Symmetra™ PX

250/500 kW 400/480 V

Single and Parallel Installation

09/2013

www.schneider-electric.com

by Schneider Electric

Legal Information

Table of Contents

Important Safety Information

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 an imminently 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 an imminently hazardous situation which, if not avoided, **can result in** death or serious injury.

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

⚠ CAUTION

CAUTION indicates an imminently hazardous situation which, if not avoided, **can 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.

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 circuit breakers, battery circuit 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. Startup 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

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 area free of conductive contaminants and humidity.
- Install the UPS system on a non-inflammable, 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/punch holes for cables or conduits with the gland plates installed and do not drill/punch 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.

⚠ WARNING

HAZARD 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 death, serious injury, or equipment damage.

⚠ WARNING

HAZARD 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 death, serious injury, or 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.
- The UPS system must be installed in a room with restricted access (qualified personnel only).
- 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 contain an internal energy source. Hazardous voltage can be present even when disconnected from the mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- A disconnection device (e.g. disconnection circuit breaker or switch) must be installed to enable isolation of the system from upstream power sources in accordance with local regulations. 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.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

In systems where backfeed is not part of the standard design, an automatic isolation device (backfeed option or other device meeting the requirements of IEC/EN 62040–1 **or** UL1778 4th Edition – depending on which of the two standards apply to your local area) must be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must open within 15 seconds after the upstream power supply fails and must be rated according to the specifications.

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

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

Battery Safety

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

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

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

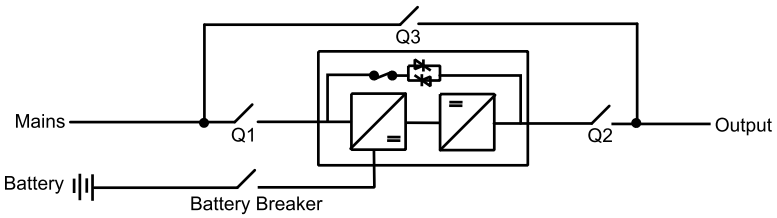
- Wait until the system is ready to be powered up before installing batteries in the system. The time duration from battery installation until the UPS system is powered up must not exceed 72 hours or 3 days.
- Batteries must not be stored more than six months due to the requirement of recharging. If the UPS system remains de-energized for a long period, 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.

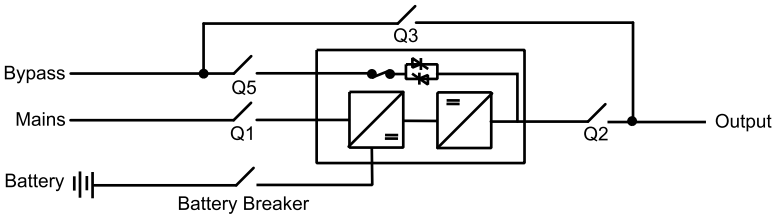
Specifications

Single Configurations

Single Mains without MBwD

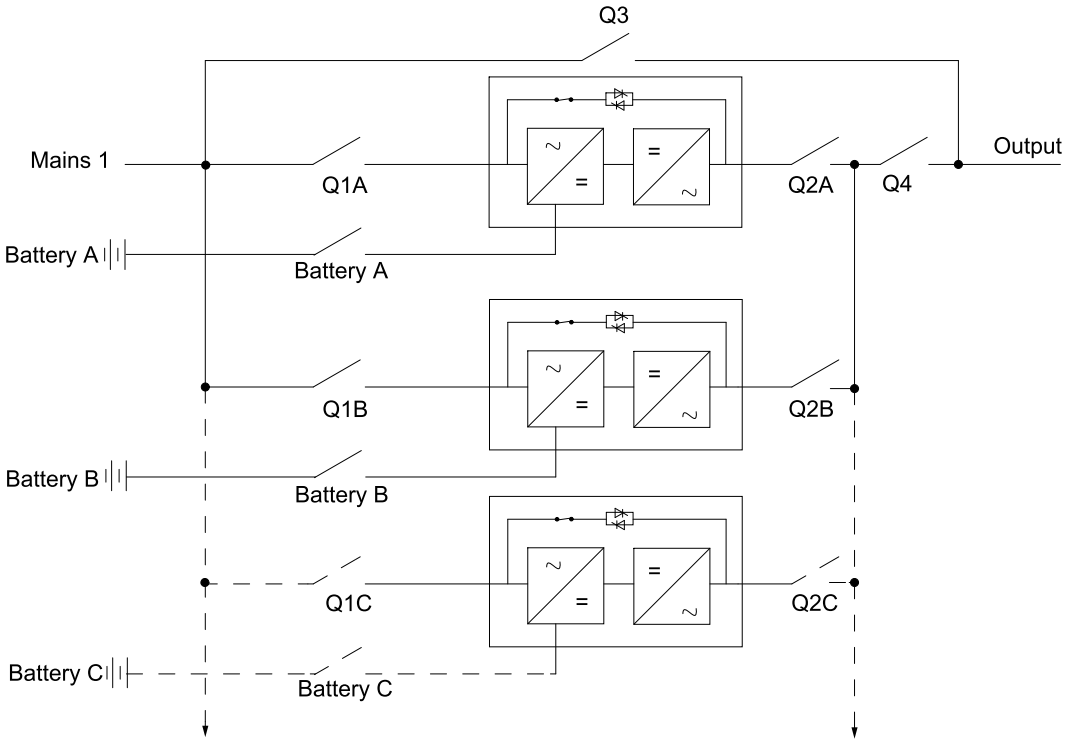


Dual Mains without MBwD

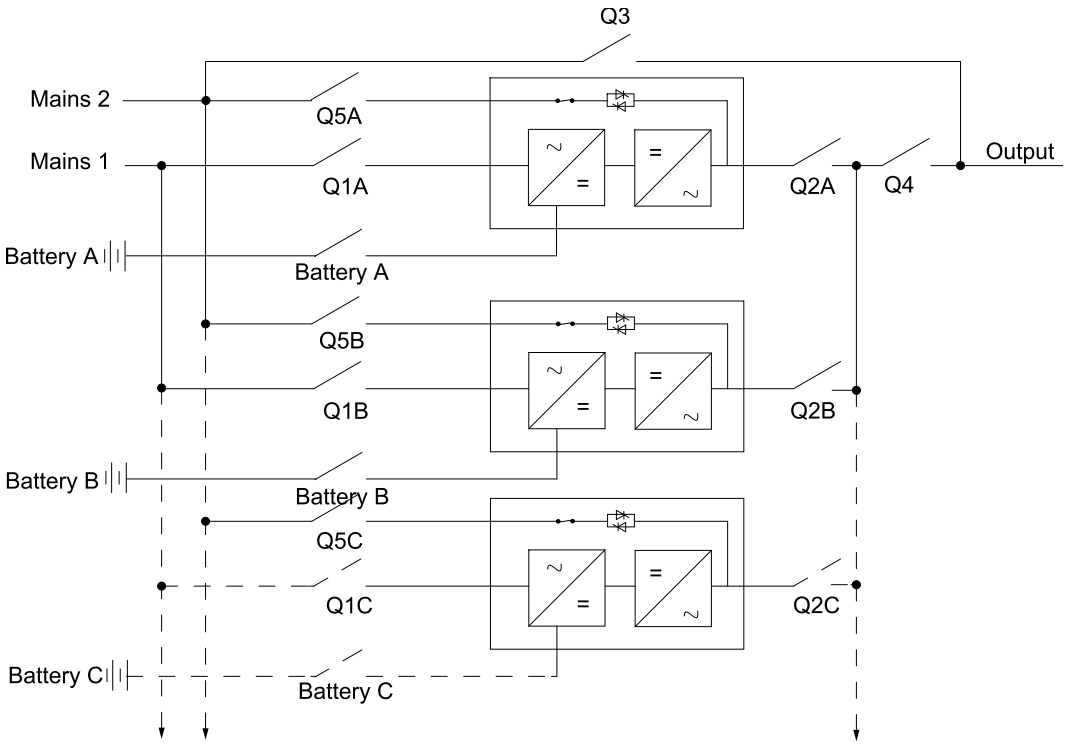


Parallel Configurations

Single Mains



Dual Mains



AC Mains Input

	250 kW				500 kW			
	380 V[1]	**400 V**	**415 V**	**480 V**	**380 V[1]**	**400 V**	**415 V**	**480 V**
Voltage range	+/-15% for full performance (340 - 460 V at 400 V, 408 - 552 V at 480 V) -50% for reduced load (200 V at 400 V, 240 V at 480 V)							
Input frequency	40–70 with 10 Hz/sec slewrate							
I thd	< 5% at full load							
Nom input current (A)[2]	398	378	364	315	795	756	728	630
Max input current (A)[3]	437	416	401	346	875	831	801	693
Input current limitation (A)[4]	447	447	431	372	894	894	861	745
Max. input short-circuit level	65 kA/3 cycles (50 kA with standard maintenance bypass)							
Input power factor correction	0.995 @ load = 100 % 0.99 @ load > 50 % 0.97 @ load > 25 %							
Softstart (ramp-in)	Configurable from 1 to 40 seconds (default 10 seconds)							

[1] 380 V has reduced mains input voltage window (-10% at 100% load).
[2] Input current based on rated load and batteries fully charged.
[3] Input current based in fully battery recharge, nominal voltage and rated load.
[4] Current limitation through electronic current limiting is based on fully recharge and -15% input voltage.

AC Bypass Input

	250 kW				500 kW			
	380 V	**400 V**	**415 V**	**480 V**	**380 V**	**400 V**	**415 V**	**480 V**
Input frequency (Hz)	50/60							
Nom input current (A)	380	361	348	301	760	722	696	601

AC Output

	250 kW				500 kW			
	380 V	**400 V**	**415 V**	**480 V**	**380 V**	**400 V**	**415 V**	**480 V**
Output capacity	150% for 60 seconds (normal operation) 125% for 10 minutes (normal operation) 150% for 60 seconds (battery operation) 125% for 10 minutes (battery operation) 125% Continuous at 480 V/110% Continuous at 400 V (bypass operation)[1] 1000% for 100 ms (bypass operation)							
Voltage tolerance	Sym. load (0-100%): +/-1% static, +/-5% after 2 ms and +/-1% after 50 ms dynamic Asym. load (0-100%): +/-3% static							
Nom output current (A)	380	361	348	301	760	722	696	601
Output frequency (sync to mains)	50 Hz/60 Hz							
Slew rate (Hz/ Sec)	0.25 - 6							
Total Harmonic Distortion (THD)	< 2% linear load < 3% non-linear load							
Output power factor	1							
Dynamic load response	+/- 5%							

[1] This is a thermal performance rating. The continuous overload is not supported by the recommended input protection or the Maintenance Bypass with Distribution.

Battery Input

NOTE: Parallel systems do not support a common battery system. All UPS units must have an individual battery system.

	250 kW	**500 kW**
Nom. voltage	2 x +/- 288 Vdc	
I_{Nom} discharge[1]	452	904
I_{Max} discharge[2]	565	1130
End Voltage	1.6–1.75/cell (automatic, depending on load)	

[1] Nominal battery discharge current based on rated load and nominal battery voltage
[2] Maximum battery discharge current based on rated load at the end of the discharge
[3] Maximum available fault current: 40 kA

The UPS supports customer-specific battery solutions with 144 cells +/- 6 cells (138 - 150 cells) for runtime optimization. Display settings allow programmable settings for number of cells and all DC voltage levels where voltage is typed in as V/cell.

	Adjustable window
Battery type	Sealed lead acid/wet cells
Nom voltage (Vdc)	+/- 276 – +/- 300
Float voltage (Vdc)	+/- 308 – +/- 345
Boost charge voltage (Vdc)	+/- 308 – +/- 345
Equalize charge voltage	+/- 308 – +/- 345
End of discharge voltage at full load (Vdc)	+/- 221 – +/- 263
Charging power	20 % of nominal power at 0–90 % load 10 % of nominal power at 100 % load
Typical recharge time	3.5 hours

Fuses, Breakers, and Cables in the US

In single utility/mains systems, supply the UPS from a grounded 4–wire WYE service.

Schneider Electric also supports 3–wire installations if the utility transformer is a grounded WYE transformer located in the same building. In this installation, the UPS system must be installed as a separately derived system. Leakage currents will occur in the bonding jumper and the technical/system earth.

In dual utility/mains systems, use a 4–wire supply for the bypass and a 3–wire supply for the mains input. Both must be WYE sources. Delta mains supply for either mains 1 or mains 2 is not permitted.

NOTICE

HAZARD OF EQUIPMENT DAMAGE

In 3–wire systems, we recommend that you add a label with the following wording: “Notice! The UPS is installed as a 3–wire system so the system must only be loaded with phase-to-phase load.”

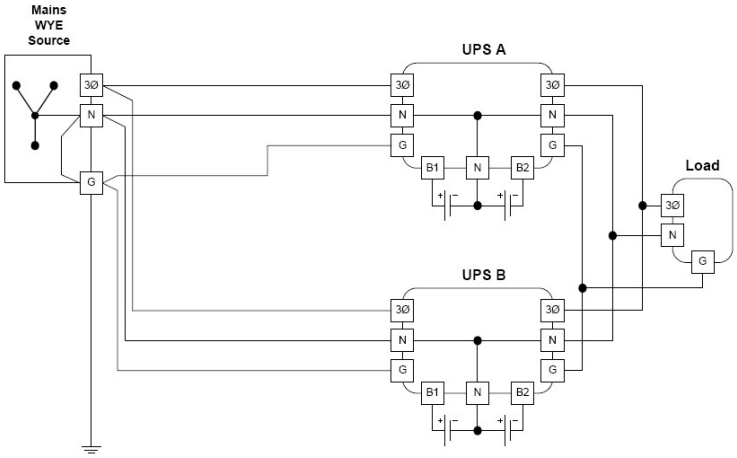
Failure to follow these instructions can result in equipment damage.

NOTE: 3–wire installations using bonding wire will result in a higher leakage current. Leakage current for a typical installation is usually within UL and industry standard limits.

Parallel Systems

NOTE: For parallel systems, the cable lengths for bypass input and output must be the same for all parallel UPS units to ensure correct load sharing in bypass operation. In single utility/mains installations this applies to mains input cables.

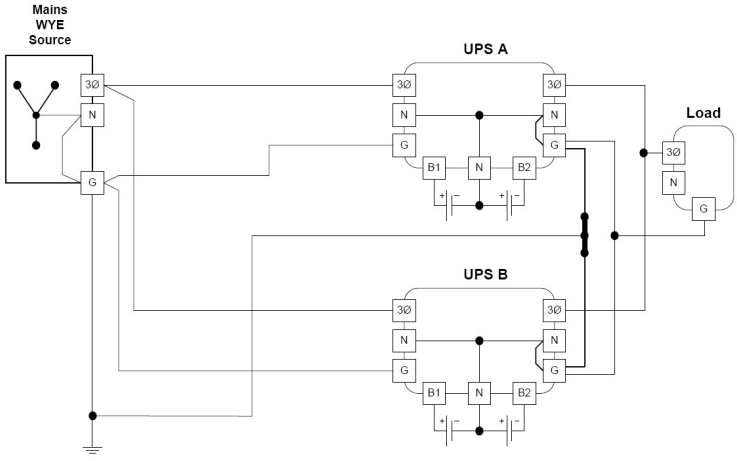
Schneider Electric recommends that the Symmetra PX 250/500 kW parallel system is supplied from a grounded 4–wire WYE service.



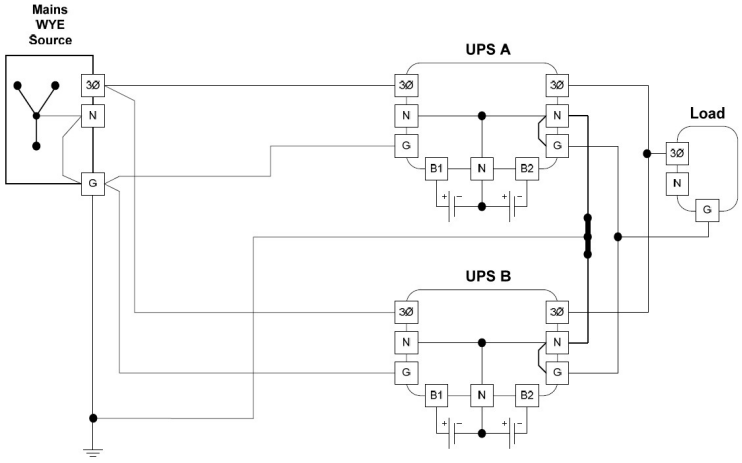
However if the load is a 3–phase load, the three alternatives below for 3–wire installations are allowed:

NOTICE
HAZARD OF MALFUNCTIONING Phase-Neutral loading is not permitted. **Failure to follow these instructions can result in equipment damage.**

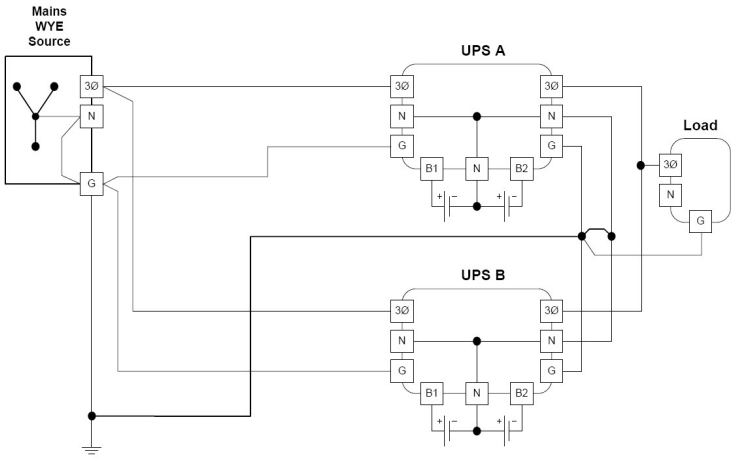
- Connect an N-G bond in each UPS, and connect the UPS output ground via tap conductors to a common grounded electrode bus and a single grounding electrode conductor. See NEC 250.30 (A)(4), including Exception #1.



- Connect an N-G bond in each UPS, and connect the UPS output neutral via tap conductors to a common grounded electrode bus and a single grounding electrode conductor. See NEC 250.30 (A)(4), including Exception #1.



- Connect an output neutral from each UPS to a neutral/bonding bus in the Maintenance Bypass Panel (MBP), and bond the MBP neutral bus to the ground with a single N-G bonding jumper and a grounding electrode conductor. See NEC 250.30 (A) Exception #1.



NOTE: Schneider Electric recommends that each UPS in the parallel system has a neutral connection installed. Contact Schneider Electric for information on other configurations.

Recommended Fuses, Breakers, and Cable Sizes in the US

⚠ 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 circuit breakers, battery circuit breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

All wiring must comply with all applicable national and/or local electrical codes.

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

NOTE: See *Required Breaker Settings for Input Overload and Short-Circuit Protection for Breakers with Electronic Trip Units, page 16* for information on breaker settings.

Temperature rating of conductors is 90°C/194°F and with 75°C terminations. Refer to table 310-16 of NEC, 75°C column for maximum ampacity. Use only copper conductors.

Equipment grounding conductors are sized in accordance with NEC Article 250-122 and Table 250-122.

The cable sizes are recommendations for maximum configurations with three current carrying conductors in a raceway. For other configurations see the label inside the front door of the Input/Output/Bypass Enclosure.

NOTE: A separate 800 A protection device for bypass input (similar to dual mains) is required for single mains systems from 450 kW 400 V or 475 kW 415 V.

