

# Galaxy VS

## UPS with Input Isolation Transformer and Up to Three Internal Battery Strings

### Installation

GVSUPS20K100B3H

Latest updates are available on the Schneider Electric website  
9/2022



# Legal Information

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this guide are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owners.

This guide and its content are protected under applicable copyright laws and furnished for informational use only. No part of this guide may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the guide or its content, except for a non-exclusive and personal license to consult it on an "as is" basis. Schneider Electric products and equipment should be installed, operated, serviced, and maintained only by qualified personnel.

As standards, specifications, and designs change from time to time, information contained in this guide may be subject to change without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this material or consequences arising out of or resulting from the use of the information contained herein.



Go to

[https://www.productinfo.schneider-electric.com/galaxyvs\\_ul/](https://www.productinfo.schneider-electric.com/galaxyvs_ul/)

or scan the QR code above for digital experience and translated manuals.

# Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS .....	5
FCC Statement .....	6
Safety Precautions .....	6
Electrical Safety .....	8
Battery Safety .....	9
Specifications .....	11
Specifications for 20 kW UPS with Input Isolation Transformer and Internal Batteries .....	11
Recommended Cable Sizes .....	12
Recommended Upstream Protection.....	13
Torque Specifications.....	13
Environment.....	13
UPS Weights and Dimensions .....	14
Clearance .....	14
Single System Overview.....	15
Installation Procedure .....	16
Install the Seismic Anchoring (Option) .....	17
Prepare for Installation .....	19
Connect the Signal Cables.....	21
Connect the Signal Cables for EPO (Emergency Power Off) .....	24
Connect the Signal Cables for Remote Alarm Panel (GVSOPT036) (Option).....	26
Connect the External Communication Cables.....	29
Connect the Modbus Cables .....	30
Connect the Power Cables.....	31
Add Translated Safety Labels to Your Product.....	34
Final Installation .....	35
Appendix: Power and Ground Schematics for Philips X-Ray System.....	38



# 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.

## FCC Statement

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## 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. If additional construction work is needed in the installation room after the UPS has been installed, turn off the UPS and cover the UPS with the protective packaging bag the UPS was delivered in.

**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 UPS 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 utility/mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that utility/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. This 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.**



## 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.**

## **⚠ CAUTION**

### **RISK OF EQUIPMENT DAMAGE**

- Mount the batteries in the UPS system, but do not connect the batteries until the UPS system is ready to be powered up. The time duration from battery connection 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, we recommend 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 injury or equipment damage.**

# Specifications

## Specifications for 20 kW UPS with Input Isolation Transformer and Internal Batteries

The UPS includes an input isolation transformer of 480 V In, 400 V Out. The UPS is designed for a continuous 20 kW load (transformer sized at 20 kW) and supports short-term peak loads up to 80 kW. The UPS protects medical equipment (e.g. X-ray, scanners) or other load equipment with similar short-time peak consumption.

Input 480 V	Connections	3-wire (L1, L2, L3, G)
	Input voltage range (V)	432-528
	Frequency (Hz)	60
	Nominal input current (A)	29
	Maximum input current (A)	34
	Input current limitation (A)	80
	Total harmonic distortion (THDI)	<6% at 100% load
	Input power factor	0.99 at 100% load
	Protection	Built-in backfeed protection and fuses
	Maximum short circuit rating	20 kA RMS
	Ramp-in	Programmable and adaptive 1-40 seconds
Output 400 V	Connections	4-wire (L1, L2, L3, N, G)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$
	Overload capacity	20 kW load: continuous in normal operation and battery operation <b>NOTE:</b> Overload capacities above 20 kW are given with load switching between 100 milliseconds ON and 200 milliseconds OFF.  30 kW load: 120 minutes in normal operation 40 kW load: 60 minutes in normal operation 50 kW load: 45 minutes in normal operation 60 kW load: 30 minutes in normal operation 70 kW load: 20 minutes in normal operation 80 kW load: 5 minutes in normal operation
	Dynamic load response	$\pm 5\%$
	Output power factor	1
	Nominal output current (A)	29
	Output frequency (Hz)	60 Hz bypass synchronized – 60 Hz $\pm 0.1\%$ free-running
	Synchronized slew rate (Hz/sec)	Programmable to 0.25, 0.5, 1, 2, 4, 6
	Total harmonic distortion (THDU)	<1% for linear load <5% for non-linear load
	Load crest factor	2.5
	Load power factor	0.7 leading to 0.7 lagging

Battery 400 V	Charging power in % of output power at 0-40% load	80%
	Charging power in % of output power at 100% load	20%
	Maximum charging power (at 0-40% load) (kW)	16
	Maximum charging power (at 100% load) (kW)	4
	Nominal battery voltage (VDC)	480
	Nominal float voltage (VDC)	545
	Maximum boost voltage (VDC)	572
	Temperature compensation (per cell)	-3.3mV/°C, for T ≥ 25 °C – 0mV/°C, for T < 25 °C
	End of discharge voltage (full load) (VDC)	384
	Battery current at full load and nominal battery voltage (A)	43
	Battery current at full load and minimum battery voltage (A)	54
	Ripple current	< 5% C20 (5-minute runtime)
	Battery test	Manual/automatic (selectable)
	Maximum short circuit rating	10 kA

## Recommended Cable Sizes

### DANGER

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

All wiring must comply with all applicable national and/or electrical codes. The maximum allowable cable size is 2 AWG.

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

Cable sizes in this manual are based on Table 310.15 (B)(16) of the National Electrical Code (NEC) with the following assertions:

- 90 °C (194 °F) conductors (75 °C (167 °F) termination)
- An ambient temperature of 30 °C (86 °F)
- Use of copper conductors
- Installation method C

If the ambient temperature is greater than 30 °C (86 °F), larger conductors are to be selected in accordance with the correction factors of the NEC.

Equipment grounding conductors are sized in accordance with NEC Article 250.122 and Table 250.122.

Input/output phases	2 AWG
Input/output EGC	2 AWG
Neutral	2 AWG

## Recommended Bolt and Lug Sizes

Cable size	Bolt size	Cable lug type	Crimping tool	Die
2 AWG	M8 x 25	LCA2-56-Q	CT-720	CD-720-1 Brown P33

## Recommended Upstream Protection

### CAUTION

#### HAZARD OF FIRE

- Connect only to a circuit with the below specifications.
- Connect to a circuit provided with a 125 A branch circuit overcurrent protection maximum in accordance with the National Electrical Code, ANSI/NFPA70, and the Canadian Electrical Code, Part I, C22.1.

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

UPS rating	20 kW
Breaker type	HDL36125

## Torque Specifications

Bolt size	Torque
M4	1.7 Nm (1.25 lb-ft / 15 lb-in)
M5	2.2 Nm (1.62 lb-ft / 19.5 lb-in)
M6	5 Nm (3.69 lb-ft / 44.3 lb-in)
M8	17.5 Nm (12.91 lb-ft / 154.9 lb-in)
M10	30 Nm (22 lb-ft / 194.7 lb-in)
M12	50 Nm (36.87 lb-ft / 442.5 lb-in)

## Environment

	Operating	Storage
Temperature	0 °C to 40 °C (32 °F to 104 °F)	-15 °C to 40 °C (5 °F to 104 °F) for systems with batteries.
Relative humidity	0 - 95% non-condensing	10 - 80% non-condensing
Elevation	Designed for operation in 0-3000 m (0-10000 feet) elevation. Power derating required from 1000-3000 m (3300-10000 feet): Up to 1000 m (3300 feet): 1.000 Up to 1500 m (5000 feet): 0.975 Up to 2000 m (6600 feet): 0.950 Up to 2500 m (8300 feet): 0.925 Up to 3000 m (10000 feet): 0.900	
Audible noise one meter (three feet) from unit	57 dB at 70% load, 65 dB at 100% load	
Protection class	IP20	
Color	RAL 9003, gloss level 85%	

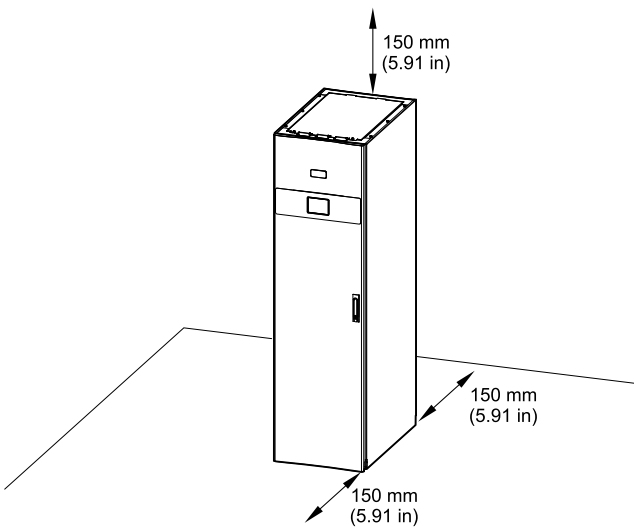
UPS Weights and Dimensions

UPS rating	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
20 kW UPS with input isolation transformer and three battery strings	877 (1933)	1970 (77.56)	550 (21.65)	847 (33.35)

