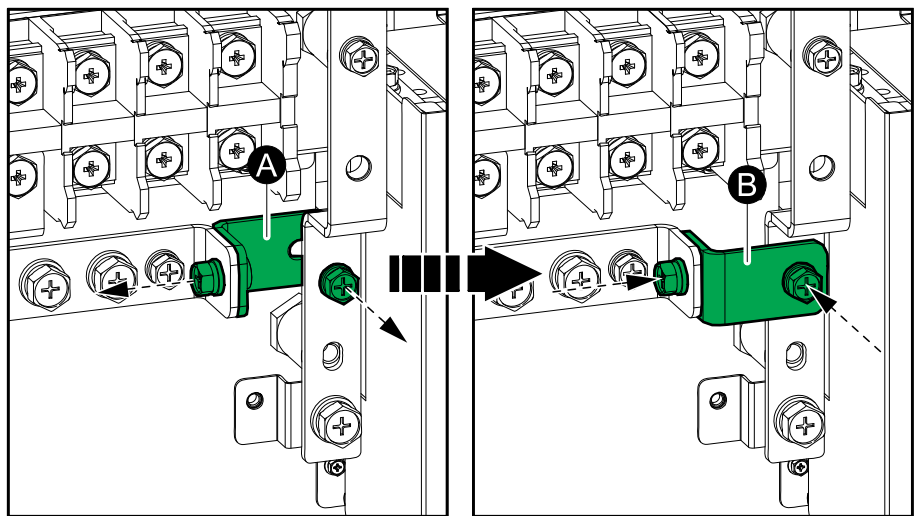
3. Remove the indicated plate.



- In dual mains systems, remove the three single mains brackets.

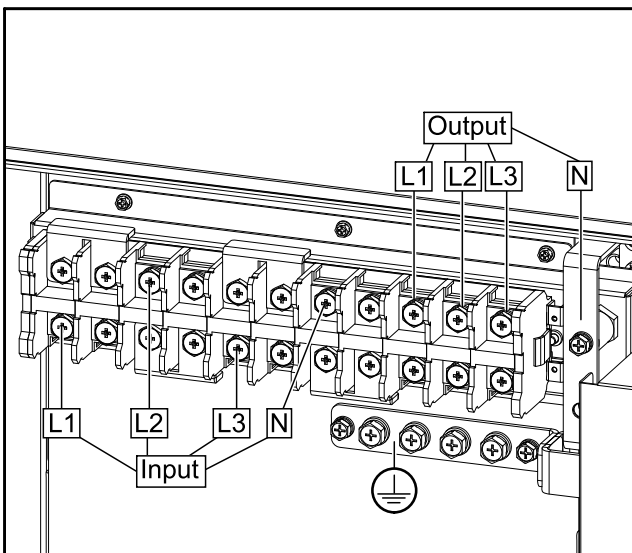


- In TNC systems only, rotate the jumper busbar to create a connection between the PE busbar and the neutral busbar.

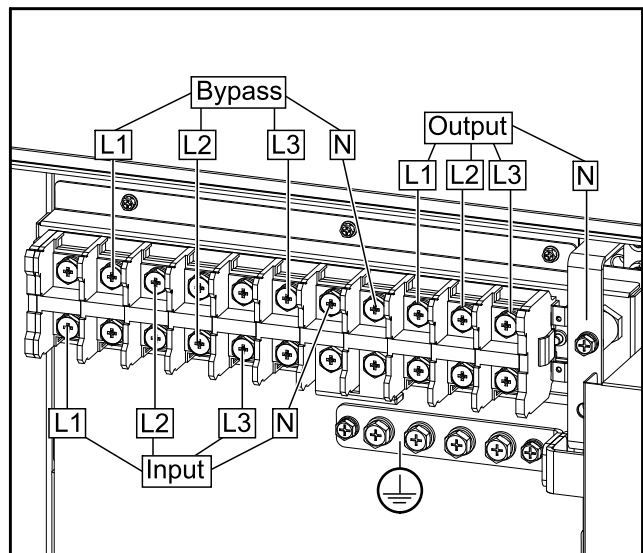


- Route the power cables through the bottom of the UPS.
- Connect the PE cable to the PE terminal.

