

# Gutor PXC

25-100 kVA

Installation

03/2017



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

# Table of Contents

Important Safety Instructions — SAVE THESE	
<b>INSTRUCTIONS</b> .....	5
FCC Statement .....	6
Safety Precautions .....	6
Electrical Safety .....	8
Battery Safety .....	9
<b>Specifications</b> .....	11
Input Specifications .....	11
Bypass Specifications .....	11
Output Specifications .....	12
Battery Specifications .....	13
Torque Specifications .....	13
Recommended Upstream Protection .....	14
Recommended Cable Sizes .....	14
UPS Weights and Dimensions .....	15
Top Entry Cabinet Weight and Dimensions .....	15
Battery Cabinet Weights and Dimensions .....	16
Clearance .....	17
Environment .....	18
Heat Dissipation .....	18
<b>System Overview</b> .....	19
Overview of Floor Anchoring Hole Positions (Option) .....	22
<b>Installation</b> .....	23
Installation Procedure for the 25-50 kVA UPS .....	23
Install the Top Entry Cabinet (Option) .....	24
Prepare for Cables on the 25-50 kVA UPS with an Adjacent Battery Cabinet (Option) .....	30
Convert the 25-50 kVA UPS from Dual Mains to Single Mains (Option) .....	32
Reposition the Conduit Box on the 25-50 kVA UPS .....	34
Connect the Power Cables on the 25-50 kVA UPS .....	36
Installation Procedure for the 75-100 kVA UPS .....	38
Prepare for Cables on the 75-100 kVA UPS with an Adjacent Battery Cabinet (Option) .....	39
Convert the 75-100 kVA UPS from Dual Mains to Single Mains (Option) .....	41
Connect the Power Cables on the 75-100 kVA UPS .....	43
Connect the Control Cables .....	47
Connect the Remote Emergency Power Off (REPO) .....	51
Connect the Input Contacts and Output Relays (Option) .....	54
Input Contacts and Output Relays Configuration Settings .....	54
Install the Kick Plates .....	55



# 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.

**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**

This manual contains important safety instructions that should be followed during the installation and maintenance of the UPS system.

**⚠ 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.
- 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 remotely 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

	25 kVA		37.5 kVA		50 kVA	
<b>Voltage (V)</b>	<b>208</b>	<b>220</b>	<b>208</b>	<b>220</b>	<b>208</b>	<b>220</b>
Connections	L1, L2, L3, N, G for single mains L1, L2, L3, G for dual mains					
Voltage range (V)	±10%					
Frequency range (Hz)	60 ±8%					
Nominal input current (A)	75	71	112	106	149	141
Maximum input current (A)	91	86	137	129	182	172
Total harmonic distortion (THDI)	< 5% at 100% load					
Maximum input short circuit rating (kA)	65					
Ramp-in	Up to 10 seconds					

	75 kVA		100 kVA	
<b>Voltage (V)</b>	<b>208</b>	<b>220</b>	<b>208</b>	<b>220</b>
Connections	L1, L2, L3, N, G for single mains L1, L2, L3, G for dual mains			
Voltage range (V)	±10%			
Frequency range (Hz)	60 ±8%			
Nominal input current (A)	221	209	295	279
Maximum input current (A)	270	255	360	340
Total harmonic distortion (THDI)	< 5% at 100% load			
Maximum input short circuit rating (kA)	65			
Ramp-in	Up to 10 seconds			

## Bypass Specifications

	25 kVA		37.5 kVA		50 kVA	
<b>Voltage (V)</b>	<b>208</b>	<b>220</b>	<b>208</b>	<b>220</b>	<b>208</b>	<b>220</b>
Connections	L1, L2, L3, N, G					
Voltage range (V)	±10%					
Frequency range(Hz)	60 ± 8%					
Nominal bypass current (A)	69	66	104	98	139	131

	75 kVA		100 kVA	
<b>Voltage (V)</b>	<b>208</b>	<b>220</b>	<b>208</b>	<b>220</b>
Connections	L1, L2, L3, N, G			
Voltage range (V)	±10%			
Frequency range (Hz)	60 ± 8%			
Nominal bypass current (A)	208	197	278	262

## Output Specifications

	25 kVA		37.5 kVA		50 kVA	
Voltage (V)	208	220	208	220	208	220
Connections	L1, L2, L3, N, G					
Overload capacity	150% for 1 minute 125% for 10 minutes 230% for 60 ms 1000% for 100 ms (bypass operation)					
Voltage range (V)	± 1%					
Power factor	1					
Nominal output current (A)	69	66	104	98	139	131
Total harmonic distortion (THDU)	< 2% at 100% linear load < 5% at 100% non-linear load					
Frequency (Hz)	60 Hz (sync to bypass) 60 Hz ± 0.1% (free-running)					
Slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, or 4					
Load crest factor	3:1					
Load power factor	0.5 leading to 0.5 lagging without derating					

	75 kVA		100 kVA	
Voltage (V)	208	220	208	220
Connections	L1, L2, L3, N, G			
Overload capacity	150% for 1 minute 125% for 10 minutes 230% for 60 ms 1000% for 100 ms (bypass operation)			
Voltage range (V)	± 1%			
Power factor	1			
Nominal output current (A)	208	197	278	262
Total harmonic distortion (THDU)	< 2% at 100% linear load < 5% at 100% non-linear load			
Frequency (Hz)	60 Hz (sync to bypass) 60 Hz ± 0.1% (free-running)			
Slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, or 4			
Load crest factor	3:1			
Load power factor	0.5 leading to 0.5 lagging without derating			

## Battery Specifications

	25 kVA	37.5 kVA	50 kVA	75 kVA	100 kVA
Charging power in % of output power	20%				
Nominal battery voltage (VDC)	384				
Nominal float voltage (VDC)	436				
Boost charge voltage (VDC)	441				
End of discharge voltage (full load) (VDC)	321				
Battery current at full load and nominal battery voltage (A)	69	104	138	207	276
Battery current at full load and minimum battery voltage (A)	83	124	165	248	331
Restored energy time to 90% charge	8 hours				
Temperature compensation	Adjustable				
Ripple current	< 1%				
Battery test	Manual or automatic (selectable)				
Deep discharge protection	Yes				
Recharge according to battery temperature	Yes				
Cold start	Yes				

## Torque Specifications

Bolt size	Torque
M3	0.63 ( 0.46 lb-ft)
M4	1.7 Nm (1.25 lb-ft)
M6	5 Nm (3.69 lb-ft)
M8	17.5 Nm (12.91 lb-ft)
M10	30 Nm (22 lb-ft)
M12	50 Nm (36.87 lb-ft)

## Recommended Upstream Protection

<b>⚠ DANGER</b>					
<b>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</b>					
A suitable surge protective device rated not greater than 2500 V must be installed on the input source.					
<b>Failure to follow these instructions will result in death or serious injury.</b>					

### Input

80% rated circuit breaker	25 kVA	37.5 kVA	50 kVA	75 kVA	100 kVA
Input (A)	125	175	225	350	450
Bypass (A)	90	150	175	300	350

## Recommended Cable 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 (National Electrical Code, ANSI/NFPA 70). The maximum allowable conductor size is:					
<ul style="list-style-type: none"> <li>• 250 kcmil for 25-50 kVA UPS</li> <li>• 500 kcmil for 75-100 kVA UPS</li> </ul>					
<b>Failure to follow these instructions will result in death or serious injury.</b>					

Cable sizes in this manual are based on Table 310.15 of the National Electrical Code 2014 (NEC) with the following assertions:

- 90 °C conductors (THHN) for 75 °C termination
- Not more than one current carrying conductor per phase for 25-50 kVA UPS
- Not more than two current carrying conductor per phase for 75-100 kVA UPS
- Use of copper conductors only – do not use aluminum conductors.
- An ambient temperature of 30 °C

If the ambient temperature is greater than 30 °C, larger conductors are to be selected with the correction factors of the NEC. Equipment grounding conductors (EGC) are sized in accordance with NEC Article 250.122 and Table 250.122.

	25 kVA	37.5 kVA	50 kVA	75 kVA	100 kVA
Input	1 AWG	2/0 AWG	4/0 AWG	500 kcmil or 2 x 2/0 AWG	2 x 4/0 AWG
Bypass	3 AWG	1/0 AWG	2/0 AWG	350 kcmil or 2 x 1/0 AWG	500 kcmil or 2 x 2/0 AWG
Output	3 AWG	1/0 AWG	2/0 AWG	350 kcmil or 2 x 1/0 AWG	500 kcmil or 2 x 2/0 AWG
Battery	1/0 AWG	1/0 AWG	3/0 AWG	350 kcmil or 2 x 1/0 AWG	2 x 4/0 AWG

## UPS Weights and Dimensions

	<b>Weight kg (lbs)</b>	<b>Height mm (in)</b>	<b>Width mm (in)</b>	<b>Depth mm (in)</b>
25 kVA	330 (725)	2100 (82.7)	600 (23.6)	800 (31.5)
37.5 kVA	409 (900)	2100 (82.7)	600 (23.6)	800 (31.5)
50 kVA	455 (1000)	2100 (82.7)	600 (23.6)	800 (31.5)
75 kVA	693 (1525)	2100 (82.7)	1200 (47.2)	800 (31.5)
100 kVA	784 (1725)	2100 (82.7)	1200 (47.2)	800 (31.5)

## Top Entry Cabinet Weight and Dimensions

For top cable entry for the 25-50 kVA UPS.

	<b>Weight kg (lbs)</b>	<b>Height mm (in)</b>	<b>Width mm (in)</b>	<b>Depth mm (in)</b>
Top entry cabinet	136 (300)	2100 (82.7)	400 (15.8)	800 (31.5)

## Battery Cabinet Weights and Dimensions

### Battery Cabinets for 25 kVA, 37.5 kVA, and 50 kVA UPSs

	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Battery cabinet 150A CB 12HX100 (GUPXCB150EN100)	602 (1325)	2100 (82.7)	770 (30.3)	800 (31.5)
Battery cabinet 150A CB 12HX150 (GUPXCB150EN150)	750 (1650)	2100 (82.7)	770 (30.3)	800 (31.5)
Battery cabinet 150A CB 12HX205 (GUPXCB150EN205)	909 (2000)	2100 (82.7)	770 (30.3)	800 (31.5)
Battery cabinet 200A CB 12HX205 (GUPXCB200EN205)	909 (2000)	2100 (82.7)	770 (30.3)	800 (31.5)
Battery cabinet 150A CB UPS12-100MR (GUPXCB150CD100)	591 (1300)	2100 (82.7)	770 (30.3)	800 (31.5)
Battery cabinet 150A CB UPS12-150MR (GUPXCB150CD150)	682 (1500)	2100 (82.7)	770 (30.3)	800 (31.5)
Battery cabinet 150A CB UPS12-210MR (GUPXCB150CD210)	864 (1900)	2100 (82.7)	770 (30.3)	800 (31.5)
Battery cabinet 200A CB UPS12-210MR (GUPXCB200CD210)	864 (1900)	2100 (82.7)	770 (30.3)	800 (31.5)

### Battery Cabinets for 37.5 kVA, 50 kVA, 75 kVA, and 100 kVA UPSs

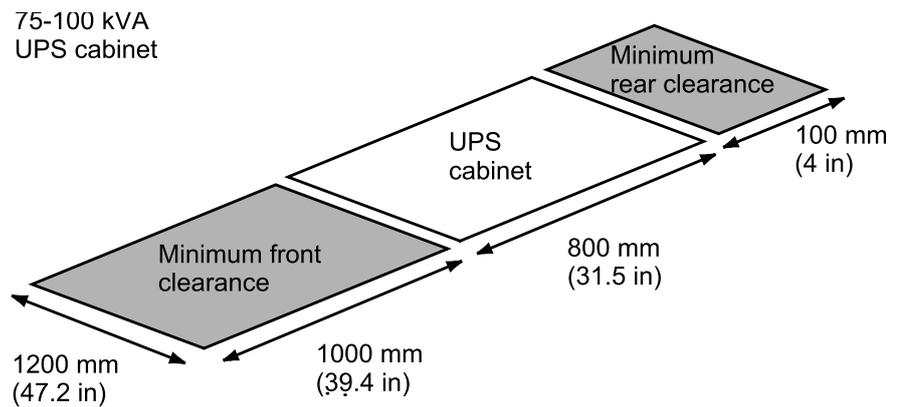
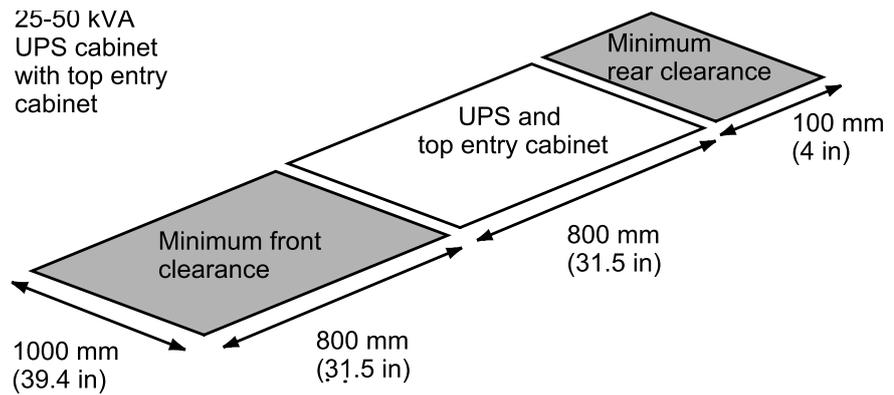
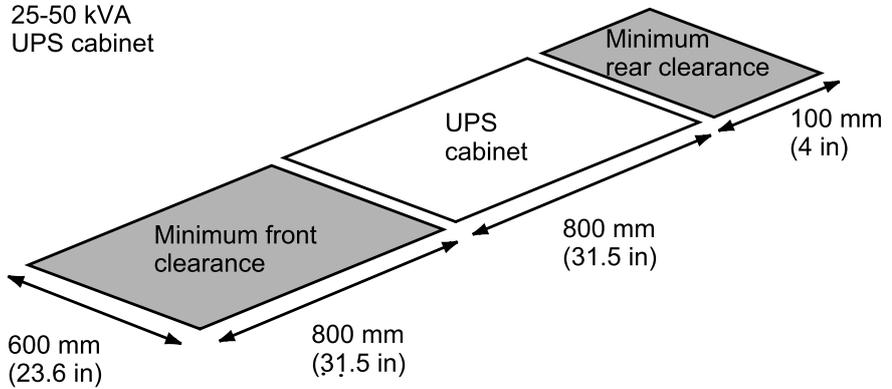
	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Battery cabinet 150A CB 12HX300 (GUPXCB150EN300)	1182 (2600)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 200A CB 12HX300 (GUPXCB200EN300)	1182 (2600)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 300A CB 12HX300 (GUPXCB300EN300)	1182 (2600)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 200A CB 12HX540 (GUPXCB200EN540)	1852 (4075)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 300A CB12HX540 (GUPXCB300EN540)	1852 (4075)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 400A CB 12HX300 (GUPXCB400EN300)	1182 (2600)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 400A CB 12HX540 (GUPXCB400EN540)	1864 (4100)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 150A CB UPS12-300MR (GUPXCB150CD300)	1159 (2550)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 200A CB UPS12-300MR (GUPXCB200CD300)	1159 (2550)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 300A CB UPS12-300MR (GUPXCB300CD300)	1159 (2550)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 200A CB UPS12-540MR (GUPXCB200CD540)	1773 (3900)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 300A CBUPS12-540MR (GUPXCB300CD540)	1773 (3900)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 400A CB UPS12-300MR (GUPXCB400CD300)	1159 (2550)	2100 (82.7)	1008 (39.7)	800 (31.5)
Battery cabinet 400A CB UPS12-540MR (GUPXCB400CD540)	1761 (3875)	2100 (82.7)	1008 (39.7)	800 (31.5)

# Clearance

The UPS system requires a minimum rear clearance of 100 mm (4 in). There is no side clearance required for installation.