**NOTE:** One battery module weighs approximately 32 kg (70.5 lbs).

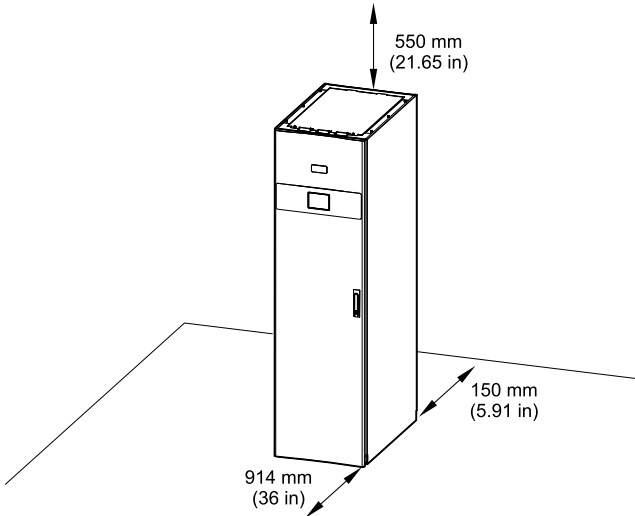
Clearance

Required Ventilation Clearance



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

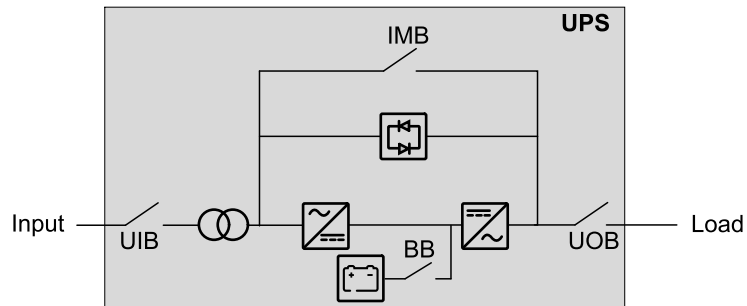
Recommended Installation and Service Clearance



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

## Single System Overview

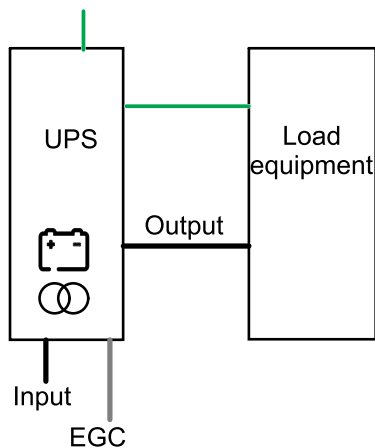
UIB	Unit input breaker
IMB	Internal maintenance breaker
UOB	Unit output breaker
BB	Battery breaker in UPS for internal batteries



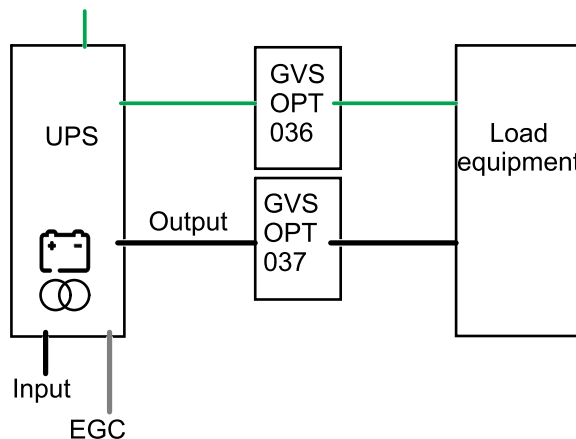
# Installation Procedure

The UPS can be installed as a stand-alone UPS or with applicable options.

## Overview of the UPS



## Overview of the UPS with Options Installed



- Signal cable
- Power cable
- Equipment grounding conductor (EGC)/ground

1. Install the Seismic Anchoring (Option), page 17.
2. Prepare for Installation, page 19.
3. If a remote alarm panel (GVSOPT036) is part of your installation, follow the installation manual provided with this product to install it.
4. If an output switch box (GVSOPT037) is part of your installation, follow the installation manual provided with this product to install it.
5. Connect the Signal Cables, page 21.
6. Connect the Signal Cables for EPO (Emergency Power Off), page 24.
7. **Only for installation with a remote alarm panel (GVSOPT036):** Connect the Signal Cables for Remote Alarm Panel (GVSOPT036) (Option), page 26.
8. Connect the External Communication Cables, page 29.
9. Connect the Modbus Cables, page 30.
10. Connect the Power Cables, page 31.
11. Add Translated Safety Labels to Your Product, page 34.
12. Final Installation, page 35.

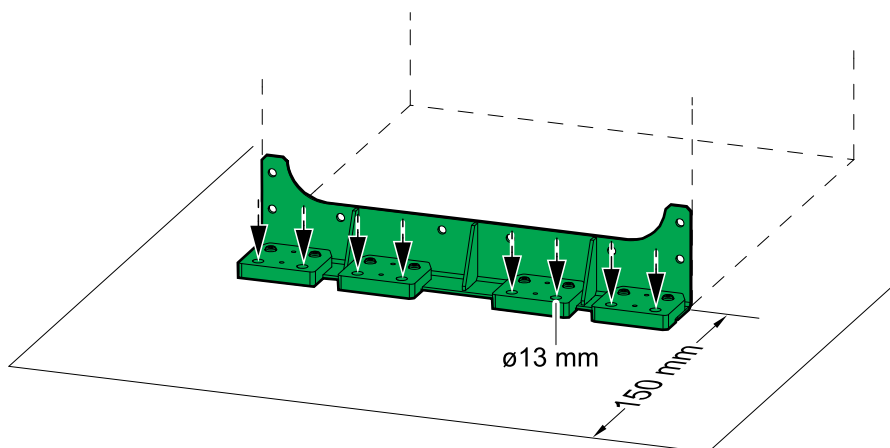


## Install the Seismic Anchoring (Option)

Use the optional seismic kit GVSOPT016 for this procedure.

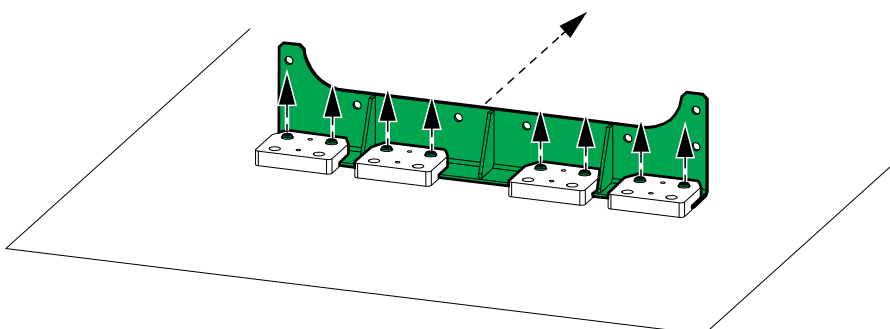
1. Mount the rear anchor assembly to the floor. Use appropriate hardware for the floor type – the hole diameter in the rear anchors is  $\varnothing 13$  mm. Minimum requirement is M12 grade 8.8 hardware.

**Rear View**



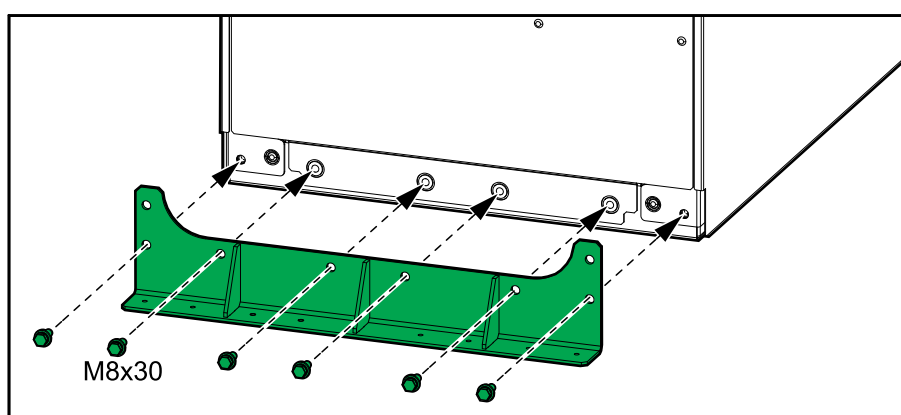
2. Remove the bolts and remove the rear anchoring bracket. Save the bolts for adjacent installation of cabinets.

**Rear View**



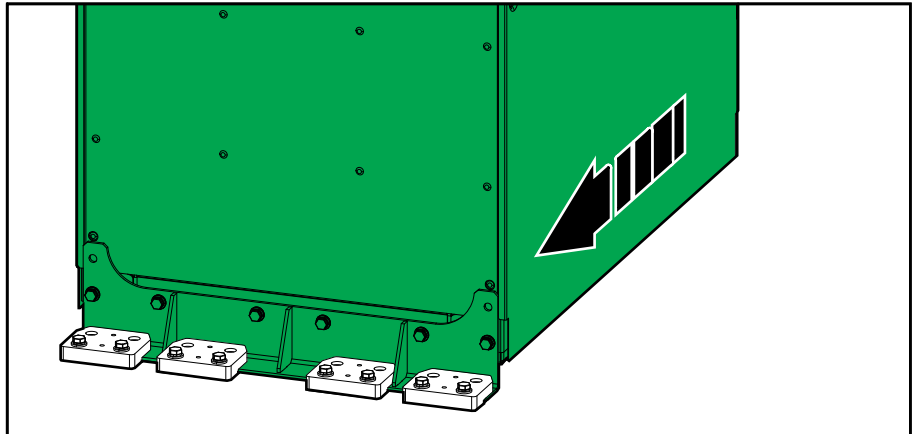
3. Install the rear anchoring bracket on the UPS with the provided M8 bolts.

**Rear View of the UPS**



4. Push the UPS into position so the rear anchoring bracket connects to the rear anchors. The front anchoring bracket is installed in the final installation steps.

