

# Galaxy 5000

40–130 kVA 480 V

## Installation

08/2017



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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.

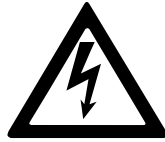
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# Important Safety Instructions — SAVE THESE INSTRUCTIONS

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



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



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

## **DANGER**

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

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

## **WARNING**

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

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

## **CAUTION**

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

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

## **NOTICE**

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

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

## Please Note

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

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

## Safety Precautions

### **⚠ DANGER**

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

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

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

### **⚠ DANGER**

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

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

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

### **⚠ DANGER**

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

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

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

### **⚠ DANGER**

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

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

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

## **⚠ DANGER**

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

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

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

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

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

## **⚠ DANGER**

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

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

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

## **⚠ DANGER**

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

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

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

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

## **⚠ DANGER**

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

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

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

## **⚠ WARNING**

### **HAZARD OF ARC FLASH**

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

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

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

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

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

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

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

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

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

- Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
- 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 contains an internal energy source. Hazardous voltage can be present even when disconnected from the utility/mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that utility/mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- A disconnection device (e.g. disconnection circuit breaker or switch) must be installed to enable isolation of the system from upstream power sources in accordance with local regulations. This disconnection device must be easily accessible and visible.
- The UPS must be properly earthed/grounded and due to a high leakage current, the earthing/grounding conductor must be connected first.

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

**⚠ 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 UL 1778 5th Edition – depending on which of the two standards apply to your local area) must be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must open within 15 seconds after the upstream power supply fails and must be rated according to the specifications.

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

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to



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

**⚠ DANGER**

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

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

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

## Battery Safety

**⚠ DANGER**

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

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

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

**⚠ DANGER**

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

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

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

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

**⚠ DANGER**

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

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

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

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

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

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

# Specifications

## Input

	40 kVA	50 kVA	60 kVA	80 kVA	100 kVA	130 kVA
Nominal input voltage (V)	480					
Frequency (Hz)	60					
Nominal input current (A) <sup>1</sup>	48	59	71	94	117	151
Maximum input current (A) <sup>2</sup>	59	70	88	111	150	182
Input current limitation (A) <sup>3</sup>	71	84	97	111	164	182
Input phase rotation	A, B, C clockwise					
Input power factor	> 0.98					
THDI	5%		3%			
Maximum short circuit withstand (kA)	20				30	

## Bypass

	40 kVA	50 kVA	60 kVA	80 kVA	100 kVA	130 kVA
Frequency (Hz)	60					
Nominal bypass current (A)	48	59	71	94	117	151

## Output

	40 kVA	50 kVA	60 kVA	80 kVA	100 kVA	130 kVA
Overload capacity	125% for 10 minutes 150% for 1 minute 220% for 1 second					
Nominal output current (A)	48	59	71	94	117	151
Frequency (Hz)	60					
THDU	≤ 0.5% phase to phase for linear loads ≤ 2 % phase to phase for non-linear loads					

1. Input current based on rated load and batteries fully charged.
2. Input current based on full battery recharge, nominal voltage, and rated load.
3. Nominal voltage -10% voltage with partial recharge.

## Battery

	40 kVA	50 kVA	60 kVA	80 kVA	100 kVA	130 kVA
Nominal voltage (VDC)	432					
End voltage (VDC)	356					
Maximum floating voltage (VDC)	490					
I <sub>Nom</sub> discharge <sup>4</sup> (A)	90	113	135	180	225	293
I <sub>Max</sub> discharge <sup>5</sup> (A)	109	137	164	219	273	355

## Recommended Overcurrent Protection

### NOTE:

Main circuit breaker rating to the system should be calculated according to the site configuration and recommended value is at least 150% of the rated current of the type of transformer used in the system with maximum trip setting. **The recommended circuit breakers in the table are based on UPS power rating. Transformer rating is not considered.**

Ratings of cables and overcurrent devices supplied for information only. Consult Schneider Electric before adopting.