**NOTE:** Minimum rear clearance is 800 mm (31.5 in) if the UPS system is anchored to the floor.

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



## Environment

	Operating	Storage
Temperature	-10 °C to 40 °C (14 °F to 104 °F) <sup>1</sup>	-15 °C to 40 °C (5 °F to 104 °F) for systems with batteries -30 °C to 80 °C (-22 °F to 176 °F) for systems without batteries
Relative humidity	0-95% non-condensing	0-95% non-condensing
Elevation according to IEC 62040-3	1000 m (3280 ft): 1.000 1500 m (4921 ft): 0.975 2000 m (6561 ft): 0.950 2500 m (8202 ft): 0.925 3000 m (9842 ft): 0.900	≤ 5000 m (16404 ft) above sea-level (or in an environment with equivalent atmospheric pressure)
Audible noise (1 m (3 ft) from surface)	65 dBA at 100% load	
Protection class	UL type 1/NEMA1 (IP42)	
Color	Light gray RAL7035	

## Heat Dissipation

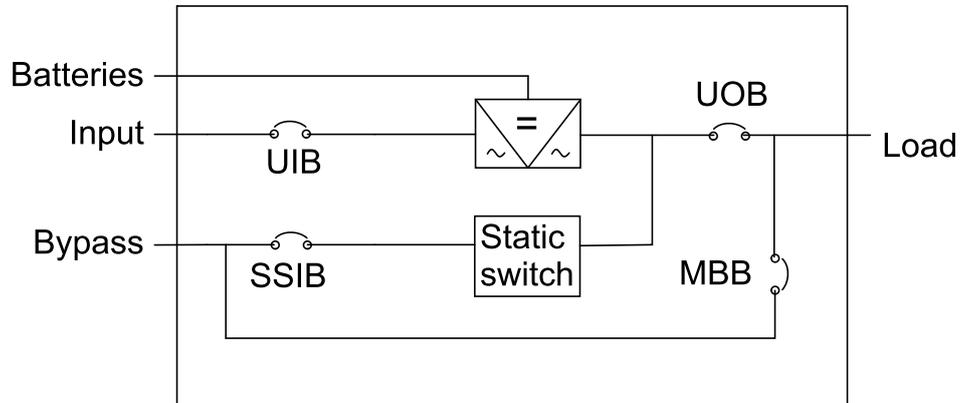
	25 kVA	37.5 kVA	50 kVA	75 kVA	100 kVA
Heat dissipation at 100% load (BTU/hr)	7216	10825	14032	20749	28465
Heat dissipation at 75% load (BTU/hr)	5187	7781	9927	14446	19855
Heat dissipation at 50% load (BTU/hr)	3408	5337	6421	9336	12841
Heat dissipation at 25% load (BTU/hr)	2265	3397	4270	6096	8231

1. Up to 55 °C (131 °F) with derating

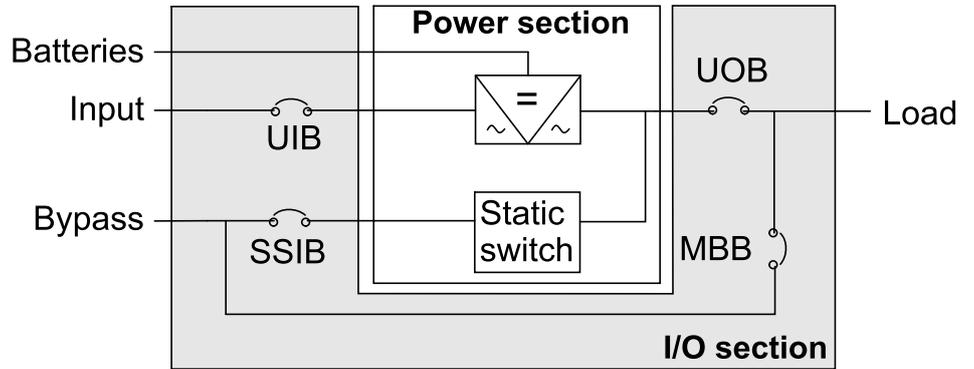
# System Overview

## One Line Diagrams

25-50 kVA UPS Cabinet

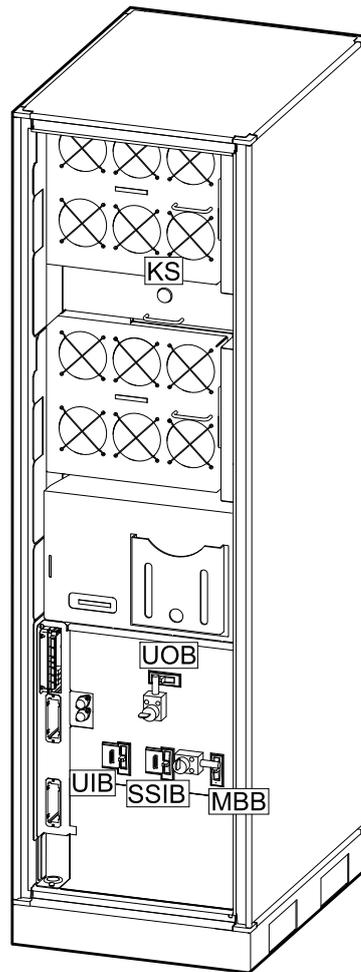


75-100 kVA UPS Cabinet



## Breakers in the 25-50 kVA UPS System

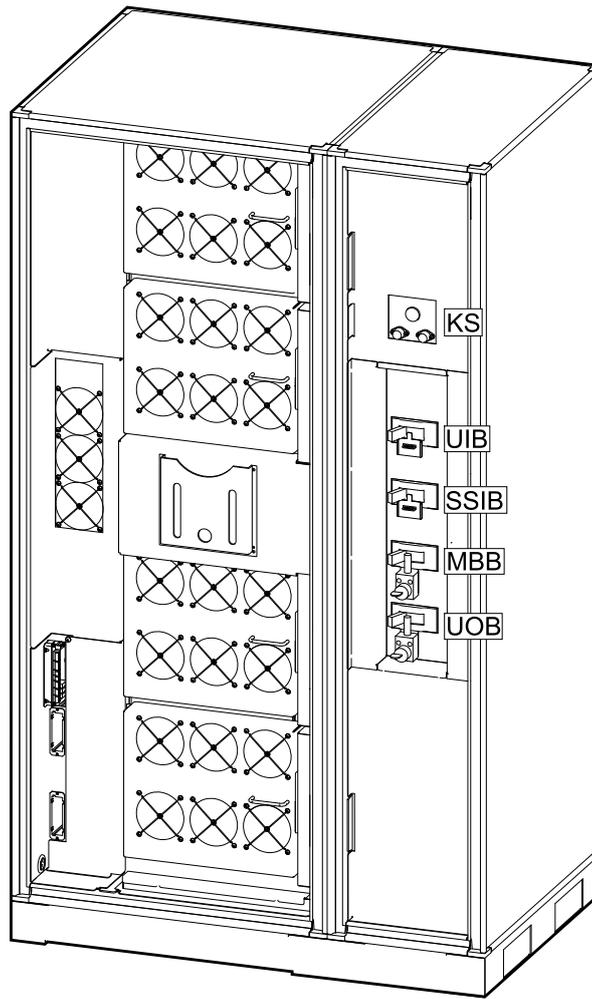
Front View of the UPS Cabinet (50 kVA UPS Shown)



UIB	Unit input breaker
SSIB	Static switch input breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker
BB	Battery breaker in the external battery solution (not shown here)
KS	Kirk key solenoid interlock

## Breakers in the 75-100 kVA UPS System

Front View of the UPS Cabinet (100 kVA UPS Shown)



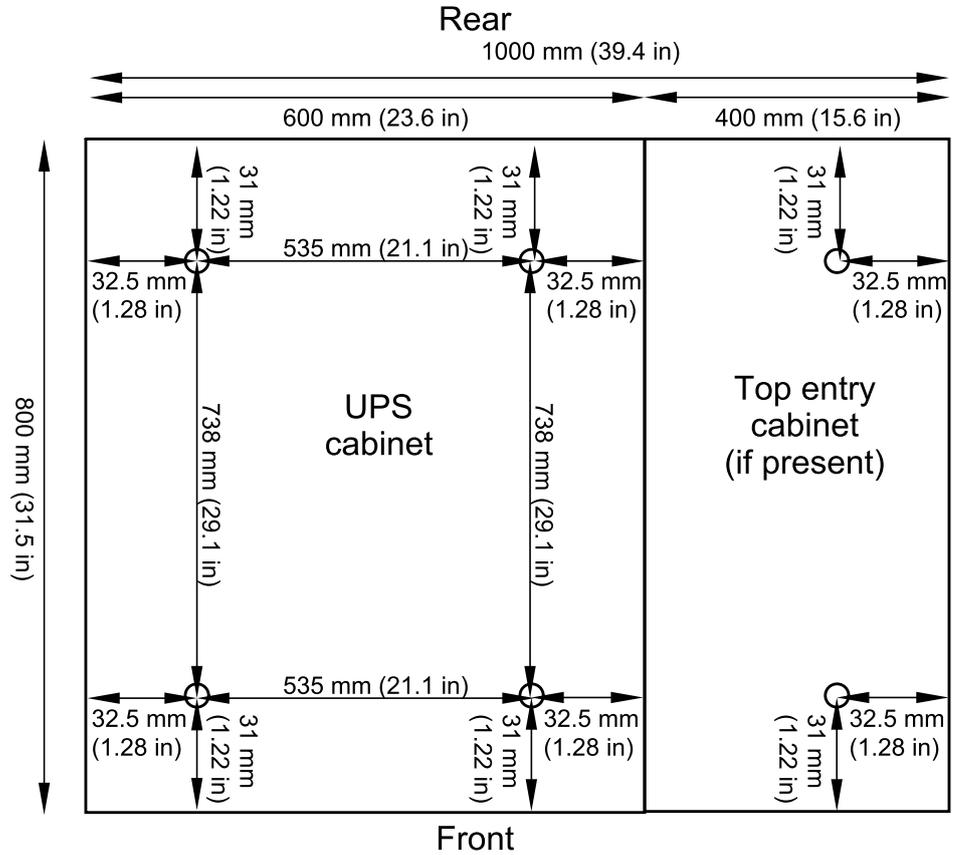
UIB	Unit input breaker
SSIB	Static switch input breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker
BB	Battery breaker in the external battery solution (not shown here)
KS	Kirk key solenoid interlock

## Overview of Floor Anchoring Hole Positions (Option)

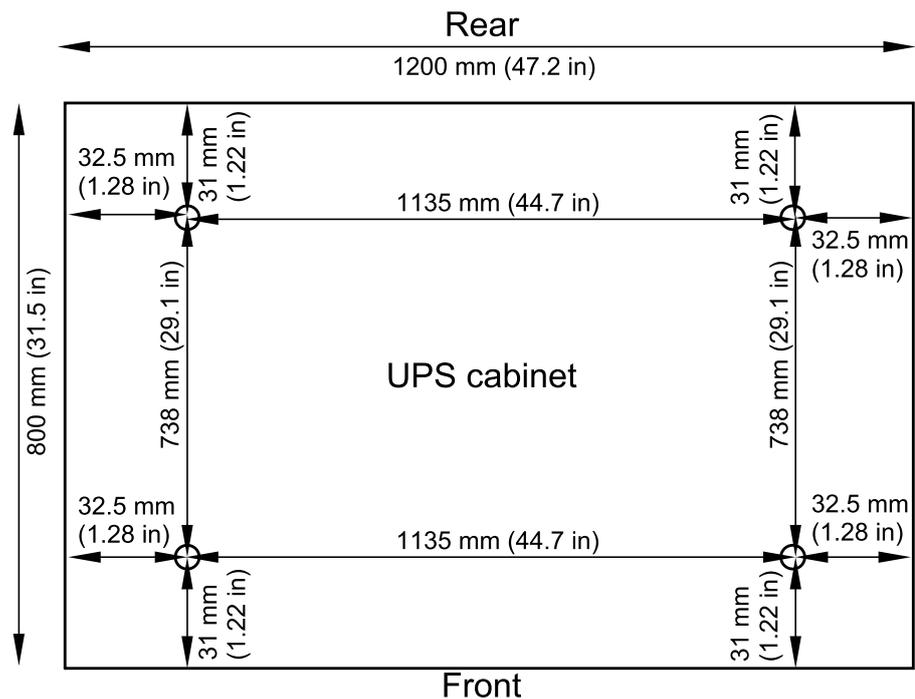
Drill the anchoring holes in the floor according to the illustration.

**NOTE:** Minimum rear clearance is 800 mm (31.5 in) if the UPS system is anchored to the floor.

### 25-50 kVA UPS Cabinet and Top Entry Cabinet Footprint



### 75-100 kVA UPS Cabinet Footprint



# Installation

## Installation Procedure for the 25-50 kVA UPS

**NOTE:** The UPS is configured for dual mains as default.

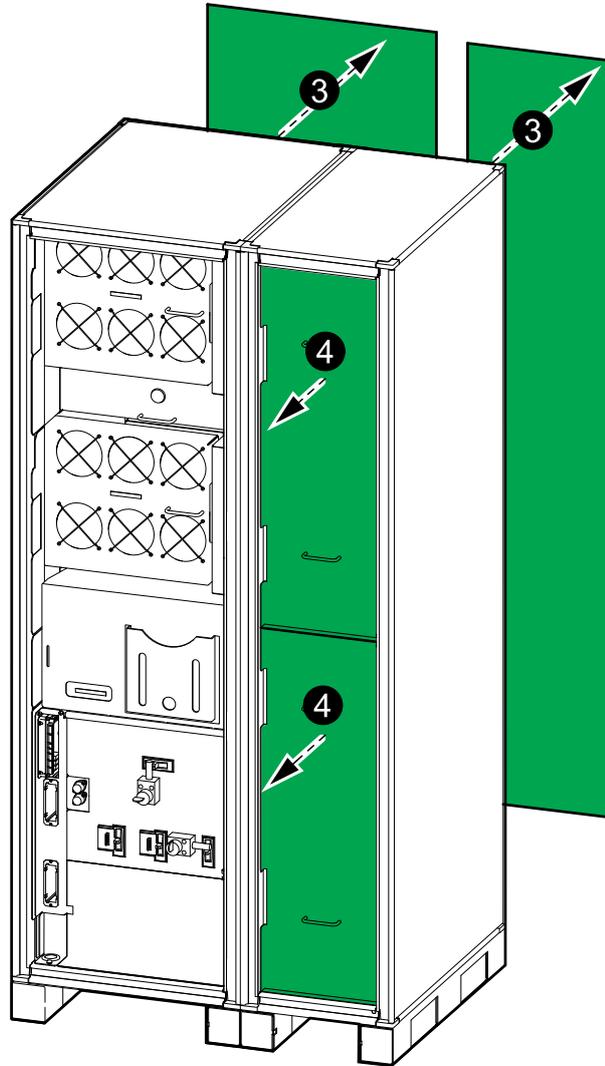
**NOTE:** Bottom cable entry is available for the UPS as a default. Top cable entry is available with the top entry cabinet.

1. Move the UPS cabinet and the top entry cabinet (if present) to the installation location with a forklift or a low profile 21 inch pallet jack by lifting from the sides.
2. Top cable entry: *Install the Top Entry Cabinet (Option), page 24.*
3. *Prepare for Cables on the 25-50 kVA UPS with an Adjacent Battery Cabinet (Option), page 30.*
4. *Convert the 25-50 kVA UPS from Dual Mains to Single Mains (Option), page 32.*
5. *Reposition the Conduit Box on the 25-50 kVA UPS, page 34.*
6. *Connect the Power Cables on the 25-50 kVA UPS, page 36.*
7. *Connect the Control Cables, page 47.*
8. *Connect the Remote Emergency Power Off (REPO), page 51.*
9. *Connect the Input Contacts and Output Relays (Option), page 54.*
10. *Install the Kick Plates, page 55.*
11. Reinstall all plates and close the doors.

## Install the Top Entry Cabinet (Option)

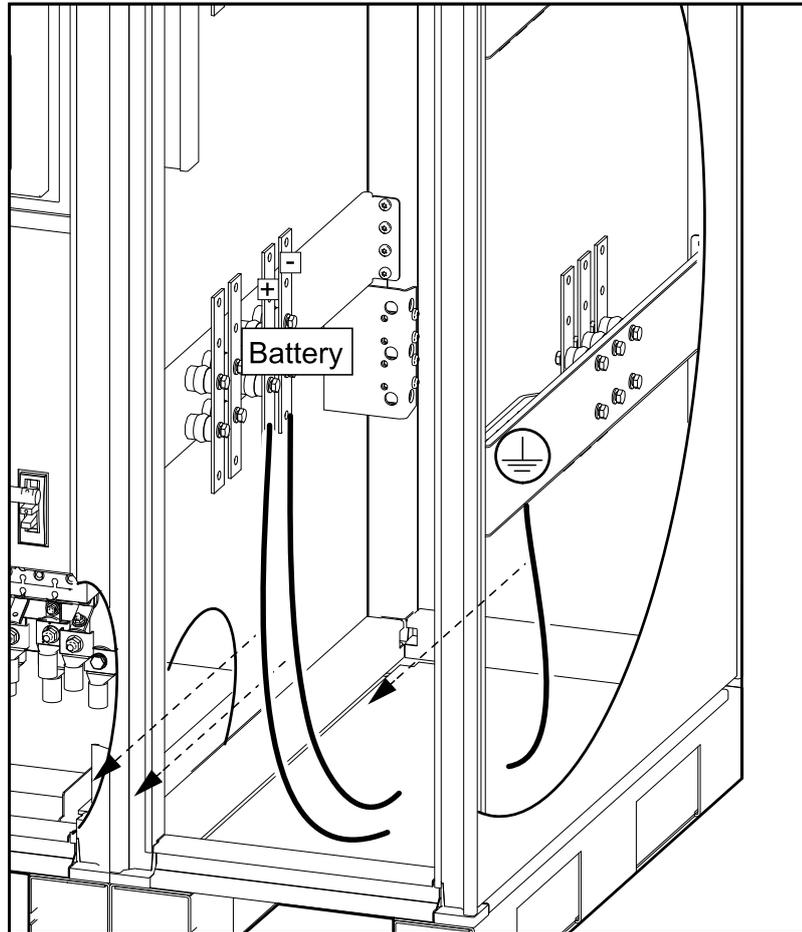
The top entry cabinet is only available for the 25-50 kVA UPS.

1. Remove the right side panel from the UPS cabinet and install the side panel on the right side of the top entry cabinet.
2. Line up the UPS cabinet and the top entry cabinet.
3. Remove the rear panel from the UPS cabinet and the top entry cabinet.
4. Remove the two front plates from the top entry cabinet.