#### Rear View of the UPS



## Prepare for Installation

### ⚡⚡ DANGER

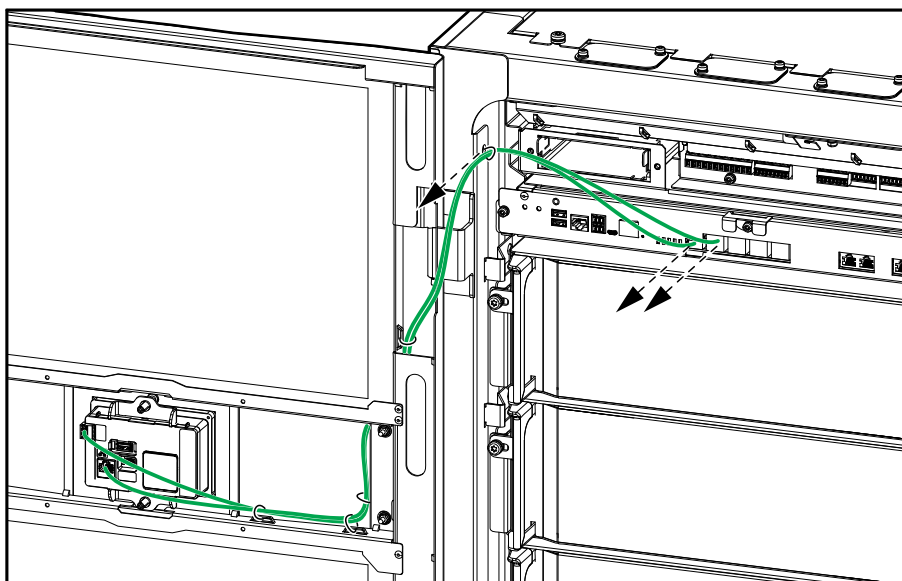
#### HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

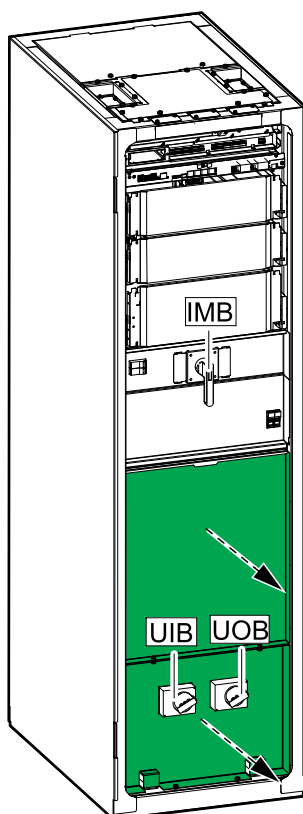
**Failure to follow these instructions will result in death or serious injury.**

**NOTE:** Route the signal cables separately from the power cables and route the Class 2/SELV cables separately from the non-Class 2/non-SELV cables.

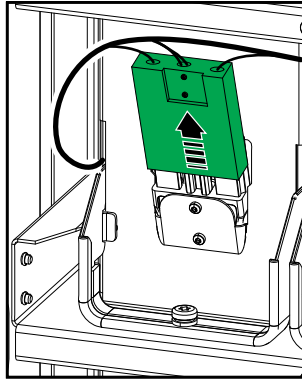
1. Disconnect the two signal cables from the display on the UPS and remove the front door.



2. Remove the two covers.



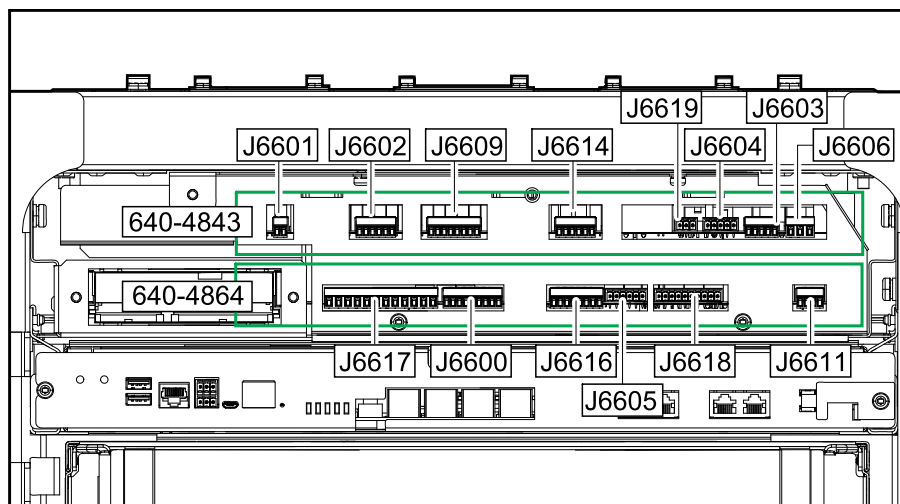
3. Disconnect the battery terminals from the front of any preinstalled battery modules.



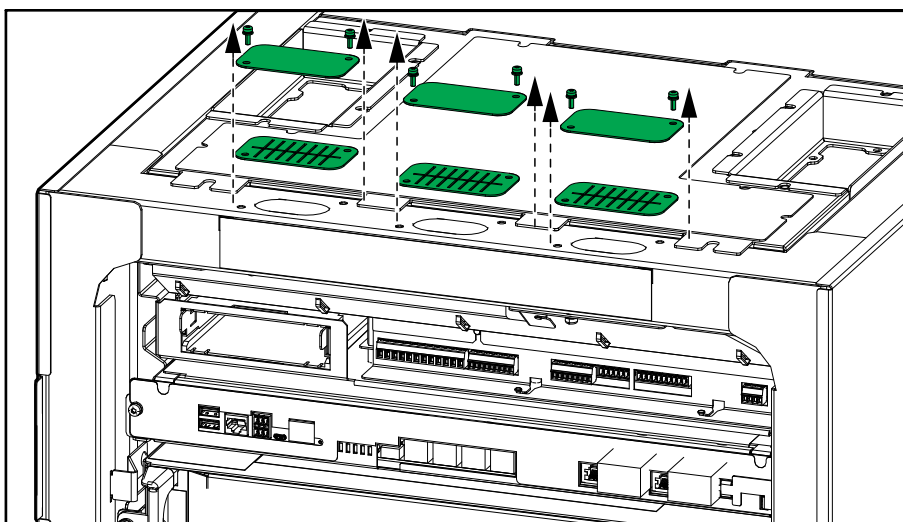
## Connect the Signal Cables

**NOTE:** Route the signal cables separately from the power cables and route the Class 2/SELV cables separately from the non-Class 2/non-SELV cables.

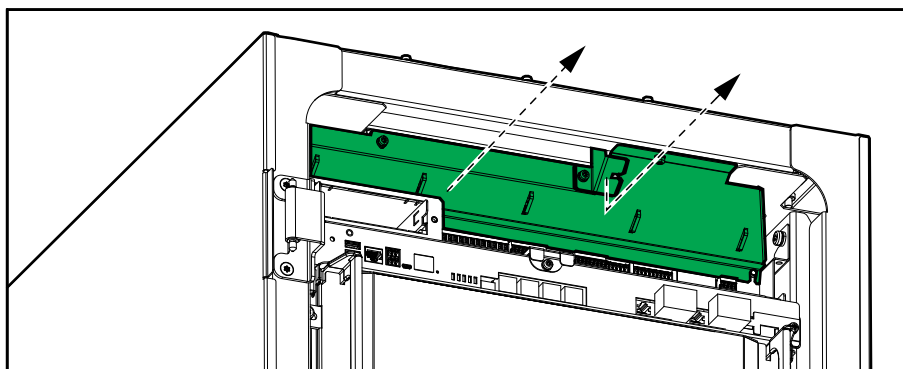
### Front View of the UPS – Board 640-4843 and 640-4864



1. Remove the top gland plates and the top brush plates from the UPS. These are for signal cable routing.

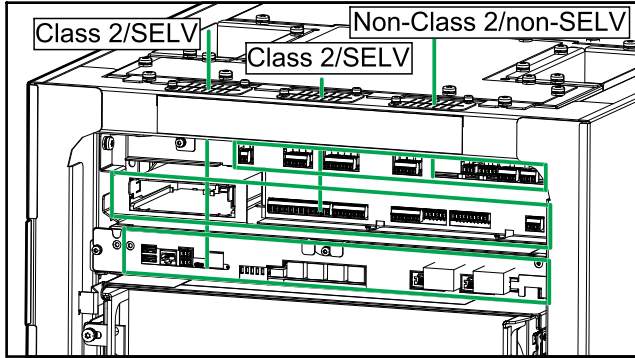


2. Perform one of the following:
  - **For installation without conduits:** Reinstall the brush plates.
  - **For installation with conduits:** Drill a hole in the gland plates for conduits, install conduits, and reinstall the gland plates.
3. Remove the indicated covers.

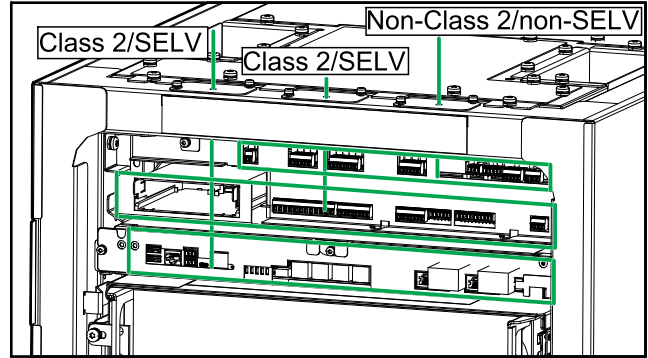


4. Route the non-Class 2/non-SELV signal cables through the right brush/gland plate.
5. Route the Class 2/SELV signal cables through the left and middle brush/gland plate.

**UPS without Conduits**



**UPS with Conduits**

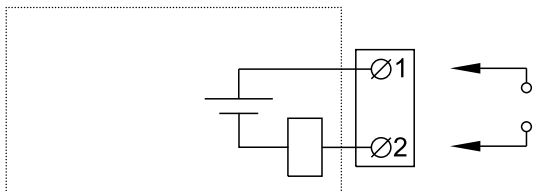


6. Connect the Class 2/SELV signal cables from the auxiliary products to board 640-4864 in the UPS. Follow the instructions in the auxiliary product manuals.