	40 kVA					50 kVA				
	208 V: 208 V	480 V: 208 V	480 V: 480 V	600 V: 208 V	600 V: 600 V	208 V: 208 V	480 V: 208 V	480 V: 480 V	600 V: 208 V	600 V: 600 V
Input (A)	175	80	80	60	60	225	90	90	70	70
Output (A)	150	150	60	150	50	175	175	80	175	60

	60 kVA					80 kVA				
	208 V: 208 V	480 V: 208 V	480 V: 480 V	600 V: 208 V	600 V: 600 V	208 V: 208 V	480 V: 208 V	480 V: 480 V	600 V: 208 V	600 V: 600 V
Input (A)	300	110	110	90	90	350	150	150	125	125
Output (A)	225	225	90	225	80	300	300	125	300	100

	100 kVA					130 kVA				
	208 V: 208 V	480 V: 208 V	480 V: 480 V	600 V: 208 V	600 V: 600 V	208 V: 208 V	480 V: 208 V	480 V: 480 V	600 V: 208 V	600 V: 600 V
Input (A)	450	200	200	150	150	600	250	250	200	200
Output (A)	350	350	150	350	125	450	450	200	200	175

4. Nominal battery discharge current based on rated load and nominal battery voltage.

5. Maximum battery discharge current based on rated load at the end of the discharge.

## Recommended Cable Sizes

**NOTE:** Upstream protective devices and downstream distribution circuits and protective devices as appropriate to the installation and distribution requirements must be installed.

**NOTE:** All wiring must comply with all applicable national and/or electrical codes.

Cable sizes in this manual are based on table 310-16 of the National Electrical Code (NEC) with the following assertions:

- 90 °C conductors (THHN) for 75 °C termination
- Use of copper conductors

Recommended 75 °C cables sizes below are for 480 V input/output UPS, depending upon recommended overcurrent protection stated in this manual.

Ground cables are sized in accordance with NEC Article 250-122 and Table 250-122.

Power and control/communication cables must be routed in separate conduits.

Upstream and downstream bypass cables must have the same type and lengths for all UPSs installed in each integrated parallel system. Any deviation will create an unequal sharing of the load currents in bypass mode.

		40 kVA	50 kVA	60 kVA	80 kVA	100 kVA	130 kVA
Input	80% rated breakers	1/0 AWG	2/0 AWG	3/0 AWG	2 x 1 AWG	2 x 2/0 AWG	2 x 4/0 AWG
	100% rated breakers	4 AWG	3 AWG	2 AWG	1/0 AWG	3/0 AWG	250 kcmil
Bypass	80% rated breakers	1/0 AWG	2/0 AWG	3/0 AWG	2 x 1 AWG	2 x 2/0 AWG	2 x 4/0 AWG
	100% rated breakers	4 AWG	3 AWG	2 AWG	1/0 AWG	3/0 AWG	250 kcmil
Output	80% rated breakers	1/0 AWG	2/0 AWG	3/0 AWG	2 x 1 AWG	2 x 2/0 AWG	2 x 4/0 AWG
	100% rated breakers	4 AWG	3 AWG	2 AWG	1/0 AWG	3/0 AWG	250 kcmil

**NOTE:** For 80% rated breakers, cable sizes are based on combined 125% continuous load and 100% non-continuous load scenario.

## Recommended Battery Cable Sizes

Battery circuit breaker rating (A)	Cable size
175	2/0 AWG
250	250 kcmil
400	600 kcmil