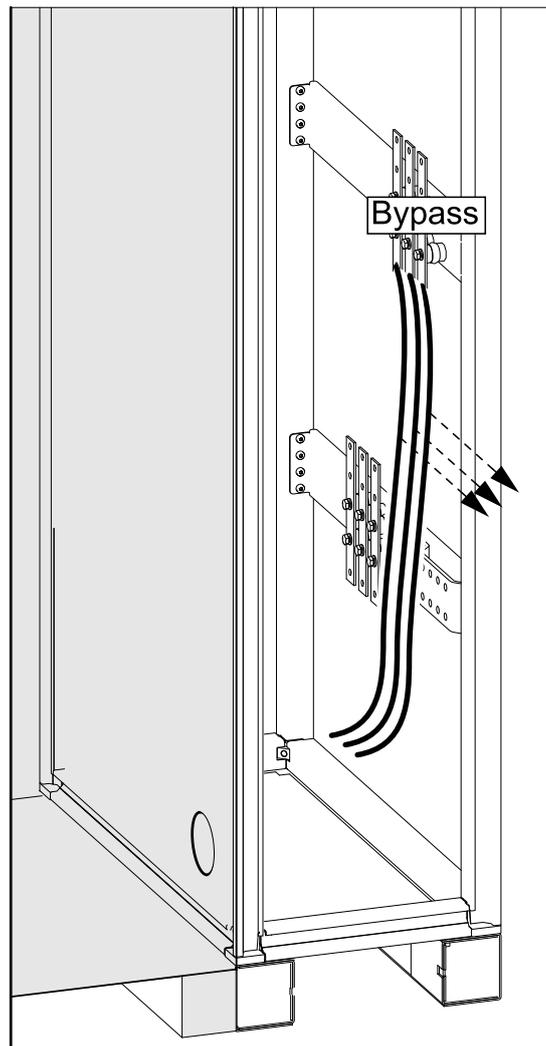
**5. Only in configurations with adjacent battery cabinet(s):**

- a. Remove the preinstalled battery cables from the battery busbars (+,-) in the left side of the top entry cabinet. The battery busbars inside the top entry cabinet are only for remote battery connections.
- b. Remove the preinstalled battery ground cable from the ground busbar in the right side of the top entry cabinet.

**Front View of the Top Entry Cabinet**

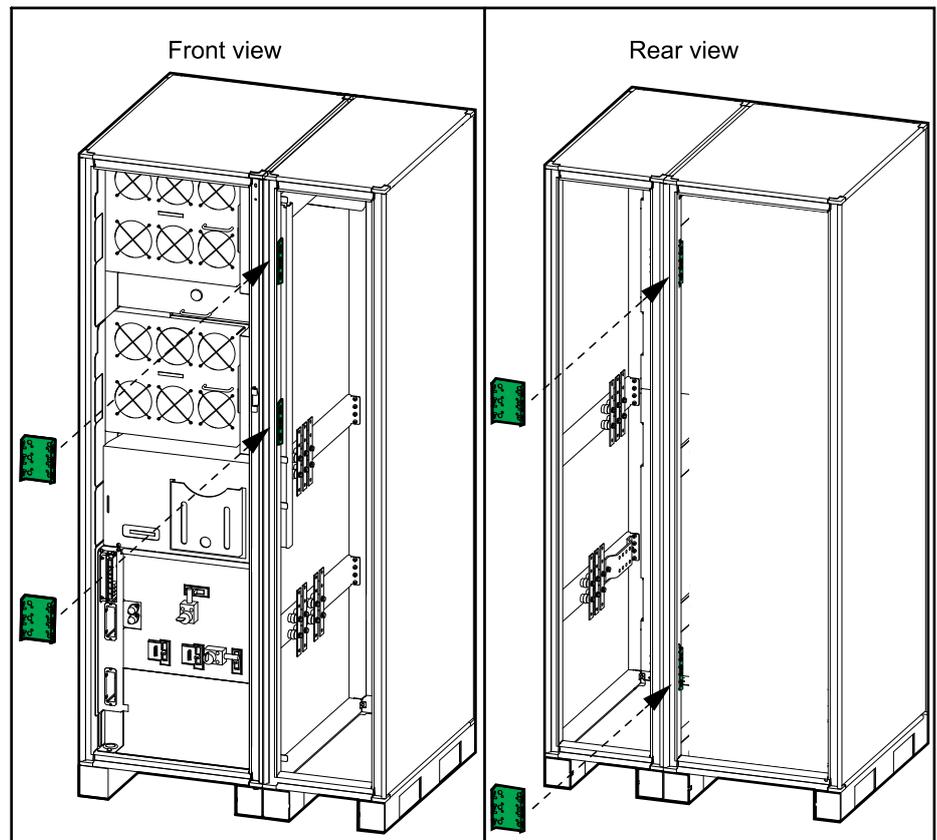
6. **Only in single mains configurations:** Remove the three preinstalled bypass cables in the right side of the top entry cabinet.

### Front View of the Top Entry Cabinet



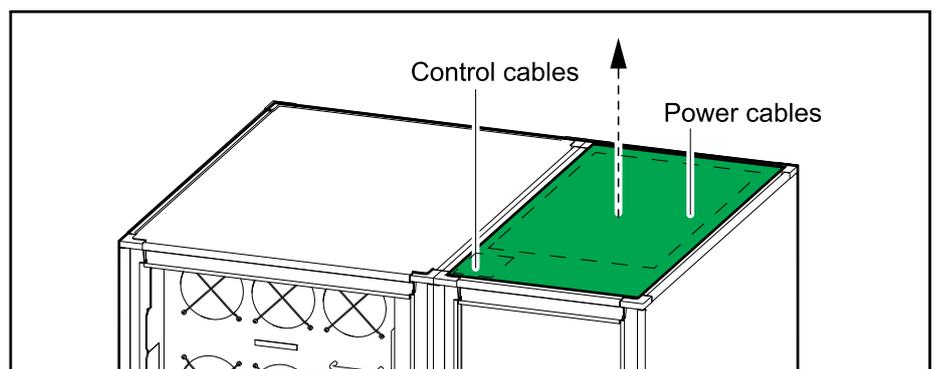
7. Install two interconnection brackets on the front of the cabinets and two interconnection brackets in the rear of the cabinets. Use C-clamps to hold the cabinets together to make the installation easier. Use four screws on each side of each interconnection bracket to fasten it to the cabinet frame.

### The UPS Cabinet and the Top Entry Cabinet



8. Reinstall the rear panels on the UPS cabinet and the top entry cabinet.
9. Remove the top gland plate in the top entry cabinet.

### Front View of the UPS and Top Entry Cabinet



10. Drill holes and install conduits for power cables and for control cables in the top gland plate. Conduits are not provided.

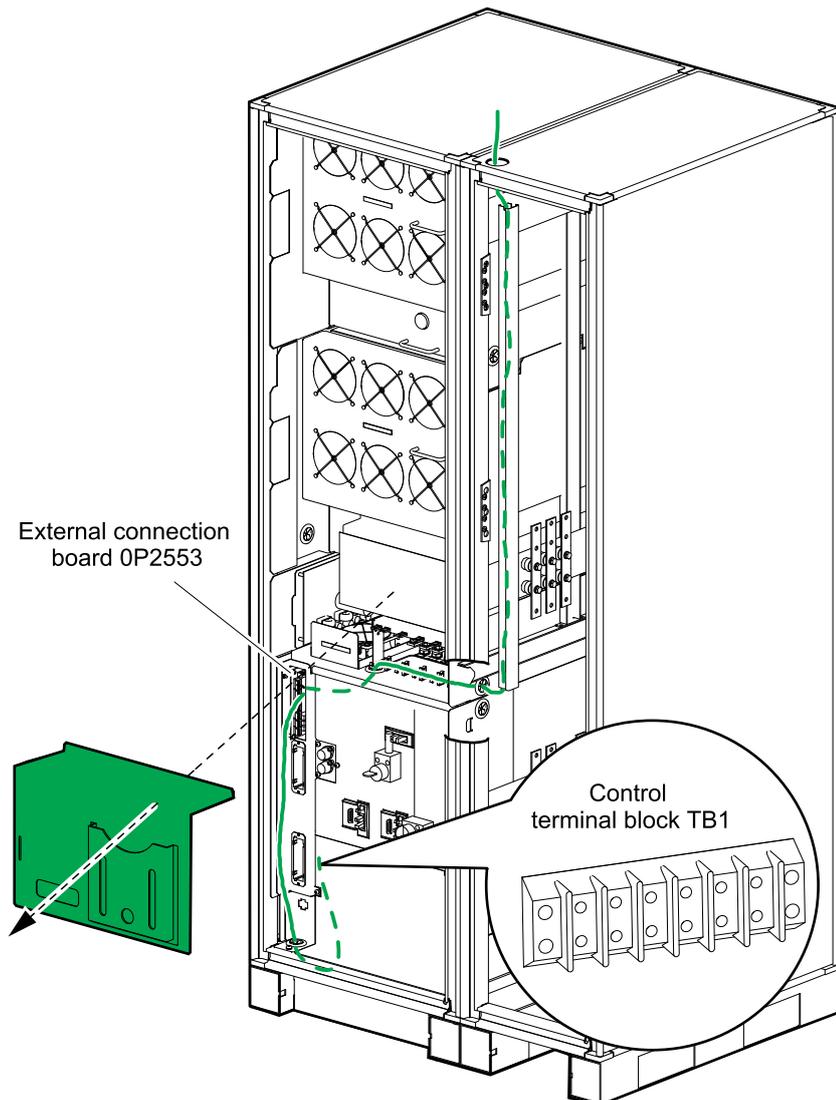
## **⚠ DANGER**

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

Do not drill or cut holes for cables or conduits with the gland plate 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.**

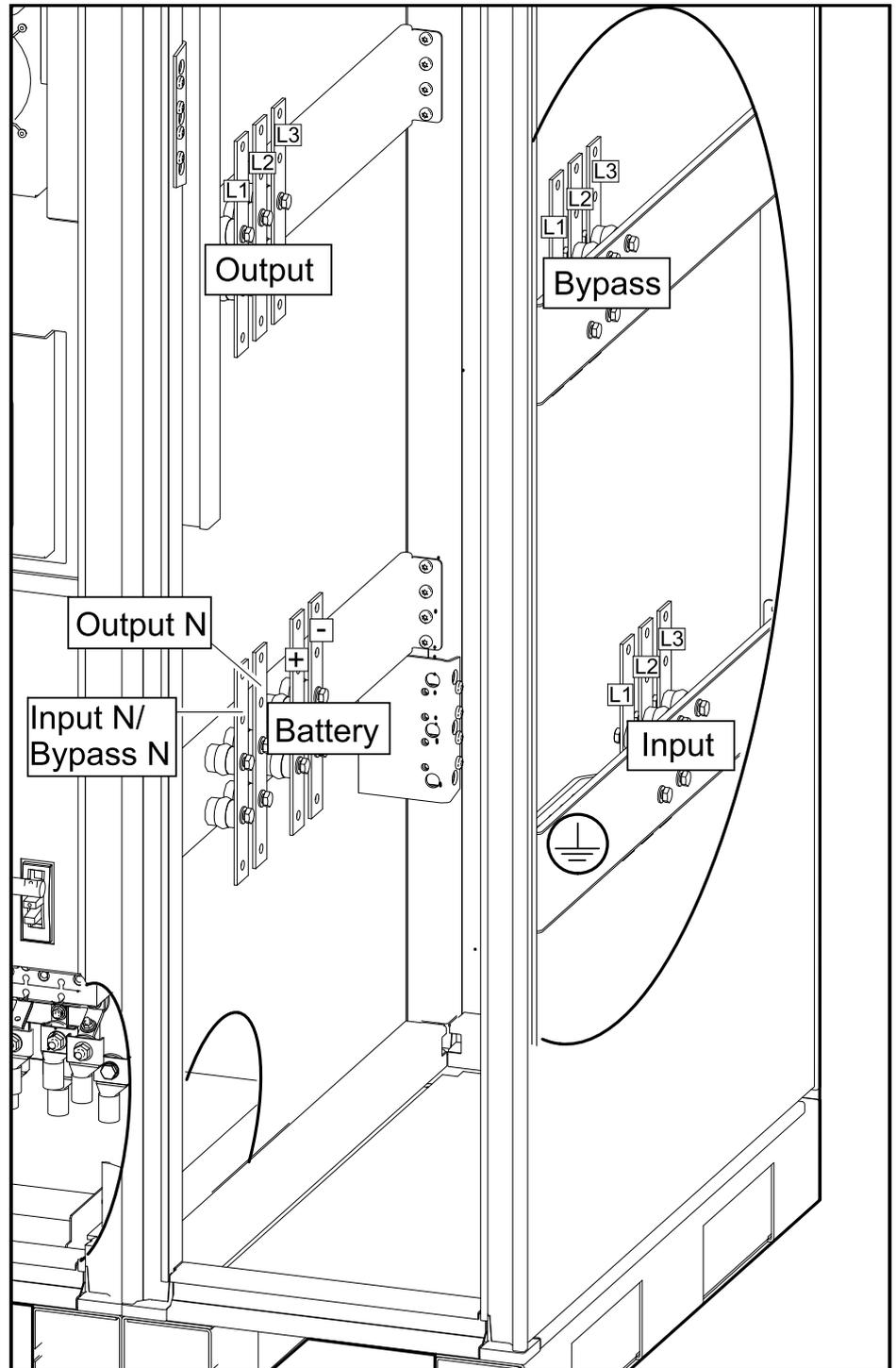
11. Reinstall the top gland plate in the top entry cabinet.
12. Remove the cover.
13. Route the remote battery control cables through the top gland plate in the top entry cabinet, into the cable channel at the front of the top entry cabinet, and into the UPS cabinet to the control terminal block TB1. Connections are described in *Connect the Control Cables*, page 47
14. Route the REPO cables and cables for input contacts and output relays through the top gland plate in the top entry cabinet, into the cable channel at the front of the top entry cabinet, and into the UPS cabinet to the external connection board OP2553. Connections are described in *Connect the Remote Emergency Power Off (REPO)*, page 51 and *Connect the Input Contacts and Output Relays (Option)*, page 54.



15. Reinstall the cover.

16. Route the equipment grounding conductor through the top gland plate and connect to the ground busbar in the top entry cabinet.

### Front View of the UPS cabinet and Top Entry Cabinet



17. Route the input cables through the top gland plate and connect to the input busbars (L1, L2, L3, (N)) in the top entry cabinet.

**NOTE:** Only connect input N in single mains systems.

18. Route the bypass cables through the top gland plate and connect to the bypass busbars (L1, L2, L3, N) in the top entry cabinet.

**NOTE:** Only connect bypass cables in dual mains systems.

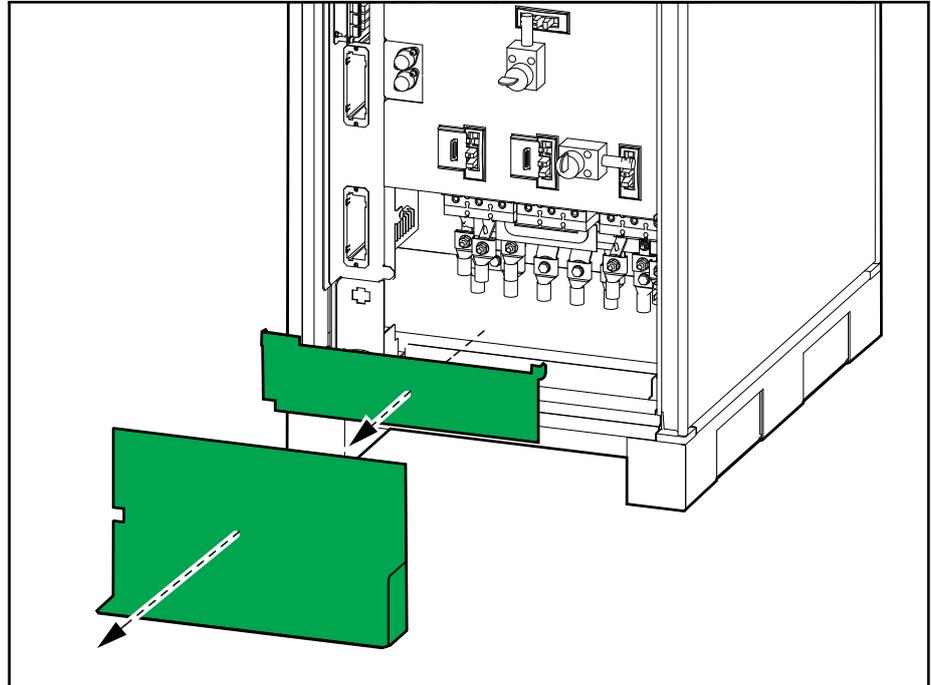
19. Route the output cables through the top gland plate and connect to the output busbars (L1, L2, L3, N) in the top entry cabinet.

20. Route the battery cables (+, -, ground) from the remote battery cabinet(s) through the top gland plate and connect to the battery busbars (+, -) and the ground busbar in the top entry cabinet

### Prepare for Cables on the 25-50 kVA UPS with an Adjacent Battery Cabinet (Option)

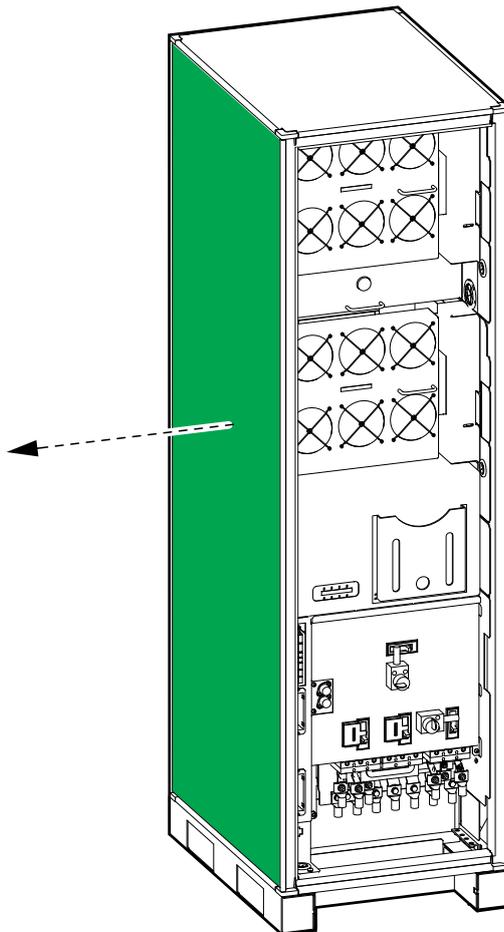
1. Remove the two plates in the bottom of the UPS cabinet.