7. Connect the Class 2/SELV signal cables to the input contacts and output relays on board 640-4864 in the UPS.

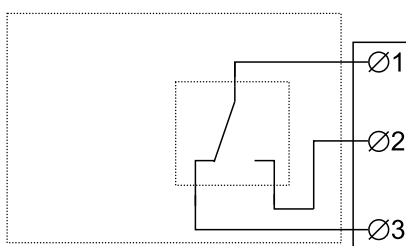
Do not connect any circuit to the input contacts unless it can be confirmed that the circuit is Class 2/SELV.

Four input contacts are available. Three input contacts can be configured to indicate a given event via the display. The input contacts support 24 VDC 10 mA. All circuits connected must have the same 0 V reference.



Name	Description	Location	Alarm text on UPS display
IN _1 (input contact 1)	Preconfigured input contact (reserved for input isolation transformer overtemperature)	640-4864 terminal J6616, 1-2	<b>Transformer temperature is too high</b>
IN _2 (input contact 2)	Configurable input contact	640-4864 terminal J6616, 3-4	
IN _3 (input contact 3)	Configurable input contact	640-4864 terminal J6616, 5-6	
IN _4 (input contact 4)	Configurable input contact	640-4864 terminal J6616, 7-8	

The output relays are preconfigured for use with the remote alarm panel GVSOPT036. If the remote alarm panel is not part of the installation, the output relays can be reconfigured for other functions – see the operation manual. The output relays support 24 VAC/VDC 1 A. All external circuitry must be fused with maximum 1 A fast acting fuses.

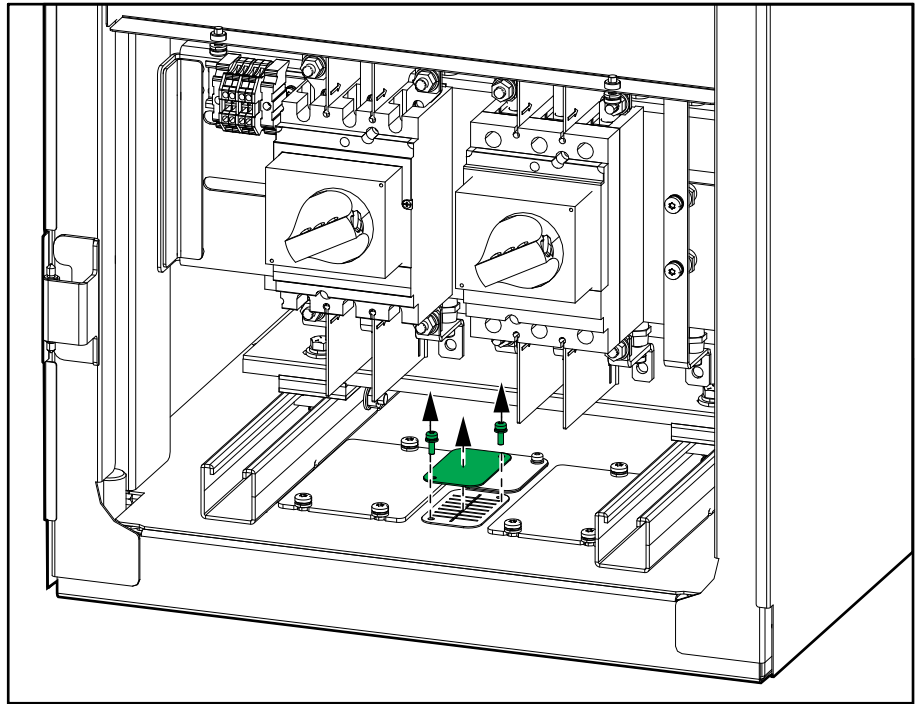


Name	Description	Location	Alarm text on UPS display	Corresponding lamp on remote alarm panel
OUT _1 (output relay 1)	Preconfigured output relay	640-4864 terminal J6617, 1-3	<b>UPS in normal operation</b>	UPS ONLINE
OUT _2 (output relay 2)	Preconfigured output relay	640-4864 terminal J6617, 4-6	<b>UPS common alarm</b>	UPS General Alarm
OUT _3 (output relay 3)	Preconfigured output relay	640-4864 terminal J6617, 7-9	<b>UPS in battery operation</b>	UPS on Battery
OUT _4 (output relay 4)	Preconfigured output relay	640-4864 terminal J6617, 10-12	<b>Battery voltage low</b>	UPS Low Battery

8. Connect the non-Class 2/non-SELV signal cables from the auxiliary products to board 640-4843 in the UPS. Follow the instructions in the auxiliary product manuals.

## Connect the Signal Cables for EPO (Emergency Power Off)

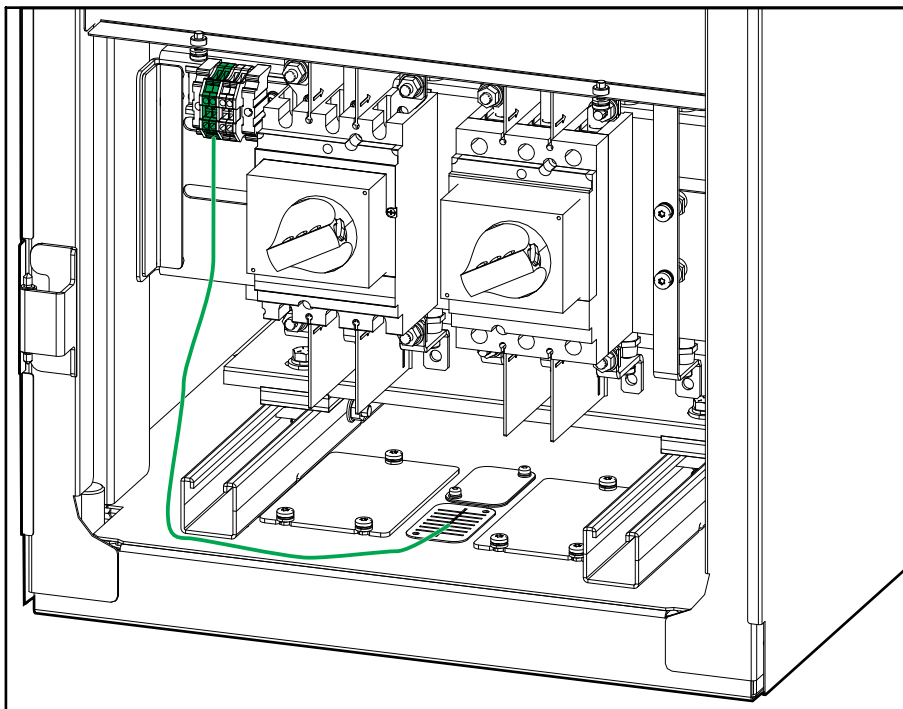
1. Remove the front bottom gland plate and the front bottom brush plate from the UPS.



2. Perform one of the following:
  - **For installation without conduits:** Reinstall the brush plate.
  - **For installation with conduits:** Drill a hole in the gland plate for conduits, install conduits, and reinstall the gland plate.

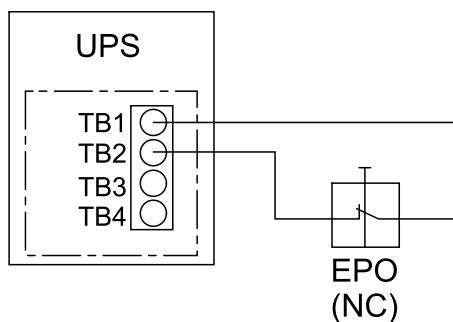


3. Route the Class 2/SELV signal cables from the building EPO through the front gland plate/brush plate and connect to the terminal block TB1 and TB2.



The EPO circuit is considered Class 2/SELV. Class 2/SELV circuits must be isolated from the primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2/SELV.

#### EPO Configuration – Normally Closed (NC) Connection



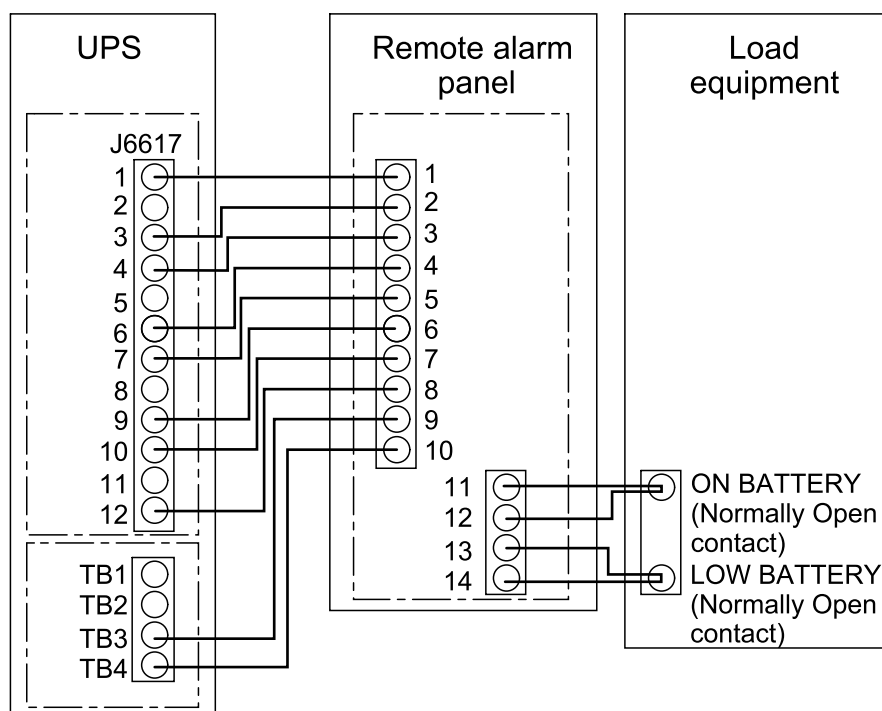
The EPO input supports 24 VDC.