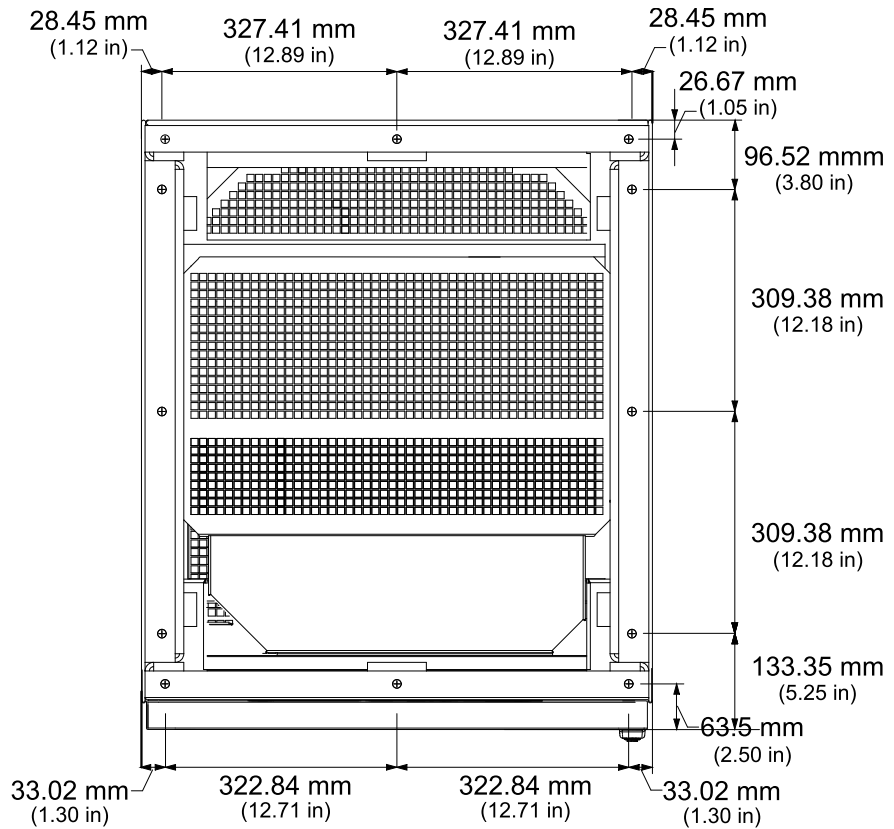
# Install Seismic Anchoring

**NOTE:** The structural engineer or design engineer of record is responsible for detailing the equipment anchorage requirements for the given installation. The installer and manufacturer of the anchorage system are responsible for assuring that the mounting requirements are met. Schneider Electric is not responsible for the specification and performance of anchorage systems.

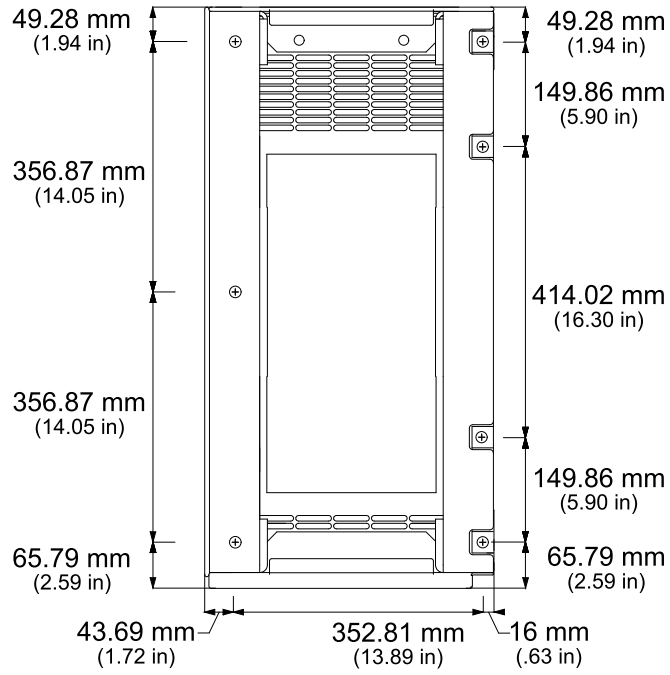
**NOTE:** Schneider Electric does not provide any seismic kit for the battery cabinet. Contact the battery cabinet vendor for seismic installation for the battery cabinet.

**NOTE:** The anchor bolts are not provided. Use anchor bolts that suit the floor material. The minimum requirement is 1/2 inch grade 5 hardware.

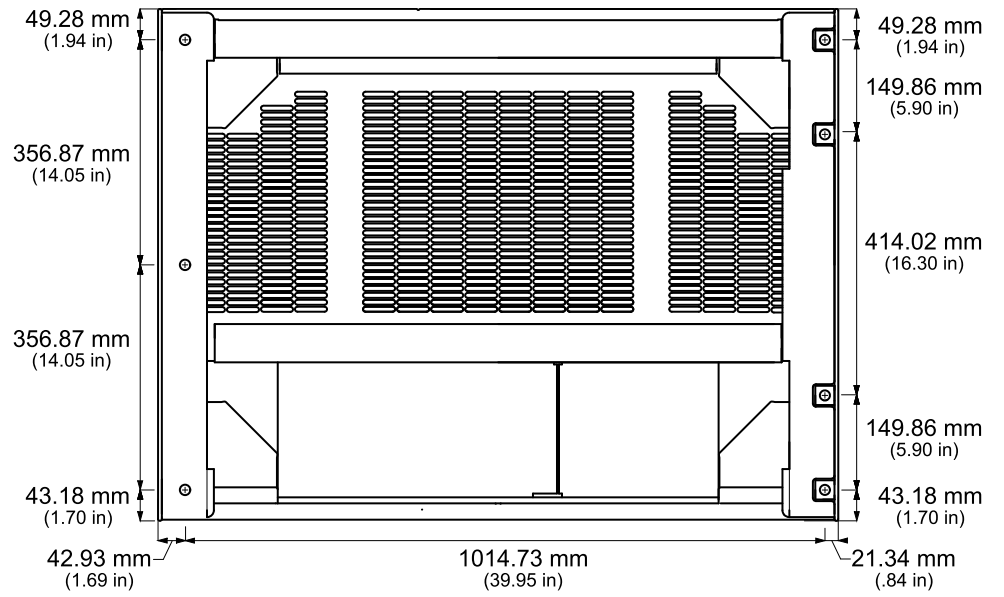
## Hole Positions for UPS Cabinet – Top View