Installations with 100% Rated Circuit Breakers or Fuses[2]

	250 kW						500 kW					
	400 V		415 V		480 V		400 V		415 V		480 V	
	OCPD	Cable	OCPD	Cable	OCPD	Cable	OCPD	Cable	OCPD	Cable	OCPD	Cable
Input Q1	450A	2x4/0	450A	2x4/0	400A	1x500	1000A	3x400	1000A	3x400	800A	2x500
Bypass Q5[1]	400A	2x2/0	350A	2x2/0	350A	2x2/0	800A	3x250	700A	3x250	700A	3x4/0
Battery[3]	500A	2x4/0	500A	2x4/0	500A	2x4/0	1000A	3x400	1000A	3x400	1000A	3x400
Output Q2	400A	1x500	350A	1x500	350A	1x350	800A	2x500	700A	2x500	700A	2x350

[1] Max. input protection: 800 A and the maximum cable size is 250 kcmil.
[2] Use breaker or class J or class L fuses.
[3] If the UPS system includes a Battery Breaker Enclosure and has one or multiple battery strings, each individual string must have a correctly sized fast fuse installed to ensure fast isolation of the battery in case of malfunction. Appropriate disconnect devices must be provided external to the equipment.

Installations with 80% Rated Circuit Breakers

	250 kW						500 kW					
	400 V		415 V		480 V		400 V		415 V		480 V	
	OCPD	Cable	OCPD	Cable	OCPD	Cable	OCPD	Cable	OCPD	Cable	OCPD	Cable
Input Q1	600A	2x300	600A	2x250	450A	2x4/0	Not allowed		Not allowed		1000A	3x400
Bypass Q5[1]	500A	2x4/0	450A	2x4/0	400A	2x3/0	Not allowed		Not allowed		800A	3x250
Battery[2]	500A	2x4/0	500A	2x4/0	500A	2x4/0	1000A	3x400	1000A	3x400	1000A	3x400
Output Q2	500A	2x4/0	450A	2x4/0	400A	1x500	Not allowed		Not allowed		800A	2x500

[1] Max. input protection is 800 A and the maximum cable size is 250 kcmil.
[2] If the UPS system includes a Battery Breaker Enclosure and has one or multiple battery strings, each individual string must have a correctly sized fast fuse installed to ensure fast isolation of the battery in case of malfunction. Appropriate disconnect devices must be provided external to the equipment.

Typical Q3 and Q4 Breaker Sizes for Parallel Systems

	250 kW units in parallel						500 kW units in parallel					
	400 V		415 V		480 V		400 V		415 V		480 V	
OCPD Rating	**80%**	**100%**	**80%**	**100%**	**80%**	**100%**	**80%**	**100%**	**80%**	**100%**	**80%**	**100%**
500 kW	1000	800	1000	700	800	700	-	-	-	-	-	-
750 kW	1600	1200	1600	1200	1200	1000	-	-	-	-	-	-
1 MW	2000	1600	2000	1600	1600	1600	2000	1600	2000	1600	1600	1600
1.5 MW	-	-	-	-	-	-	3000	2500	3000	2500	2500	2000
2 MW	-	-	-	-	-	-	4000	3000	4000	3000	4000	2500

Recommended Bolt and Lug Sizes

Cable size	Terminal bolt diameter	Single Hole lug	NEMA 2 Lug	Crimping tool/die
4/0 AWG	M10	Panduit LCA 4/0-12-X	Panduit LCD 4/0-12-X	Panduit CT-720/CD-720-3
250 kcmil	M10	Panduit LCA250-12-X	Panduit LCD250-12-X	Panduit CT-720/CD-720-3
300 kcmil	M10	Panduit LCA300-12-X	Panduit LCD300-12-X	Panduit CT-720/CD-720-4
350 kcmil	M10	Panduit LCA350-12-X	Panduit LCD350-12-X	Panduit CT-720/CD-720-5
400 kcmil	M10	Panduit LCA400-12-6	Panduit LCD400-12-6	Panduit CT-720/CD-720-6
500 kcmil	M10	Panduit LCA500-12-6	Panduit LCD500-12-6	Panduit CT-720/CD-720-7

Fuses, Breakers, and Cables in Europe, Africa, and Asia

⚠ 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 circuit breakers, battery circuit breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

All wiring must comply with all applicable national and/or local electrical codes.

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

NOTE: For parallel systems, the cable lengths for bypass input and output must be the same for all parallel UPS units to ensure correct load sharing in bypass operation. In single utility/mains installations this applies to mains input cables.

NOTE: See *Required Breaker Settings for Input Overload and Short-Circuit Protection for Breakers with Electronic Trip Units, page 16* for information on breaker settings.

Supply the UPS from a 5–wire TN-S system (L1, L2, L3, N, PE).

The recommended cable sizes are based on an environment with an ambient temperature of 40°C (104°F).

Temperature ratings of conductors: 90°C (194°F).

Refer to IEC 60364-5-52 for installation methods. The cable sizes are recommendations for maximum configurations and copper cables. For other system size configurations see label inside of Input/Output/Bypass front door.

Recommended Cable Sizes in Systems with Breaker Protection[1]

Installation Method	OCPD	B1 (mm²)	B2 (mm²)	C (mm²)	OCPD	B1 (mm²)	B2 (mm²)	C (mm²)
	400 V				415 V			
	250 kW							
Mains input	400A[1]	2 x 95	2 x 120	2 x 95	400A[1]	2 x 95	2 x 120	2 x 95
Bypass input	400A	2 x 95	2 x 120	2 x 95	355A	2 x 95	2 x 120	2 x 95
Battery[2]	500A	1 x 120	3 x 95	2 x 95	500A	1 x 120	3 x 95	2 x 95
Output	400A	2 x 95	2 x 120	2 x 95	355A	2 x 95	2 x 120	2 x 95
	500 kW							
Mains input	800A	4 x 120	-	3 x 150	800A[1]	4 x 120	-	3 x 150
Bypass input	800A	4 x 120	-	3 x 150	800A	4 x 120	-	3 x 150
Battery[2]	1000A	-	-	3 x 240	1000A	-	-	3 x 240
Output	800A	4 x 120	-	3 x 150	800A	4 x 120	-	3 x 150

[1] The breaker must comply with IEC 60947-2 which guarantees a non-tripping current of 1,05 times current setting for 2 hours. Alternative breaker size must be higher than stated current.
[2] If the UPS system includes a Battery Breaker Enclosure and has one or multiple battery strings, each individual string must have a correctly sized fast fuse installed to ensure fast isolation of the battery in case of malfunction. Appropriate disconnect devices must be provided external to the equipment.

Recommended Cable Sizes in Systems with Fuse Protection

Installation Method	OCPD	B1 (mm²)	B2 (mm²)	C (mm²)	OCPD	B1 (mm²)	B2 (mm²)	C (mm²)
	400 V				415 V			
	250 kW							
Mains input	500A	2 x 95	2 x 120	2 x 150	400A[1]	2 x 95	2 x 120	2 x 95
Bypass input	400A	2 x 95	2 x 120	2 x 95	355A	2 x 95	2 x 95	1 x 185
Battery[2]	500A	1 x 120	3 x 95	2 x 95	500A	1 x 120	3 x 95	2 x 95

Recommended Cable Sizes in Systems with Fuse Protection

Installation Method	OCPD	B1 (mm²)	B2 (mm²)	C (mm²)	OCPD	B1 (mm²)	B2 (mm²)	C (mm²)
	400 V				415 V			
Output	400A	2 x 95	2 x 120	2 x 95	355A	2 x 95	2 x 95	1 x 185
	500 kW							
Mains input	1000A	-	-	4 x 150	1000A	-	-	4 x 150
Bypass input[1]	800A	4 x 120	-	3 x 150	800A	4 x 120	-	3 x 150
Battery[2]	1000A	-	-	3 x 240	1000A	-	-	3 x 240
Output	800A	4 x 120	-	3 x 150	800A	4 x 120	-	3 x 150

[1] Max. input protection: 800 A.
[2] If the UPS system includes a Battery Breaker Enclosure and has one or multiple battery strings, each individual string must have a correctly sized fast fuse installed to ensure fast isolation of the battery in case of malfunction. Appropriate disconnect devices must be provided external to the equipment.

Typical Q3 and Q4 Breaker Sizes for Parallel Systems

	250 kW		500 kW	
	400 V	415 V	400 V	415 V
For 2 UPS units (A)	800	800	1600	1600
For 3 UPS units (A)	1250	1250	2500	2000
For 4 UPS units (A)	1600	1600	3200	3200

Required Breaker Settings for Input Overload and Short-Circuit Protection for Breakers with Electronic Trip Units

Single Mains Installation (Common Mains and Bypass Input Breaker)

	Mains input breaker
In	= Maximum input current
STPU	In x A (3 < A < 4)
STD	Max. 100 ms
LTD	Max. 3 x In in 5s
Iinst	In x 5

Dual Mains Installation (Separate Mains and Bypass Breaker)

	Mains input breaker	Bypass input breaker
In	= Maximum input current	= Maximum input current
STPU	In x A (3 < A < 4)	In x B (10 < B <12)
STD	Max. 100 ms	Max. 100 ms

	Mains input breaker	Bypass input breaker
LTD	Max. 3 x In in 5s	Max. 3 x In in 5s
Iinst	In x 5	In x 15

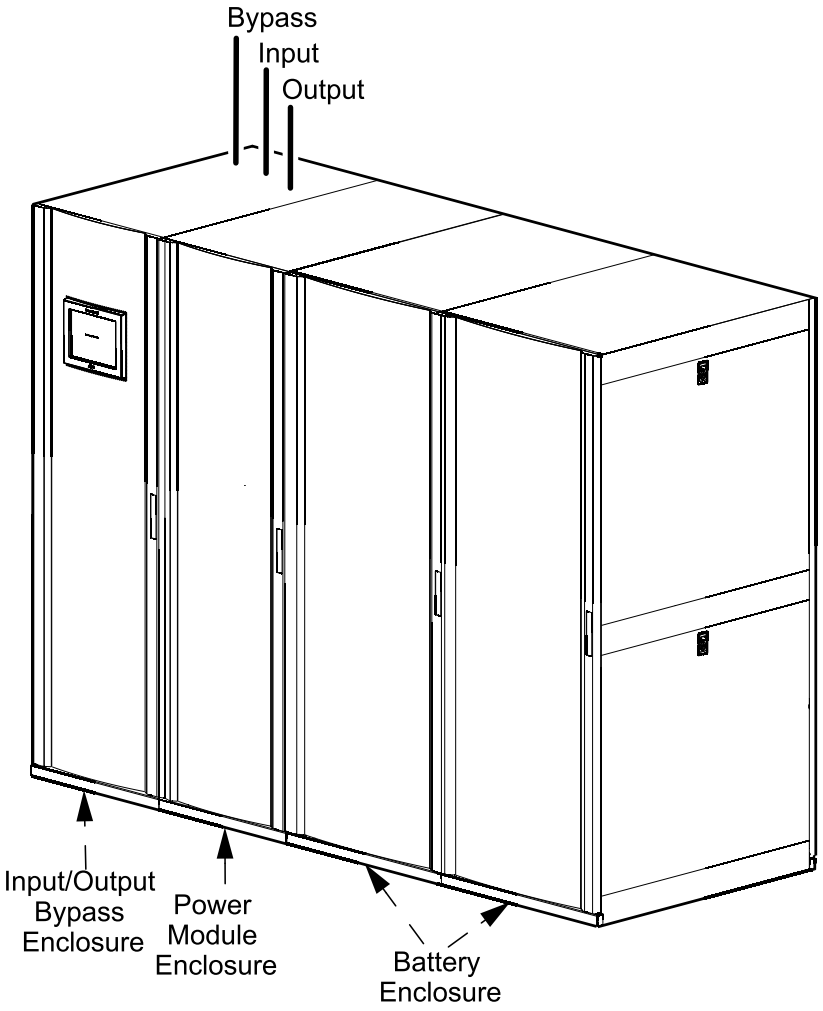
Torque Specifications

Bolt size M8	Bolt size M10
13.5 Nm	30 Nm

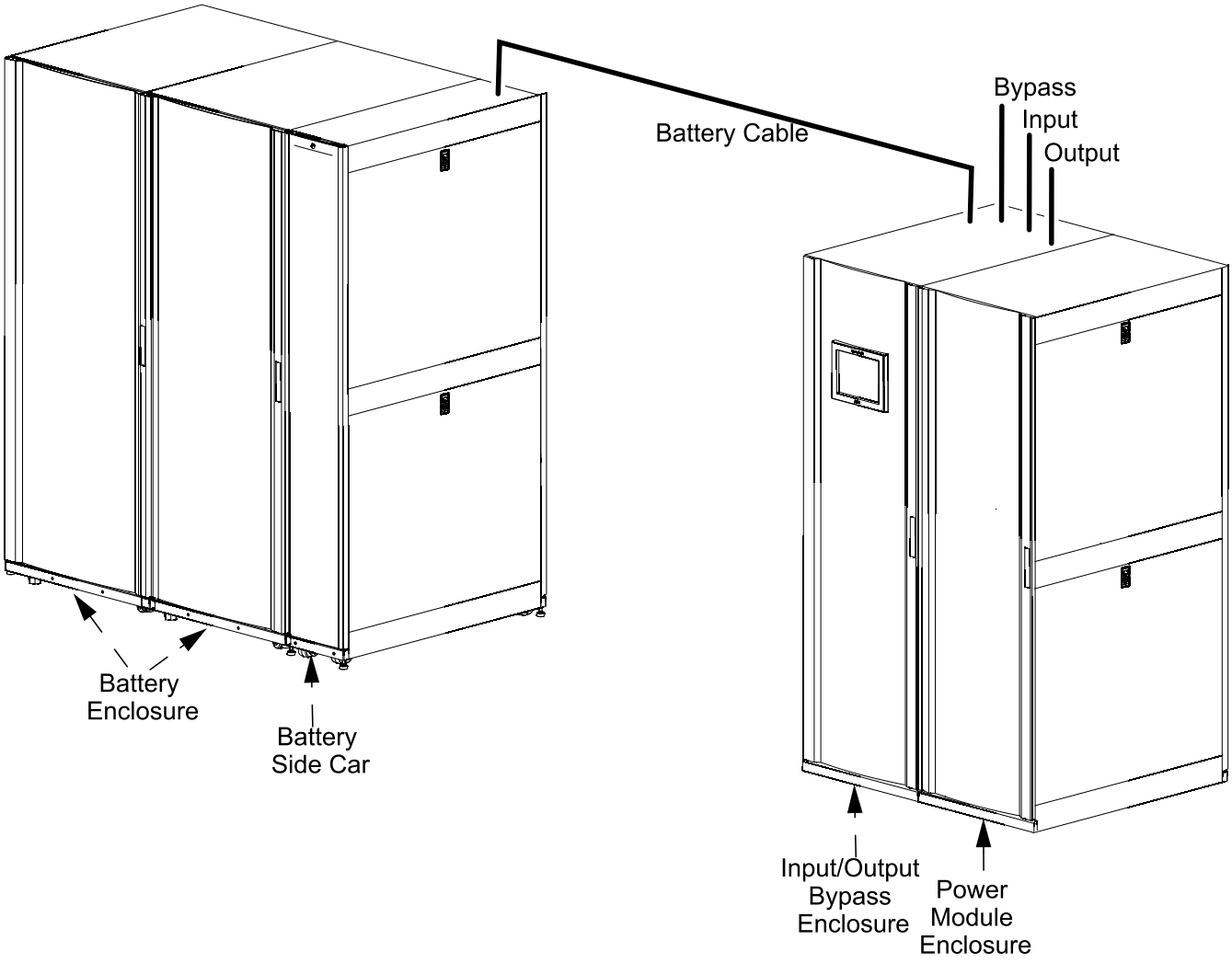
Connect the Power Cables

Overview of Cables

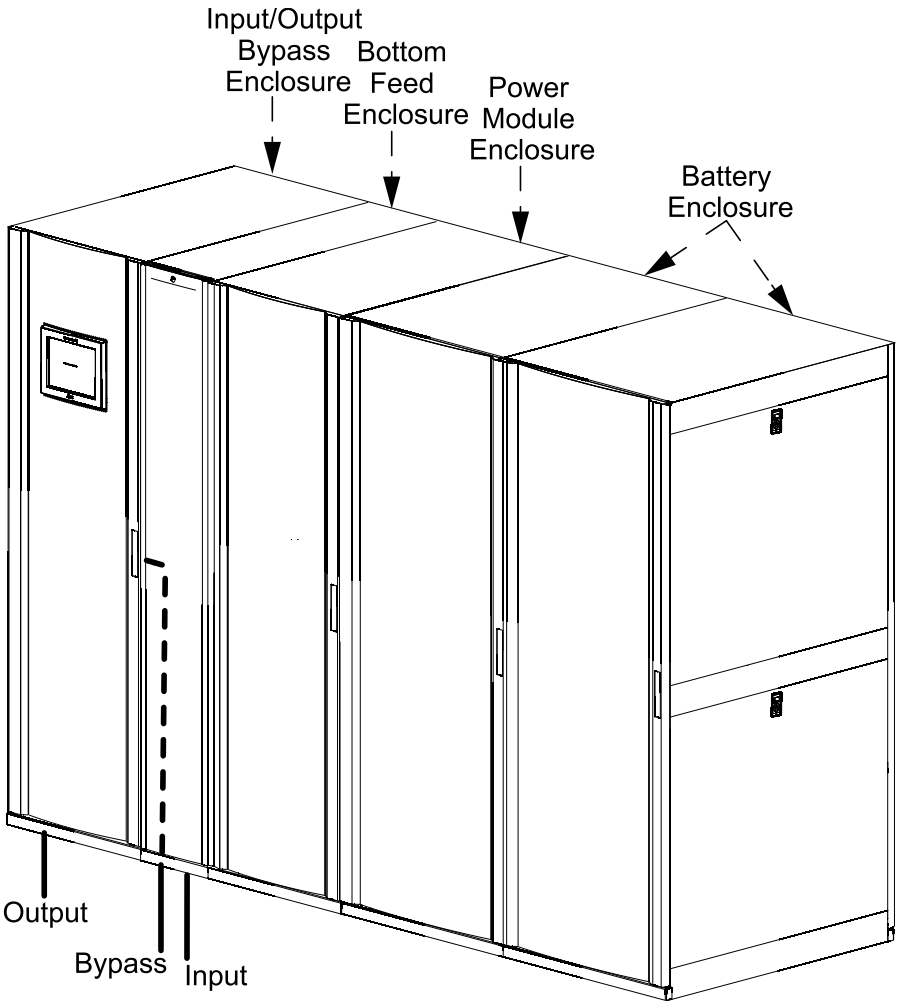
Top Entry Systems with Line-up and Match Batteries