**NOTE:** The default setting for the EPO activation is to turn off the inverter. If you want the EPO activation to transfer the UPS into forced static bypass operation instead, please contact Schneider Electric.

## Connect the Signal Cables for Remote Alarm Panel (GVSOPT036) (Option)

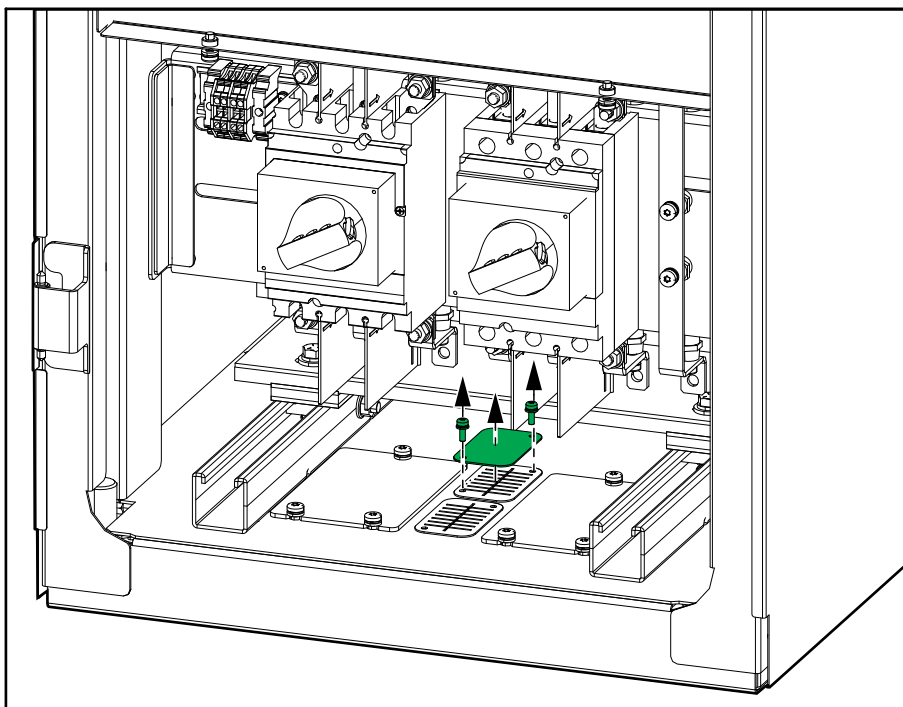
1. Connect the Class 2/SELV signal cables to the UPS output relays and route the signal cables out through the top of the UPS. Connect to terminal 1-8 in the remote alarm panel. See [Connect the Signal Cables](#), page 21 for details on routing the signal cables out of the UPS.

Name	Description	Location on UPS	Alarm text on UPS display	Location on remote alarm panel	Corresponding lamp on remote alarm panel
OUT_1 (output relay 1)	Preconfigured output relay	Terminal J6617: 1,3	<b>UPS in normal operation</b>	1,2	UPS ONLINE
OUT_2 (output relay 2)	Preconfigured output relay	Terminal J6617: 4,6	<b>UPS common alarm</b>	3,4	UPS General Alarm
OUT_3 (output relay 3)	Preconfigured output relay	Terminal J6617: 7,9	<b>UPS in battery operation</b>	5,6	UPS on Battery
OUT_4 (output relay 4)	Preconfigured output relay	Terminal J6617: 10,12	<b>Battery voltage low</b>	7,8	UPS Low Battery



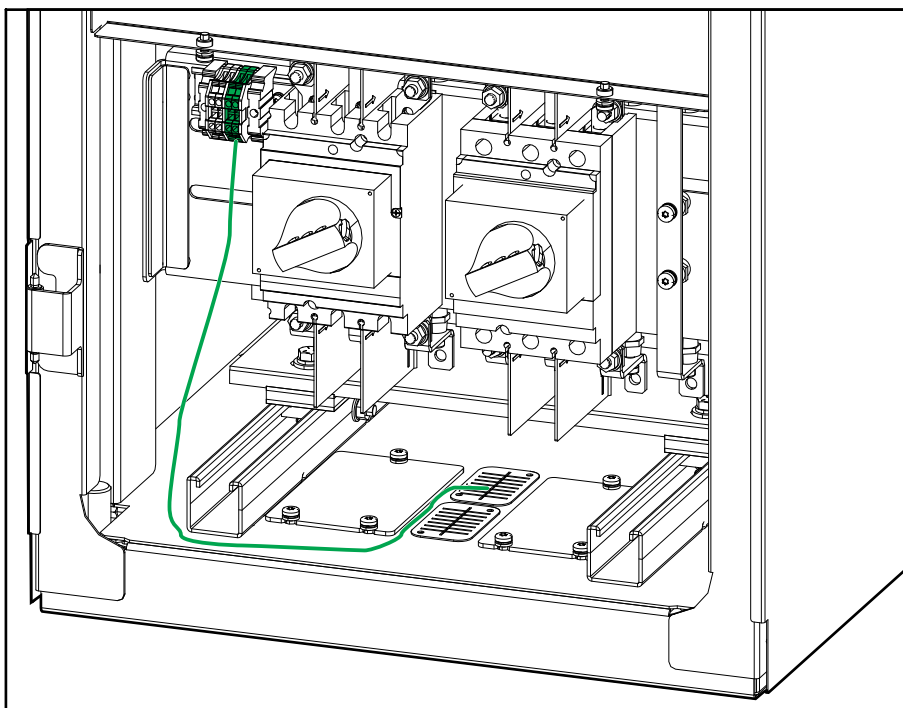
2. Remove the rear bottom gland plate and the rear bottom brush plate from the UPS.

### Front View of the UPS



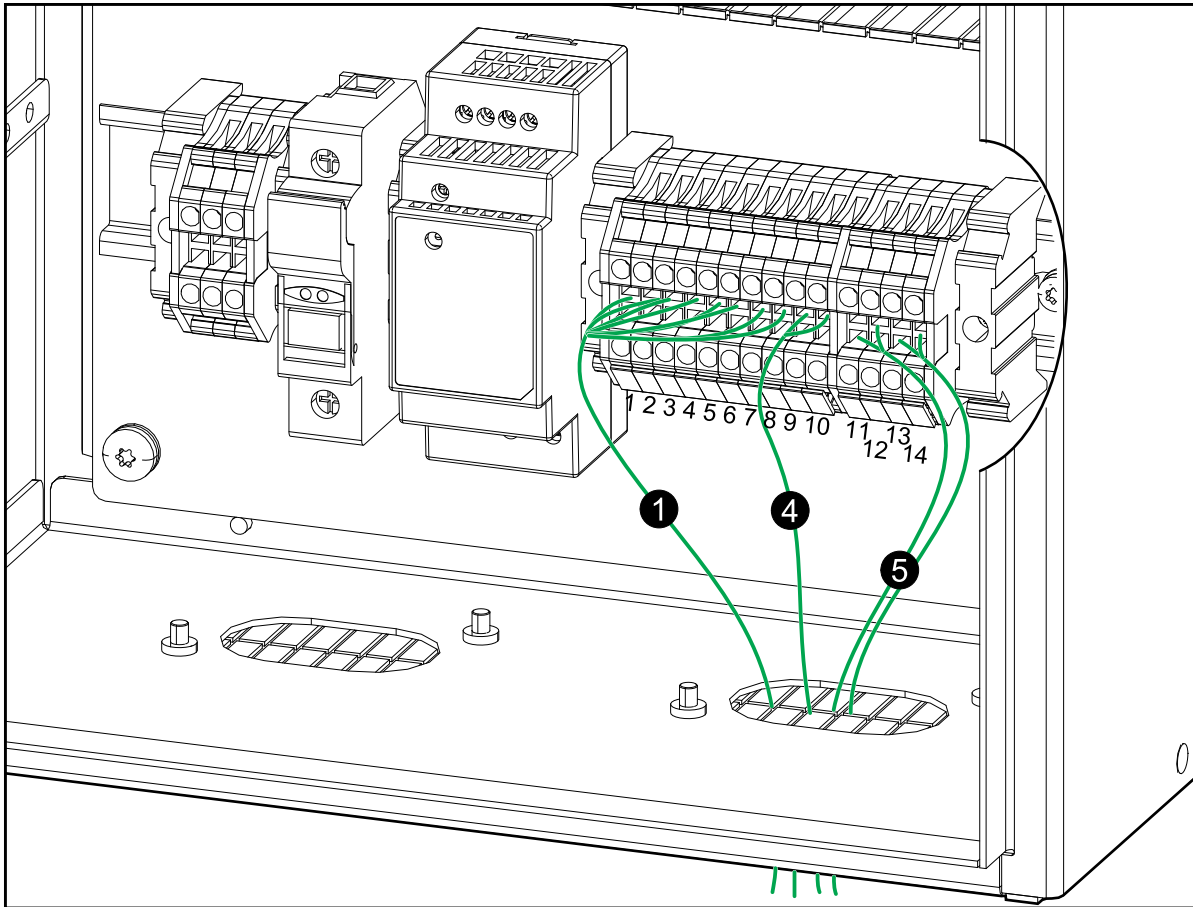
3. Perform one of the following:
  - **For installation without conduits:** Reinstall the brush plate.
  - **For installation with conduits:** Drill a hole in the gland plate for conduits, install conduits, and reinstall the gland plate.
4. Connect the IMB signal cables to the terminal block TB3 and TB4 in the UPS and route the IMB signal cables out through the bottom of the UPS. Connect the IMB signal cables to terminal 9 and 10 in the remote alarm panel.