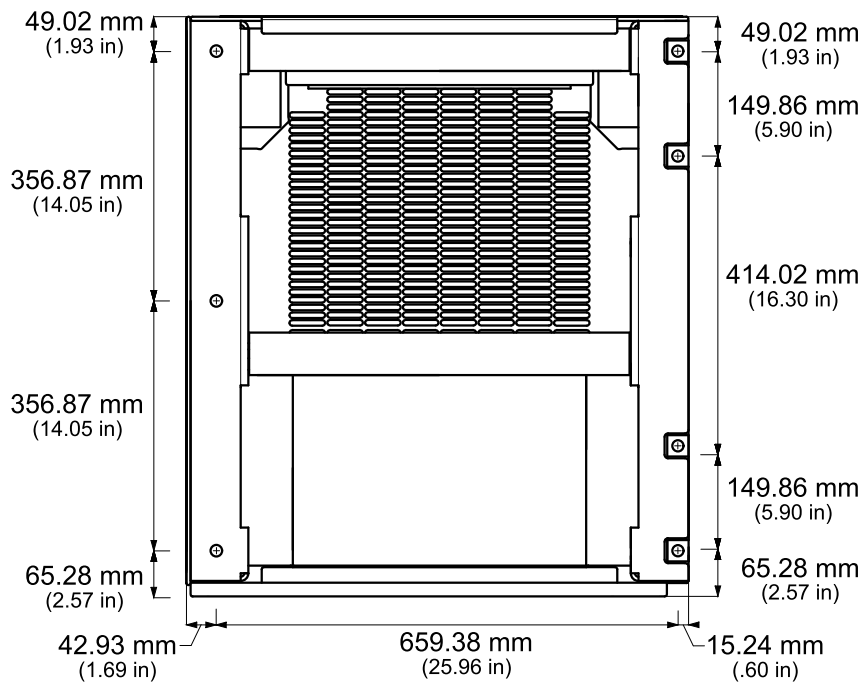
**Hole Positions for Top Entry Cabinet**