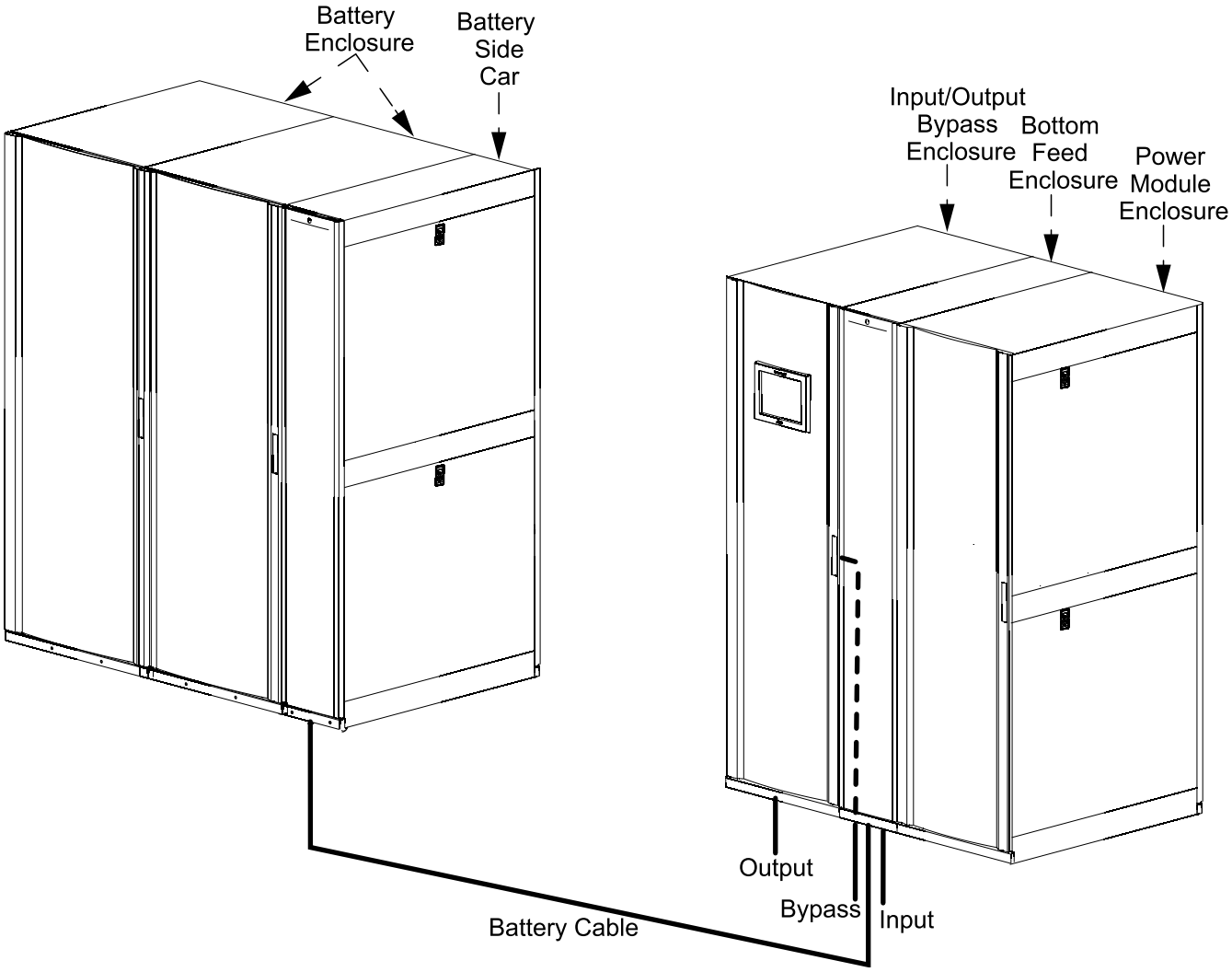
Top Entry Systems with Remote Batteries



Bottom Entry Systems with Line-up and Match Batteries



Bottom Entry Systems with Remote Batteries



Prepare the Installation

⚠ DANGER

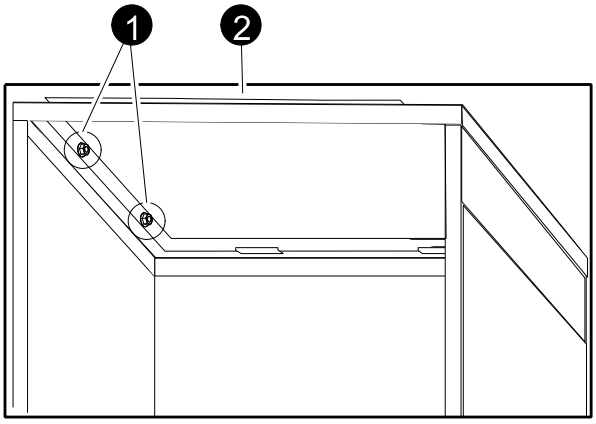
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

Run the Cables in Top Entry Systems

Input/Output/Bypass Enclosure



1. From the inside of the Input/Output/Bypass Enclosure, loosen the four screws.
2. Lift up the front of the top cover and slide out the cover.
3. Drill/punch holes for the cables.
4. Refit the cover and install conduits (if applicable).

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

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

5. Run the cables through the top of the Input/Output/Bypass Enclosure to the cable landing area.

Run the Cables in Bottom Entry Systems

In systems with bottom cable entry, the mains and bypass cables are routed through the bottom of the Bottom Feed Enclosure. The output cables are routed through the bottom of the Input/Output/Bypass Enclosure.

1. Remove the bottom cover of the Bottom Feed Enclosure by loosening the four M8 bolts.
2. Drill/punch holes for the cables in the bottom plate.
3. Refit the bottom plate and install conduits (if applicable).

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

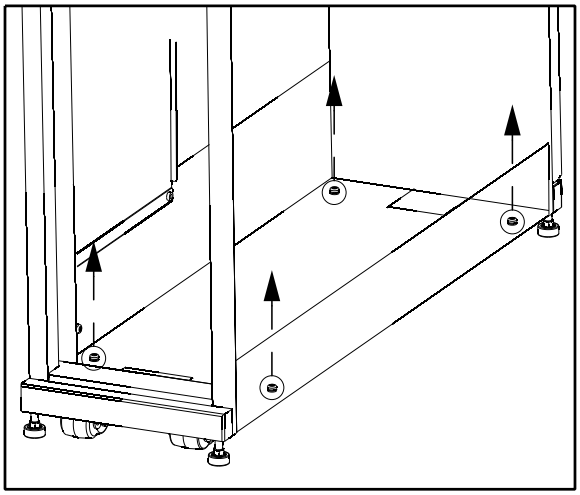
Ensure that there are no sharp edges that can damage the cables.

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

4. Run the mains cables through the bottom of the Bottom Feed Enclosure to the AC Mains Input cable landings.

5. Run the bypass cables through the bottom of the Bottom Feed Enclosure, through the side into the Input/Output/Bypass Enclosure. In the Input/Output/Bypass Enclosure, run the cables to the top and then down to the AC Bypass Input cable landings.

Bottom Feed Enclosure



6. In the Input/Output/Bypass Enclosure, loosen the two M6 bolts from the back of the enclosure.
7. Lift up the bottom plate and slide it out.
8. Drill/punch holes for the cables in the bottom plate where indicated .
9. Refit the bottom plate and install conduits (if applicable).

⚠ DANGER

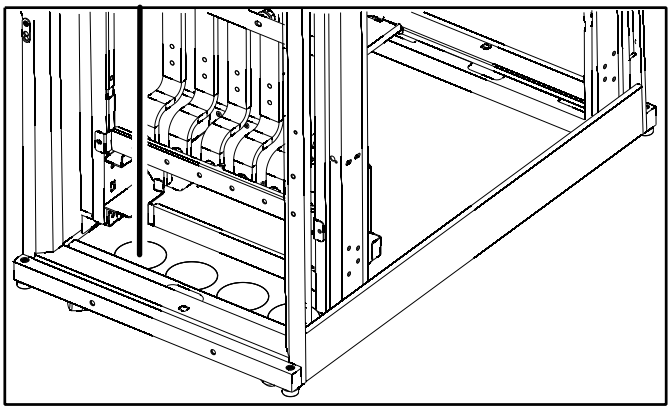
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

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

10. Run the output cables through the bottom cover in the back of the enclosure all the way to the top and then down to the AC Output cable landings.

Input/Output/Bypass Enclosure



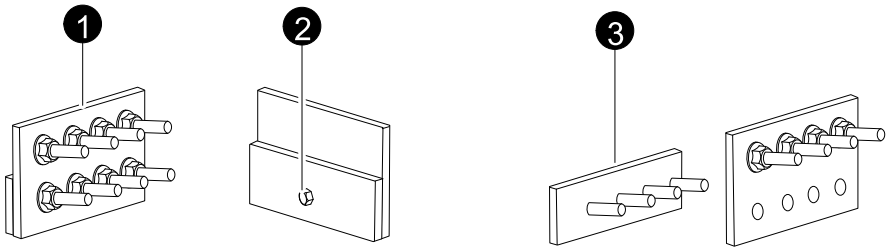
Remove NEMA 2 Hole Pattern

NOTE: The NEMA 2 hole plates can be installed upside down to gain additional wiring clearances.

The NEMA 2 hole pattern plate is only used in some installations in the US. In other installations, the NEMA 2 plate must be removed.

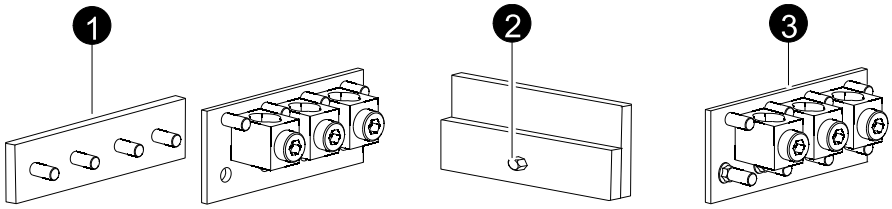
Use cable lugs with a mutual distance of 44.5 mm. In other installations, follow the below procedure to remove the NEMA 2 hole pattern plates from the busbars.

1. Loosen the four 10 mm nuts connecting the NEMA 2 hole pattern plate to the busbar.
2. Loosen the 8 mm nut on the back of the busbar.
3. Slide the NEMA 2 hole pattern plate off the busbar.



Install the Terminal Blocks (Optional)

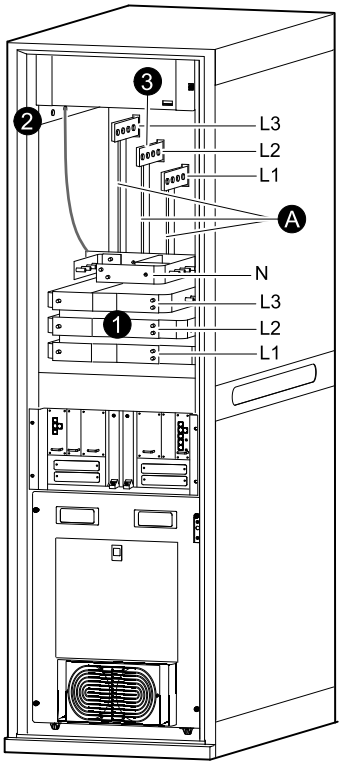
1. Slide the plate with the terminal blocks onto the busbar.
2. Tighten the 8 mm nut on the back of busbar.
3. Tighten the four 10 mm nuts below the terminal blocks.



Connect Input Cables, Bypass Cables, and PE/Equipment Grounding Conductor

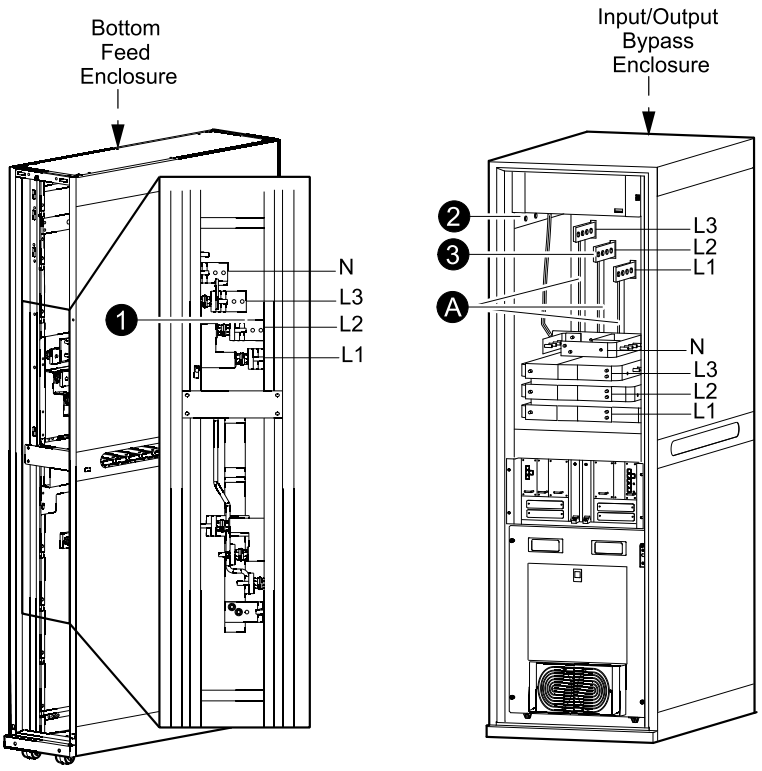
Top Entry Systems

Input/Output/Bypass Enclosure



1. Connect the AC input cables to the AC Mains Input cable landings.
2. Connect the PE/equipment grounding conductor.
3. Only applicable to a dual mains system: Ensure that the single feed busbars (labeled A) have been removed and connect the AC bypass cables to the AC Bypass Input cable landings.
4. Install plastic covers over the terminals AC input L1, L2, L3, N and AC bypass L1, L2, L3 (only in dual mains systems).

Bottom Entry Systems

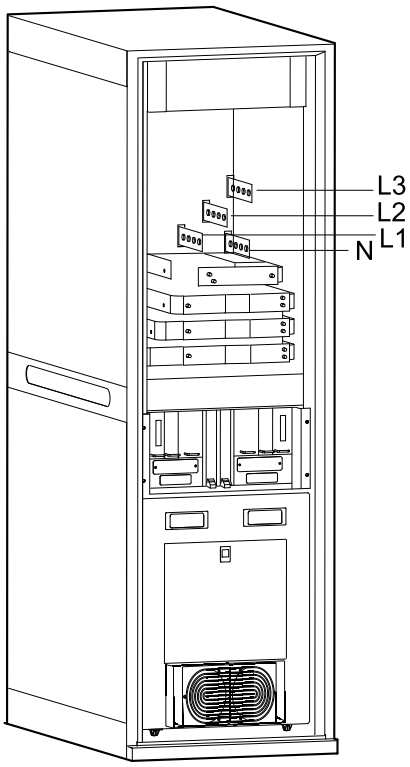


1. Connect the AC input cables to the AC Mains Input cable landings in the Bottom Feed Enclosure.
2. Only applicable to a dual mains system: Ensure that the single feed busbars (labeled A) have been removed and connect the AC bypass cables to the AC Bypass Input cable landings.
3. Connect the PE/grounding electrode conductor.
4. Install plastic covers over the AC bypass terminals L1, L2, L3.

Connect the Output Cables

1. Connect the AC output cables to the AC Output cable landings in the Input/ Output/Bypass Enclosure.

Input/Output/Bypass Enclosure



2. Install plastic covers over the output terminals L1, L2, L3.

Connection of Bonding Jumper and Technical/System Earth

⚠ CAUTION

HAZARD OF ELECTRIC SHOCK

Connect the bonding jumper and the technical/system earth according to the guidelines below

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

NOTE: The bonding jumper is not installed from factory.

Systems in the US

- 4–wire systems
  - Bonding jumper: Not connected
  - Technical/system earth: No Local Grounding Electrode connected
- 3–wire systems
  - Bonding jumper: Must be connected

– Technical/system earth: A Grounding Electrode must be connected via the Grounding Electrode Conductor

Systems in Europe, Africa, and Asia

- 5–wire systems
  - Bonding jumper: Not connected
  - Technical/system earth: A Local Earth Electrode must be connected

Connect the Bonding Jumper

NOTE: This section is not applicable to 4–wire systems.

⚠ CAUTION

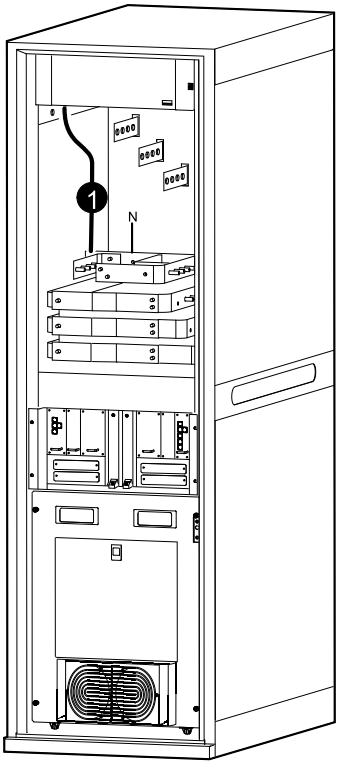
HAZARD OF ELECTRIC SHOCK

Install the bonding jumper in 480 V 3–wire systems.

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

1. Take the bonding jumper that is connected to the grounding busbar in the side of the Input/Output/Bypass Enclosure and connect it to the N-point.

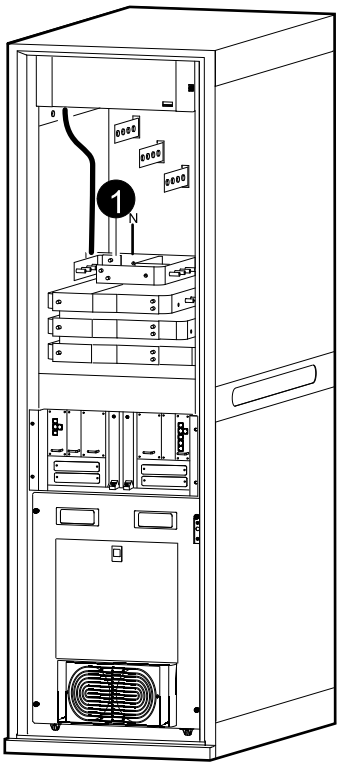
Input/Output/Bypass Enclosure



Connect the Technical Earth

1. Connect the earth electrode to the N busbar in the Input/Output/Bypass Enclosure in the location labeled **Grounding Electrode Terminal – E**.