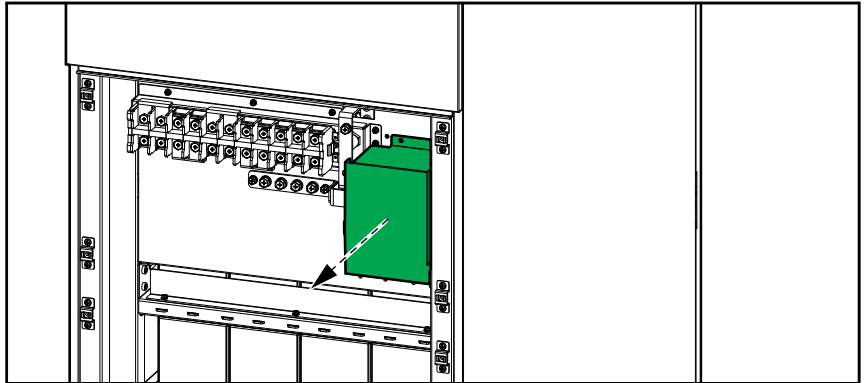
**Single Mains System**



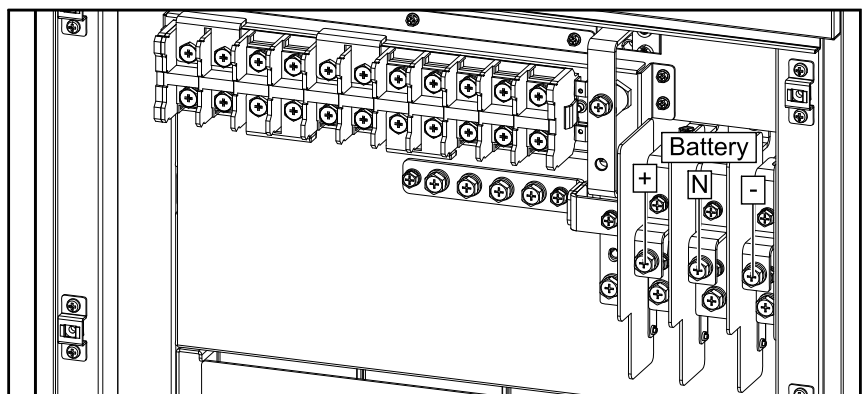
**Dual Mains System**



8. Connect the input, output, and bypass (if applicable) cables.
9. For installation with modular battery cabinets, connect the battery cables:
  - a. Remove the indicated cover.

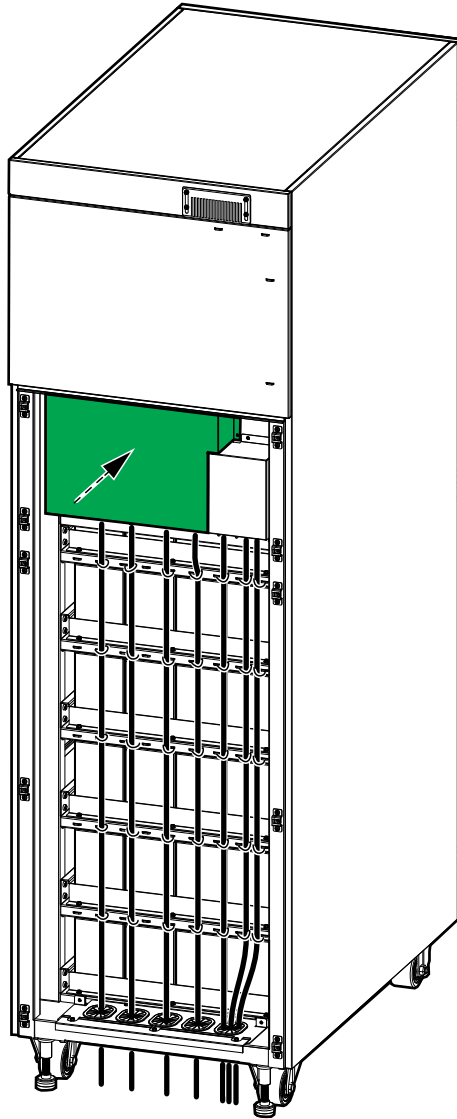


- b. Connect the battery cables.



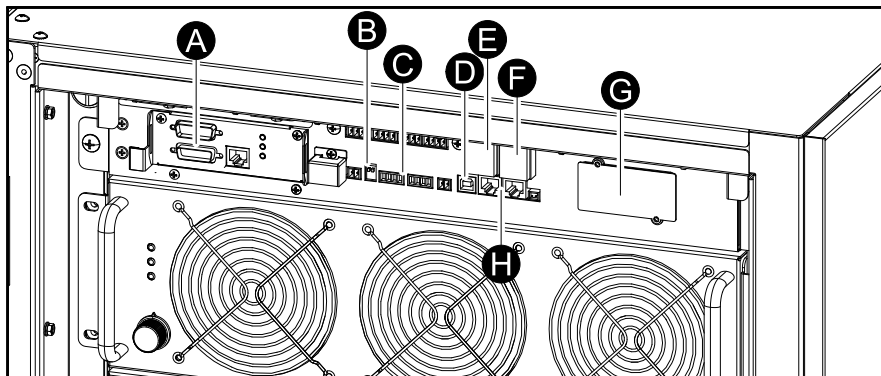
- c. Reinstall the cover over the battery terminals.