**Hole Positions for PDU Cabinet**

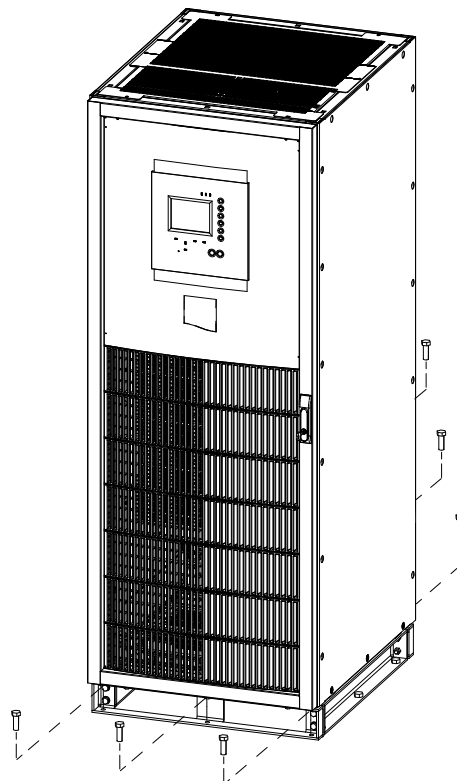


**Hole Positions for Maintenance Bypass Cabinet/Transformer Cabinet**



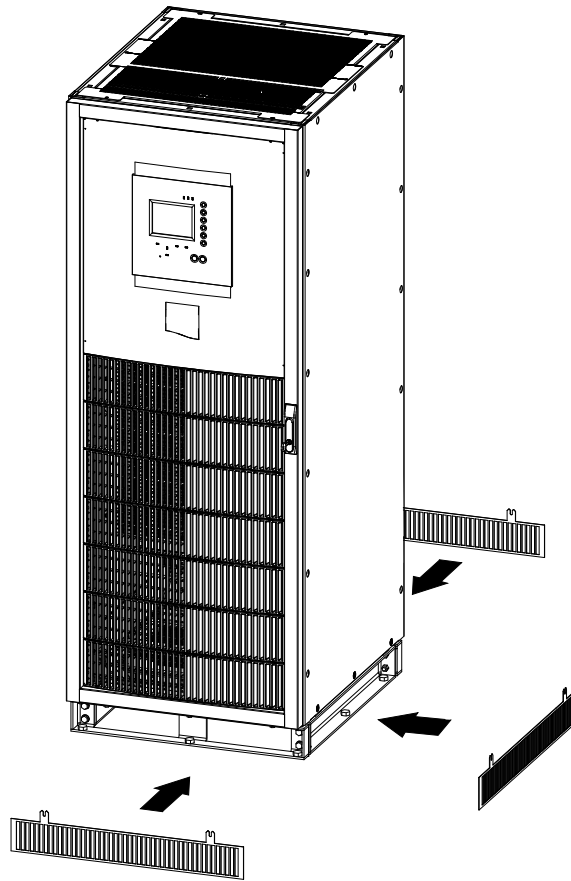
**NOTE:** Example shown is UPS and top entry cabinets, but installation procedure is similar for the other cabinet types.

1. Drill anchoring holes in the floor according to the hole positions given for each cabinet to be seismically anchored (anchoring bolts not provided).
2. Install the anchor bolts in the right and left side of the UPS cabinet.
3. Install the anchor bolts in the rear and front of the UPS cabinet.

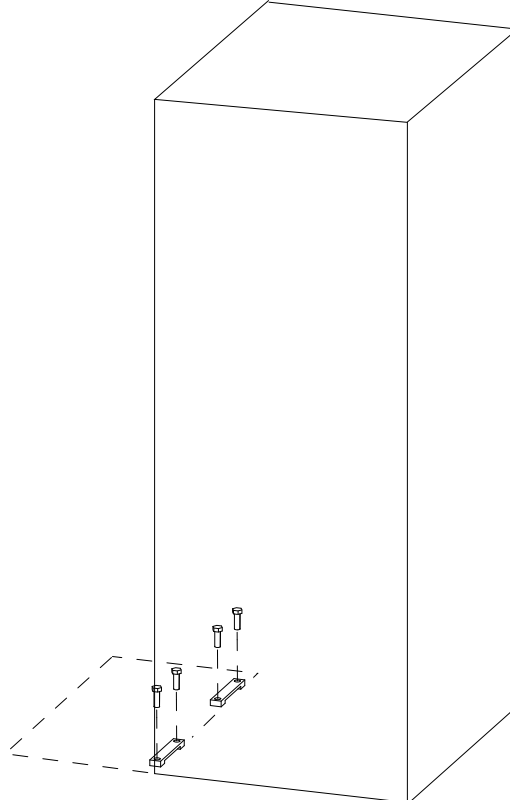




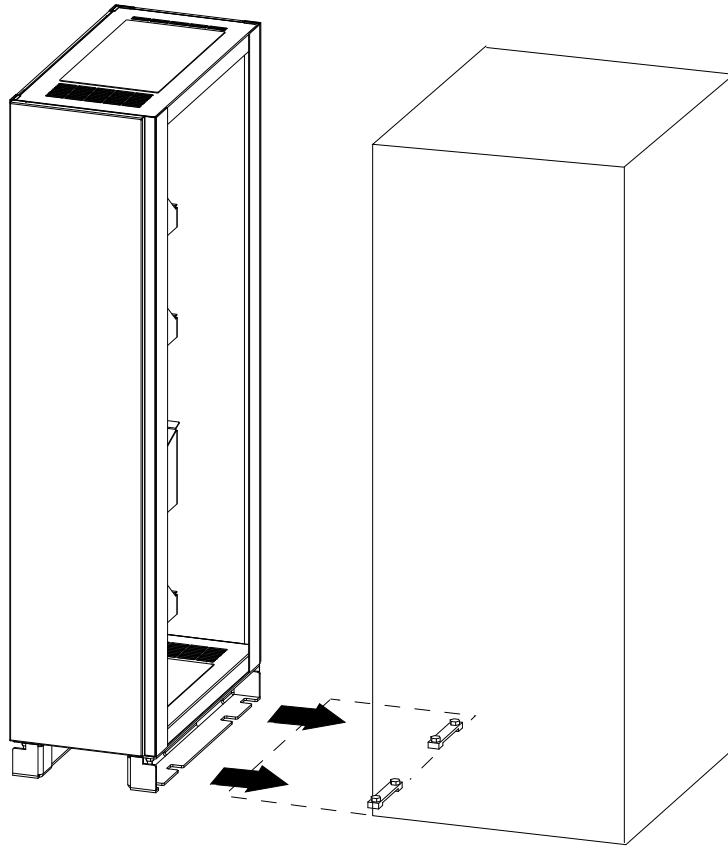
4. Install the kickplates on front, right and rear sides of the UPS cabinet.