Input/Output/Bypass Enclosure



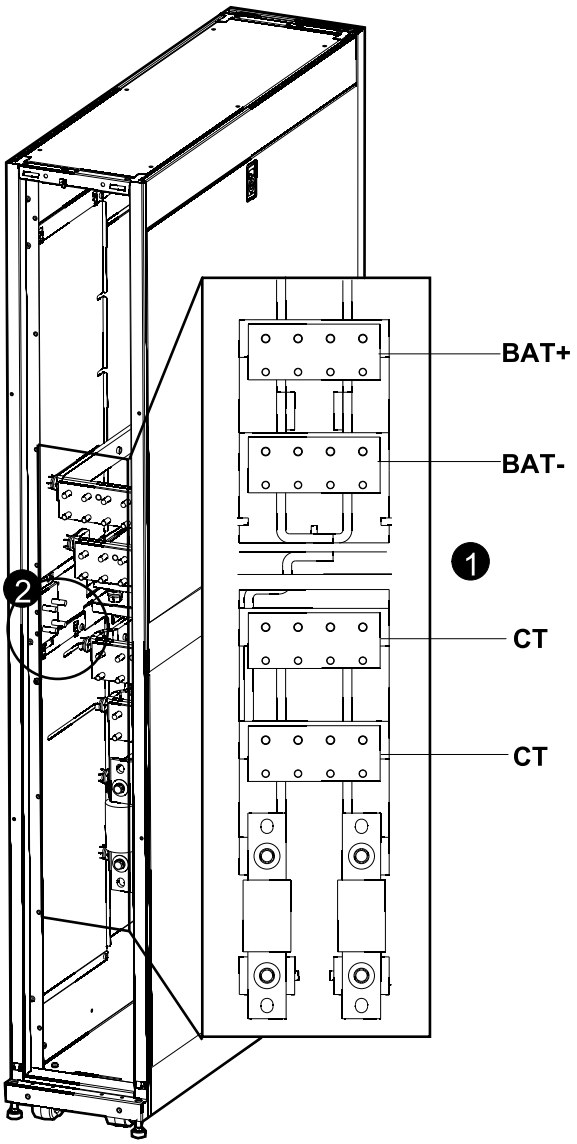
Connect Battery Cables in Systems with Remote Batteries

Connect Battery Cables in Top Cable Entry Systems

1. Connect one end of the battery cables to the BAT+, BAT-, and CT (Midpoint) cable landings in the Battery Side Car.

2. Connect the ground/PE cable.

Battery Side Car

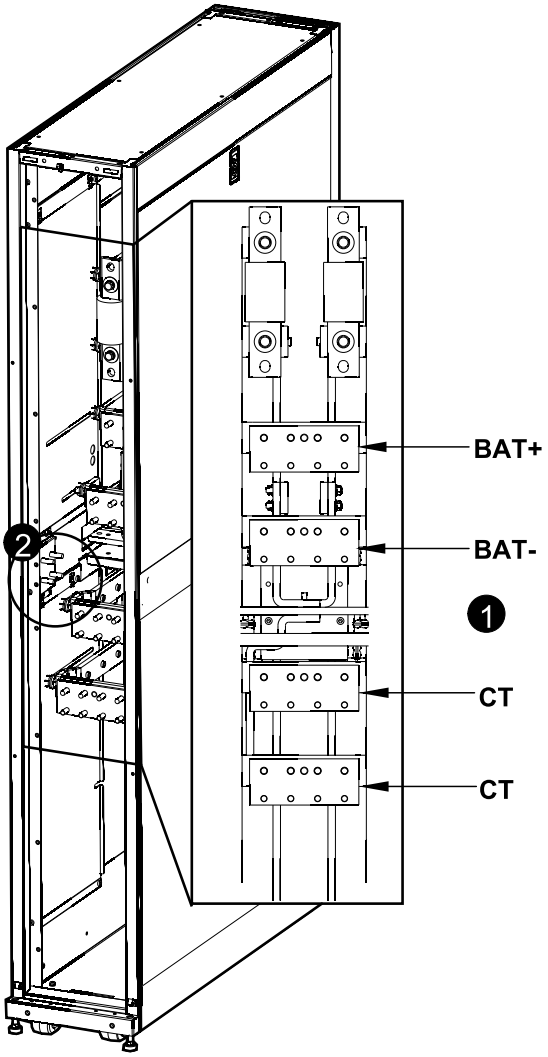


Connect Battery Cables in Bottom Cable Entry Systems

1. Connect one end of the battery cables to the BAT+, BAT-, and CT (Midpoint) cable landings in the Battery Side Car.

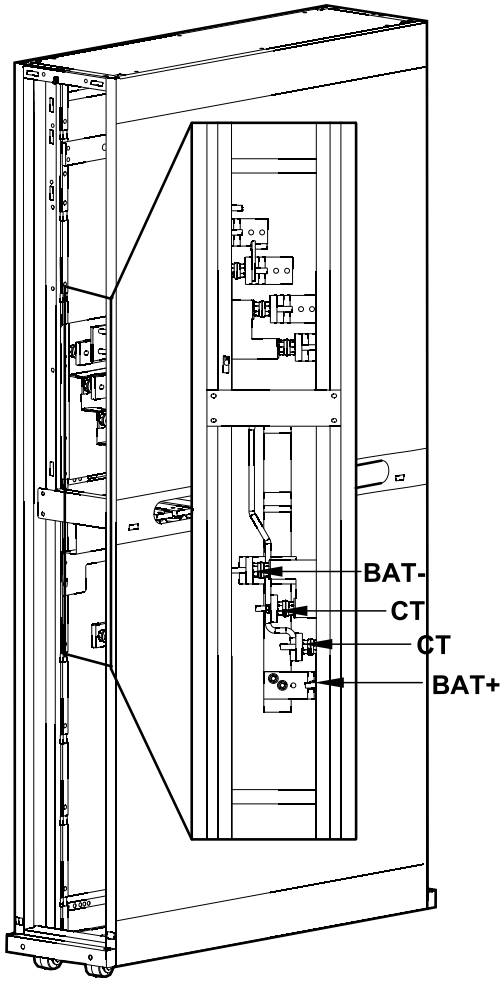
2. Connect the ground/PE cable.

Battery Side Car



3. Connect the other end of the battery cables to BAT+, BAT-, and CT (Midpoint) cable landings in the Bottom Feed Enclosure.

Bottom Feed Enclosure



Communication Cables

EPO switch wiring

In installations with EPO, the UPS must be connected to either a dry contact or an external 24 VDC Emergency Power Off (EPO) switch.

For installations in the US and Canada

The EPO circuit is considered Class 2 and SELV (Safety Extra Low voltage). A SELV circuit is isolated from primary circuitry through an isolating transformer and designed so that under normal conditions, the voltage is limited to 42.4 VAC peak or 60 VDC. SELV and Class 2 circuits must be isolated from all primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is SELV or Class 2.

Installations in the US:

- CL2 Class 2 cable for general purpose use
- CL2 Plenum cable for use in a vertical shaft or from floor to floor
- CL2 R Racer cable for use in dwellings and raceways
- CL2 X Limited use cable for dwellings and raceways

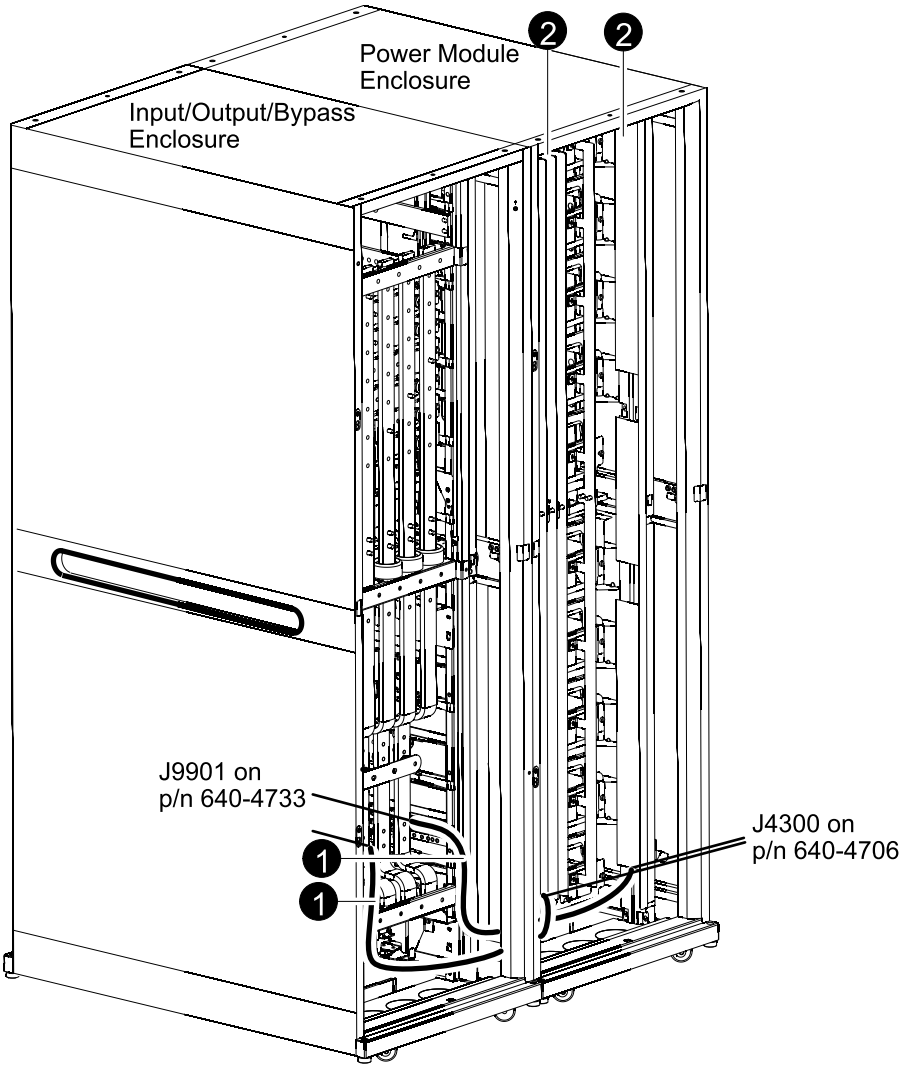
Installations in Canada:

- CL2 R Certified, type ELC (Extra-Low-Voltage Control Cable)
- CL2 X Certified, type ELC (Extra-Low-Voltage Control Cable)

For installations in Europe

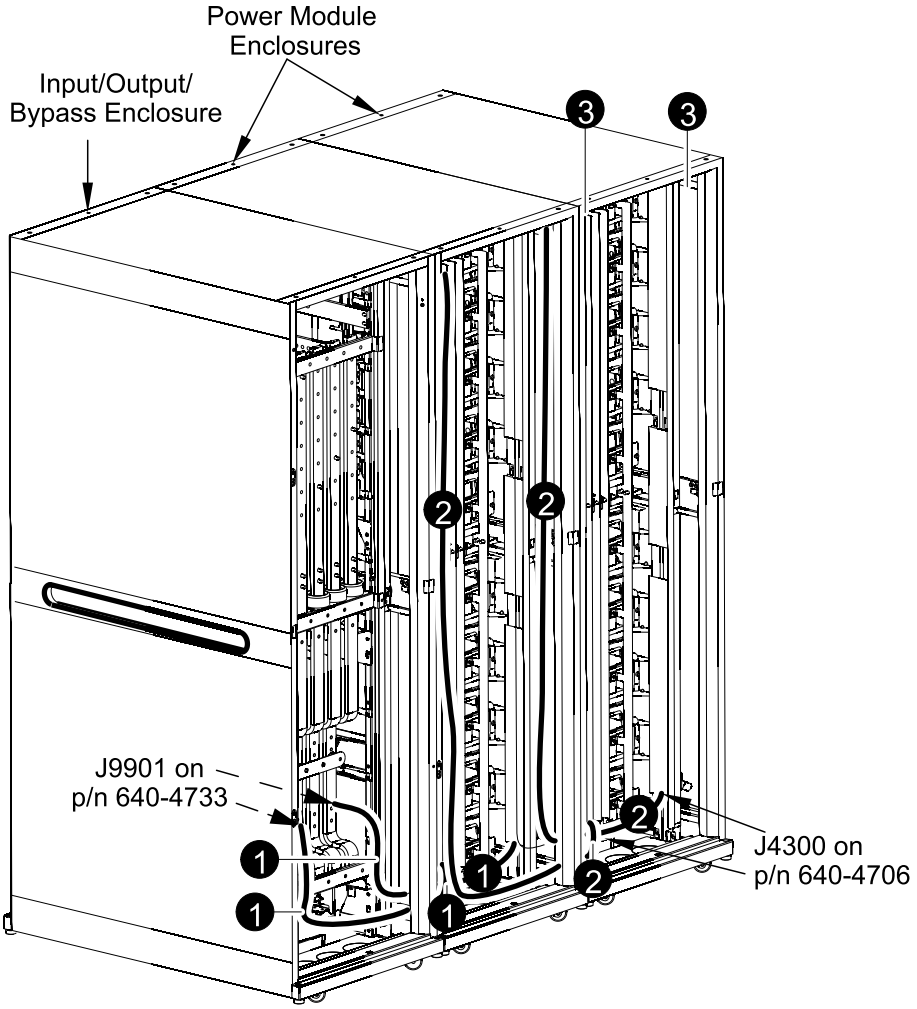
The EPO can be achieved with either a contact closure or application of an external 24 VAC or 24 VDC from a SELV (Safety Extra Low voltage). It is important to note that the hazardous voltage from the mains voltage must be isolated from the contact closure or 24 VAC/24 VDC circuit. The EPO circuit contact closure, the VAC or VSC circuit is considered a SELV circuit as defined in EN60950 “Safety of Information Technology Equipment”.

Connect Communication Cables between Power Module and Input/Output/ Bypass Enclosure in 250 kW Systems



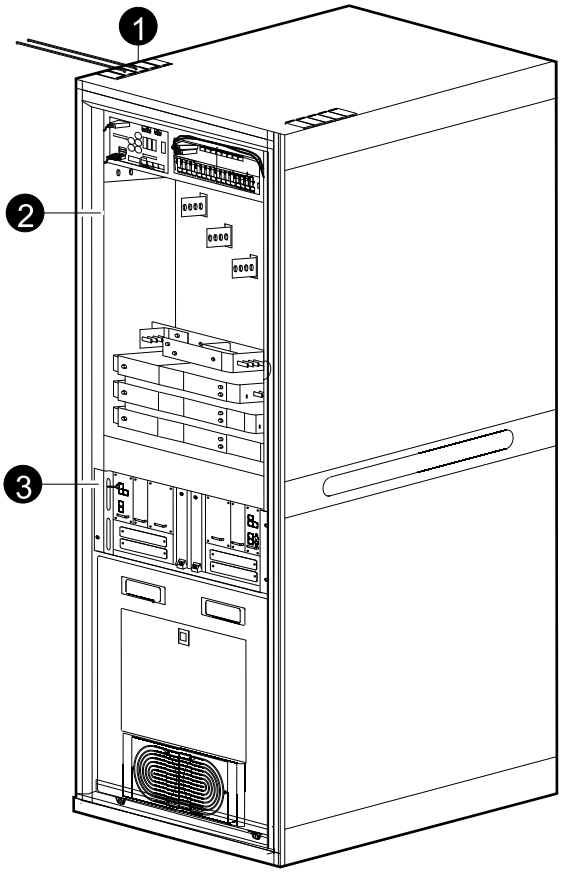
1. Take the MIM/RIM cables that are placed in the bottom of the Power Module Enclosure and connect them in the bottom of the Input/Output/Bypass Enclosure (left to left and right to right).
2. Verify that terminators are installed.

Connect Communication Cables between Power Module and Input/Output/ Bypass Enclosures in 500 kW Systems



1. Take the MIM/RIM cables that are placed in the bottom of Power Module Enclosure next to the Input/Output/Bypass Enclosure and connect them in the bottom of the Input/Output/Bypass Enclosure (left to left and right to right).
2. Take the MIM/RIM cables that are placed in the bottom of the other Power Module Enclosure. Connect one end in the top of this Power Module Enclosure and the other end in the bottom of the second Power Module Enclosure (left to left and right to right).
3. Verify that terminators are installed.

Run the Communication Cables

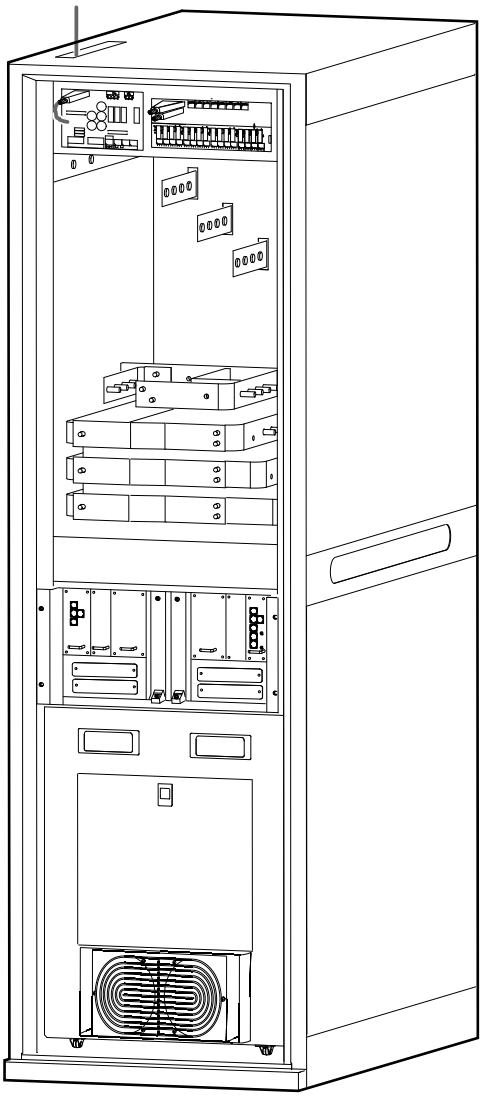


1. Run the cables through the openings in the top cover.
2. Guide the cables through the cable channel in the side.
3. Guide the cables through the hole from the cable tray to the board assembly.

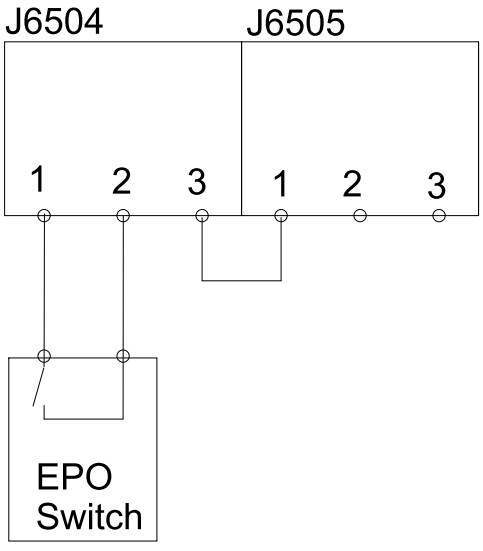
Connect the EPO

1. Run the cables through the openings in the front left corner of the enclosure.

Input/Output/Bypass Enclosure



2. Connect the cable from the EPO to the ECT board. A normally open installation is shown.



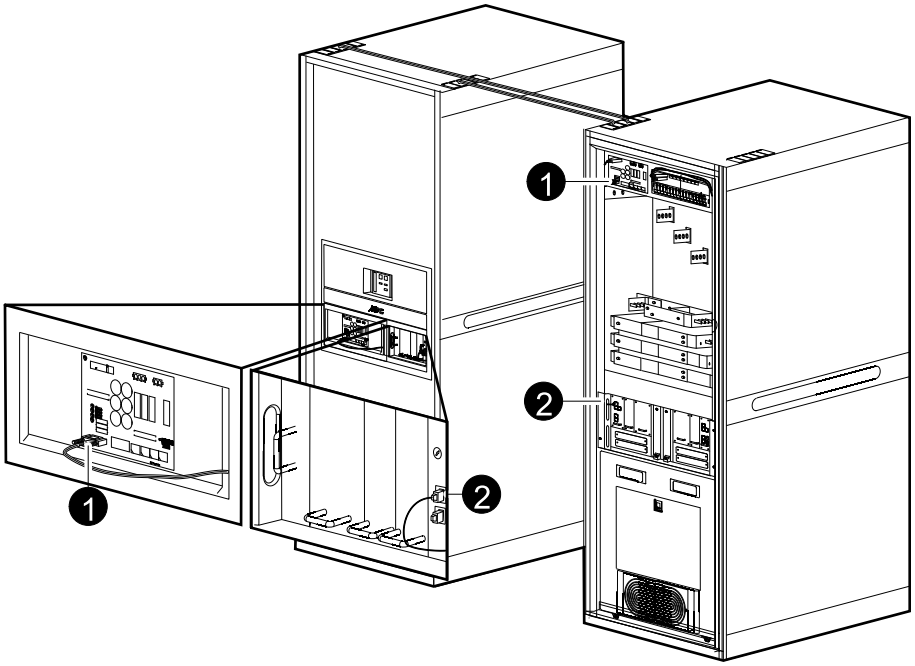
Connect Communication Cables between the Input/Output/Bypass Enclosure and Battery Enclosure

⚠ DANGER

RISK OF ELECTRIC SHOCK

Do not stick fingers behind the ECT board as hazardous voltages are present if batteries are installed.

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



1. Connect the ECT (Emergency Connect and Trip) cable 0W4528 (0W3759 in installations with remote batteries) from the Input/Output/Bypass ECT Board (0P4711) connector J6500 to the Battery Enclosure ECT Board (0P4711) connector J6500.
2. Route Abus cable 0W4527 (0W3758 in installations with remote batteries) from the Abus terminal on the External Connection Board in the Input/Output/Bypass Enclosure to the top Abus terminal on the Abus Communication Board. Route the cable in the right cable channel and remove the two bolts securing the top baying kit while routing the cable. Connect the cable.