10. Fasten the cables to the cable relief in the bottom of the UPS.

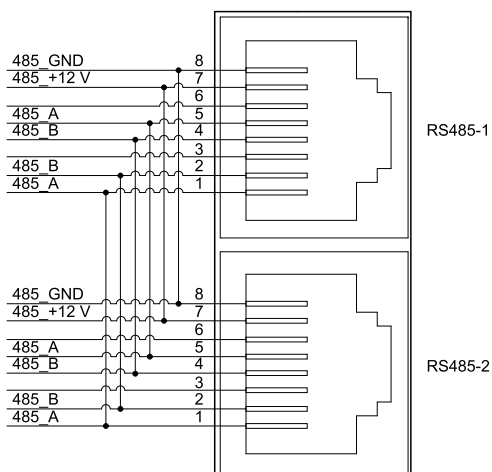


11. Reinstall the plate and the rear panels.

# Communication Interfaces

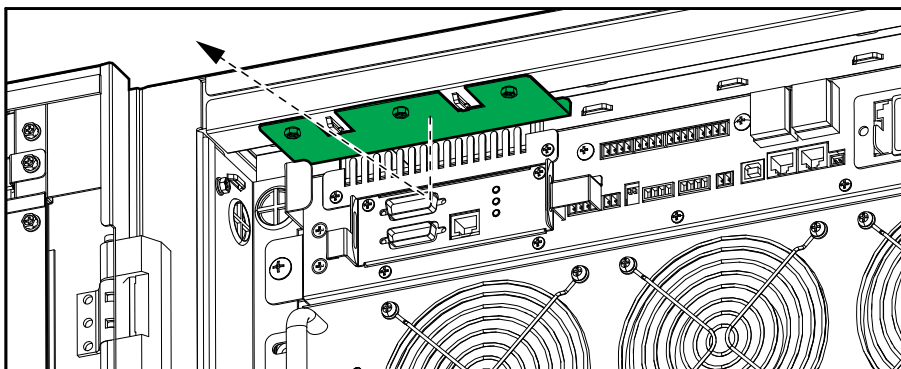


- A. Parallel ports
- B. CAN\_R: CAN termination resistor
- C. Dry contacts
- D. USB port
- E. EPO
- F. Slot for optional cold start button
- G. Slot for optional SNMP
- H. RS485

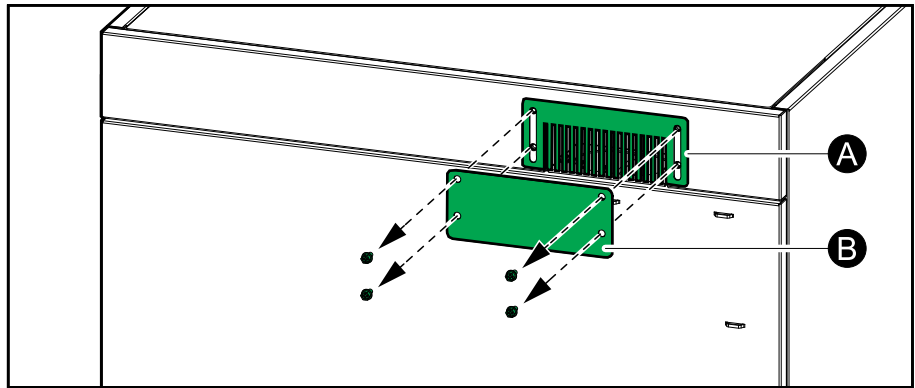


## Route the Signal Cables

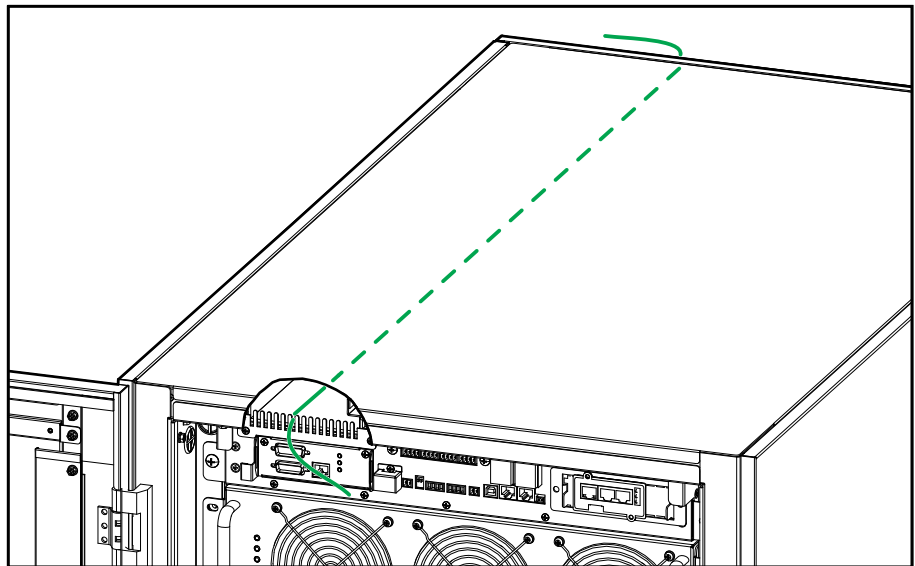
1. Remove the indicated plate from the front of the UPS.