5. Install the seismic straps on the floor to the left of the UPS cabinet.

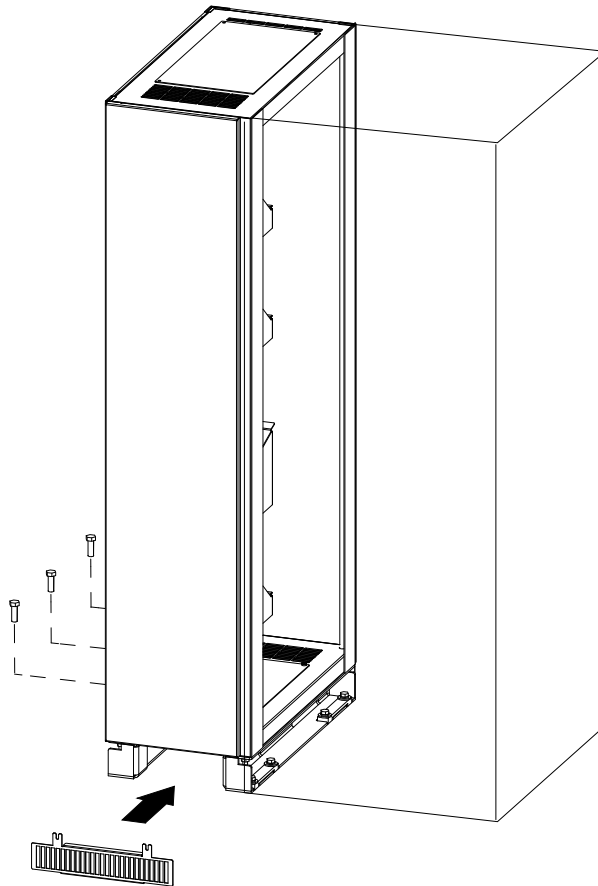


- Slide the top entry cabinet brackets under the seismic straps.

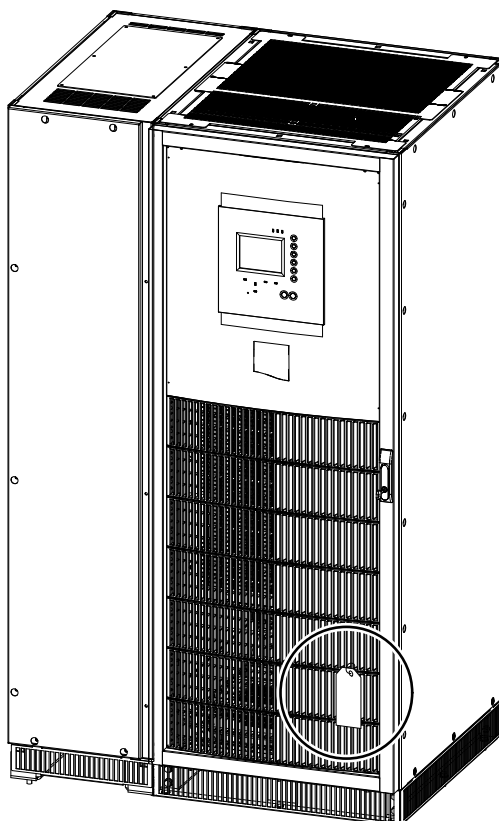


- Install the anchor bolts in the left bracket of the top entry cabinet.

- Install the front kickplate on the top entry cabinet.