   NOTE: Only one A–bus cable (0W3758) can be used in the installation.

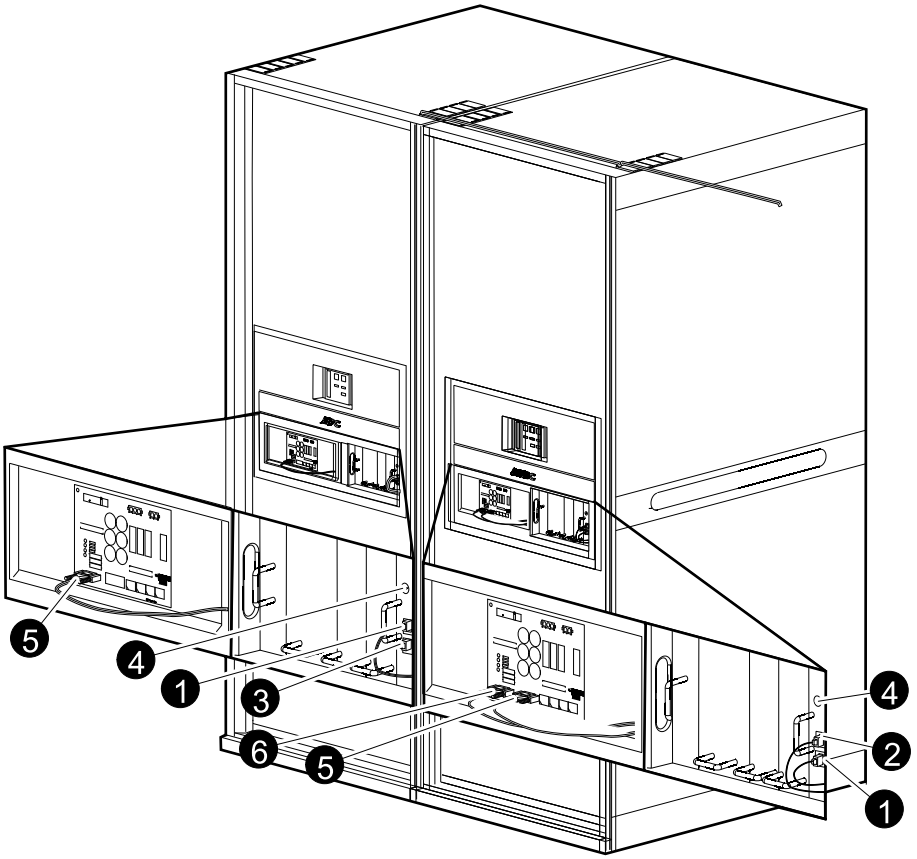
Connect Communication Cables between Battery Enclosures

⚠ DANGER

RISK OF ELECTRIC SHOCK

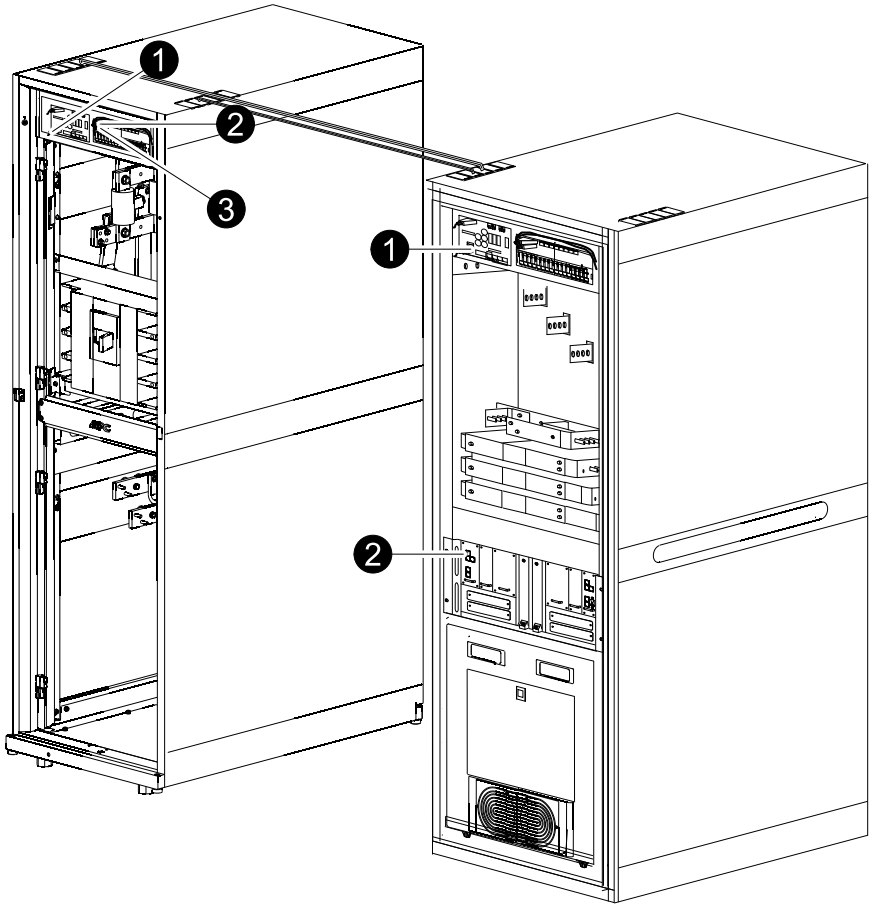
Do not stick fingers behind the ECT board as hazardous voltages are present if batteries are installed.

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



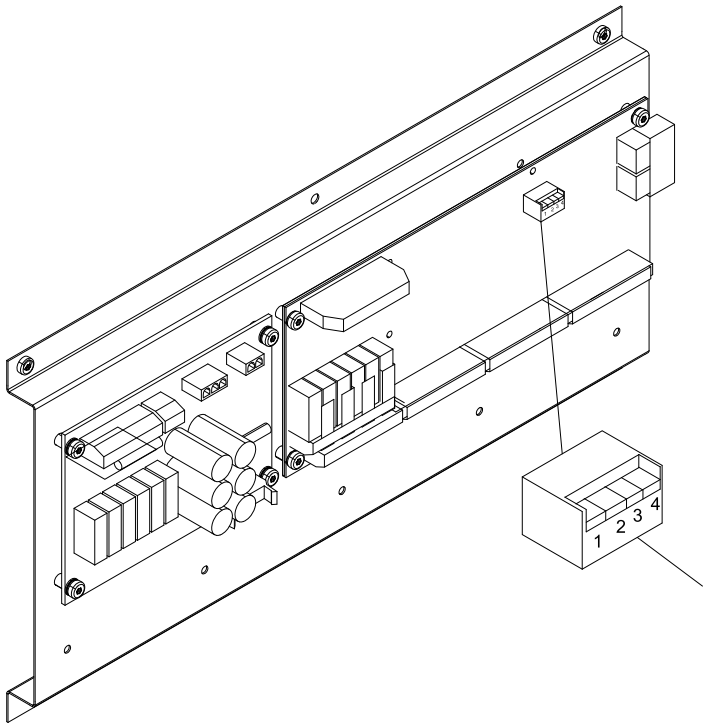
1. Remove the terminator from the bottom Abus terminal on the Battery Enclosure that is connected to the UPS and connect 0W4527 Abus terminal to the top Abus terminal on the next Battery Enclosure in the system.
2. Route the Abus cables (0W4527) between all Battery Enclosures in the system from the bottom Abus slot to the top Abus slot in the next Battery Enclosure. Route the cable in the right cable channel and remove the two bolts securing the top baying kit while routing the cable. Connect the cable to the slots.
3. Install the terminator in the bottom Abus terminal on the last Battery Enclosure.
4. Set the number of each Battery Enclosure using the selector.
5. Connect the ECT cable (0W4528) from the connector J6501 on the ECT Board of the Battery Enclosure connected to the Input/Output/Bypass Enclosure to connector J6500 on the next Battery Enclosure in the system.
6. Connect ECT cables (0W4528) between all Battery Enclosures in the system as in step 5.

Connect Communication Cables between Input/Output/Bypass and Battery Breaker Enclosure



1. Connect ECT cable (0W3759) from the Input/Output/Bypass ECT Board (0P4711) connector J6500 to the Battery Breaker Enclosure ECT Board (0P4711) connector J6500. In the Battery Breaker Enclosure, secure the ECT cable (0W3759) to the cable relief in the lower left corner.
2. Connect the Abus cable (0W3758) from the Abus terminal on the External Connection Board in the Input/Output/Bypass Enclosure to the top Abus terminal J2 on the Ancillary Monitor Board. In the Battery Breaker Enclosure, secure the Abus cable (0W3758) to the cable relief in the upper right corner.
3. Verify that terminator 0W03913 is installed in the J4 terminal on the Ancillary Monitor Board in the Battery Breaker Enclosure.

4. Verify that the AMB DIP switch is configured for use in a Battery Breaker Enclosure (Pins 1–4 down).



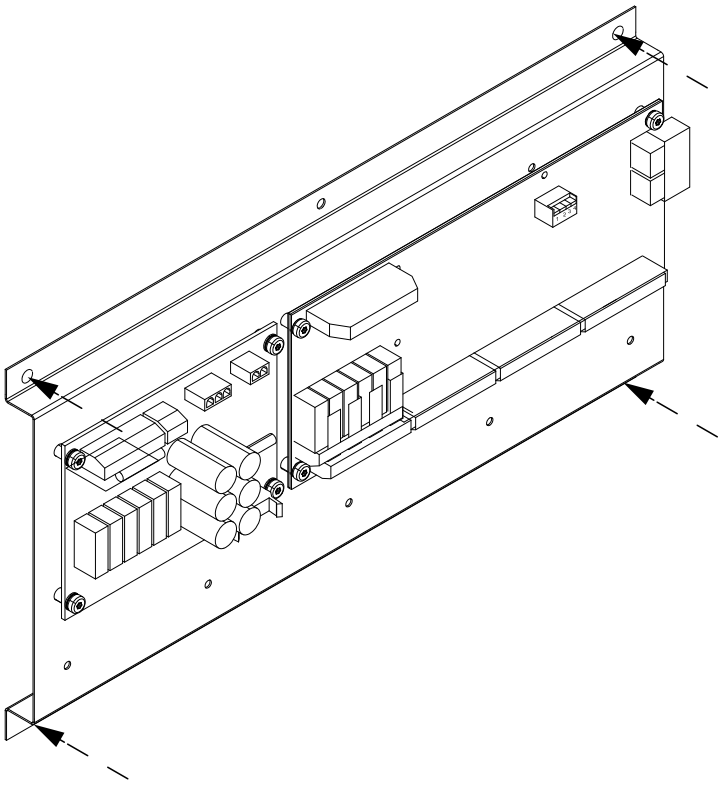
SW1	Pin 1	Pin 2	Pin 3	Pin 4
AMB	Down	Down	Down	Down

Ancillary Monitor Board and EPO Connection and Trip Board

This section describes how to install the Ancillary Monitor Board (AMB) and the EPO Connection and Trip Board (ECT) into a customer-supplied Maintenance Bypass Panel (MBP).

Install the Assembly

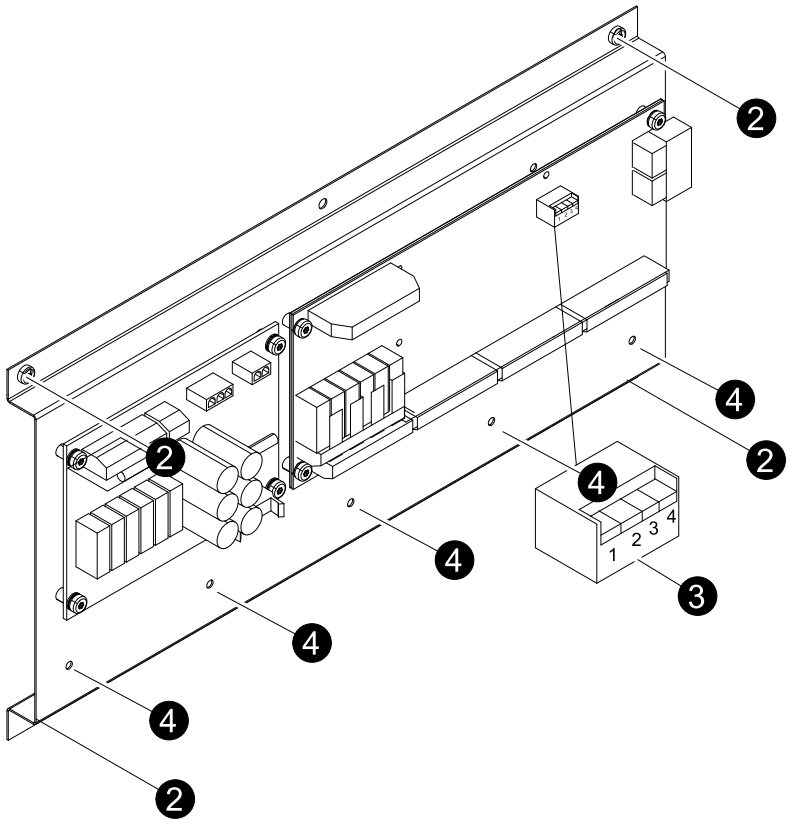
1. Mark the holes in a grounded surface in the maintenance bypass panel and drill four holes (5.5 mm when using the supplied nuts or 4.5 mm when using threaded nuts). Recommended thickness of metal is 1 to 1.5 mm (0.39 to 0.059 in).



2. Secure the assembly with the four supplied M5 screws and nuts.
3. Verify that the AMB DIP switch is configured for use in a customer-supplied MBP (Pin 1 up and pins 2–4 down).

SW1	Pin 1	Pin 2	Pin 3	Pin 4
AMB	Up	Down	Down	Down

4. Install the supplied cable ties in the pre-drilled holes at the bottom of the assembly for securing of all signal wires.



Connect Signal Wires to the Boards

⚠ WARNING

HAZARD OF ELECTRIC SHOCK

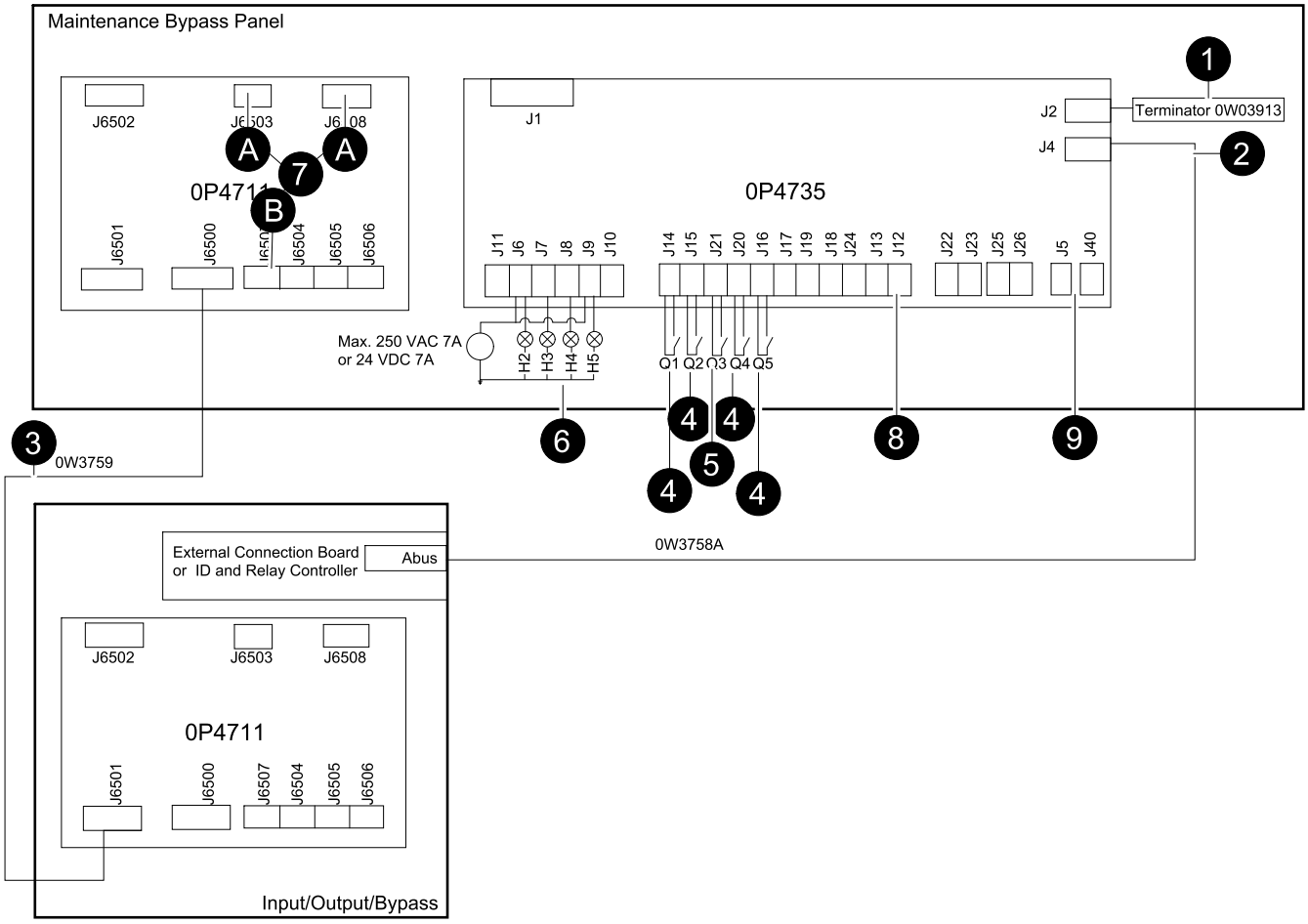
All wiring to the boards should be considered as field wiring rated minimum 480 VAC and must use copper conductors only.

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

NOTE: All input voltages must have the same ground and 0 V reference.

NOTE: If the inputs for Q2, Q4, Q5 are not used, jumpers must be installed.