#### Front View of the UPS Cabinet



- Remove the left side panel from the UPS cabinet.

**Front View of the UPS Cabinet**



- Drill holes and install conduits for battery cables and for control cables in the side panel. Conduits are not provided. Fit the holes to the placement of the cable inlets inside the UPS cabinet.

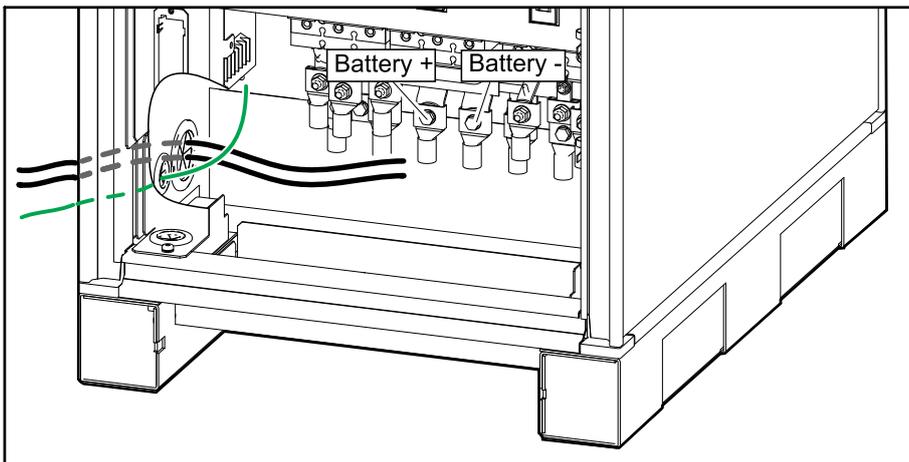
**⚠ DANGER**

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

Do not drill or cut holes for cables or conduits with the side panel 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.**

**Front View of the UPS Cabinet**

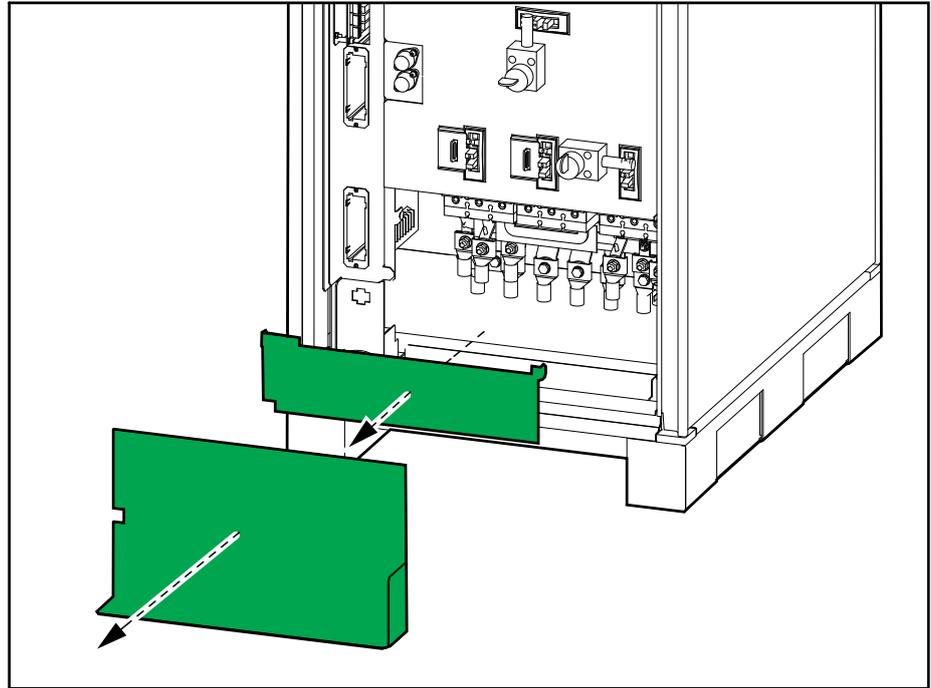


4. Reinstall the side panel in the UPS cabinet.

## Convert the 25-50 kVA UPS from Dual Mains to Single Mains (Option)

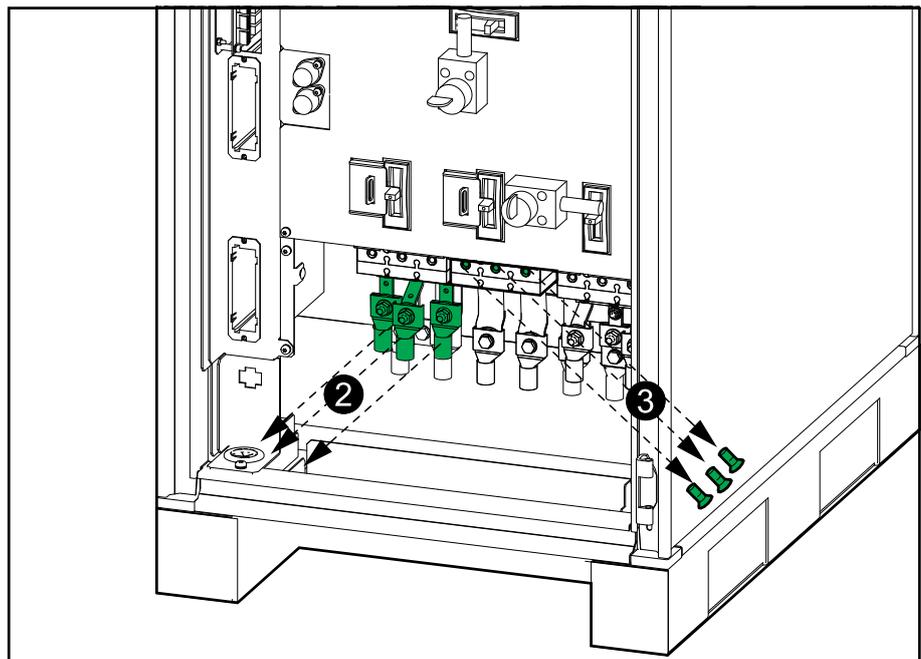
1. Remove the two plates in the bottom of the UPS cabinet.

### Front View of the UPS Cabinet



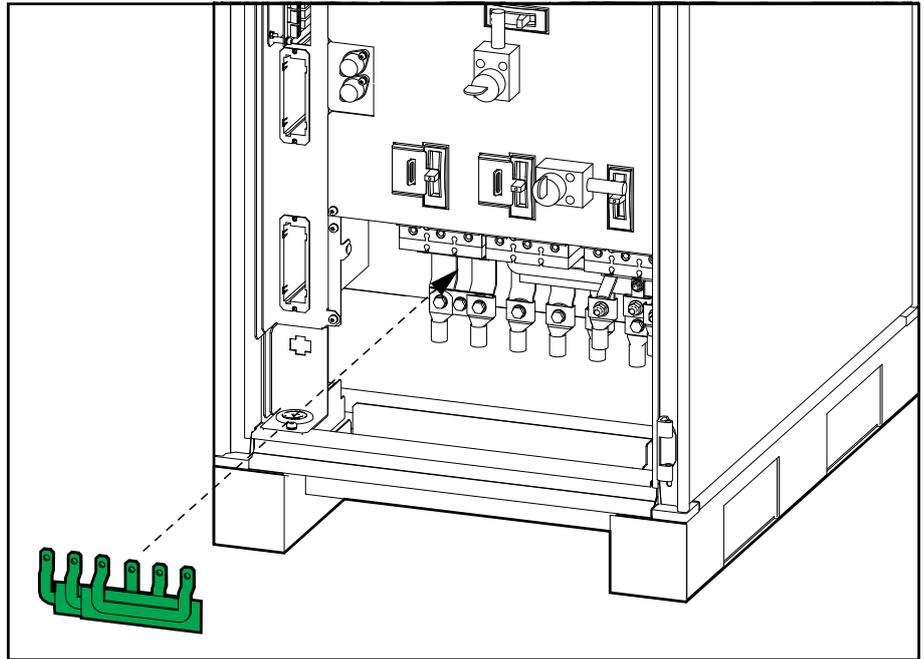
2. Remove the three input busbars from the unit input breaker UIB. Save the three busbar screws.
3. Remove the three busbar screws from the static switch input breaker SSIB. Save the three busbar screws.

### Front View of the UPS Cabinet

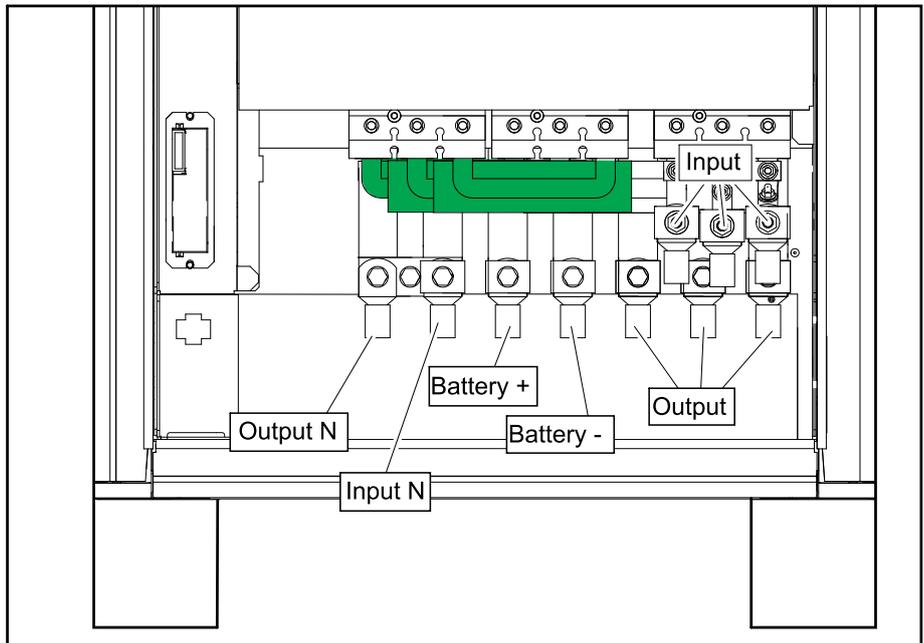


4. Install the provided busbar assembly for single mains between the unit input breaker UIB and the static switch input breaker SSIB and fasten with the six busbar screws removed in earlier steps.

**Front View of the UPS Cabinet**



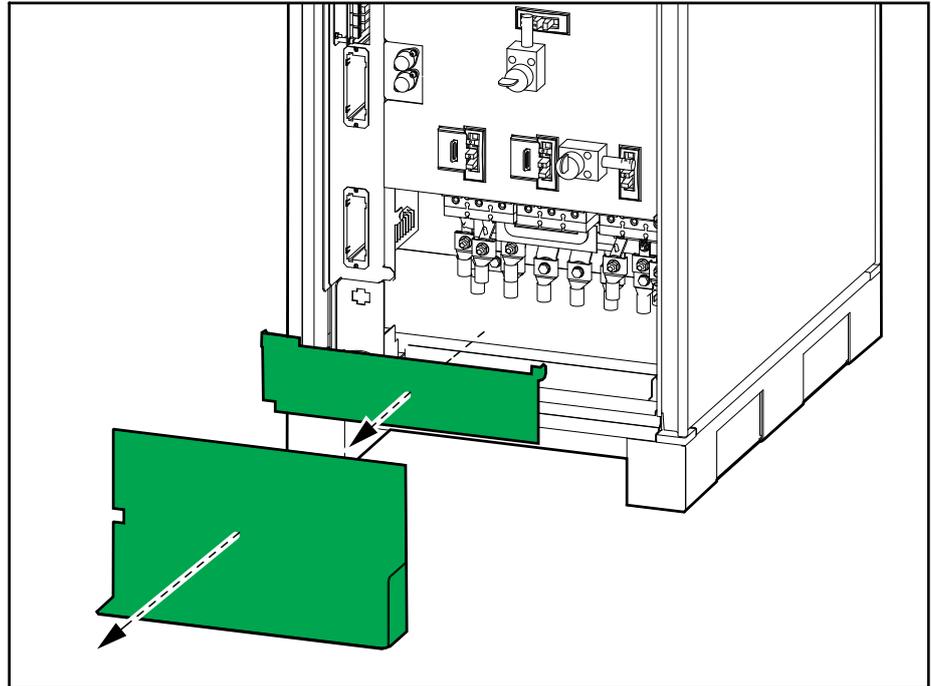
**Front View of the UPS Cabinet with the Busbar Assembly for Single Mains Installed**



## Reposition the Conduit Box on the 25-50 kVA UPS

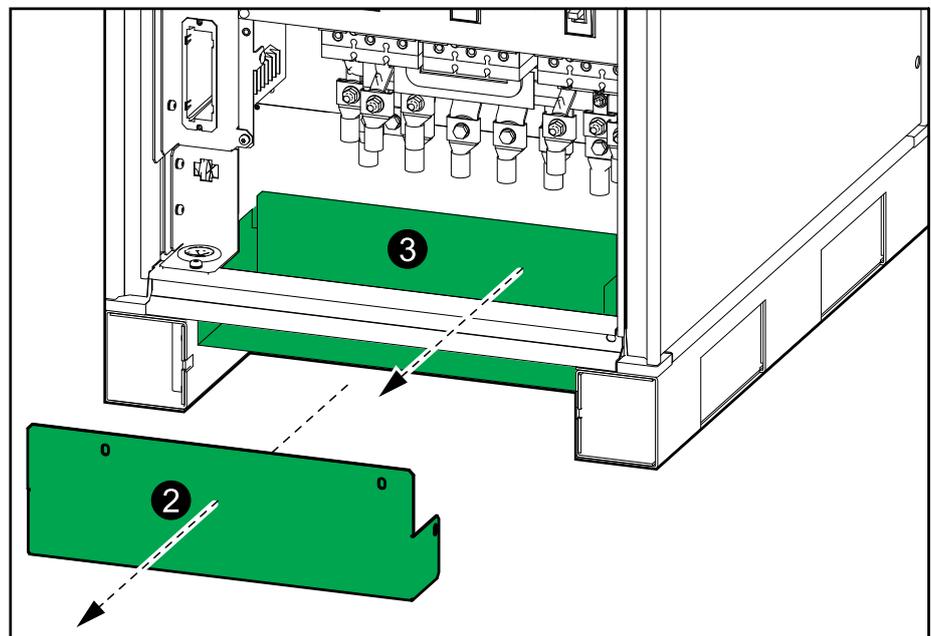
1. Remove the two plates in the bottom of the UPS cabinet.

### Front View of the UPS Cabinet



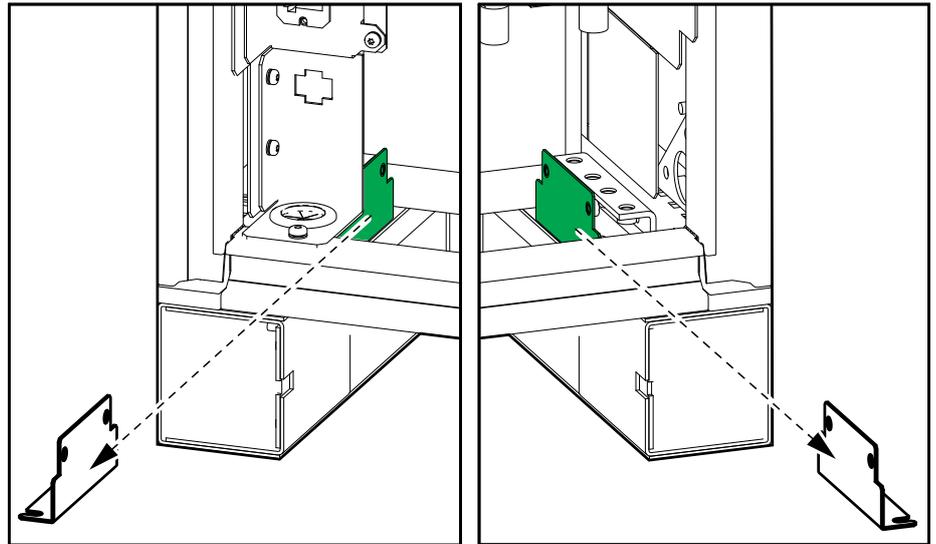
2. Remove the front part of the conduit box in the bottom of the UPS cabinet.
3. Remove the rear part of the conduit box in the bottom of the UPS cabinet.

### Front View of the UPS Cabinet



- Remove the indicated brackets in the right and the left side of the UPS cabinet. Discard the brackets, but save the screws for installation.

#### Front View of the UPS Cabinet



- For bottom cable entry only:** Drill holes and install conduits for power cables and for control cables in the bottom of the rear part of the conduit box. Conduits are not provided.