2. Remove the rear gland plate and the rear brush plate from the UPS.



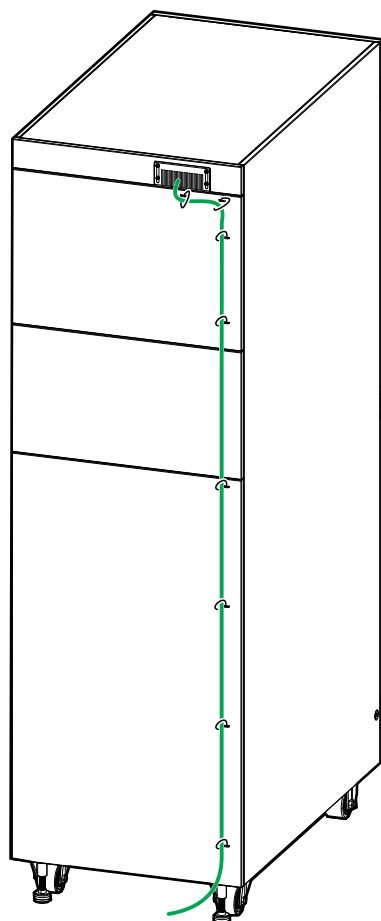
- A. For installations without conduits, reinstall the brush plate.
  - B. For installations with conduits, drill holes for conduits and reinstall the gland plate.
3. Route the signal cables through the gland/brush plate and to the front of the UPS.



4. Reinstall the plate on the front of the UPS.



5. Fasten the signal cables with cable ties on the rear of the UPS.



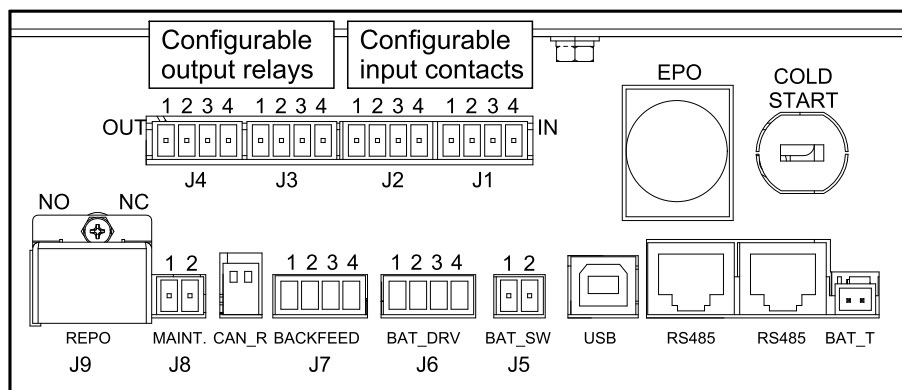
## Input Contacts and Output Relays

**NOTICE**

**RISK OF EQUIPMENT DAMAGE**

The battery breaker contact drive J6-1 and J6-2 can provide a maximum of +24 VDC 400 mA to the undervoltage release coil or shunt trip release coil. If this value is exceeded it can damage the UPS.

**Failure to follow these instructions can result in equipment damage.**

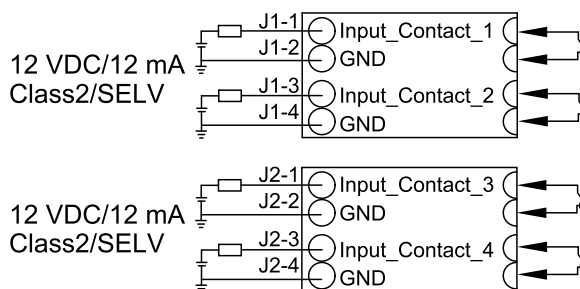


Terminal	Function	
BAT_T-1	Input contact for battery temperature sensor	
BAT_T-2	Signal ground	
J5-1	AUX contact for battery breaker	12 VDC/12 mA Class2/SELV
J5-2	Signal ground	
J6-1	Normally closed output contact for battery breaker trip	24 VDC/400 mA Class2/SELV
J6-2	Normally open output contact for battery breaker trip	
J6-4	Signal ground	
J7-1	Backfeed 1 output relay pin 1 (normally closed (NC) as default)	30 VDC/1 A Class2/SELV
J7-2	Backfeed 1 output relay pin 2 (normally closed (NC) as default)	
J7-3	Backfeed 2 output relay pin 1 (normally closed (NC) as default)	
J7-4	Backfeed 2 output relay pin 2 (normally closed (NC) as default)	
J8-1	AUX contact for external maintenance bypass breaker	12 VDC/12 mA Class2/SELV
J8-2	Signal ground	
J9-1	Normally open EPO contact	<b>NO configuration</b> 12 VDC/12 mA Class2/SELV  <b>NC configuration</b> 12 VDC/12 mA Class2/SELV
J9-2	Signal ground	
J9-3	Normally closed EPO contact	
J9-4	Signal ground	