### Front View of the UPS



5. Connect the provided signal cables 0W49487 and 0W49491 to the terminal block (11-14) in the remote alarm panel. Torque to 0.5-0.6 Nm (0.36-0.44 lb-ft / 4.42-5.31 lb-in). Route the signal cables out through the bottom of the remote alarm panel, and connect to the load equipment. The provided signal cables are 30 m (98.4 ft) long.

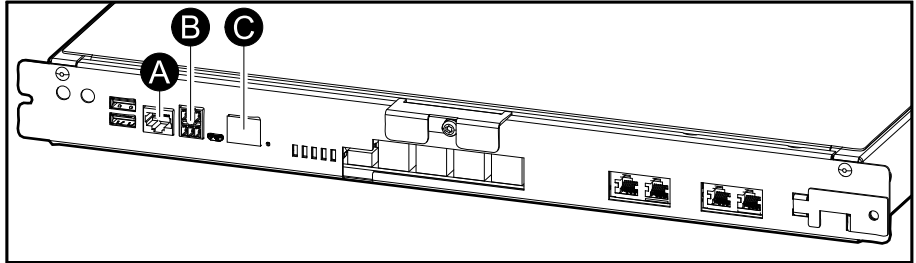
#### Front View of the Remote Alarm Panel



## Connect the External Communication Cables

1. Connect the external communication cables to the ports in the UPS controller box.

### Front View of the Controller Box



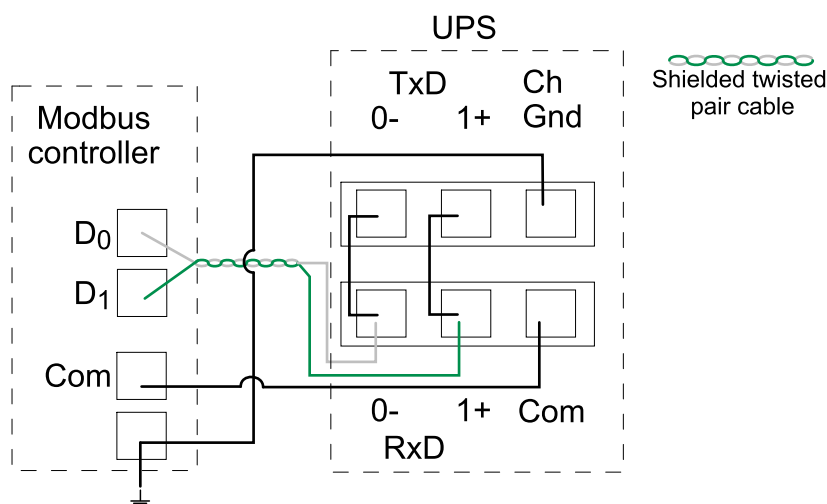
- A. Universal I/O port for built-in network management card.
- B. Modbus port for built-in network management card.
- C. Network port for built-in network management card. Use a shielded network cable.

**NOTE:** Check that you are connecting to the correct port to avoid network communication conflicts.

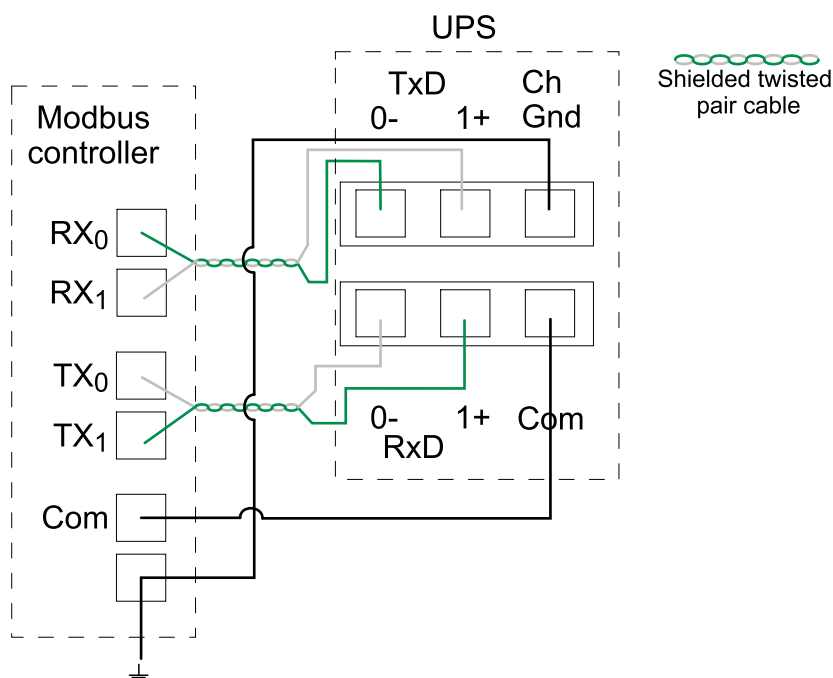
## Connect the Modbus Cables

1. Connect the Modbus cables to the UPS(s). Use either 2-wire or 4-wire connection.
  - Shielded twisted pair cables must be used for Modbus connections. The shield connection to the ground must be as short as possible (ideally below 1 cm). The cable shield must be connected to the Ch Gnd pin on each device.
  - Wiring should be done in accordance with local wiring codes.
  - Route signal cables separately from power cables to ensure sufficient isolation.
  - The Modbus port is galvanically isolated with the Com pin as ground reference.

### Example: 2-Wire Connection



### Example: 4-Wire Connection

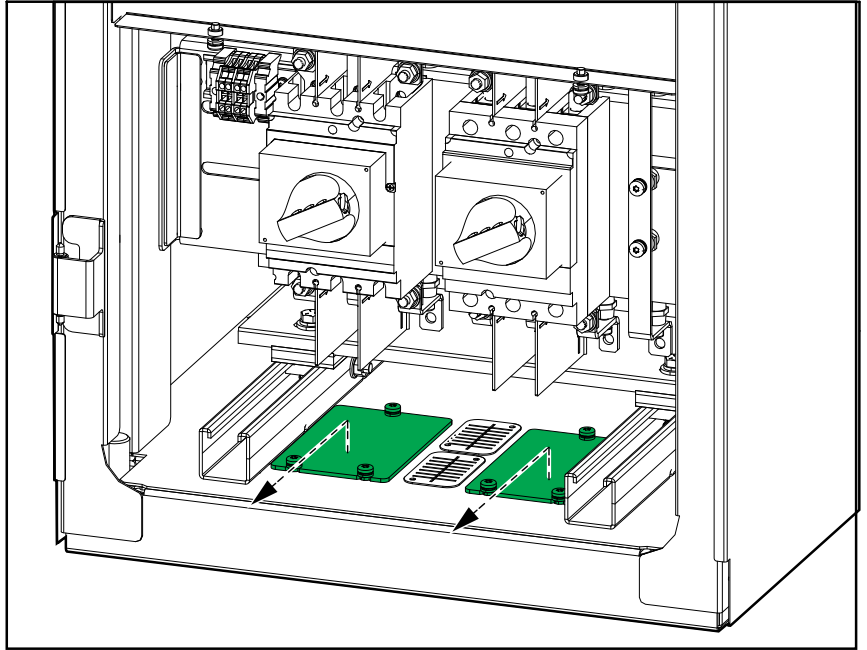


2. Install 150 Ohm termination resistors at each end of each bus if the buses are very long and operate at high data rates. Busses under 610 meters (2000 feet) at 9600 baud or under 305 meters (1000 feet) at 19.200 baud should not require termination resistors.

## Connect the Power Cables

### 1. For bottom cable entry:

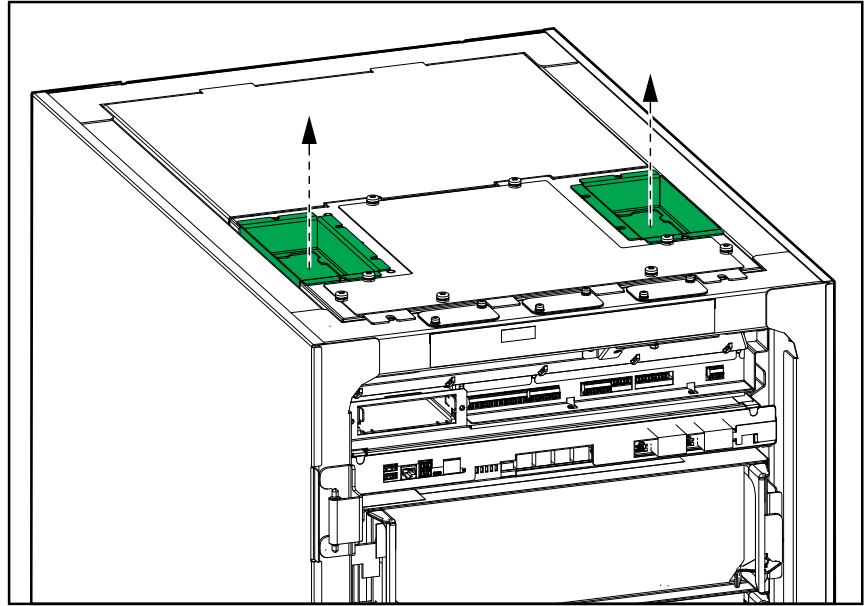
- a. Remove the gland plates in the bottom of the UPS.