Connect Signal Wires in Single Systems



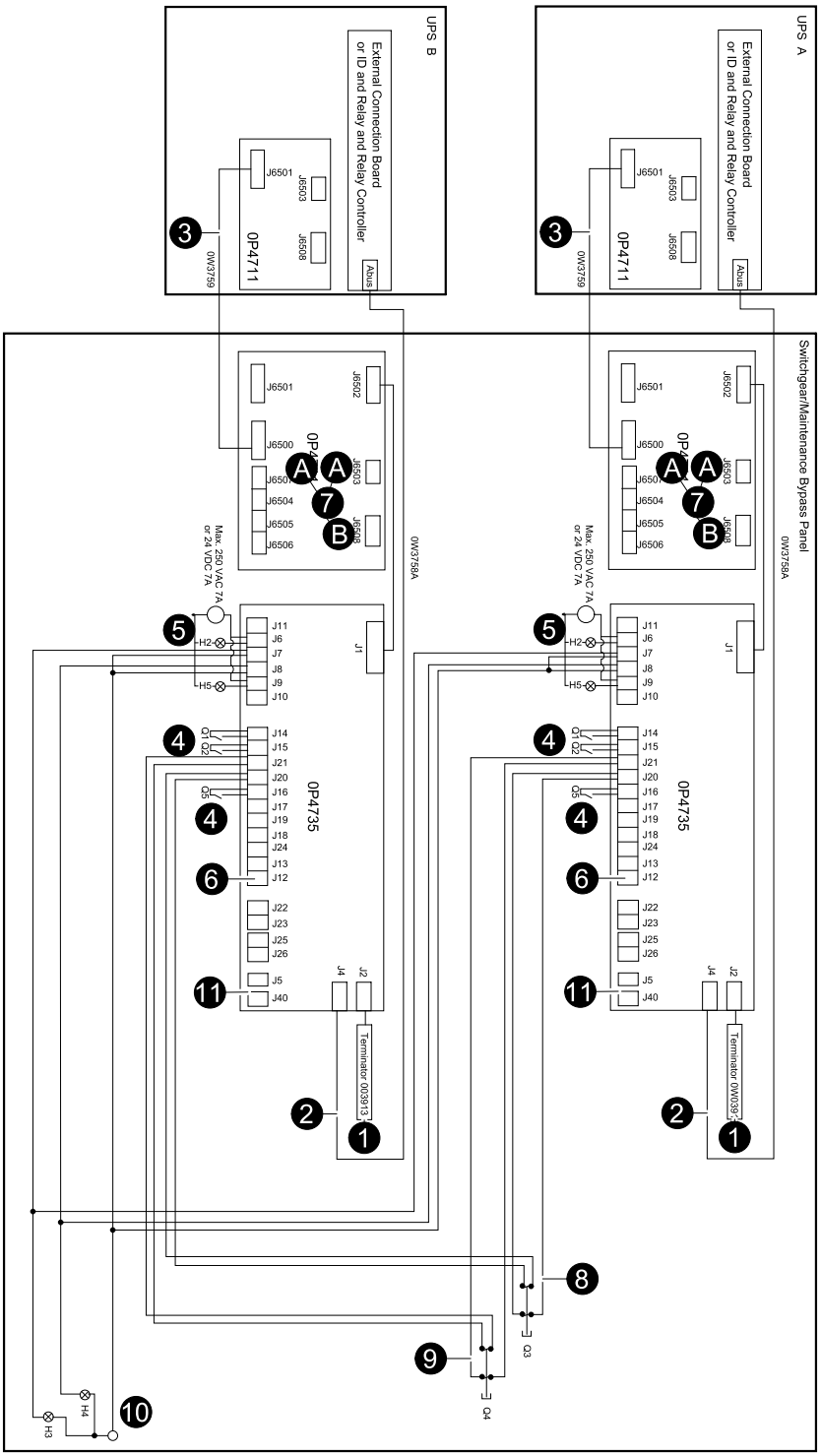
1. Install terminator 0W03913 in the J2 terminal on the AMB.
2. Connect the Abus cable (0W3758) from J4 on the AMB (0P4735) to the Abus terminal External Connection Board or ID and relay controller on the front of the Input/Output/Bypass Enclosure.
3. Connect the ECT cable (0W3759) from J6500 on the ECT board (0P4711) in the MBP to J6501 on the ECT board (0P4711) in the top of the Input/Output/Bypass Enclosure.
4. Connect a Normally Open (NO) auxiliary switch for Q1, Q2, Q4, Q5 status. Q1 is mandatory and Q2, Q4, and Q5 are optional depending on installation. If the inputs are not used, jumpers must be installed.
5. Connect Normally Closed (NC) auxiliary for Q3 status.
6. Connect H2 to H5 lamps for permission to operate Q2 to Q5 (max. 7.2 A/250 VAC).
7. Connect cable for Q2 tripping to either:
   a. J6503 (UVR). When using Square D UVR or ABB S8 UVR , an external 24 VDC SELV supply should be connected to J6507. For the UVR, the following parts are needed to connect to J6503 pin 2 and 3: 1 TYCO 1-480700-0, M&L 3-position plug housing and 2 TYCO 350218-3 M&L pin, AWG 20-14 (not supplied).
   b. J6508 (SOR). For the SOR shunt trip, the following parts are needed to connect to J6508: 1 TYCO 1-480698-0, M&L 2-position plug housing and 2 TYCO 350218-3 M&L pin, AWG 20-14 (not supplied).
8. Connect contact for door open/close. If the input is not used, jumpers must be installed.

9. Option: Connect external synchronization cables from L1 and L2 of the preferred AC source to J5 (L1) and J40 (L2).

   NOTE: Install a fuse on the external synchronization cable. Fuse size 1–2 A depending on system.

Connect Signal Wires in Parallel Systems

NOTE: The below diagram shows a parallel system with two UPS units. The wiring principle is the same for up to four UPS units.



1. In each UPS, install terminator 0W03913 in the J2 terminal on the AMB.
2. In each UPS, connect the Abus cable (0W3758) from J4 on the AMB (0P4735) to the Abus terminal External Connection Board or ID and relay controller on the front of the Input/Output/Bypass Enclosure.

3. In each UPS, connect the ECT cable (0W3759) from J6500 on the ECT board (0P4711) in the MBP to J6501 on the ECT board (0P4711) in the top of the Input/Output/Bypass Enclosure.
4. In each UPS, connect Normally Open (NO) auxiliary switch for Q1, Q2, and Q5 status.
5. In each UPS, connect H2 and H5 lamps for permission to operate Q2 and Q5.
6. Connect contact for door open/close. If the input is not used, jumpers must be installed.
7. In each UPS, connect cable for Q2 tripping to either:
   a. J6503 (UVR). When using Square D UVR or ABB S8 UVR , an external 24 VDC SELV supply should be connected to J6507. For the UVR, the following parts are needed to connect to J6503 pin 2 and 3: 1 TYCO 1-480700-0, M&L 3-position plug housing and 2 TYCO 350218-3 M&L pin, AWG 20-14 (not supplied).
   b. J6508 (SOR). For the SOR shunt trip, the following parts are needed to connect to J6508: 1 TYCO 1-480698-0, M&L 2-position plug housing and 2 TYCO 350218-3 M&L pin, AWG 20-14 (not supplied).
8. Connect NC contact for Q3. Each UPS must be connected to a separate Dry contact.
9. Connect NO contact for Q4. Each UPS must be connected to a separate Dry contact.
10. Connect H3 and H4 lamps in parallel.
11. Option: Connect external synchronization cables from L1 and L2 of the preferred AC source to J5 (L1) and J40 (L2) on the 0P4735 board for each UPS in the parallel system.

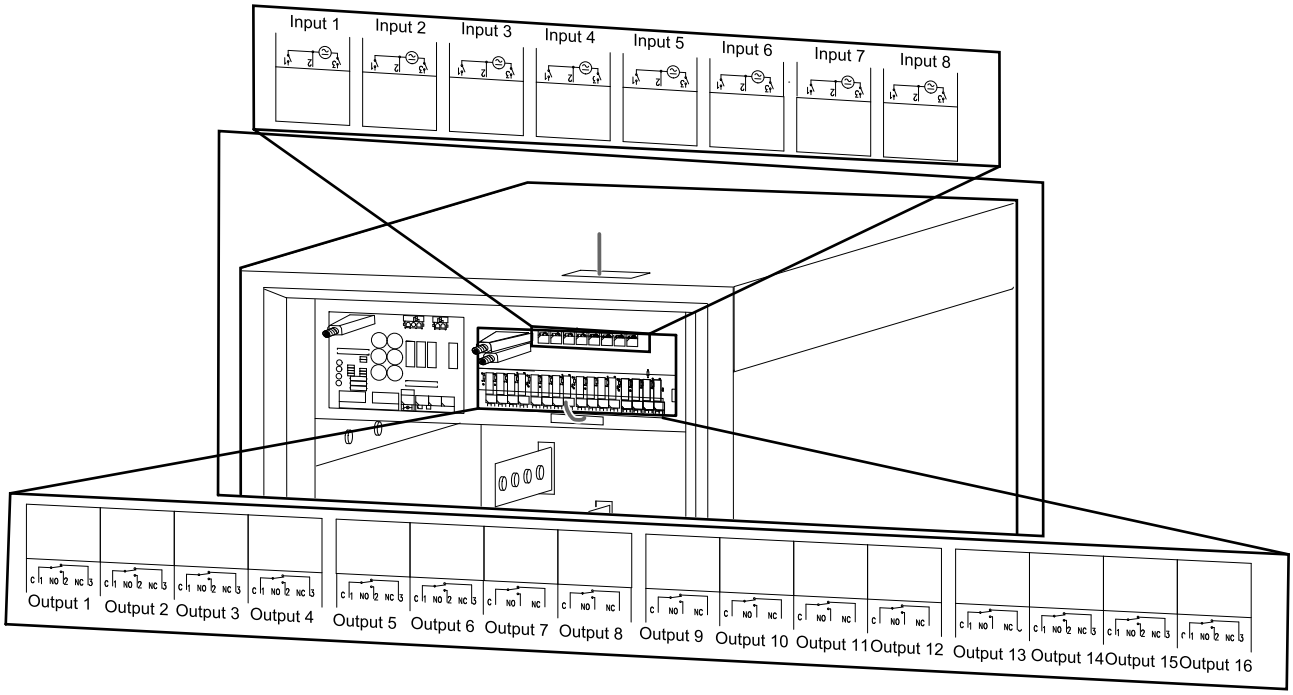
    NOTE: Install a fuse on each external synchronization cable. Fuse size 1–2 A depending on system.

Relay Inputs/Outputs

The relay board informs the user of the operation mode, status, and alarm conditions and has eight ports on the input side and 16 output terminals. All input voltages must have the same ground and 0 V reference.

All wiring to the relay board should be considered as field wiring rated minimum 480 VAC, and must use copper conductors only.

NOTE: Communication cables to the relay board must be run through the openings in the middle of the enclosure via the cable channel to the relau board.



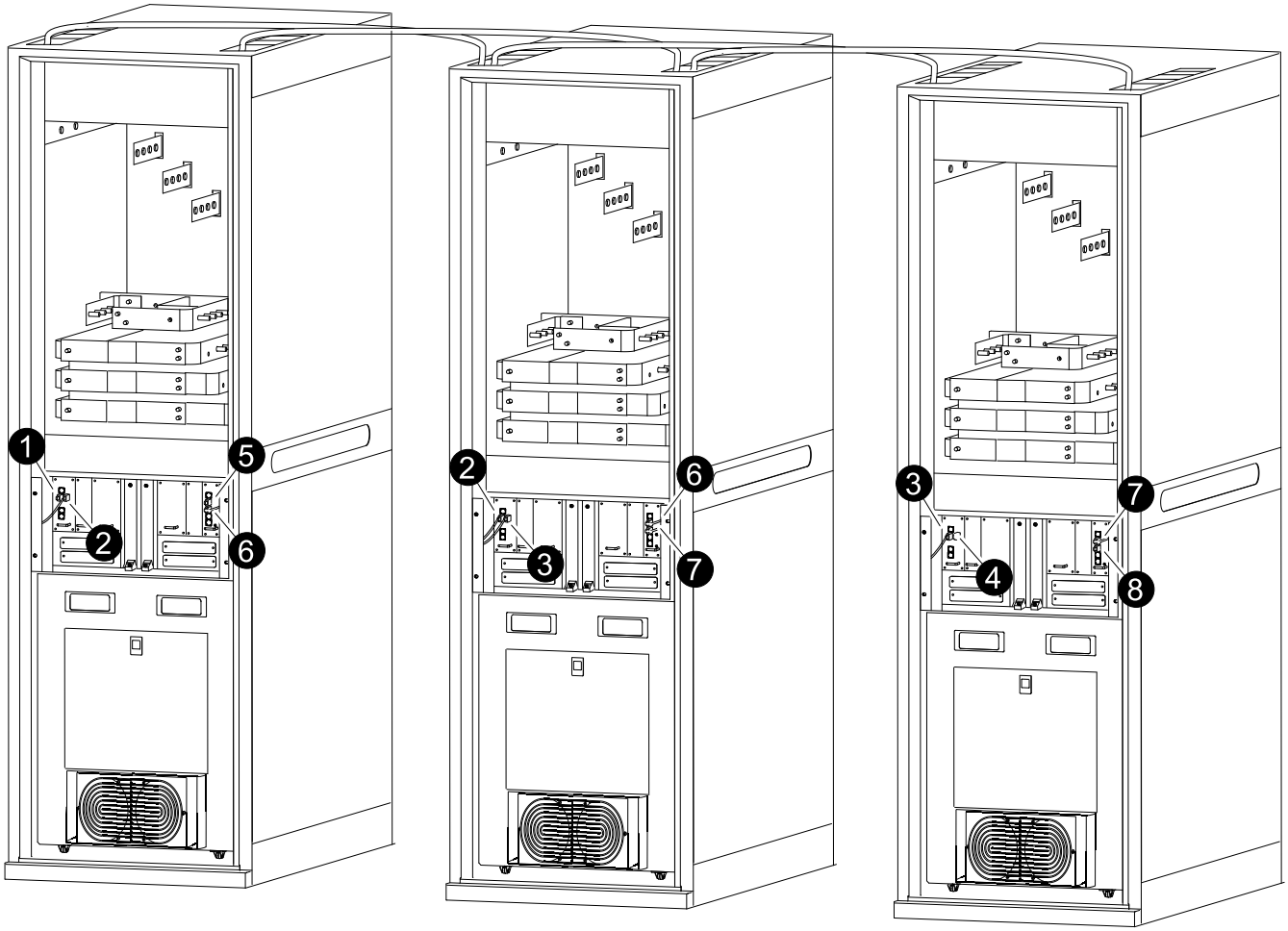
Inputs	
Input 1	Reduction of charge power
Input 2	Boost charge inhibit
Input 3	Battery ground fault
Input 4	Enable external synchronization
Input 5	
Input 6	
Input 7	Door contact
Input 8	Activate mega tie mode

Outputs	
Output 1	Common alarm, configurable
Output 2	Normal operation, configurable
Output 3	Bypass operation, configurable
Output 4	Battery operation, configurable
Output 5	Battery voltage low, configurable
Output 6	Battery fault, configurable
Output 7	Maintenance bypass on, configurable
Output 8	Mains input outside tolerance, configurable
Output 9	Bypass input outside tolerances, configurable
Output 10	Output outside tolerance, configurable
Output 11	Battery disconnected, configurable
Output 12	Overload on inverter/bypass, configurable
Output 13	Option 1, configured via display
Output 14	Option 2, configured via display
Output 15	Option 3, configured via display
Output 16	Option 4, configured via display

Connect Parallel Cables

Interconnect the UPS units in the parallel system using the provided Pbus cables (SYOPT008). The length of the cable is 25 m.

NOTE: It is important that the Pbus 2 cables are connected from left to left and the Pbus 1 cables are connected from right to right side.



1. Install terminator in slot Pbus2 2A of UPS 1.
2. Connect white Pbus cable from Pbus2 2B of UPS 1 to Pbus2 2A of UPS 2.
3. Connect white Pbus cable from Pbus2 2B of UPS 2 to Pbus2 2A of UPS 3.
4. Install terminator in slot Pbus2 2B of UPS 3.
5. Install terminator in slot Pbus1 1A of UPS 1.
6. Connect red Pbus cable from Pbus1 1B of UPS 1 to Pbus1 1A of UPS 2.
7. Connect red Pbus cable from Pbus1 1B of UPS 2 to Pbus1 1A of UPS 3.
8. Install terminator in slot Pbus 1B of UPS 3.
9. Verify that there are no P-bus communication alarms.

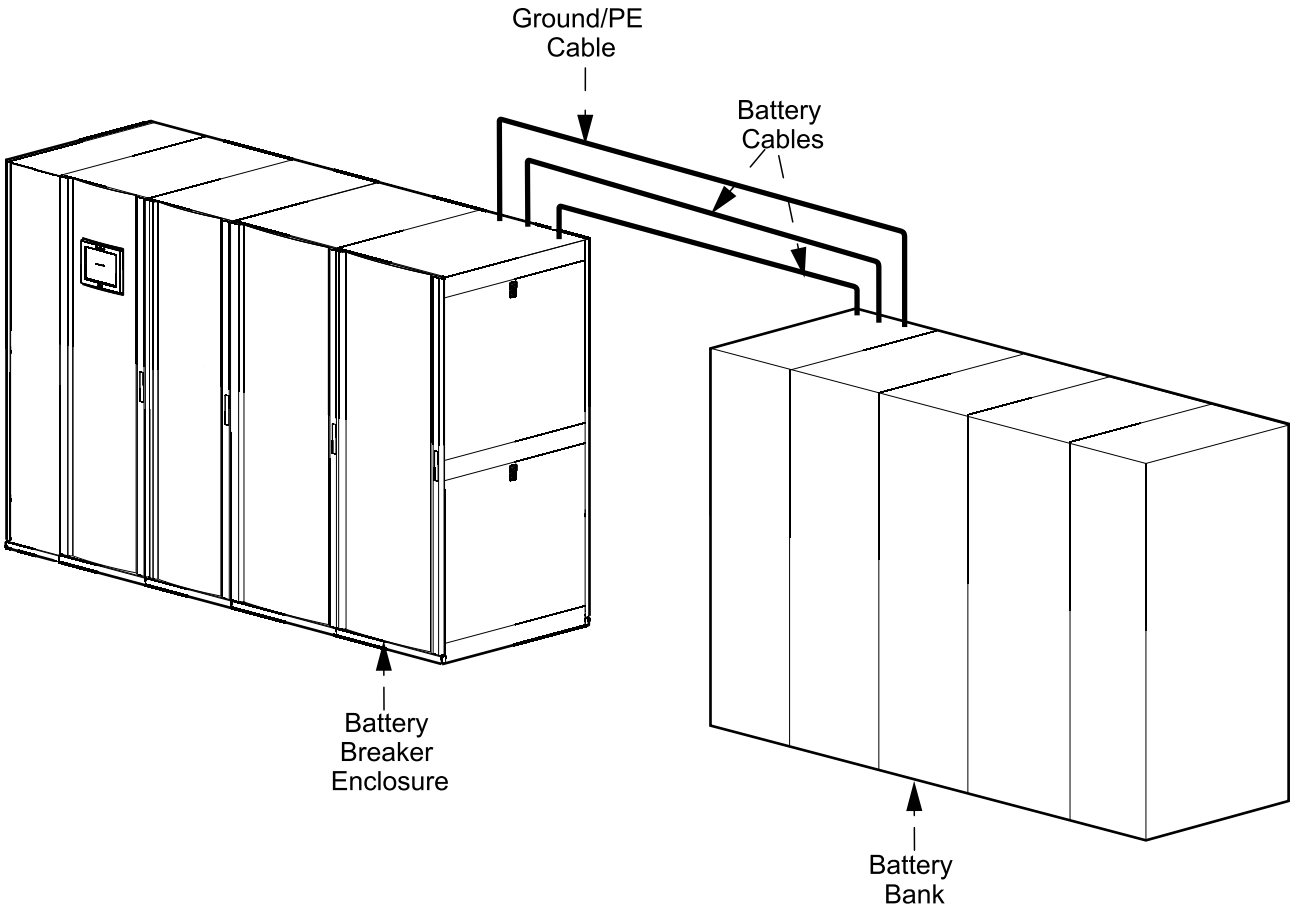
Install the Battery Breaker Enclosure (Option)

The Battery Breaker Enclosure can be installed up against the Power Module Enclosure or remotely.