9. If OSHPD review is required: Position all OSHPD certification labels on the UPS cabinet.

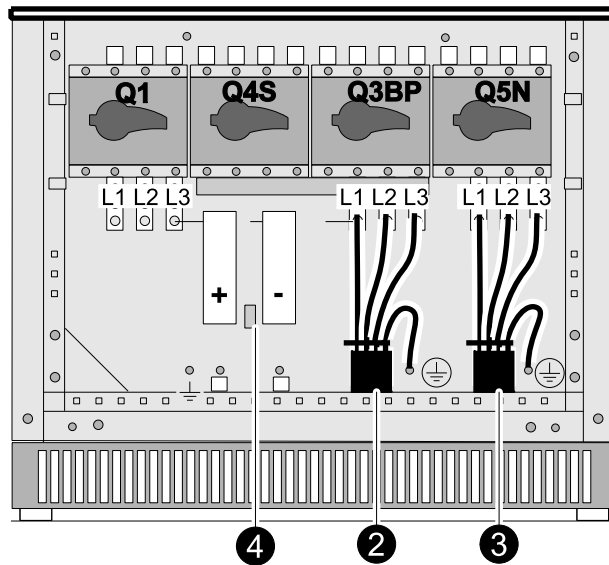


**NOTE:** For Galaxy 5000 range, OSHPD Application # : OSP-0261-10, Special Seismic certification valid up to 1.41 g.

# Connect Power Cables in Single Systems

## Connect the Power Cables in Single Utility/Mains Systems

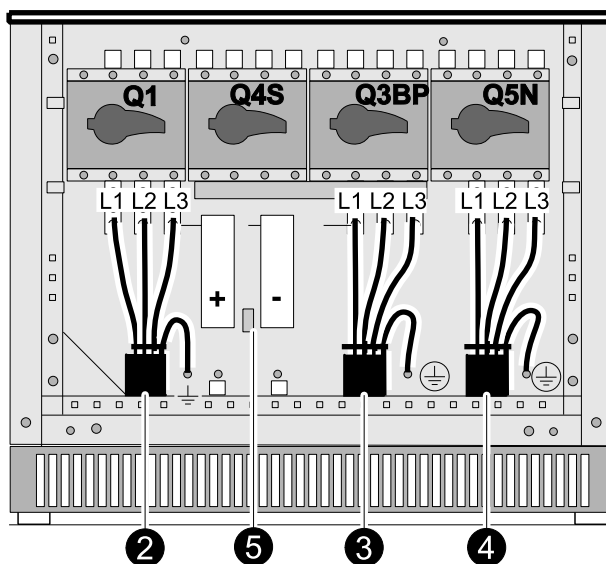
1. Remove the protection cover in the bottom of the UPS cabinet.
2. Connect the input cables to the input terminals and to the UPS grounding plate.
3. Connect the output cables to the output terminals and to the UPS grounding plate.
4. Connect the battery cables to the battery terminals.
5. Fasten the cables to the UPS cabinet.
6. Reinstall the protection cover.



## Connect the Power Cables in Dual Utility/Mains Systems

1. Remove the protection cover in the bottom of the UPS cabinet.
2. Connect the input cables to the input terminals and to the UPS grounding plate.
3. Connect the bypass cables to the bypass terminals and to the UPS grounding plate.
4. Connect the output cables to the output terminals and to the UPS grounding plate.
5. Connect the battery cables to the battery terminals.
6. Fasten the cables to the UPS cabinet.

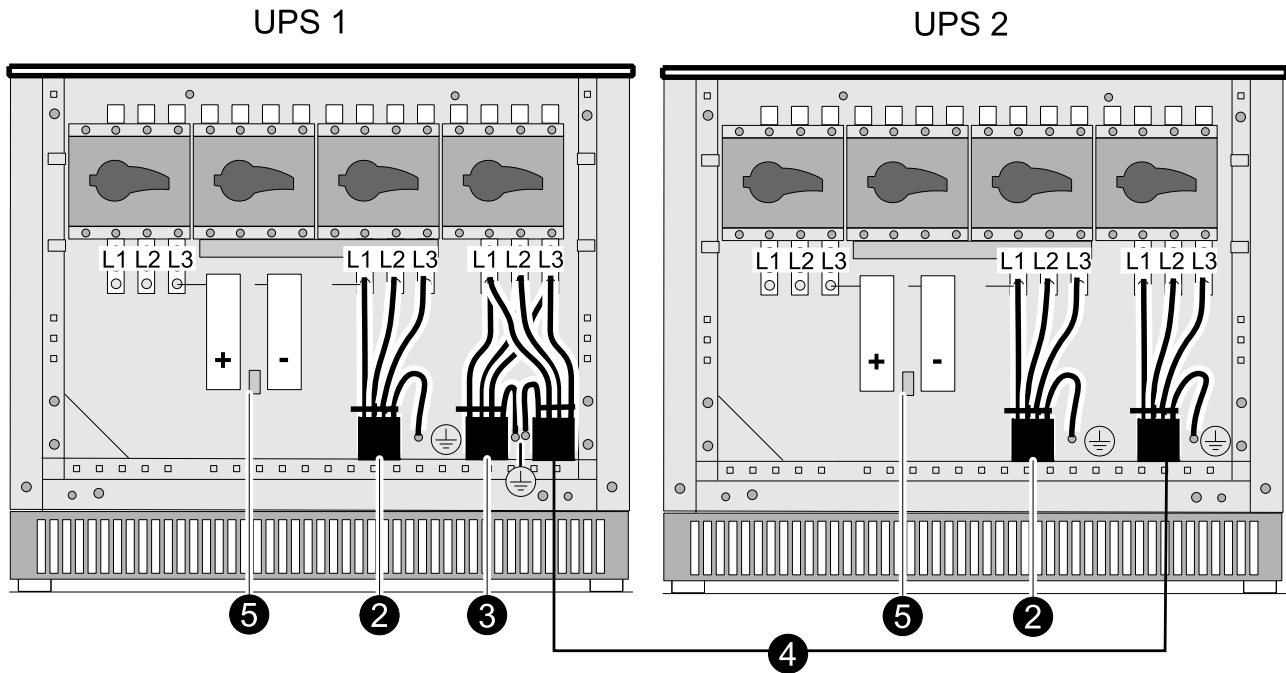
7. Reinstall the protection cover.