### Configurable Input Contacts

The four configurable input contacts can be configured from the display with the following functions:

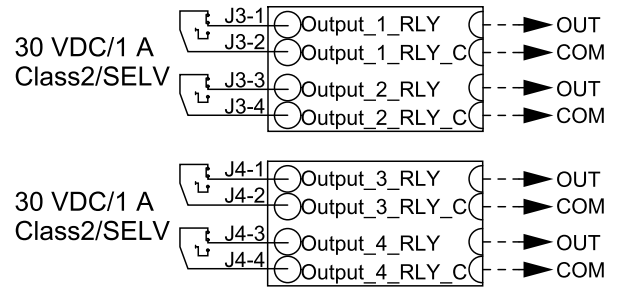
- Disable
- INV ON
- INV OFF
- Battery alarm
- Genset enable
- Custom alarm 3
- Custom alarm 4
- Disable ECO



## Configurable Output Relays

The four configurable output contacts can be configured from the display with the following functions:

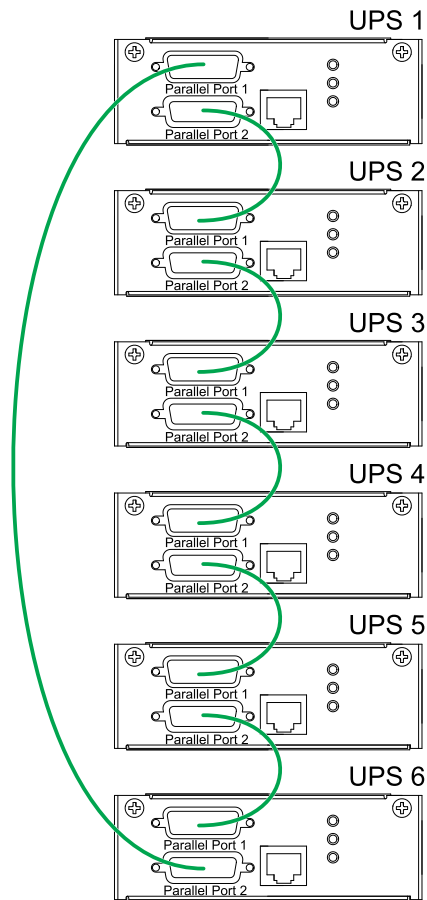
- **Disable**
- **Common alarm**
- **Normal operation**
- **Battery operation**
- **Static bypass operation**
- **Output overload**
- **Fan inoperable**
- **Battery alarm**
- **Battery disconnected**
- **Battery voltage low**
- **Input out of tolerance**
- **Bypass out of tolerance**
- **EPO activated**
- **Maintenance mode**
- **Parallel lost**



## Connect the Parallel Cables in a Parallel System

1. Connect the optional parallel cables between all the UPSs of the parallel system.

**NOTE:** For location of parallel ports see *Communication Interfaces, page 23*.



2. Verify the setting of the CAN\_R (for location of CAN\_R see *Communication Interfaces, page 23*).
  - For parallel systems with  $\leq 4$  parallel UPSs, CAN\_R of all UPSs must be in ON position.
  - For parallel systems with  $\geq 5$  parallel UPSs, CAN\_R of all UPSs must be in OFF position.

# Backfeed Protection

## ⚠ DANGER

### HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

In systems where backfeed protection is not part of the standard design, an automatic isolation device (backfeed protection option or other device meeting the requirements of IEC/EN 62040–1) must be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must open within 15 seconds after the upstream power supply fails and must be rated according to the specifications.

**Failure to follow these instructions will result in death or serious injury.**

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to the equipment or is connected to an IT power distribution system, a label must be fitted at the UPS input terminals, and on all primary power isolators installed remote from the UPS area and on external access points between such isolators and the UPS, by the user, displaying the following text (or equivalent in a language which is acceptable in the country in which the UPS system is installed):

## ⚠ DANGER

### HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Risk of Voltage Backfeed. Before working on this circuit: Isolate the UPS and check for hazardous voltage between all terminals including the protective earth.