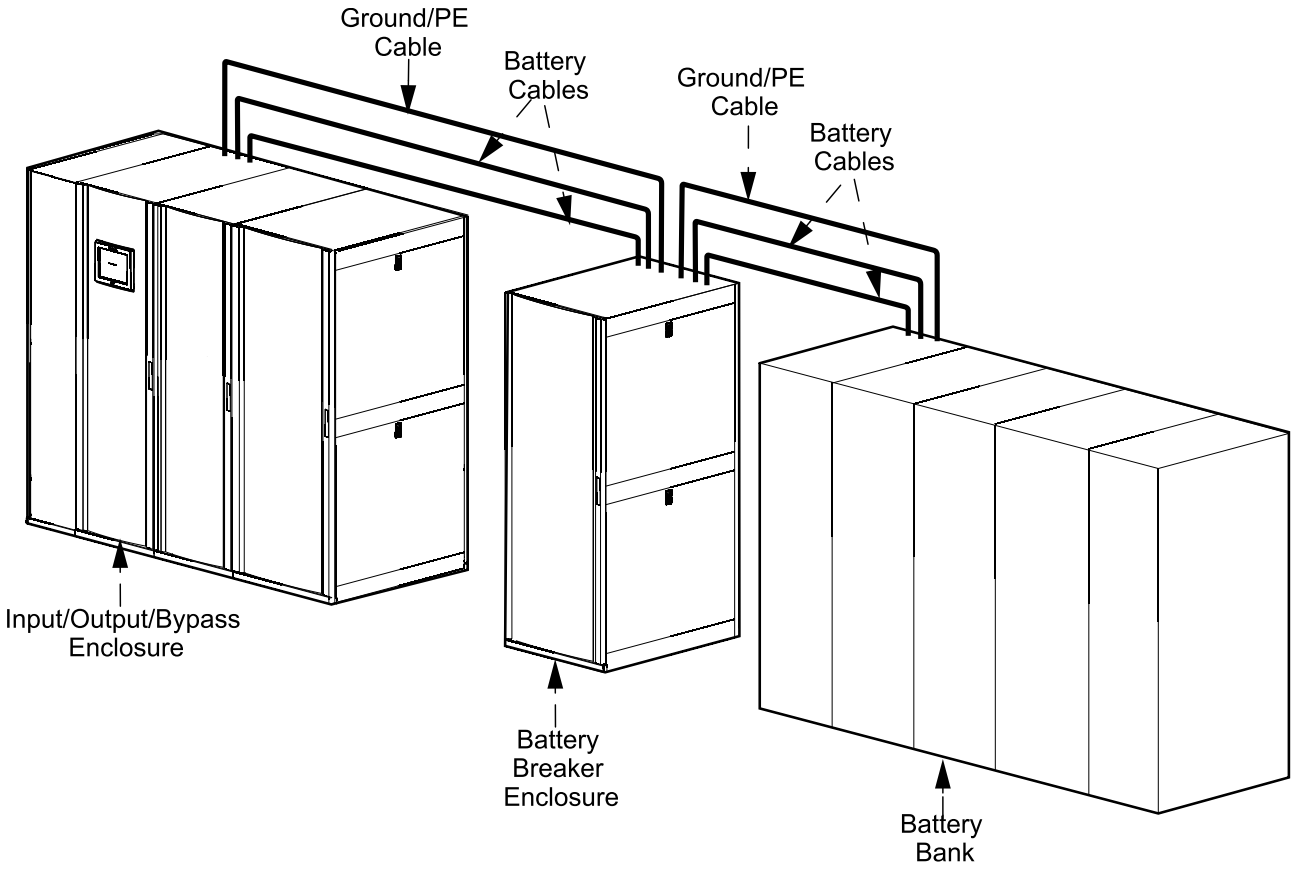
NOTE: In systems with a line-up-and-match Battery Breaker Enclosure, the Battery Breaker Enclosure is grounded via the baying kit.

NOTE: In systems with a line-up-and-match Battery Breaker Enclosure, the DC output is hardwired by Schneider Electric via busbars between the Battery Breaker Enclosure and the Power Module Enclosure.

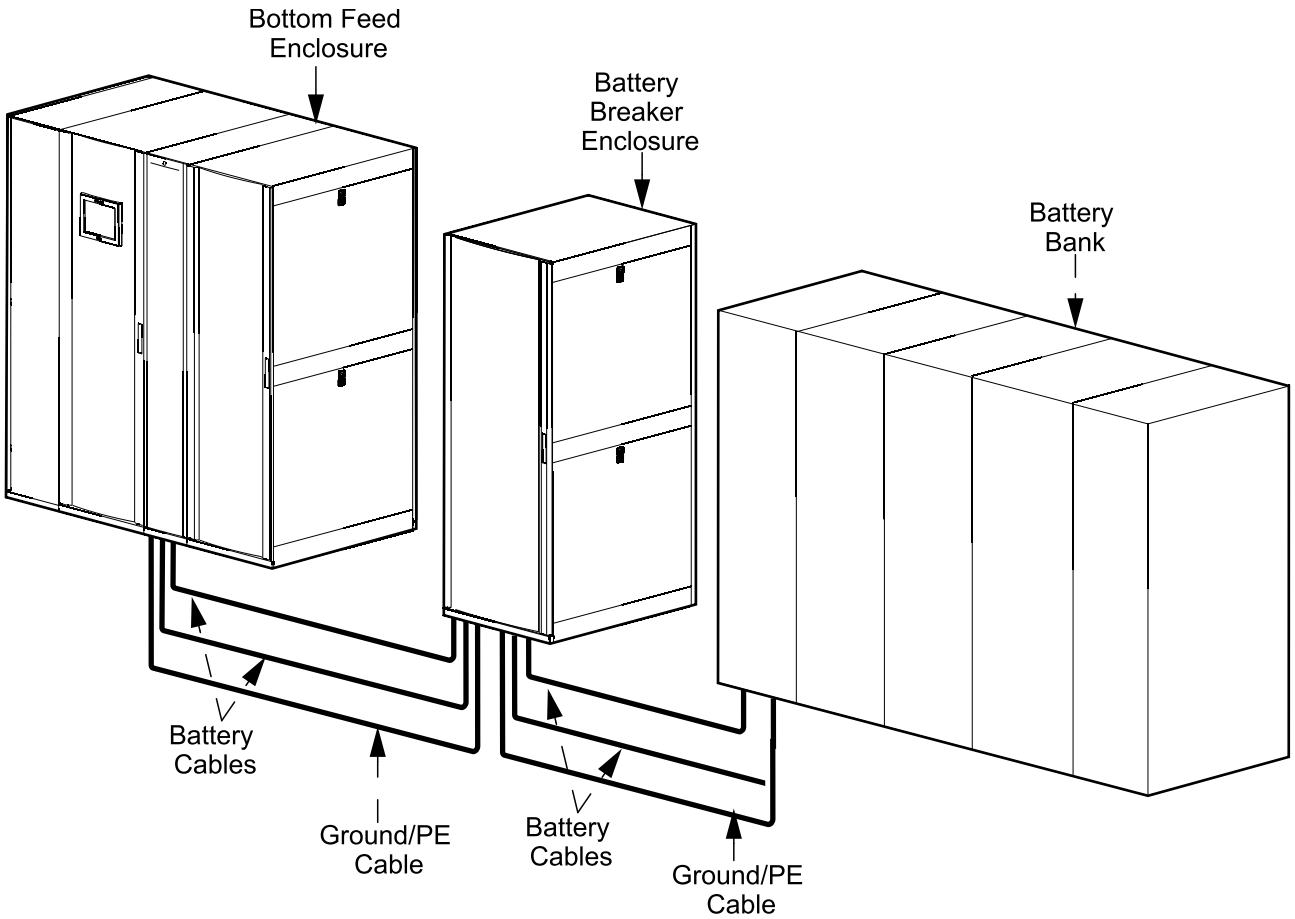
Battery Breaker Enclosure placed Line-up-and-match



Battery Breaker Enclosure placed Remotely in Top Cable Entry Systems



Battery Breaker Enclosure placed Remotely in Bottom Cable Entry Systems



Prepare Battery Breaker Enclosure for Cables in Top Cable Entry Systems

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

1. From the inside of the Battery Breaker Enclosure, loosen the four screws.
2. Lift up the front of the top cover and slide out the cover.
3. Drill/punch holes for the cables.
4. Refit the cover and install conduits (if applicable).

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

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

5. Run the cables through the top of the Battery Breaker Enclosure to the cable landing area.

Prepare Battery Breaker Enclosure for Cables in Bottom Cable Entry Systems

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

1. From the inside of the Battery Breaker Enclosure, loosen the 4 screws of the rear bottom cover and remove.
2. Drill/punch holes for cables.
3. Refit cover and install conduits (if applicable).

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

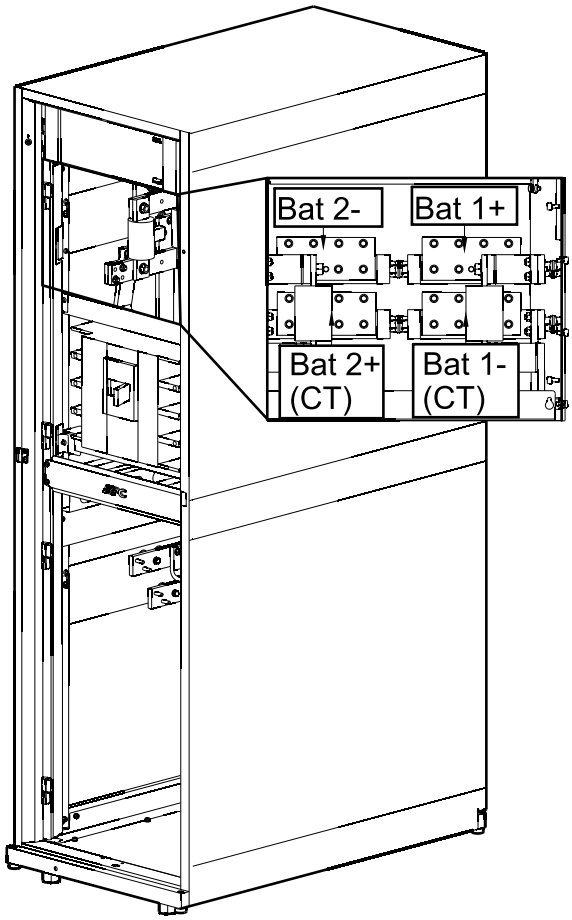
Failure to follow these instructions will result in death or serious injury.

Connect Cables in Systems with Line-Up-and-Match Battery Breaker Enclosure

The battery breaker supports two strings of 144 VLA batteries (equal 2 x 288 V). The two strings are divided into a positive (+) and a negative (-) string. For runtime optimization, the number of cells can be adjusted to +/- 6 cells (138-150 cells).

1. Route the DC input cables from the battery bank and through the top or bottom of the Battery Breaker Enclosure and guide them to the DC input terminals in the top of the enclosure.
2. Connect the DC input cables to the Bat 1 and Bat 2 busbars.

Battery Breaker Enclosure

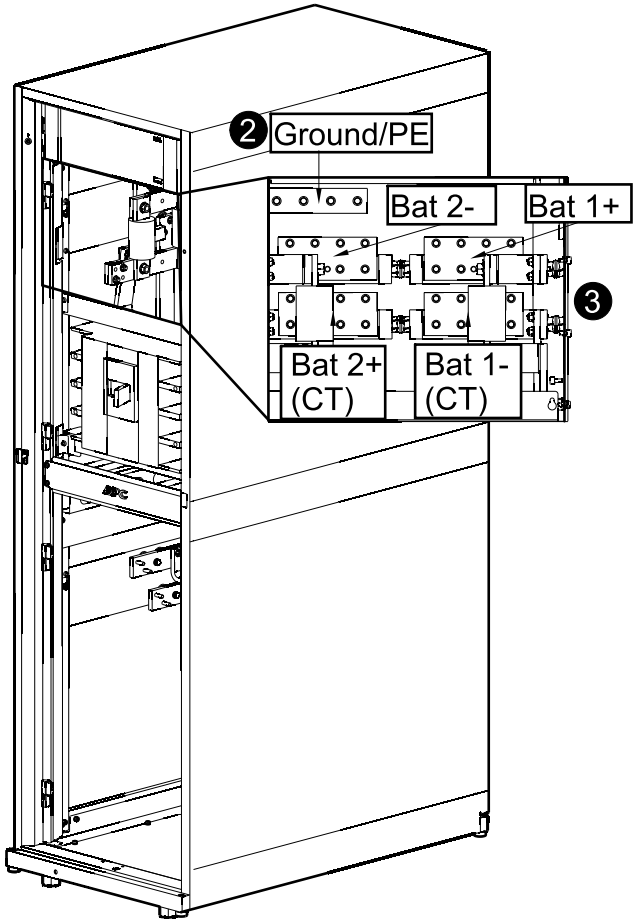


Connect Cables in Systems with Remote Battery Breaker Enclosure

1. Route the DC input cables from the battery bank and through the top or bottom of the Battery Breaker Enclosure and guide them to the DC input terminals in the top of the enclosure.
2. Connect the ground/PE cable to the equipment grounding terminal in the upper left corner of the enclosure.

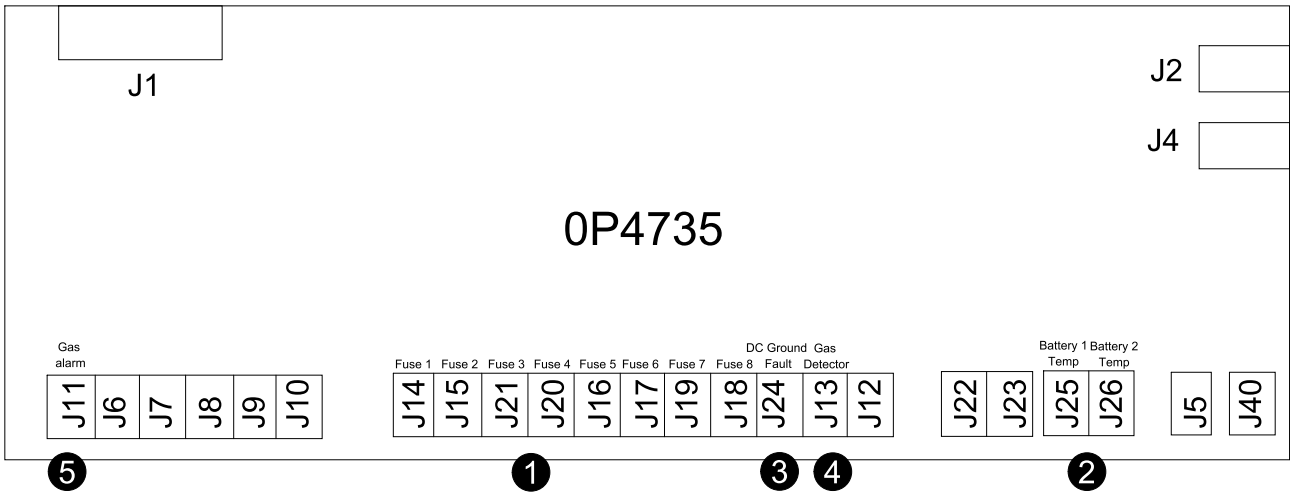
3. Connect the DC input cables to the Bat 1 and Bat 2 busbars.

Battery Breaker Enclosure



Connect Battery Breaker Enclosure Communication Cables

0P4735 in Battery Breaker Enclosure



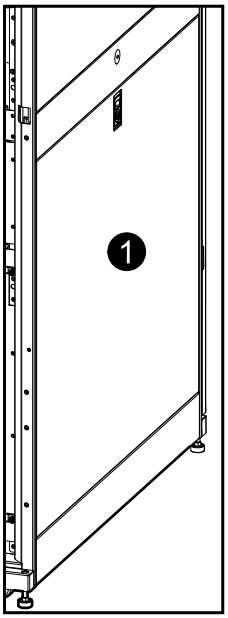
1. Connect cables from fuse indicators from the fuses in the battery bank to J14-J21. If not used, jump the inputs as they are configured as normally closed (NC).

2. Install the battery temperature sensors in the battery bank as described in the documentation supplied with the battery temperature sensors, and connect cables from the battery temperature sensors to J25 and J26.
3. Connect cable from the DC ground fault detection to the J24. If not used, jump the inputs as they are configured as normally closed (NC).
4. Connect cables from the gas detector to J13. If not used, jump the inputs as they are configured as normally closed (NC).
5. Connect cable from gas alarm relay to J11.

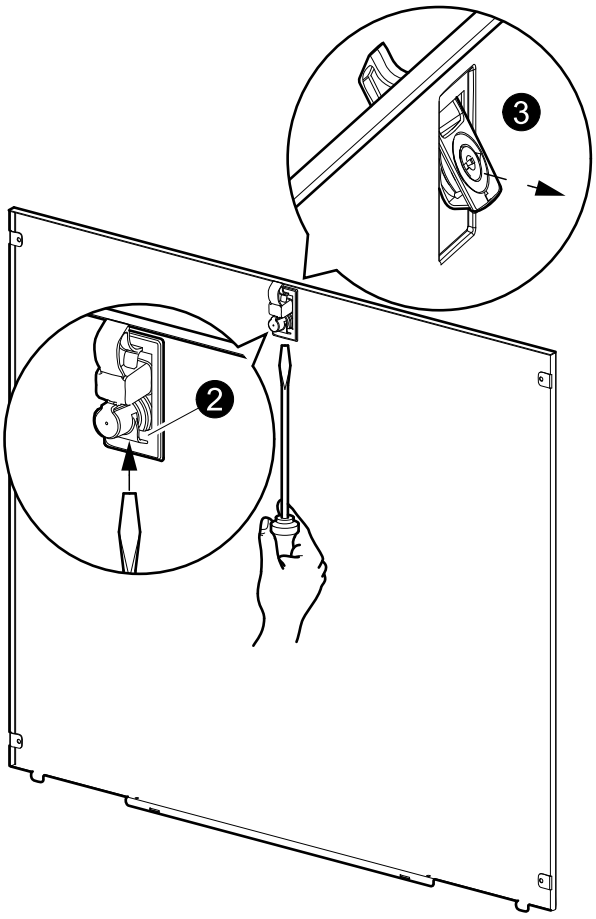
Install Seismic Option

Replace the Side Panel Lock

1. Remove the side panel from the end of row cabinets.

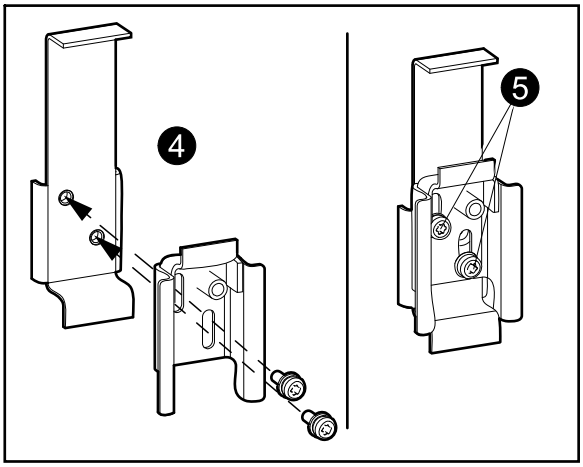


2. Use a screwdriver to press on the tap that secures the lock to the side panel.
3. Pull the lock out and up and remove it from the side panel.

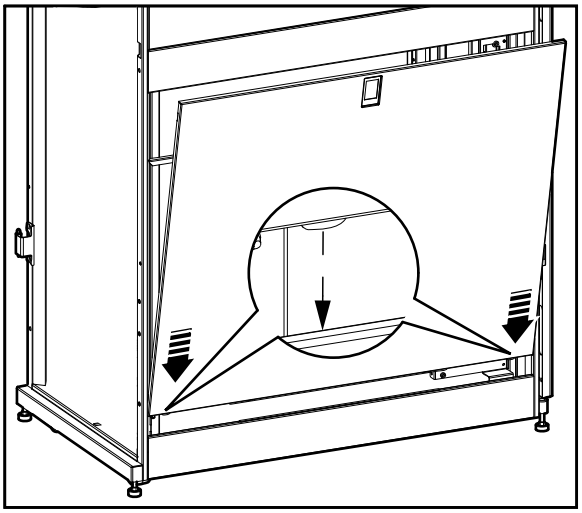


4. Put the two lock parts together.

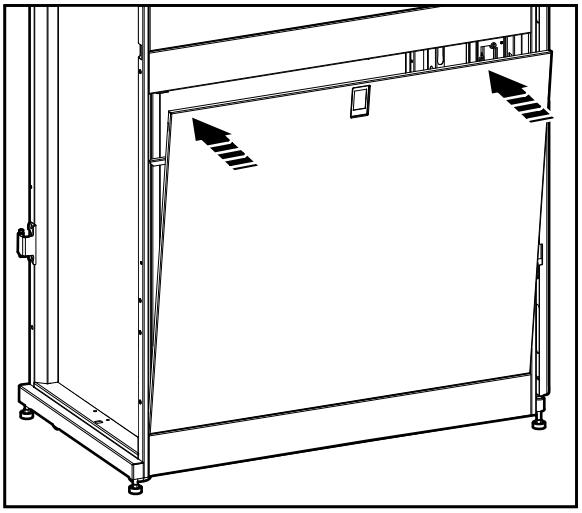
5. Loosely tighten the screws.