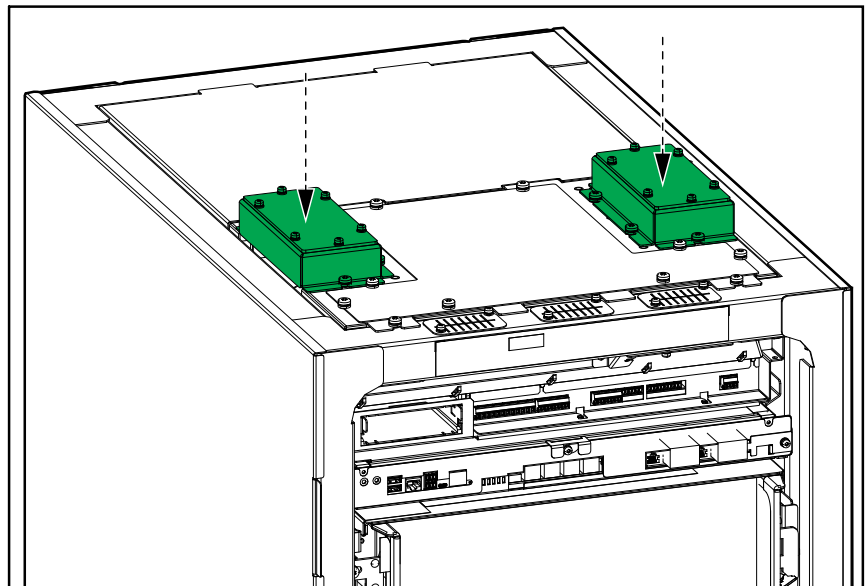
- b. Drill/punch holes for power cables/conduits in the gland plates. Install conduits (not provided), if applicable.
- c. Reinstall the gland plates in the bottom of the UPS.

**2. For top cable entry:**

- a. Remove the conduit boxes from the top of the UPS.



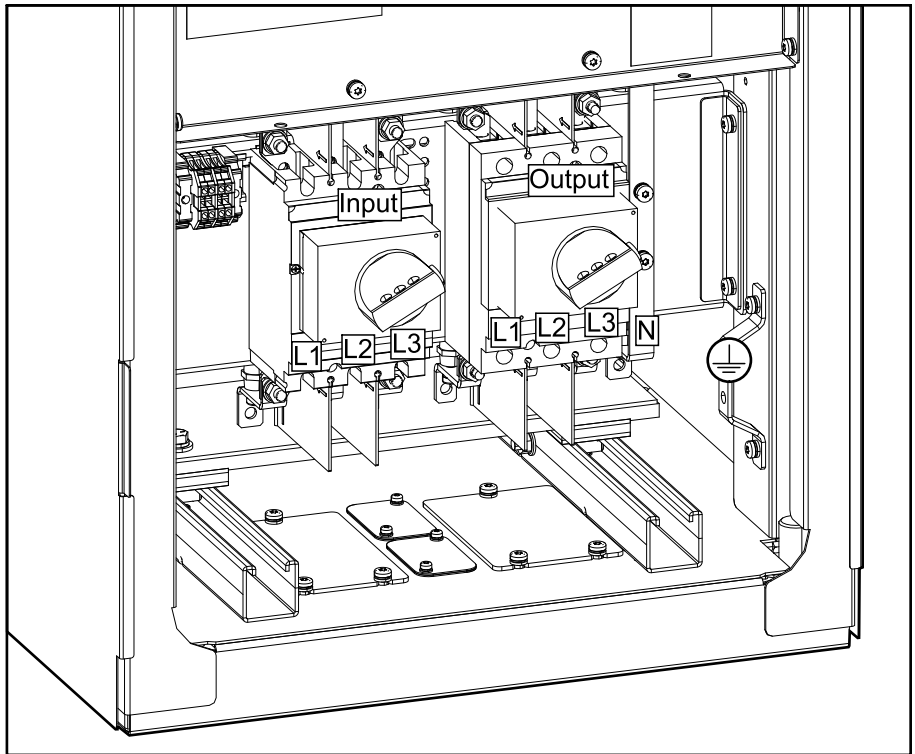
- b. Remove the gland plates from the conduit boxes.
- c. Drill/punch holes for power cables/conduits in the gland plates. Install conduits (not provided), if applicable.
- d. Reinstall the gland plates on the conduit boxes.
- e. Install the conduit boxes in the top of the UPS. Note that the conduit boxes are installed in the reverse position.



- 3. Route the power cables through the top or bottom of the UPS.**



4. Connect the EGC to the ground busbar.



5. Connect the input cables (L1, L2, L3) to the unit input breaker UIB.
6. Connect the output cables (L1, L2, L3, N) to the unit output breaker (UOB).
7. Reinstall the protection plate in front of the power cable landing area.

## Add Translated Safety Labels to Your Product

The safety labels on your product are in English and French. Sheets with translated safety labels are provided with your product.

1. Find the sheets with translated safety labels provided with your product.
2. Check which 885-XXX numbers are on the sheet with translated safety labels.
3. Locate the safety labels on your product that match the translated safety labels on the sheet – look for the 885-XXX numbers.
4. Add the replacement safety label in your preferred language to your product on top of the existing French safety label.

## Final Installation

### **⚡⚠ 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.**

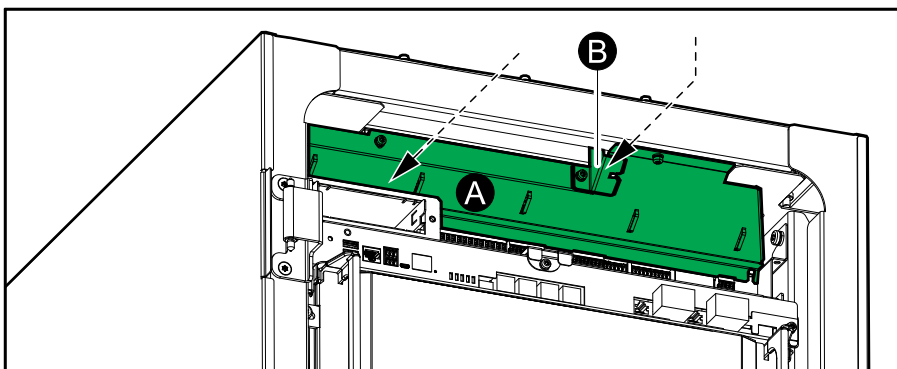
### **⚠ WARNING**

#### **RISK OF EQUIPMENT DAMAGE**

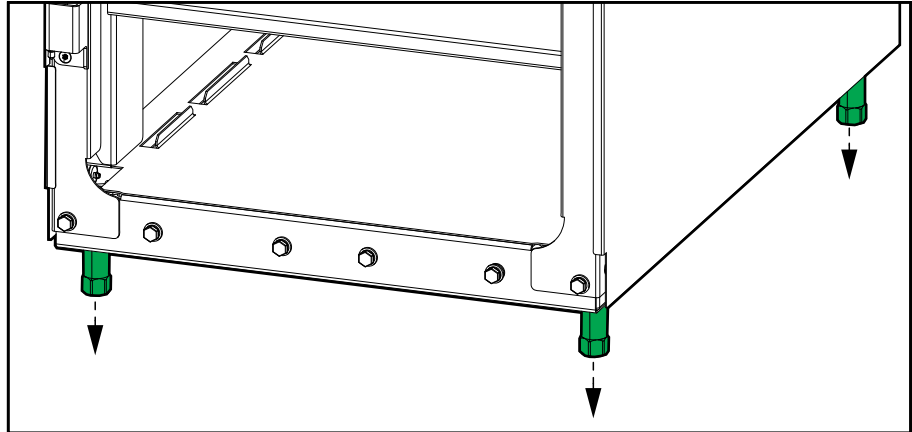
Wait until the system is ready to be powered up before installing batteries in the system. The time duration from battery installation until the UPS system is powered up must not exceed 72 hours or 3 days.

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

1. Reinstall the indicated covers (first A and then B). It may be necessary to disconnect the Class 2/SELV signal cables while fitting the covers in place. Fasten the Class 2/SELV signal cables to the bridges on the covers.



2. Lower the front and rear leveling feet on the UPS with a wrench until they connect with the floor. Use a bubble-leveler to check that the UPS is level.



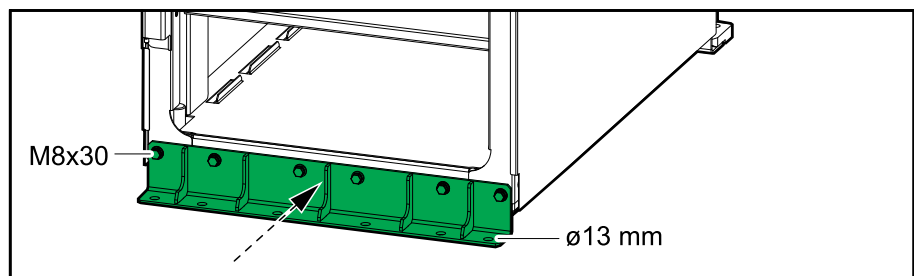
## NOTICE

### RISK OF EQUIPMENT DAMAGE

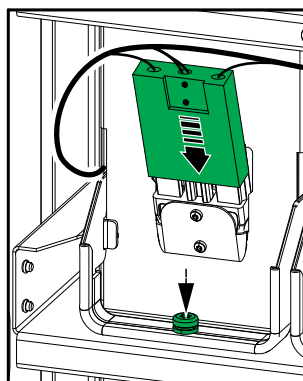
Do not move the cabinet after the leveling feet have been lowered.

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

3. **Only for seismic anchoring:** Mount the front anchoring bracket on the UPS and to the floor. Use appropriate hardware for the floor type – the hole diameter in the front anchoring bracket is  $\varnothing 13$  mm. Minimum requirement is M12 grade 8.8 hardware.