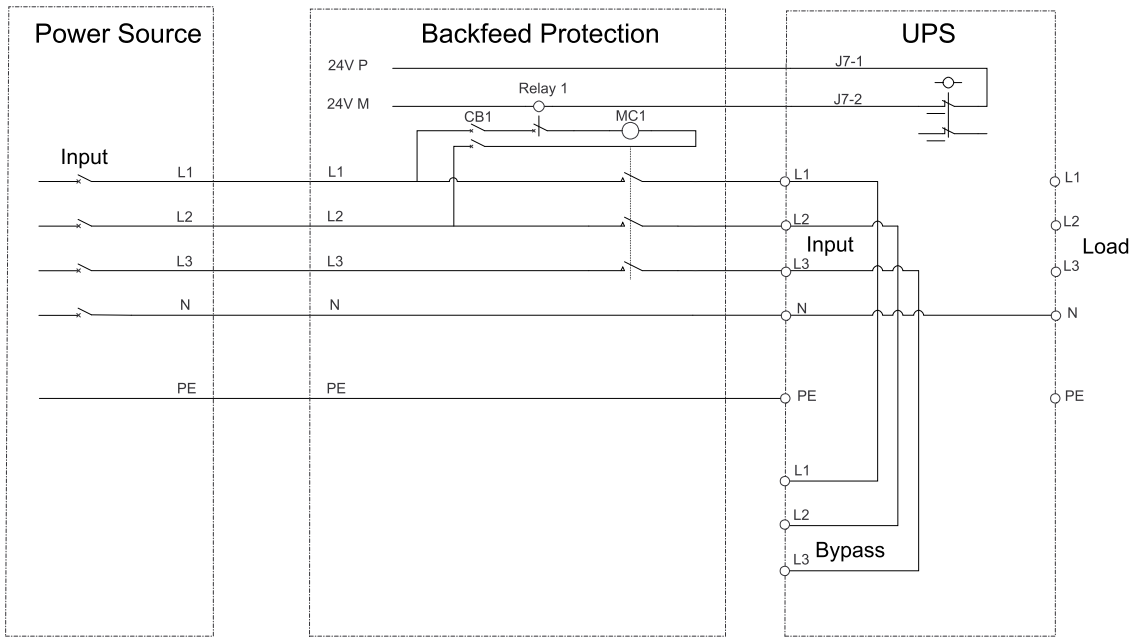
**Failure to follow these instructions will result in death or serious injury.**

An additional external isolation device must be installed in the UPS system. A contactor can be used for this purpose. In the shown examples, the isolation device is a contactor (marked with a **MC1** for single mains systems and marked with a **MC1** and **MC2** for dual mains systems).

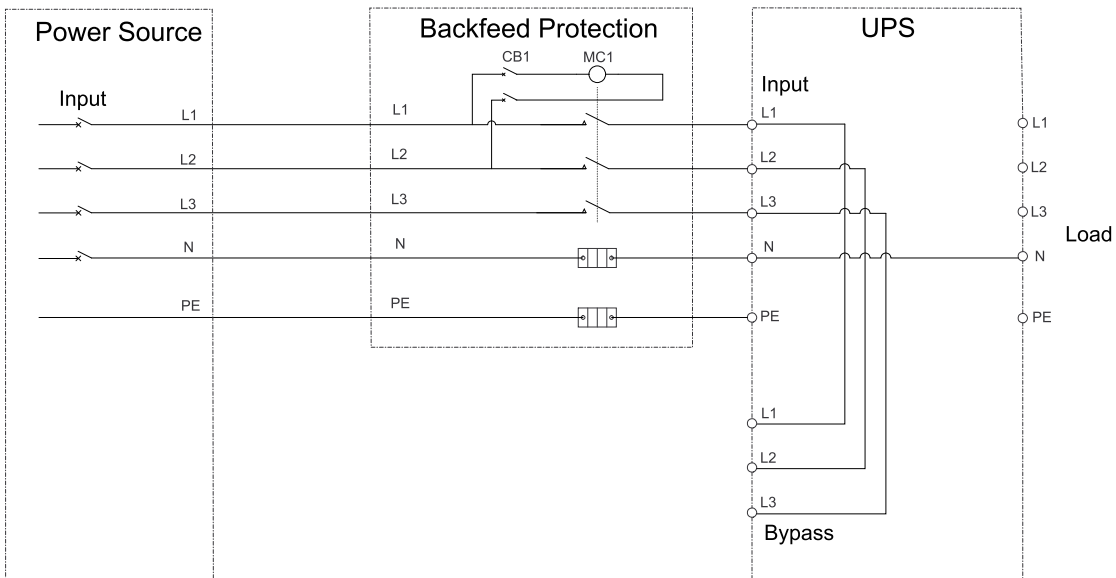
The isolation device must be able to withstand the electrical characteristics as described in *Specifications, page 11*.

**NOTE:** The 24 V source should be generated from the switchgear input source in single mains configurations and from both the switchgear input and bypass source in dual mains configurations.