6. Place the side panel at an angle at the bottom of the frame.

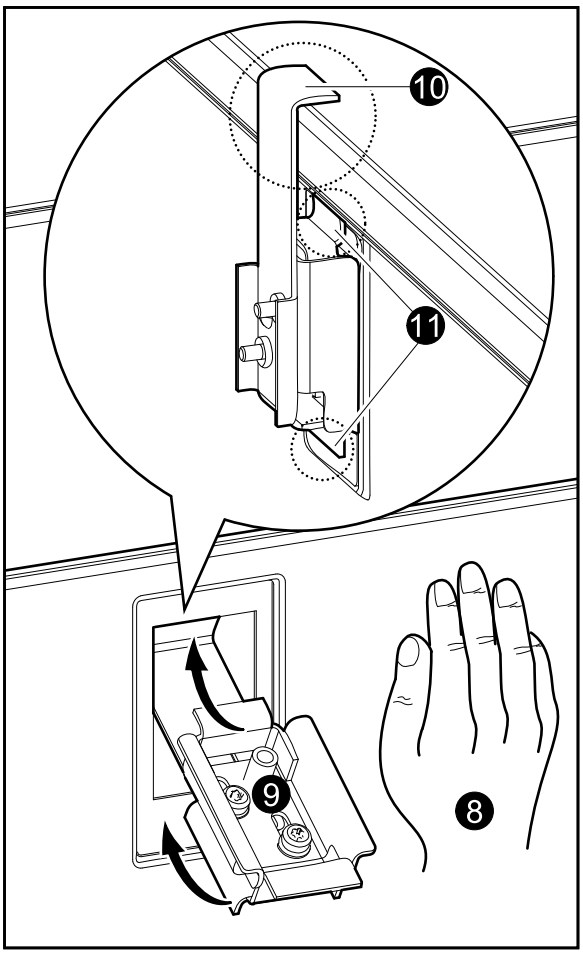


7. Push the top of the side panel in place.

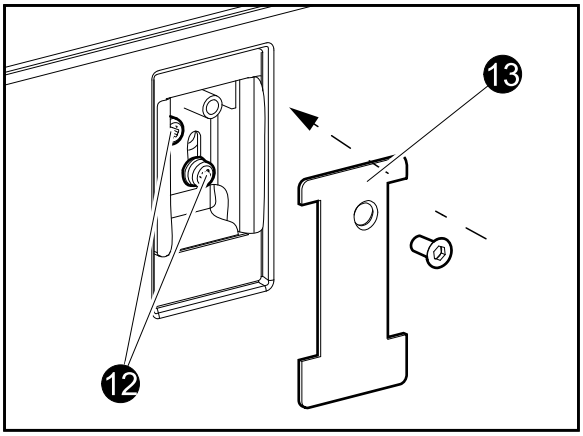


8. Hold the side panel with one hand.
9. Take the lock assembly and guide the top through the hole in the side panel.
10. Lift the lock assembly in place.

11. Ensure that the upper and lower taps are hidden behind the side panel.

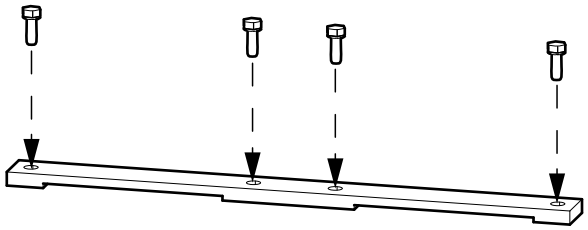


12. Secure the two screws in the lock assembly.
13. Install the lock cover using the provided screw.

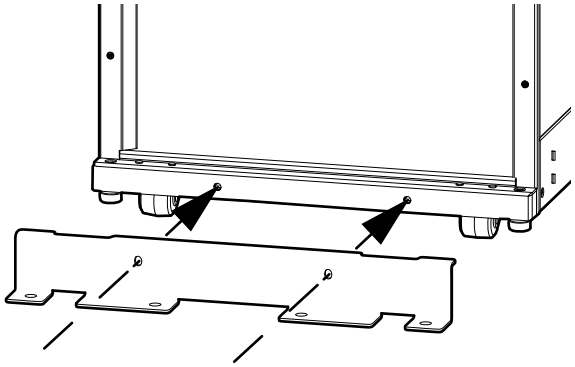


Install the Rear Anchoring Brackets

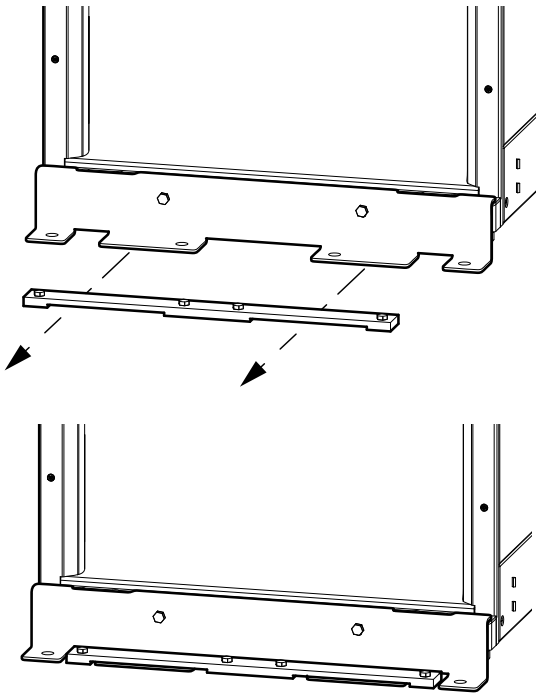
1. Secure the floor anchoring bracket to the floor using floor anchoring bolts (not supplied). Use M12 strength class 8.8 or 1/2 in grade 5 steel bolts.



2. Secure the other part of the rear anchoring to the back of the cabinet.

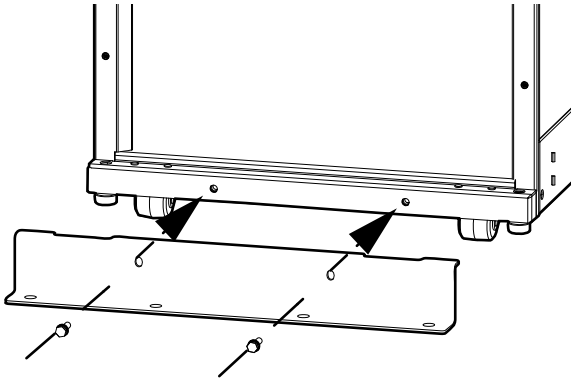


3. Push the cabinet backwards so the cabinet slides under the floor anchoring bracket.

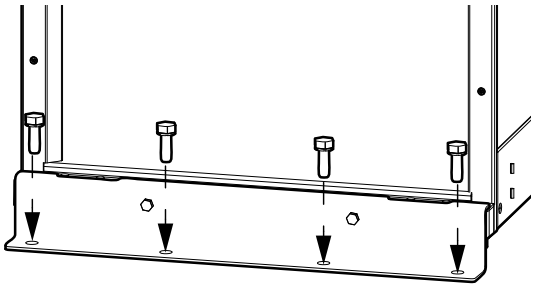


Install the Front Anchoring Bracket

1. Secure the front anchoring bracket to the cabinet.



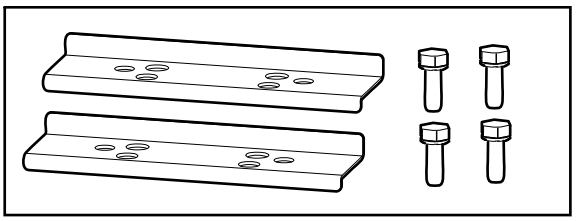
2. Secure the front anchoring bracket to the floor using floor anchoring bolts (not supplied). Use M12 strength class 8.8 or 1/2 in grade 5 steel bolts.



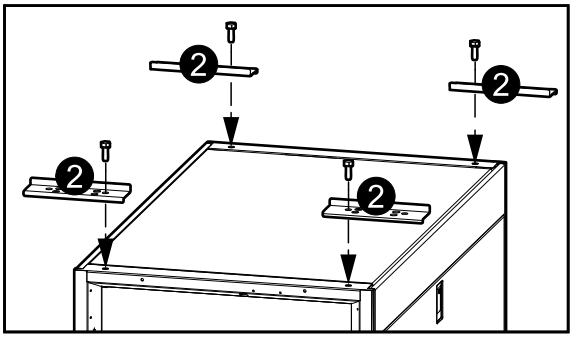
Install the Top Assembly Bracket

Required parts for each assembly:

- Two top assembly brackets
- Four screws



1. **Only applicable for Symmetra PX 100 kW systems:** Dispose of the top assembly brackets supplied with the battery cabinet.
2. Place the top assembly bracket over two adjacent cabinets and secure using two screws.

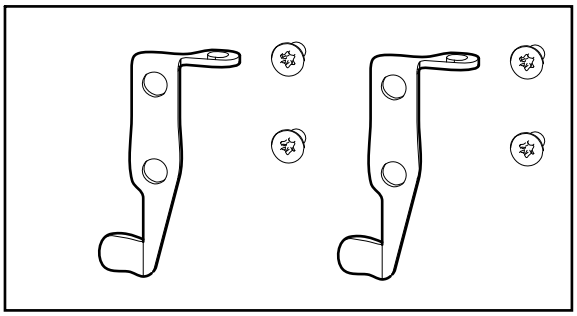


Install the Door Hinge Lock

NOTE: This procedure is only applicable for 600 mm and 750 mm wide cabinets.

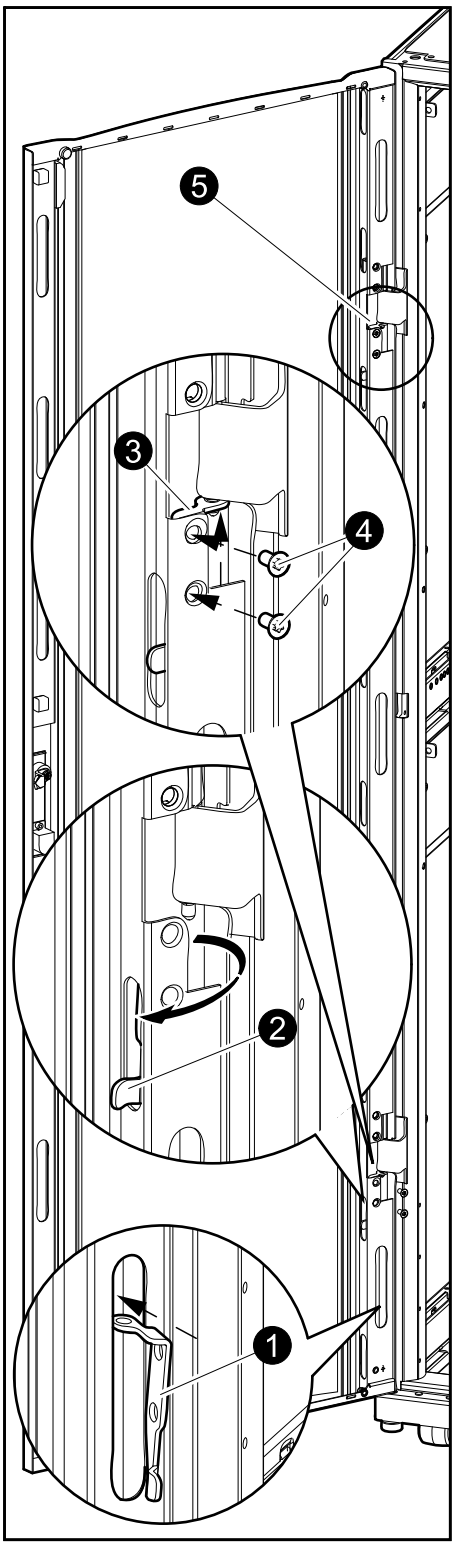
Required parts:

- Two door hinge locks
- Four screws



1. With one hand slide the lock into the hole below the hinge.
2. With the other hand turn the lock 90° holding the bottom of the lock.
3. Push the lock upwards to the bottom of the hinge.
4. Secure it with the two provided screws.

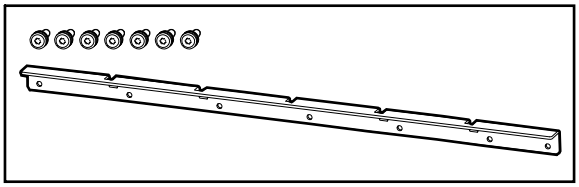
5. Use the same procedure to install the upper door hinge lock.



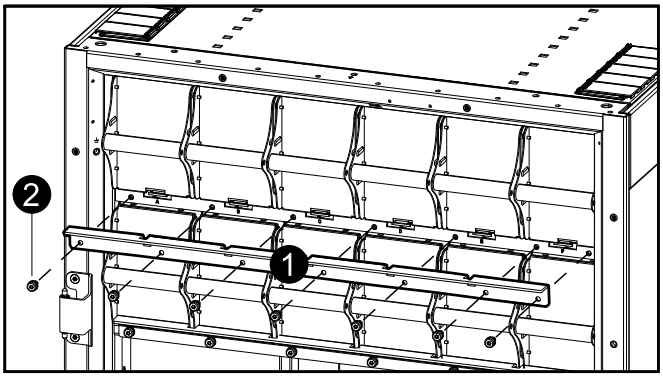
Install the Battery Locks

Required parts:

- Eight battery locks
- 56 screws



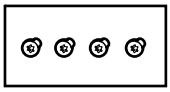
1. Place the battery lock below the battery row.
2. Secure the lock by the seven provided screws.



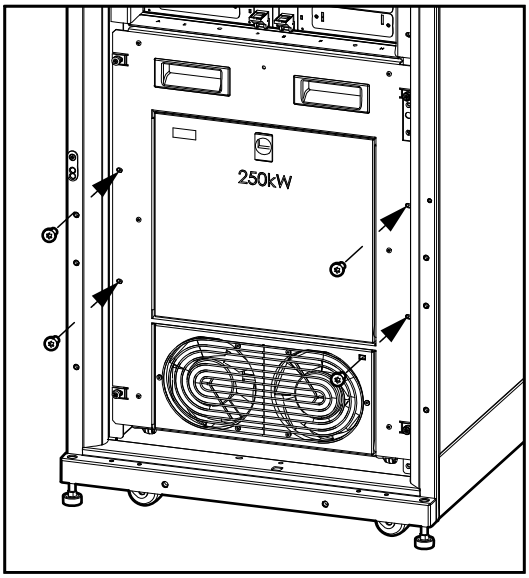
Install the Bypass Static Switch Lock

Required parts:

- Four M5 bolts



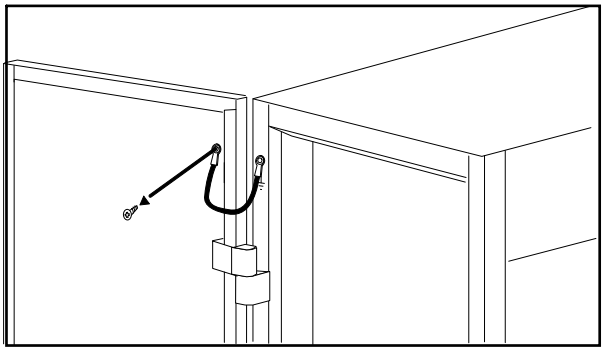
1. Secure the bypass static switch using the four provided bolts.



Install the Filter Option in the Power Module Enclosure

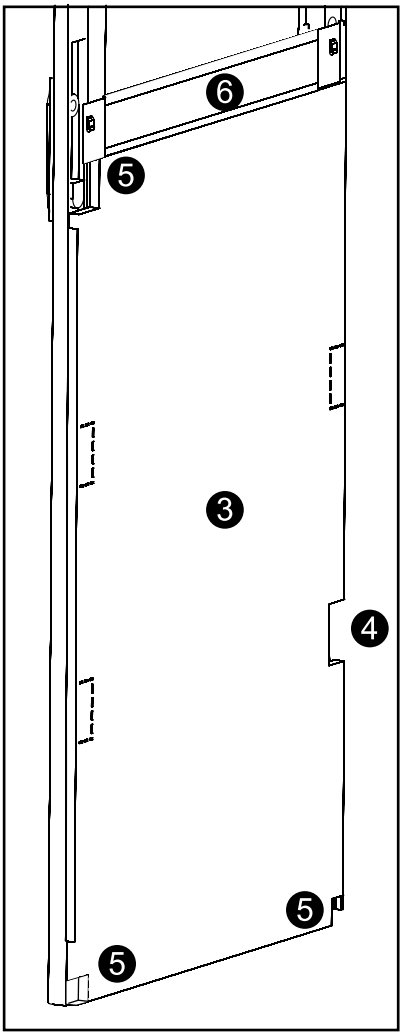
The filters are used for extra protection of systems installed in environment with conductive dust. Check the filters once a month. If the air filters show visible dust or other impurities, the filters must be replaced.

1. Open the front door.
2. Loosen the screws and disconnect the ground wire between the front door and the Power Module Enclosure.



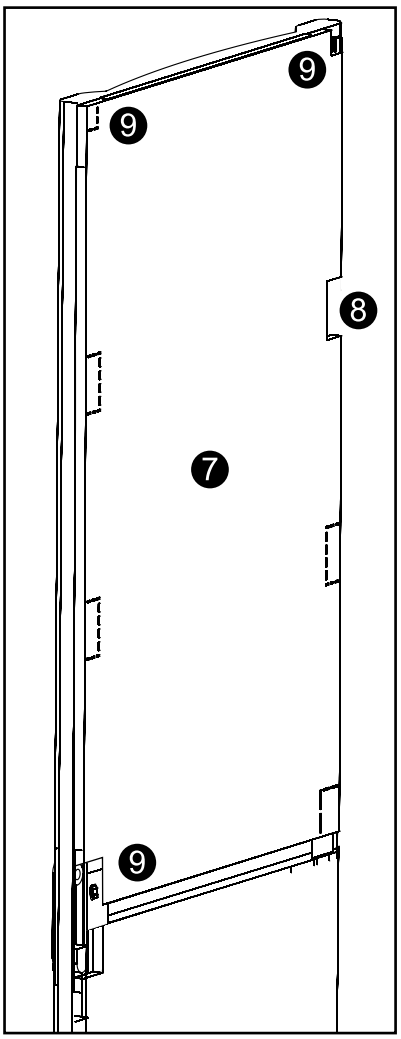
3. Press the bottom filter plate against the bottom half of the front door.
4. Remove the bottom right perforated area of the filter to get access to the bottom hinge.
5. Remove the three perforated corners marked in the drawing.

6. Install the logo plate.



7. Press the top filter plate against the top half of the front door.
8. Remove the top right perforated area of the filter to get access to the top hinge.

9. Remove the three perforated corners marked on the drawing.



10. Reconnect the ground wire disconnected in step 1.

Printed in.
Schneider Electric

Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmaison
France

+ 33 (0) 1 41 29 70 00

www.schneider-electric.com

990–2806I–001