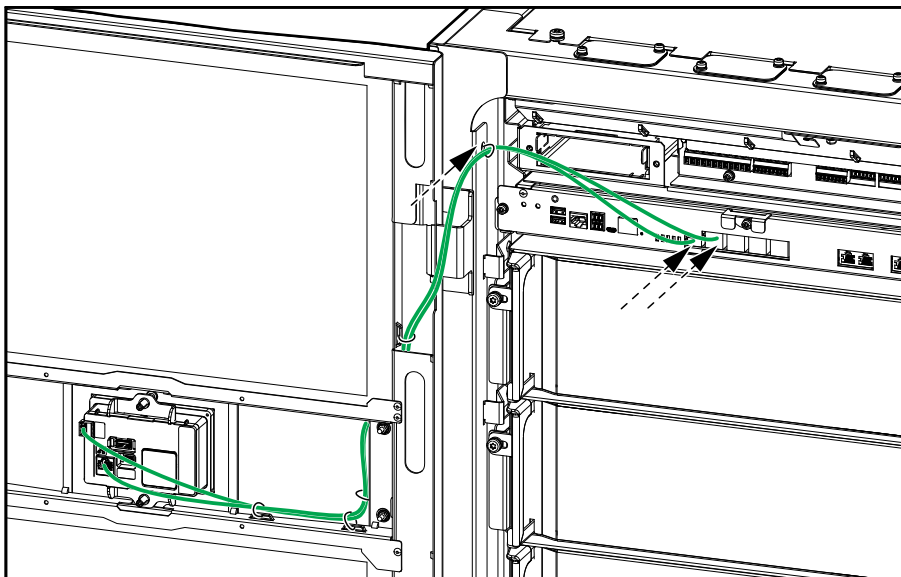


4. Set the battery breaker BB to the open (OFF) position.
5. Push the battery modules into the slot. Fill the shelves from the bottom and upwards. Always install a complete battery string (four battery modules) on each shelf.
6. Turn down the handle on the battery modules and fasten the handle to the shelf with the provided screw.
7. Connect the battery terminals to the front of the battery modules.



8. Reinstall the battery cover on the UPS.
9. Reinstall the front door.

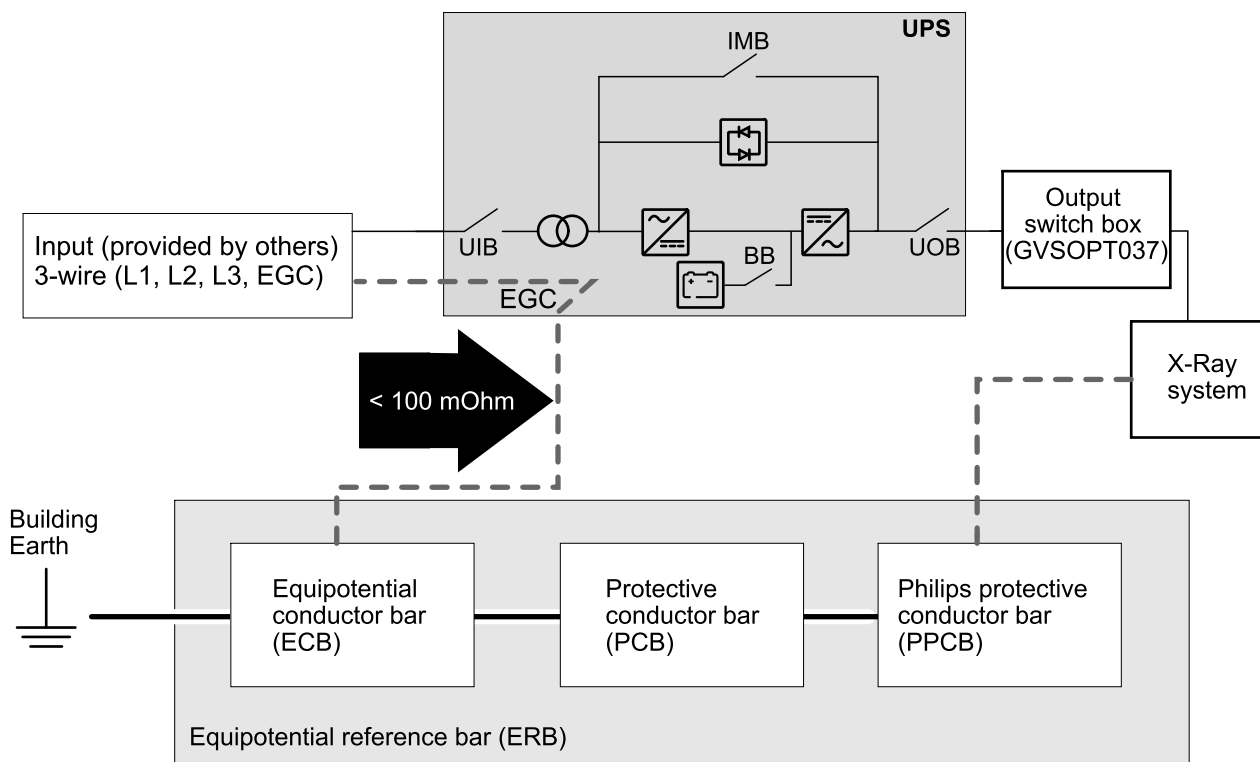
10. Reconnect the two signal cables from the display. Fasten the signal cables with cable ties in the upper left corner.



## Appendix: Power and Ground Schematics for Philips X-Ray System

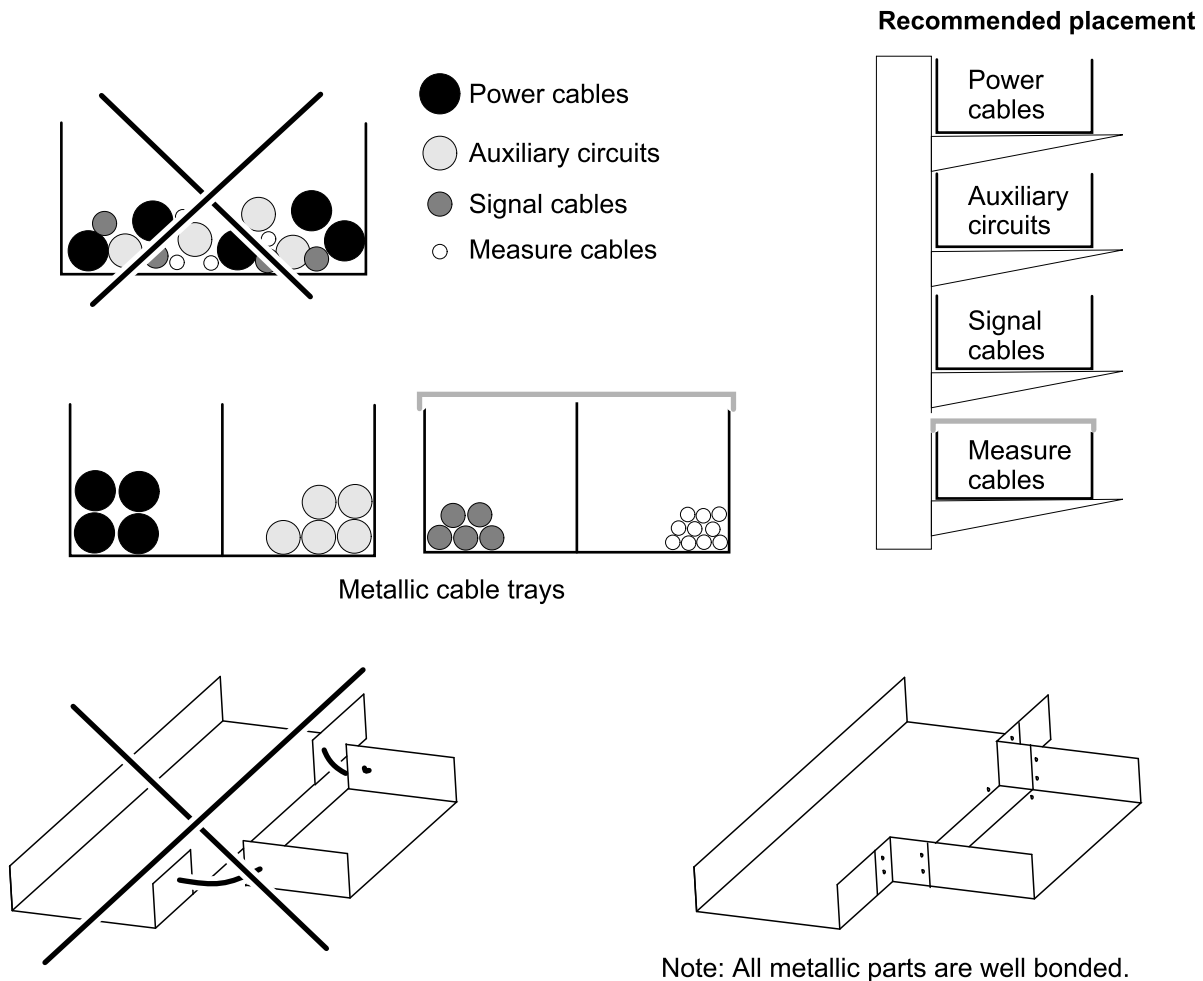
When installing the UPS with a Philips X-Ray system, the schematics below must be followed.

**The ground impedance connection from the UPS to the protective conductor bar (PCB) plug must not exceed 100 mΩ. Local installers shall apply a release test.**



### General Requirements

- Medical equipment cabling must always be routed separately.
- For installation of cables between hospital mains, the UPS, and the X-Ray system, the installer must follow all applicable international and local regulations.
- Equipotential connections between equipment must be short and wide.
- Carefully identify and recognize the protective earth and the equipotential earth.
- The green and yellow colors are specified for protective conductors. However, no colors are specified for equipotential bonding conductors.
- Use equipotential metallic cable trays in relation to the main equipotential bonding (reduces radiation from the electrical power cables). If you use only one cable tray for all cables, the cables must be separated correctly from each other.

**Recommended Cable Placement in Metallic Cable Trays**

Schneider Electric  
35 rue Joseph Monier  
92500 Rueil Malmaison  
France

+ 33 (0) 1 41 29 70 00



As standards, specifications, and design change from time to time,  
please ask for confirmation of the information given in this publication.

© 2021 – 2022 Schneider Electric. All rights reserved.

990-91500B-001