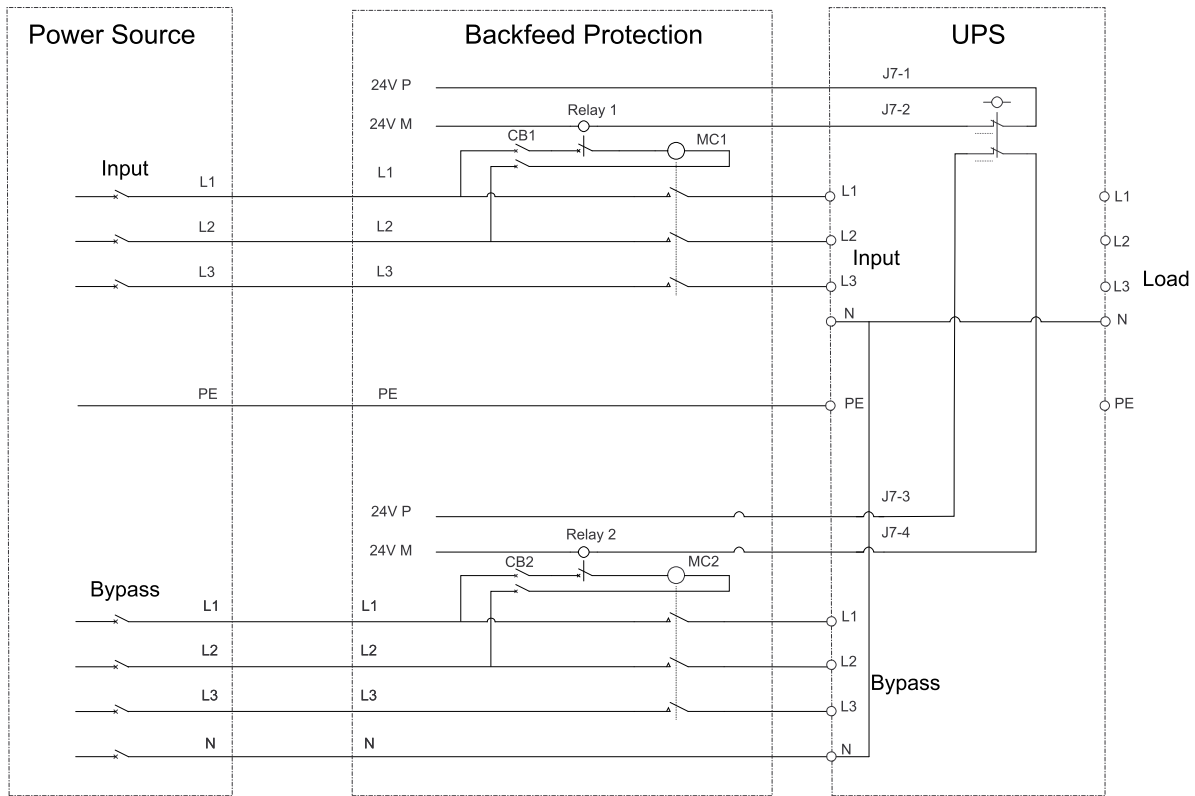
### Single Mains UPS and External Isolation Device