### **! DANGER**

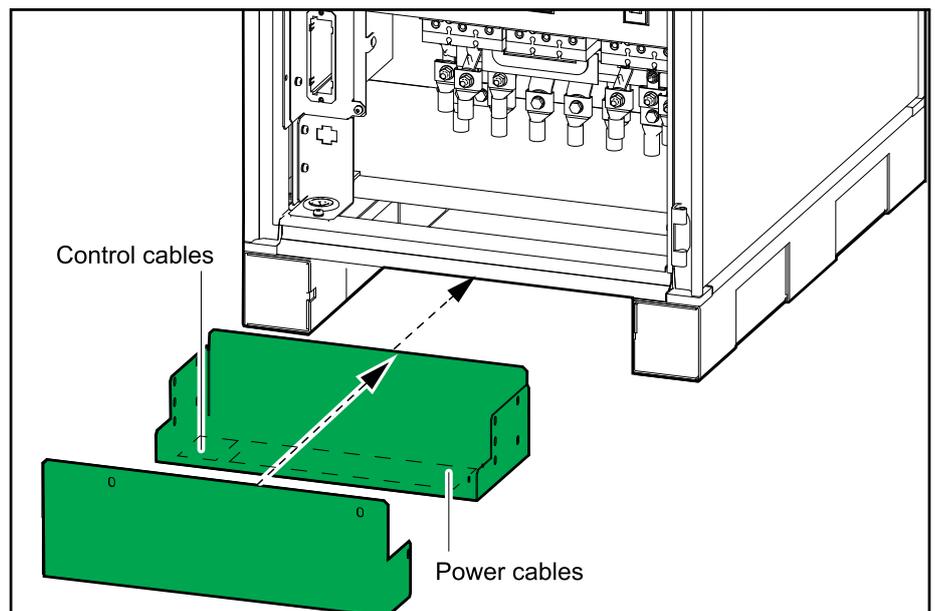
#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not drill or cut holes for cables or conduits with the conduit box 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.**

- Reinstall the rear and front part of the conduit box with three screws in each side and two screws in the front. Note that the conduit box is installed in a lower position now that the brackets are removed.

#### Front View of the UPS Cabinet



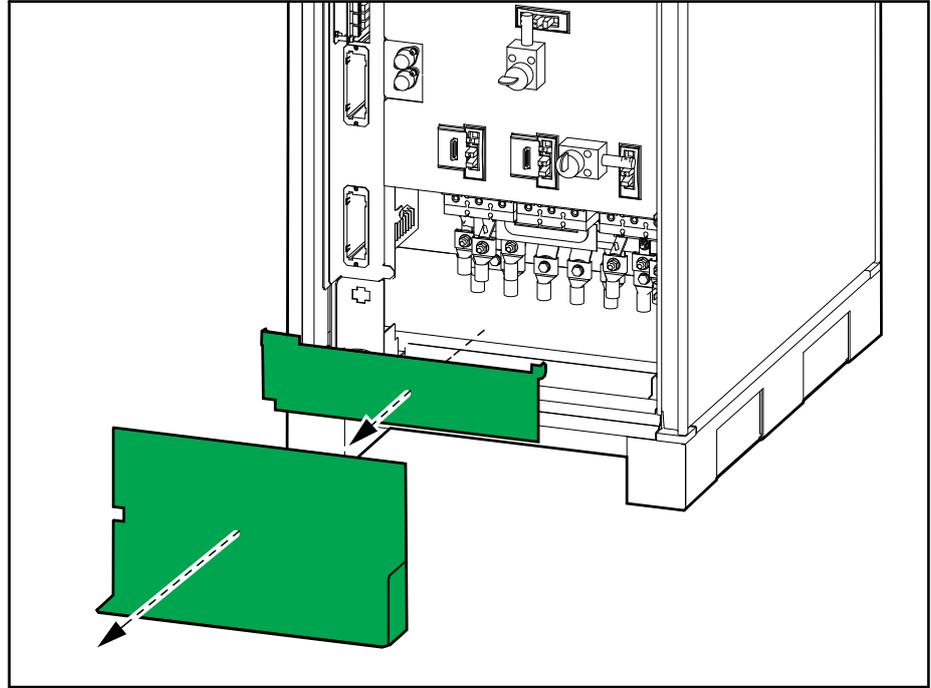
## Connect the Power Cables on the 25-50 kVA UPS

**NOTE:** Bottom cable entry: Route the power cables through the conduit box in the bottom of the UPS cabinet.

Top cable entry: Route the preinstalled power cables in the top entry cabinet through the left side and into the UPS cabinet.

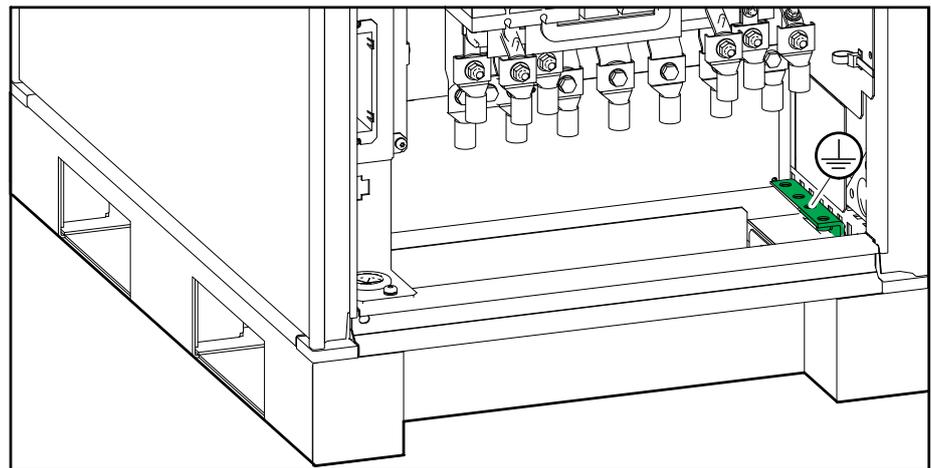
1. Remove the two plates in the bottom of the UPS cabinet.

### Front View of the UPS Cabinet



2. Connect the equipment grounding conductor to the ground busbar.

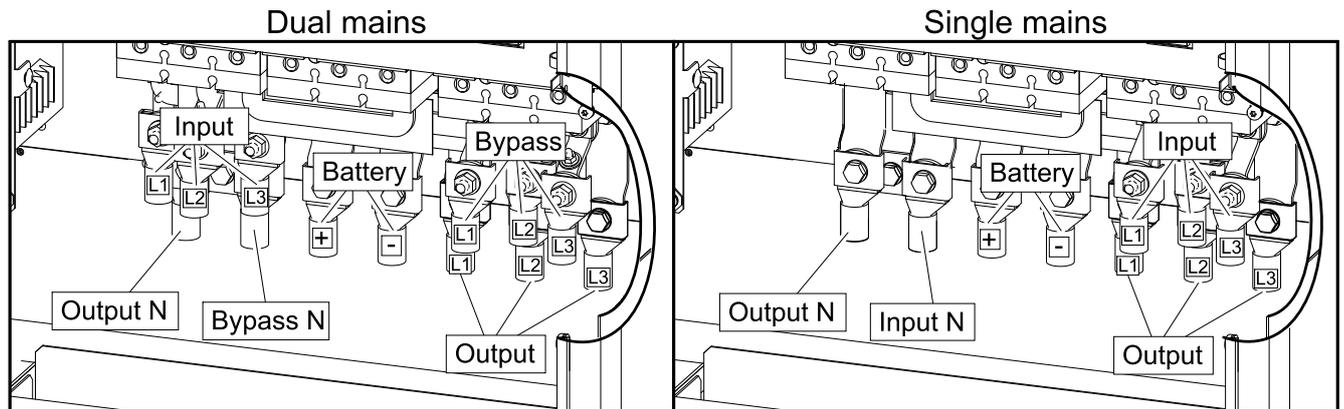
### Front View of the UPS Cabinet



3. Connect the input cables to the input terminals (L1, L2, L3 (N)).

**NOTE:** Only connect input N in single mains systems.

### Front View of the UPS Cabinet



4. Connect the bypass cables to the bypass terminals (L1, L2, L3, N).

**NOTE:** Only connect bypass cables in dual mains systems.

5. Connect the output cables to the output terminals (L1, L2, L3, N).

6. Connect the battery cables (+, -, ground) to the battery terminals (+, -) and to the ground busbar.

**NOTE:** Route battery cables from adjacent battery cabinets through the left side panel of the UPS cabinet.

## Installation Procedure for the 75-100 kVA UPS

**NOTE:** The UPS is configured for dual mains as default.

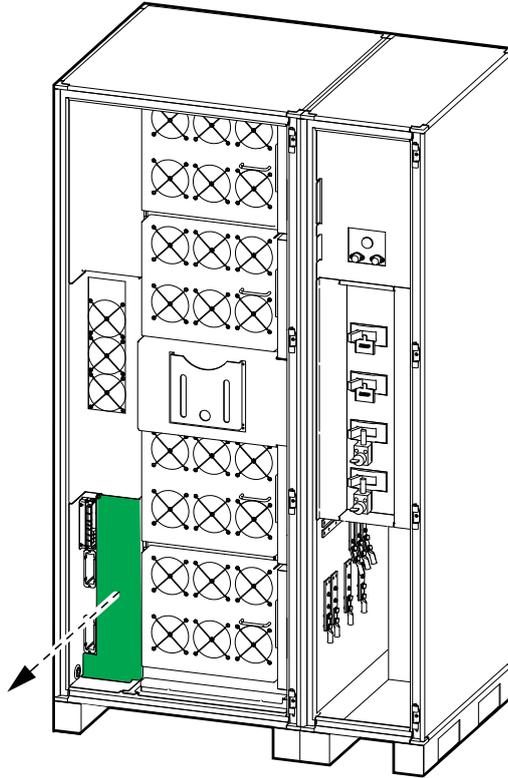
**NOTE:** Both top and bottom cable entry is available.

1. Move the UPS cabinet to the final location with a forklift or a low profile 21 inch pallet jack by lifting from the sides.
2. *Prepare for Cables on the 75-100 kVA UPS with an Adjacent Battery Cabinet (Option), page 39.*
3. *Convert the 75-100 kVA UPS from Dual Mains to Single Mains (Option), page 41.*
4. *Connect the Power Cables on the 75-100 kVA UPS, page 43.*
5. *Connect the Control Cables, page 47.*
6. *Connect the Remote Emergency Power Off (REPO), page 51.*
7. *Connect the Input Contacts and Output Relays (Option), page 54.*
8. *Install the Kick Plates, page 55.*
9. Reinstall all plates and close the doors.

## Prepare for Cables on the 75-100 kVA UPS with an Adjacent Battery Cabinet (Option)

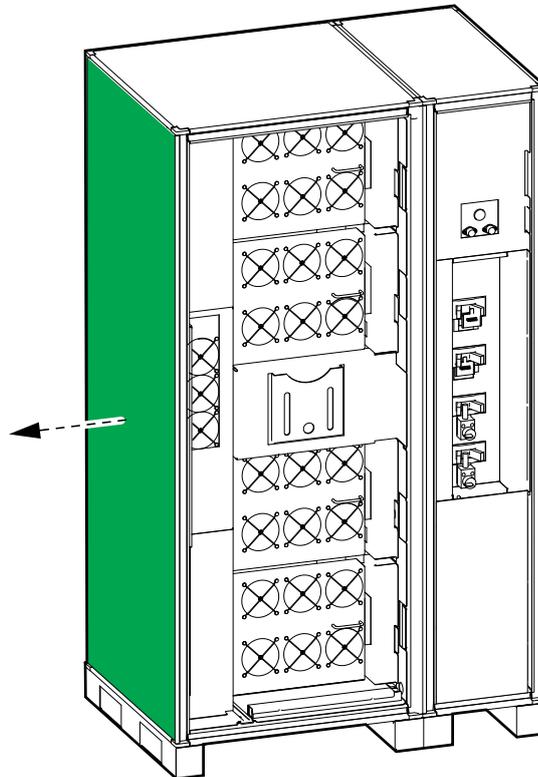
1. Remove the plate in the bottom left side of the power section.

**Front View of the UPS Cabinet**



2. Remove the side panel from the power section of the UPS cabinet.

**Front View of the UPS Cabinet**



3.
  - a. Drill holes and install conduits for battery cables in the side panel. Fit the power cable holes to the placement of the two battery busbars inside the power section. Conduits are not provided.
  - b. Drill holes and install conduits for control cables in the side panel. Fit the control cable hole to the control cable inlet. Conduits are not provided.

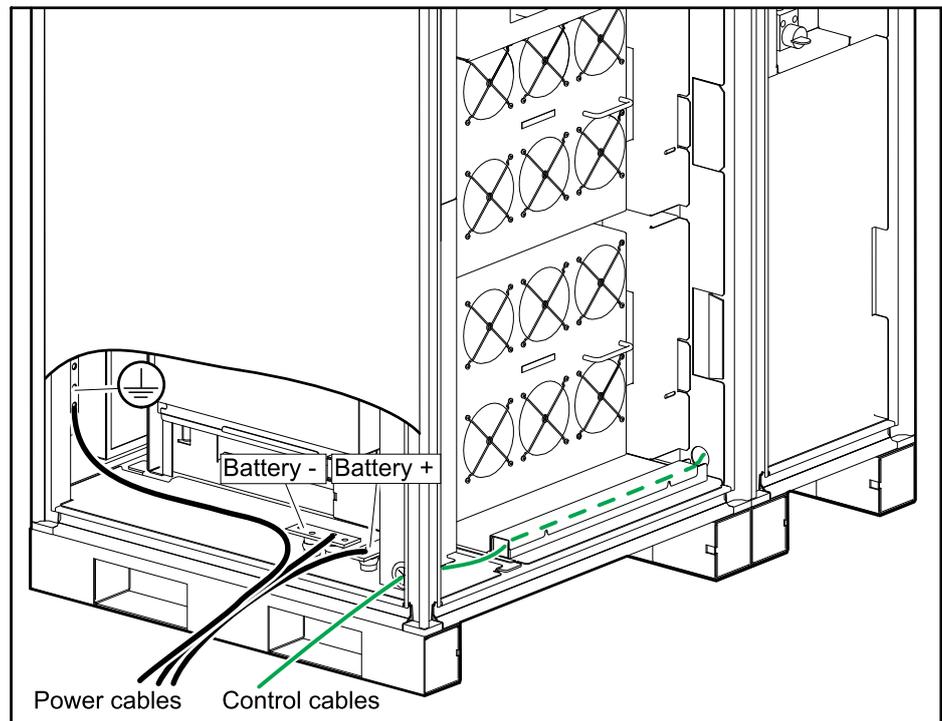
## **⚠ DANGER**

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

Do not drill or cut holes for cables or conduits with the side panel 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.**

### **Front View of the UPS Cabinet**

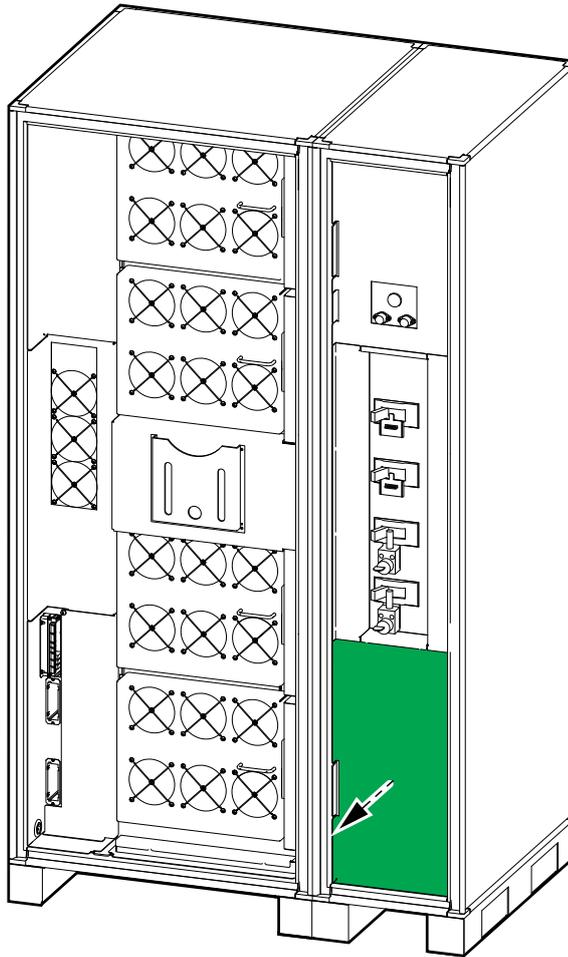


4. Reinstall the side panel in the power section.

## Convert the 75-100 kVA UPS from Dual Mains to Single Mains (Option)

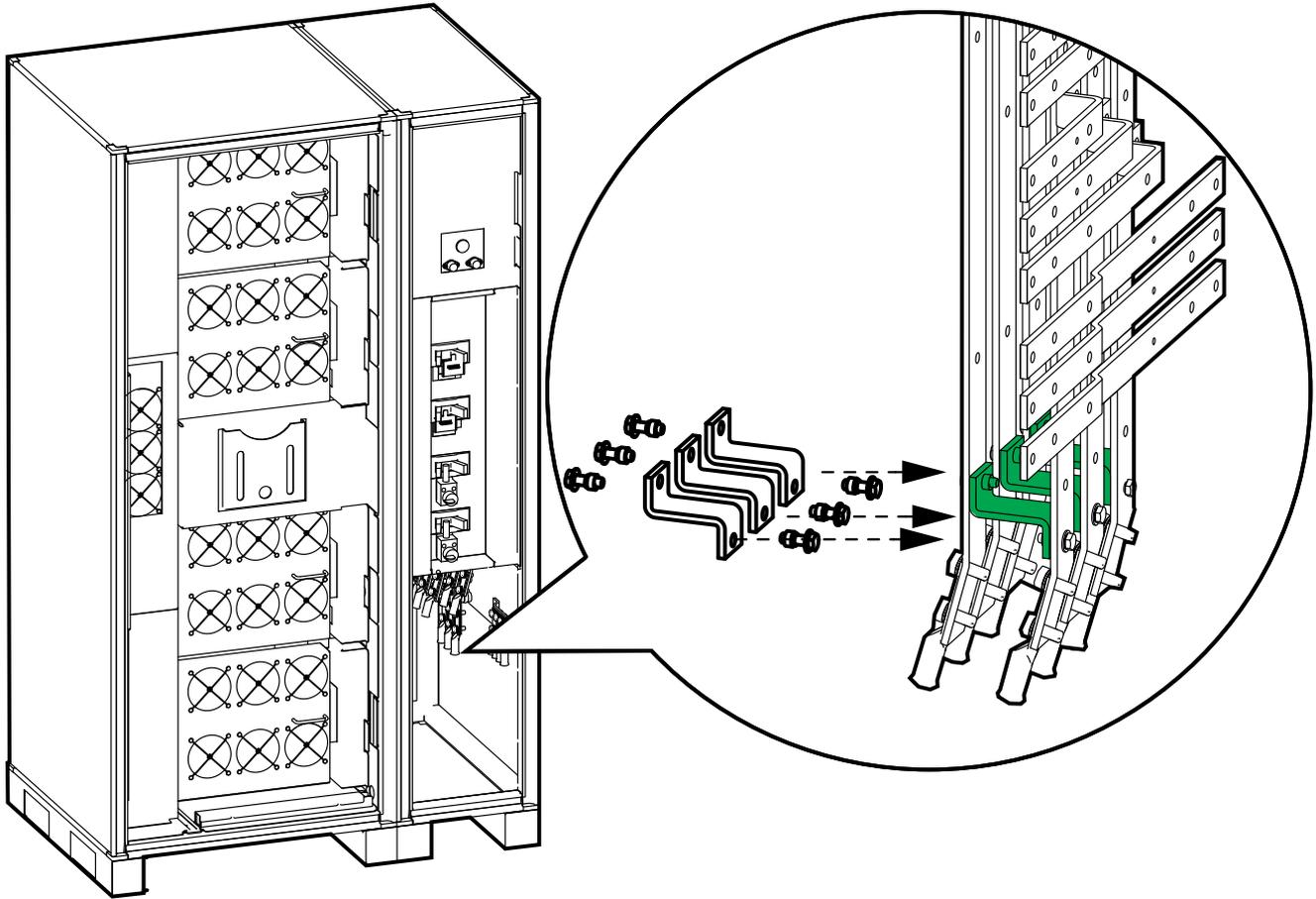
1. Remove the plate in the bottom of the I/O section.

### Front View of the UPS Cabinet



2. Install the three provided jumper busbars between the input busbars and the bypass busbars.

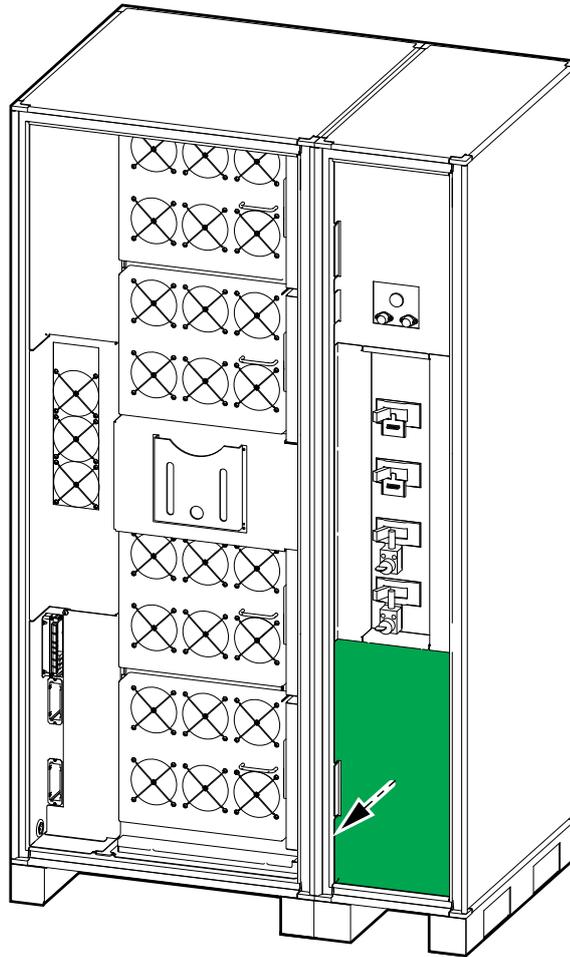
### Front View of the UPS Cabinet



## Connect the Power Cables on the 75-100 kVA UPS

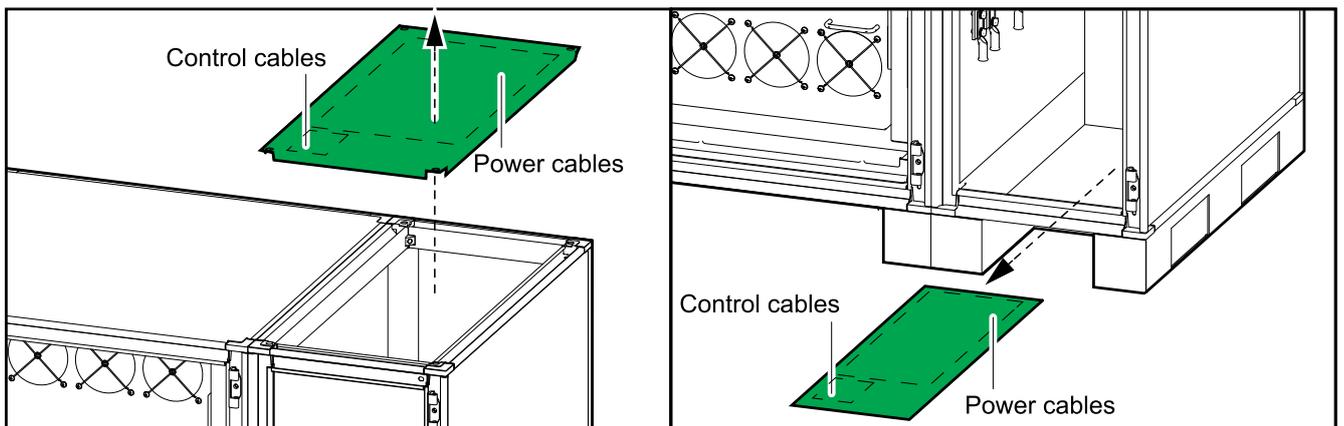
1. Remove the lower front plate in the I/O section.

**Front View of the UPS Cabinet**



2. Remove the gland plate in the top or bottom of the I/O section.

**Top and Bottom Front View of the UPS Cabinet**



- 3. Drill holes and install conduits for power cables and for control cables in the gland plate. Conduits are not provided.

**⚠ DANGER**

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

Do not drill or cut holes for cables or conduits with the gland plate 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.**

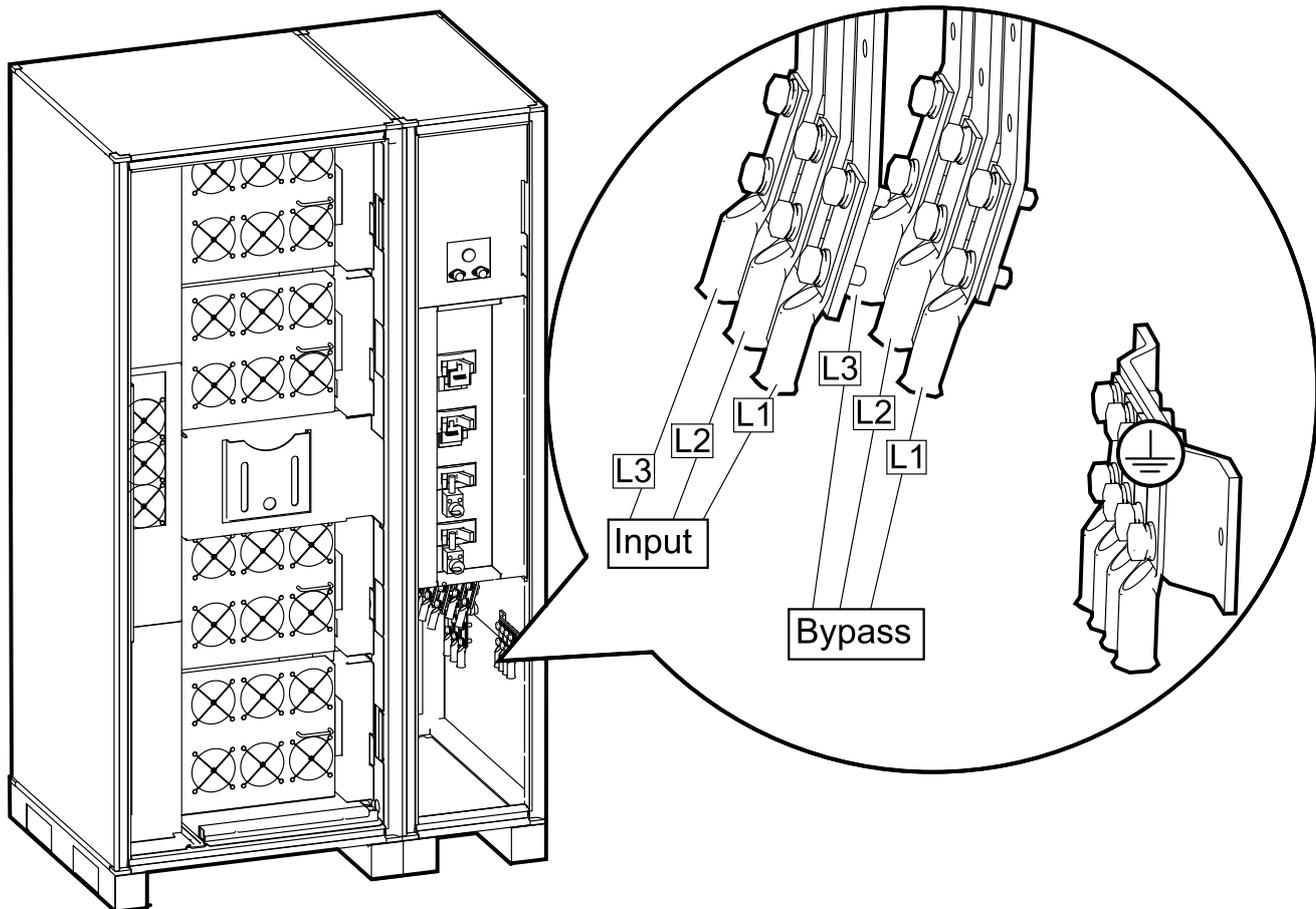
- 4. Reinstall the gland plate.
- 5. Route the equipment grounding conductor through the top or bottom of the I/O section and connect it to the ground busbar.
- 6. Route the input cables through the top or bottom of the I/O section and connect the input cables to the input terminals (L1, L2, L3, (N)). The neutral cable connects in the left side of the I/O section.

**NOTE:** Only connect input N in single mains systems.

- 7. Route the bypass cables through the top or bottom of the I/O section and connect the bypass cables to the bypass terminals (L1, L2, L3, N). The neutral cable connects in the left side of the I/O section.

**NOTE:** Only connect bypass cables in dual mains systems.

**Front View of the UPS Cabinet**

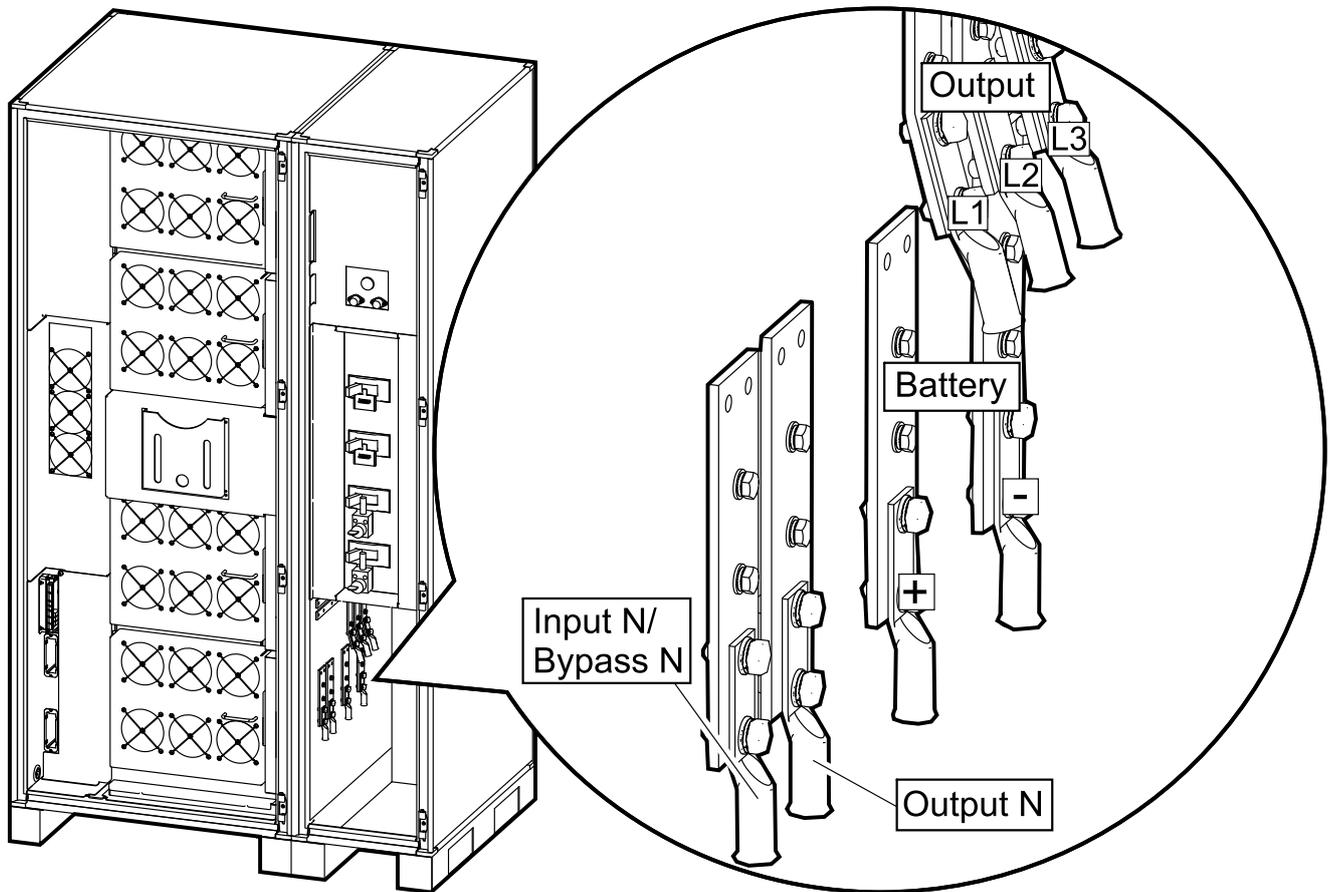


- 8. Route the output cables through the top or bottom of the I/O section and connect the output cables to the output terminals (L1, L2, L3, N). The neutral cable connects in the left side of the I/O section.

9. **Only for configurations with remote battery cabinet(s):** Route the battery cables (+, -, ground) through the top or bottom of the I/O section and connect the battery cables to the battery terminals (+, -) and to the ground busbar.

**NOTE:** These battery terminals are only for remote battery cabinets.

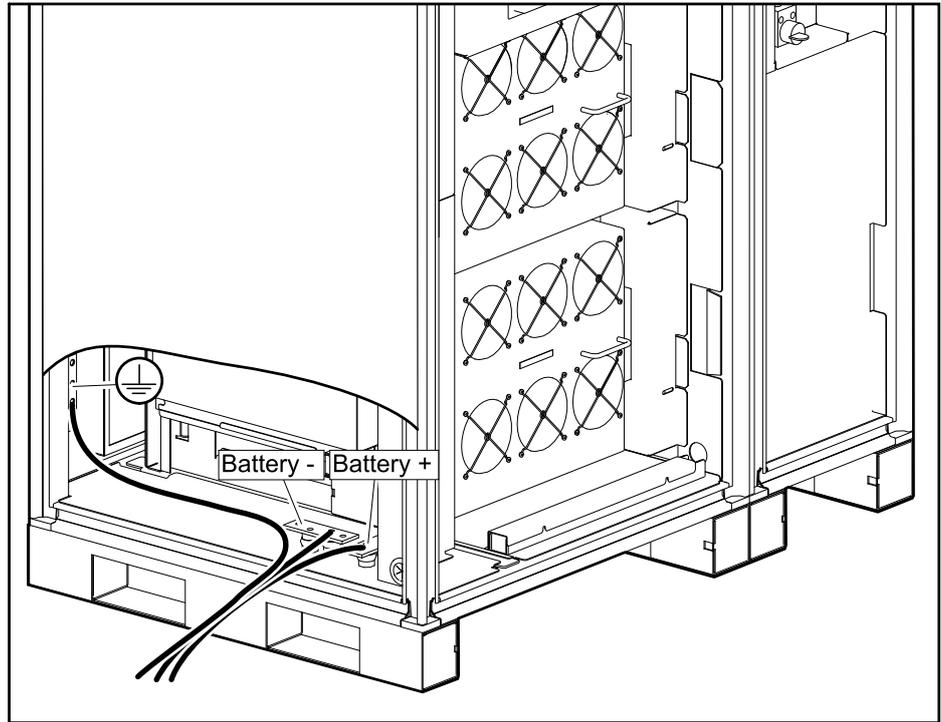
### Front View of the UPS Cabinet



10. **Only for configurations with adjacent battery cabinet(s):** Route the battery cables (+, -, ground) through the left side panel and connect them to the battery busbars (+, -) and the ground busbar in the power section.