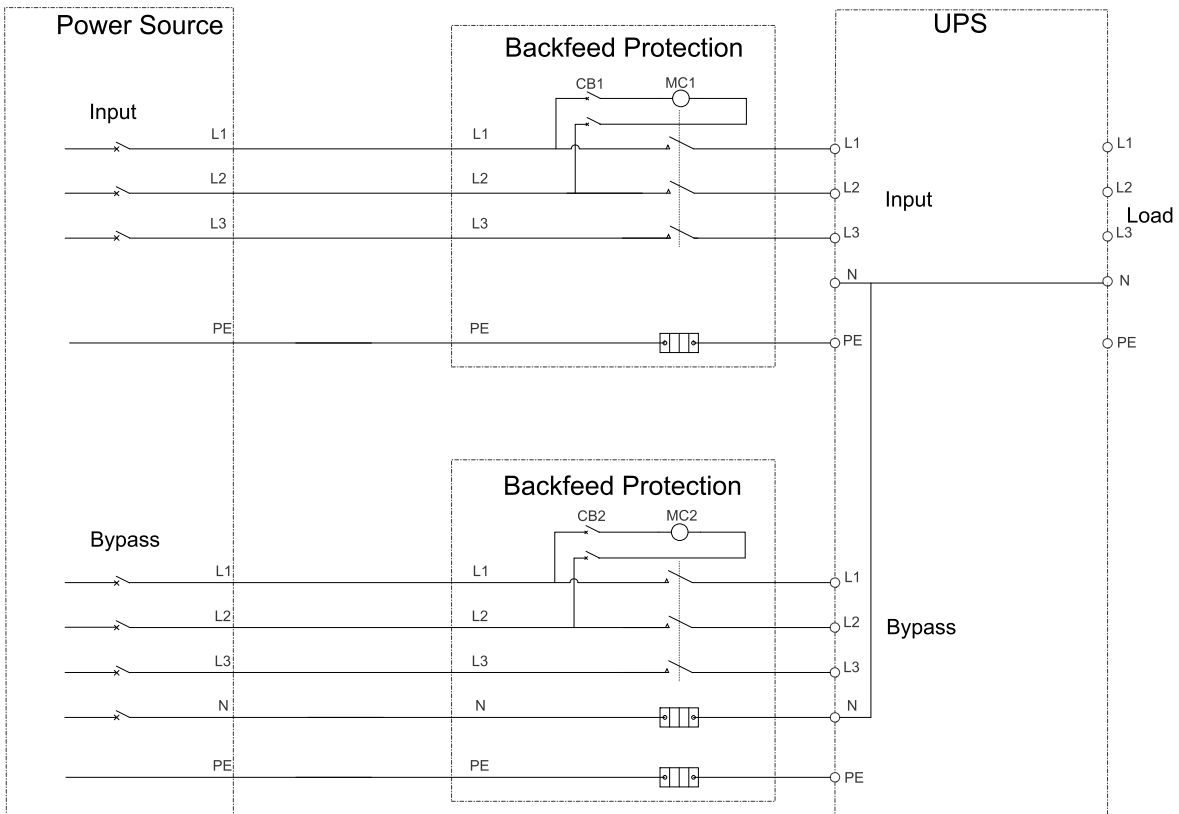
### Single Mains UPS with Backfeed Box



### Dual Mains UPS and External Isolation Device



### Dual Mains UPS with Backfeed Box



# Install Batteries in the UPS

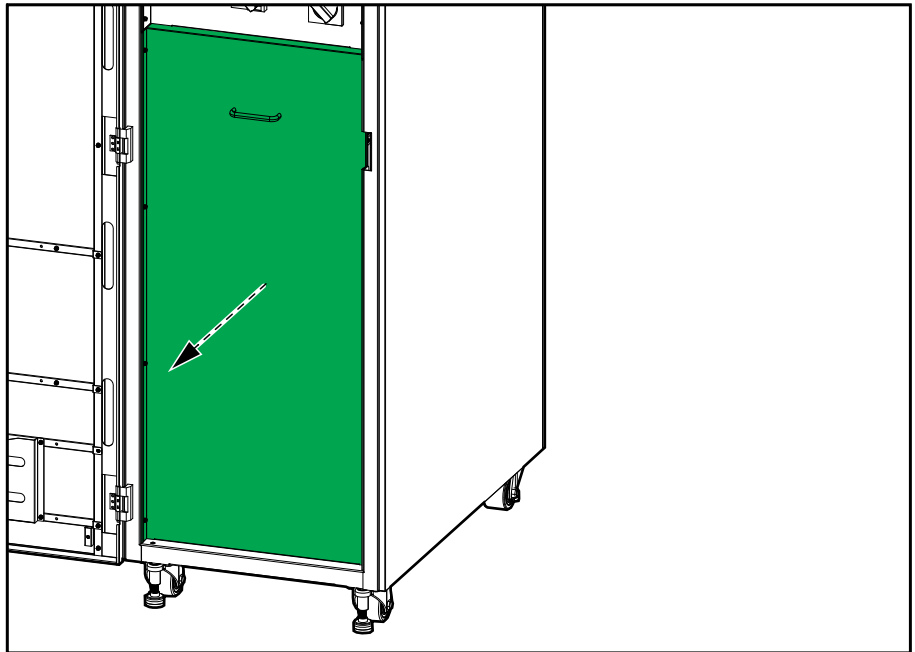
## **⚡⚠ DANGER**

### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

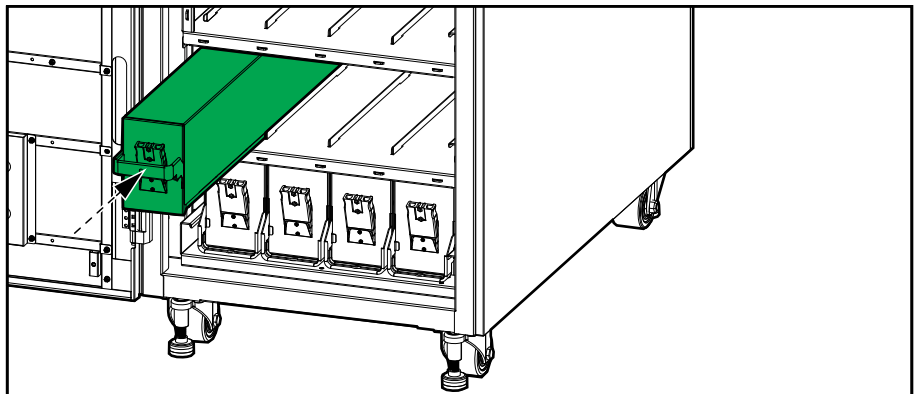
Ensure that the battery breakers (BB) are in the off position before installing batteries.

**Failure to follow these instructions will result in death or serious injury.**

1. Remove the plate in front of the battery shelves.

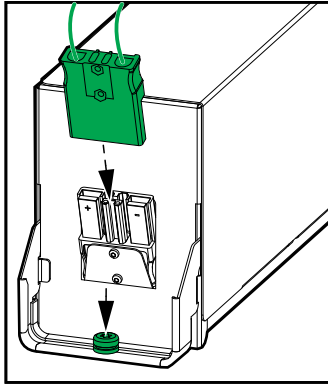


2. Install battery modules one string at a time and from the bottom and up. One row is one battery string.





3. Fasten the battery modules with a screw in front of the battery module



4. Remove the shrink tubes from the power terminals and connect the power terminals to the batteries.
5. Reinstall the plate in front of the battery shelves.





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