**NOTE:** These battery terminals are only for adjacent battery cabinets.

#### Front View of the UPS Cabinet

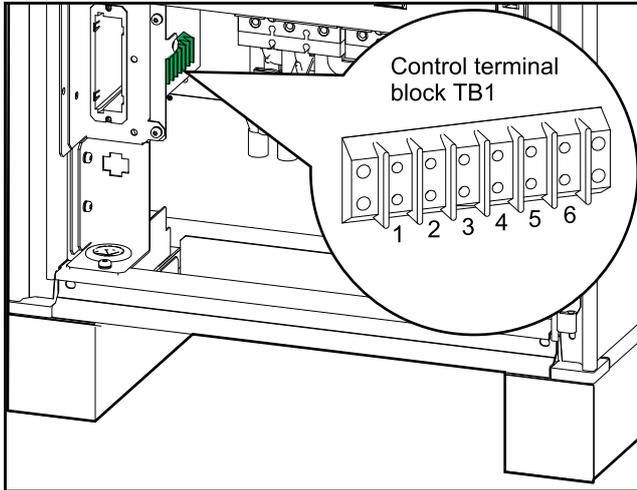


## Connect the Control Cables

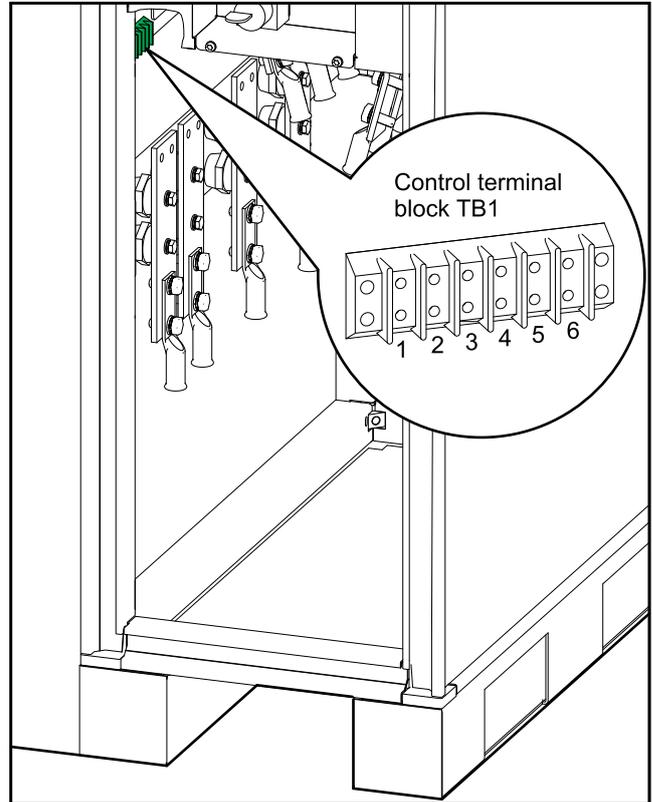
**NOTE:** Battery cables and control cables must be routed separately to reduce noise.

1. **Only for configurations with remote battery cabinet(s):** Route the control cables through the top or bottom of the UPS to the control terminal block TB1.

Front View of the 25-50 kVA UPS Cabinet

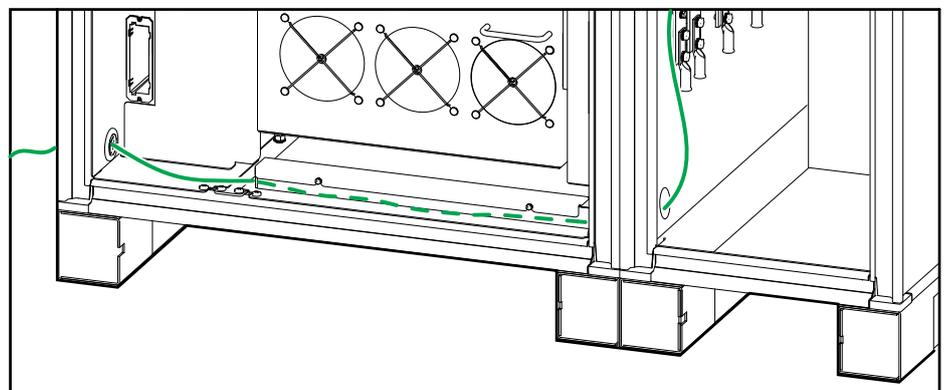


Front View of the 75-100 kVA UPS Cabinet



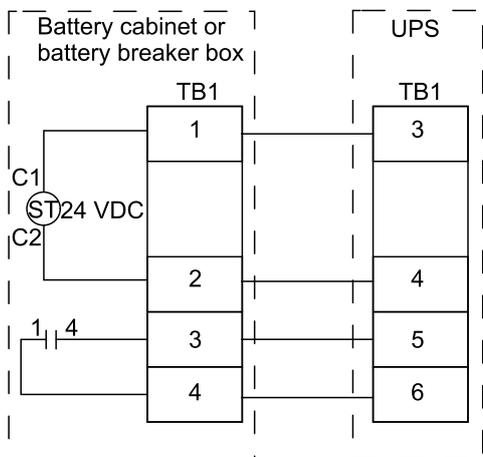
2. **Only for configurations with adjacent battery cabinet(s):** Route the control cables through the left side panel of the 25-50 kVA UPS or through the cable channel in the power section on the 75-100 kVA UPS to the control terminal block TB1.

Front View of the 75-100 kVA UPS Cabinet

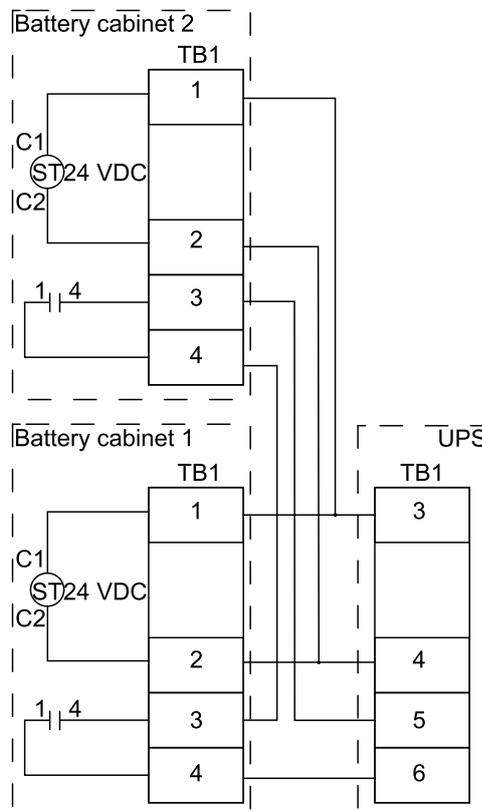


3. Connect the control cables from the control terminal block TB1 in the battery cabinet(s) or the battery breaker box to the control terminal block TB1 in the UPS cabinet as shown.

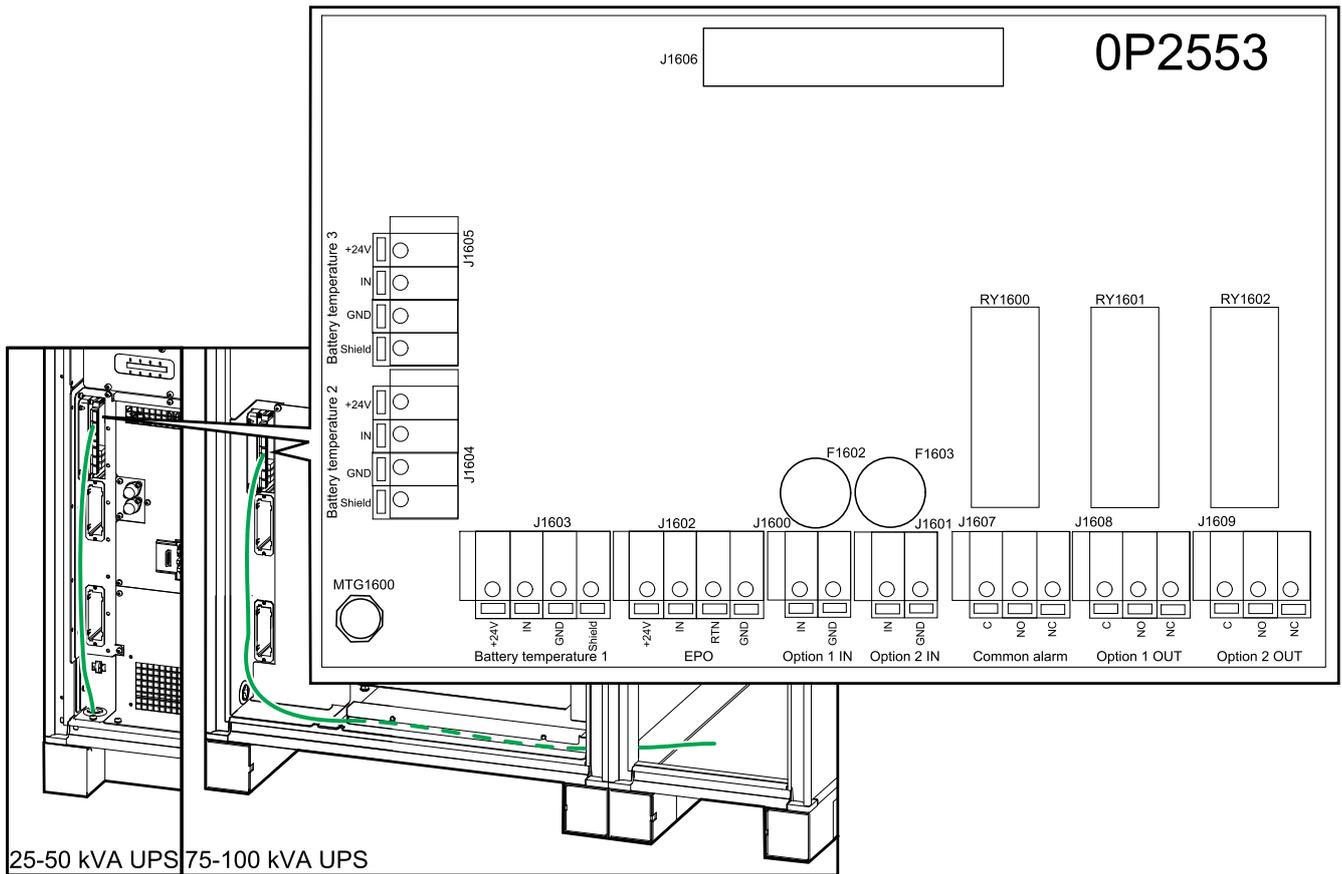
### Control Cable Connections with One Battery Cabinet



### Control Cable Connections with Two Battery Cabinets



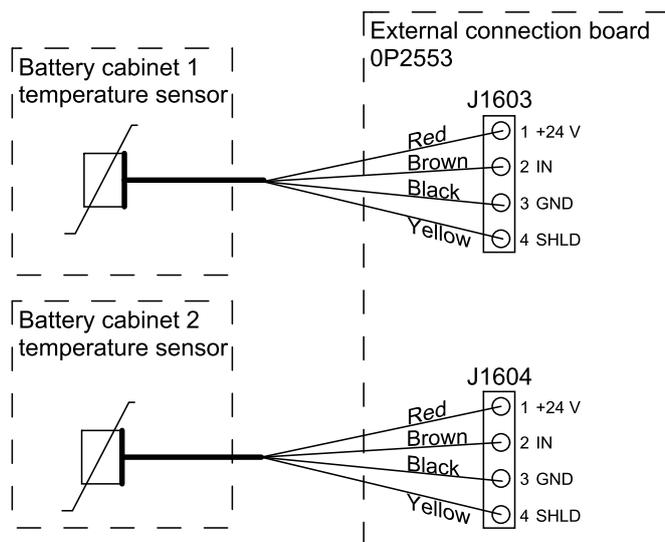
**Front View of the UPS Cabinet – Location of the External Connection Board 0P2553**



**4. Only for configurations with adjacent battery cabinet(s):**

- a. Connect the cables from the battery temperature sensor in battery cabinet 1 to J1603 on the external connection board 0P2553 in the UPS cabinet as shown.
- b. Connect the cables from the battery temperature sensor in battery cabinet 2 (if present) to J1604 on the external connection board 0P2553 in the UPS cabinet as shown.

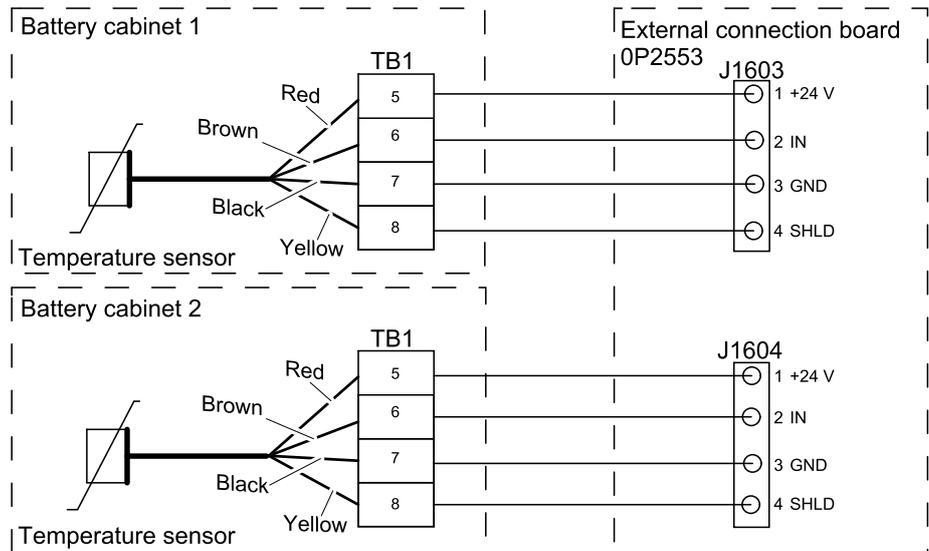
**Cable Connections for Temperature Sensors in Adjacent Battery Cabinets**



**5. Only for configurations with remote battery cabinet(s):**

- a. Connect the battery temperature sensor to pins 5-8 on the control terminal block TB1 in battery cabinet 1.
- b. Connect the cables from pins 5-8 on the control terminal block TB1 in battery cabinet 1 to J1603 on the external connection board 0P2553 in the UPS cabinet as shown. Note that you will need a cable (not provided) with three wires and a shield for this step.
- c. Connect the battery temperature sensor to pins 5-8 on the control terminal block TB1 in battery cabinet 2 (if present).
- d. Connect the cables from pins 5-8 on the control terminal block TB1 in battery cabinet 2 (if present) to J1604 on the external connection board 0P2553 in the UPS cabinet as shown. Note that you will need a cable (not provided) with three wires and a shield for this step.

**Cable Connections for Temperature Sensors in Remote Battery Cabinets**



## Connect the Remote Emergency Power Off (REPO)

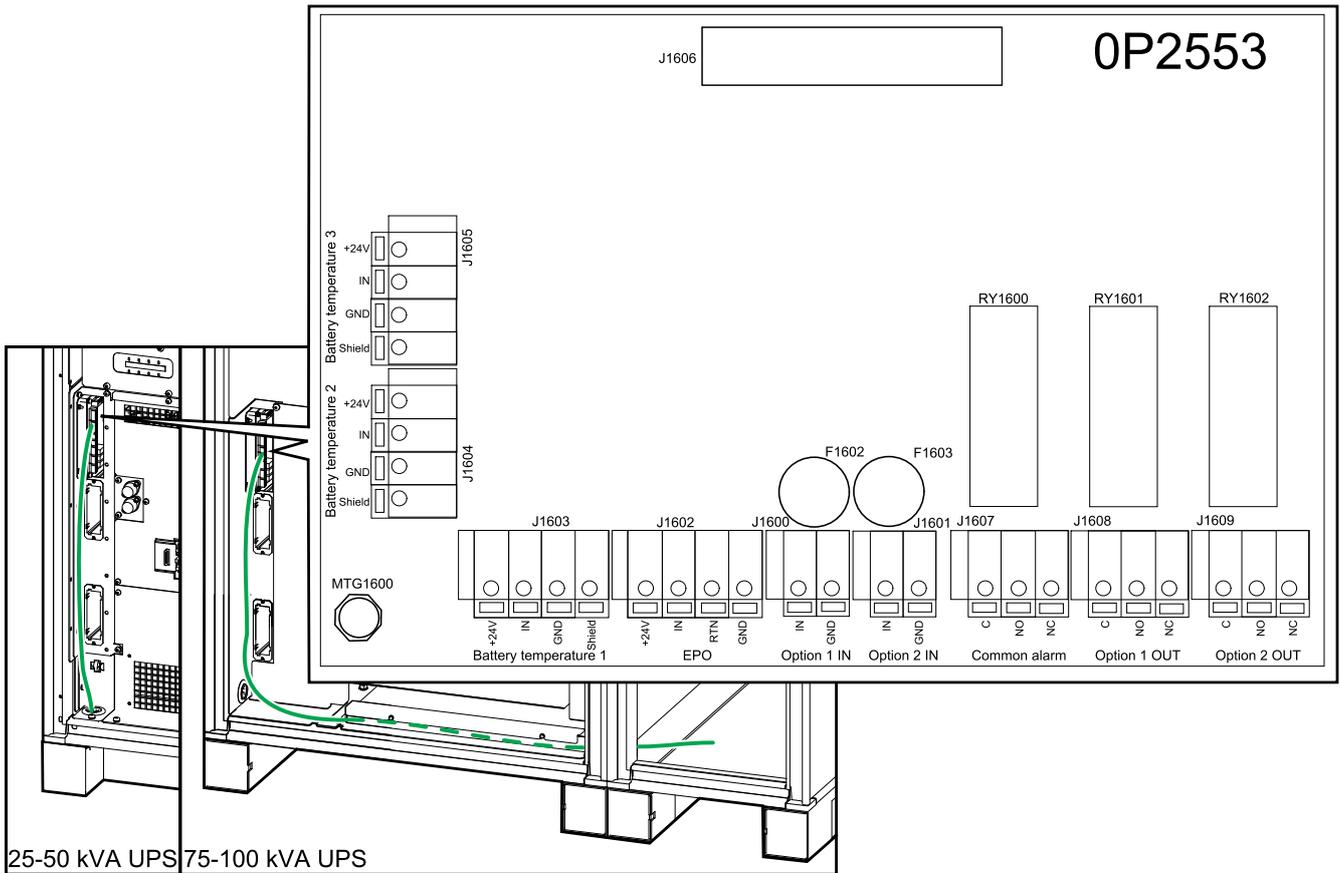
The REPO circuit is considered Class 2 and SELV. Class 2 and SELV circuits must be isolated from the primary circuitry. Do not connect any circuit to the REPO terminal block unless it can be confirmed that the circuit is SELV or Class 2.

**NOTE:** This UPS uses two isolated REPO circuits. Both REPO circuits must be connected for full EPO of the system. Use a double pole single throw switch.

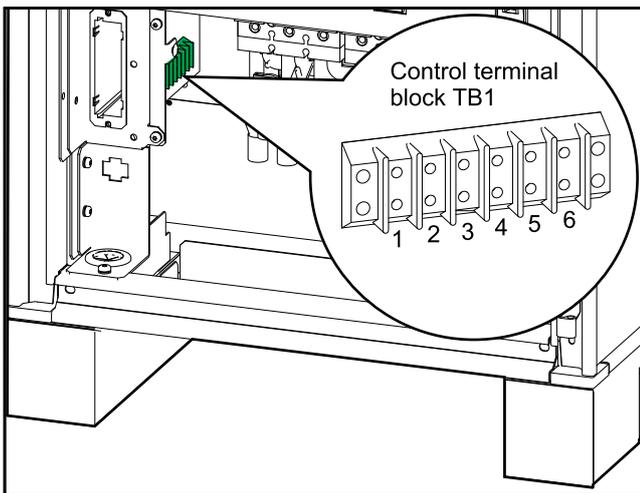
**NOTE:** Do not tie the connections from TB1 and the external connection board 0P2553 together.

1. Route the REPO cables from your REPO to the external connection board 0P2553 and the control terminal block TB1 in the UPS cabinet as shown.

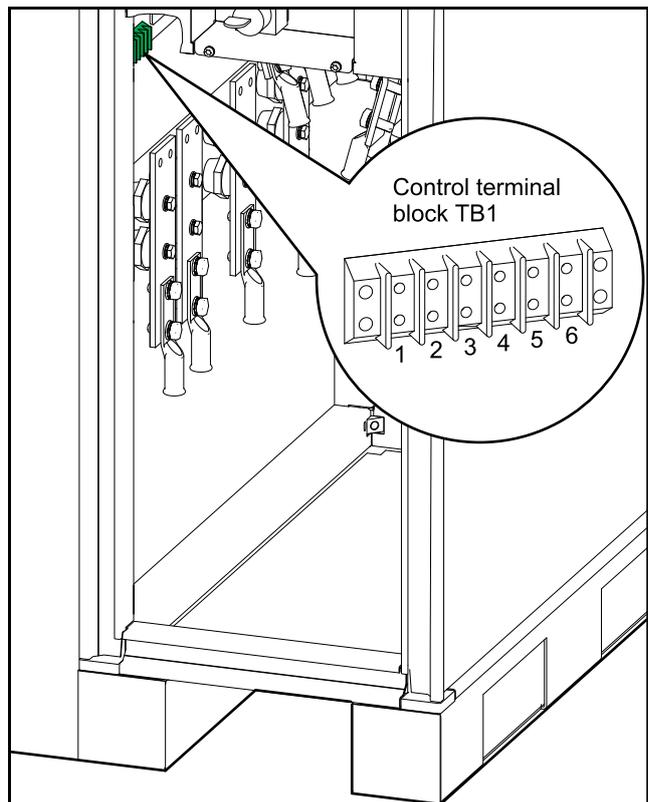
**Front View of the UPS Cabinet – Location of the External Connection Board 0P2553**



**Front View of the 25-50 kVA UPS Cabinet**

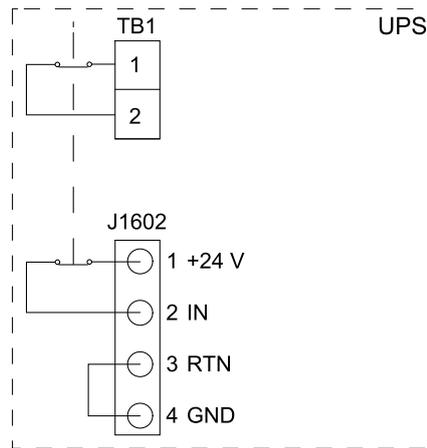


**Front View of the 75-100 kVA UPS Cabinet**

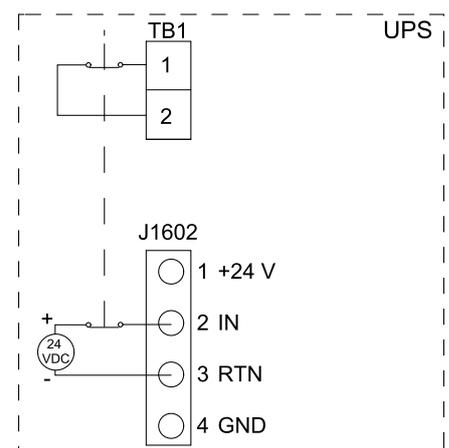


2. Remove the jumper between terminals 1 and 2 on J1602 on the external connection board 0P2553 in the UPS.
3. Remove the jumper between pins 1 and 2 on the control terminal block TB1 in the UPS.
4. Connect the building REPO as a REPO with internal supply or as a REPO with external supply as shown. The control terminal block TB1 must always be connected to the internal supply (dry contact), the external connection board 0P2553 can be connected to the internal supply or to an external 24 VDC supply.
5. Fasten the REPO cables.

#### REPO with Internal Supply



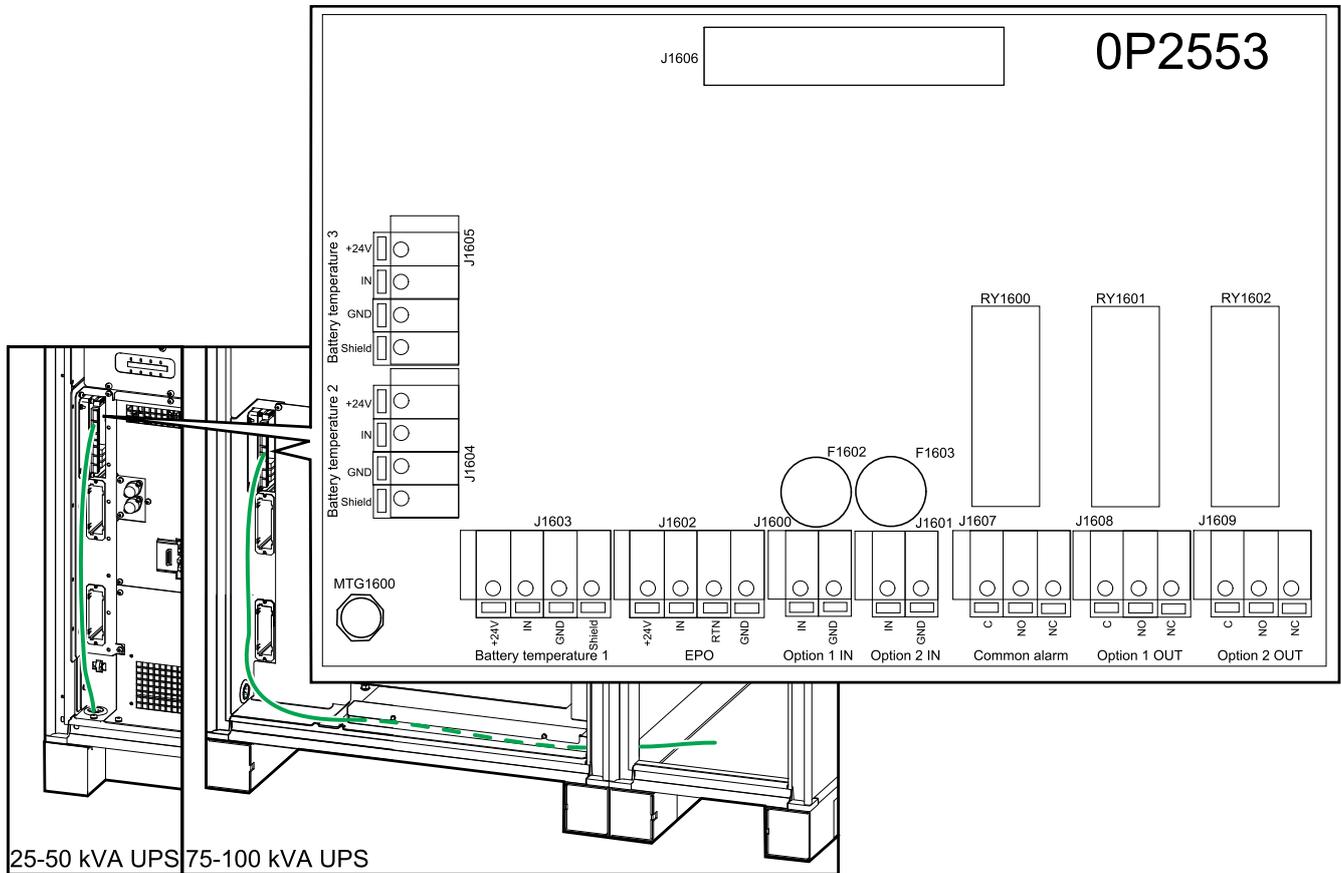
#### REPO with 24 VDC External Supply, Maximum 20 mADC



## Connect the Input Contacts and Output Relays (Option)

1. Route the signal cables to the external connection board 0P2553 in the UPS cabinet as shown.

### Front View of the UPS Cabinet – Location of the External Connection Board 0P2553



2. Connect the signal cables to the input contacts and output relays on the external connection board 0P2553.

## Input Contacts and Output Relays Configuration Settings

The default configuration settings are shown.

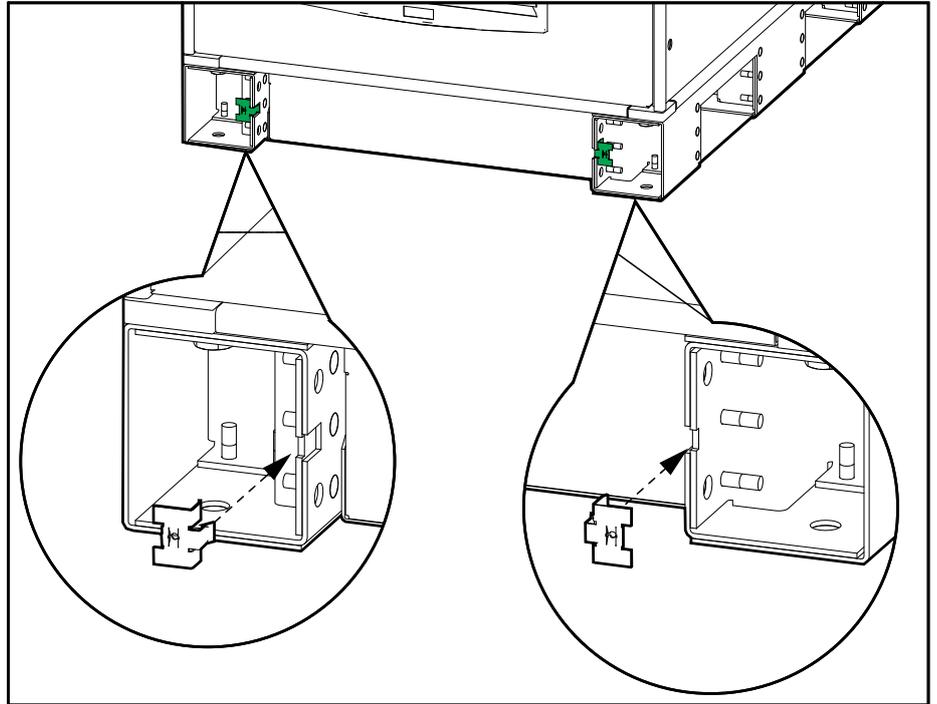
Name	Description	Location	Value
Option 1 IN	Input contact: Block boost/initial charge	J1600 on 0P2553	Closed state: Disable boost charge
Option 2 IN	Input contact: Force to boost charge	J1601 on 0P2553	Closed state: Start boost charge
Common alarm	Output relay: Common alarm	J1607 on 0P2553	Normally open (NO)/ Normally closed (NC) Maximum 250 VAC, 8 A Maximum 24 VDC, 8A
Option 1 OUT	Output relay: Battery operation	J1608 on 0P2553	
Option 2 OUT	Output relay: Static bypass operation	J1609 on 0P2553	

## Install the Kick Plates

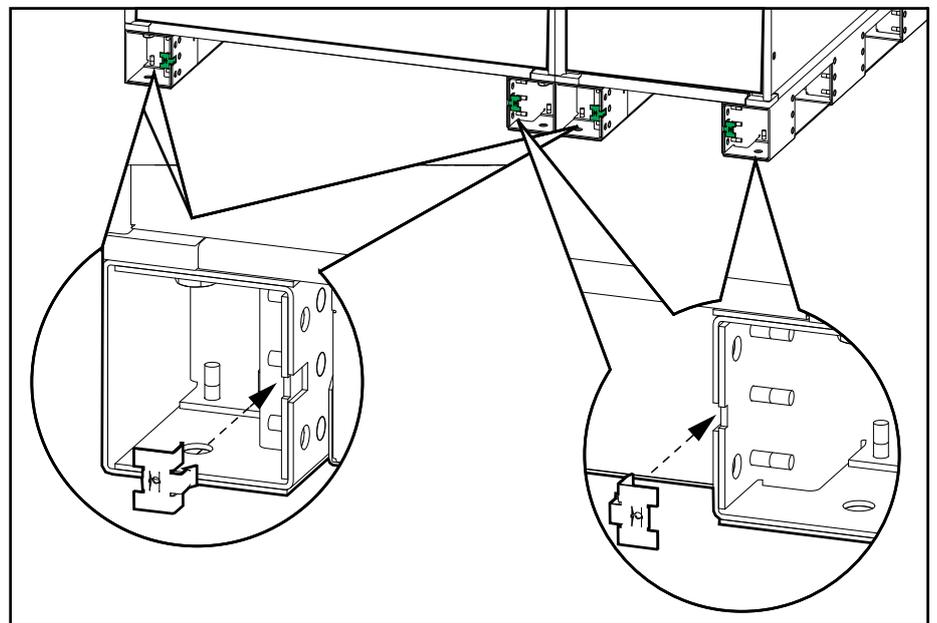
**NOTE:** Kick plates are installed in the same way on the top entry cabinet.

1. Install spring clips in the left and right sides as shown on the illustration.

**Front View of the 25-50 kVA UPS Cabinet**

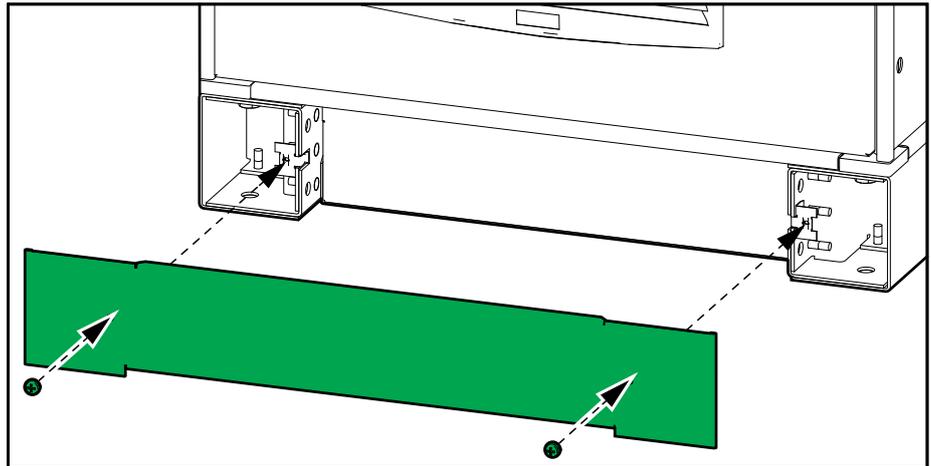


**Front View of the 75-100 kVA UPS Cabinet**

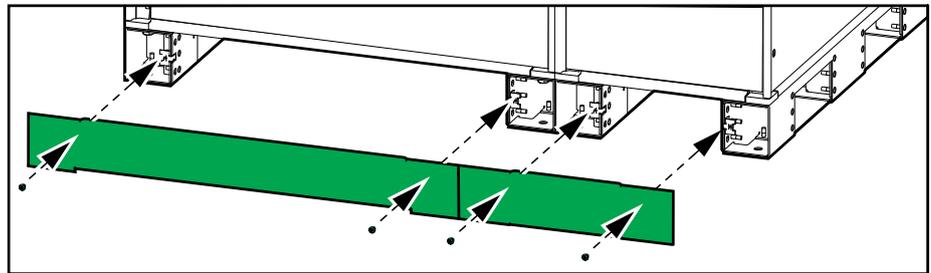


2. Attach the kick plates to the spring clips.

### Front View of the 25-50 kVA UPS Cabinet



### Front View of the 75-100 kVA UPS Cabinet



3. Fasten with the M5 screws.







Schneider Electric  
35 rue Joseph Monier  
92500 Rueil Malmaison  
France

+ 33 (0) 1 41 29 70 00

[www.schneider-electric.com](http://www.schneider-electric.com)

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