# Connect Power Cables in Parallel Systems

## Connect the Power Cables in Single Utility/Mains Systems

**NOTE:** A maximum of two UPS units can be installed in parallel for rated power.

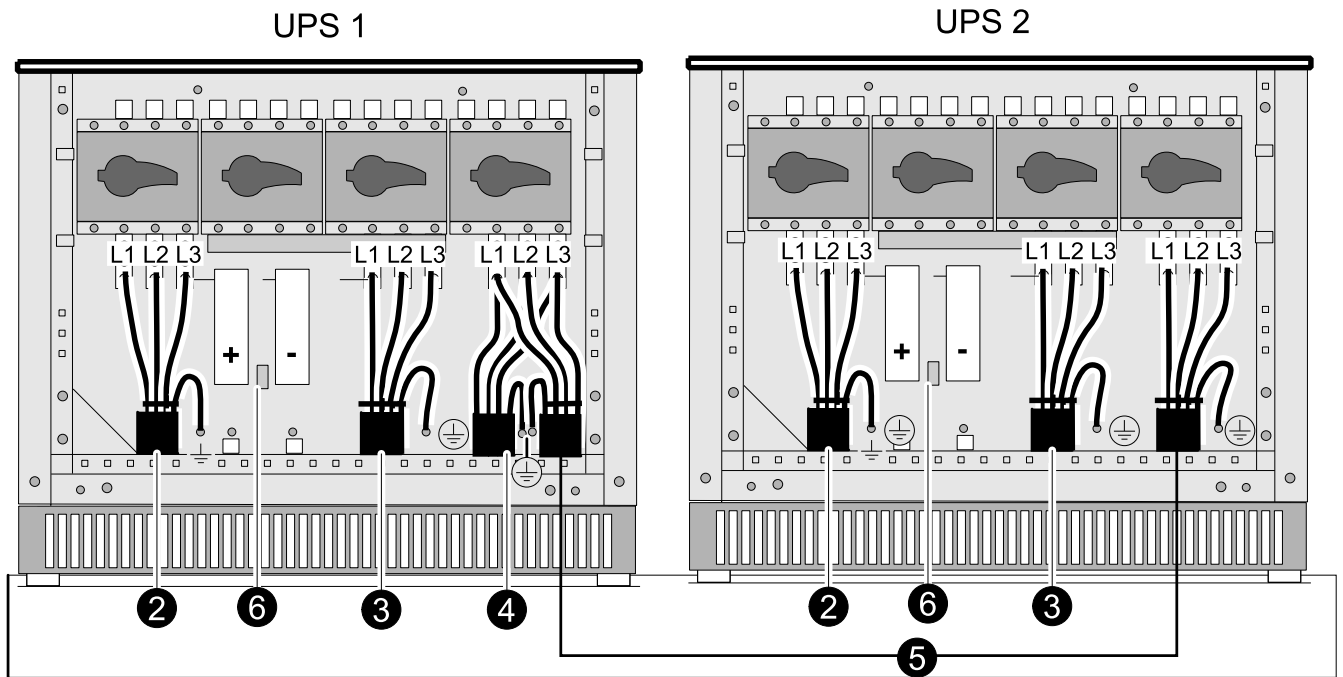


1. Remove the protection covers in the bottom of the UPS cabinets.
2. Connect the input cables to the input terminals and to the UPS grounding plate in UPS 1. Repeat in UPS 2.
3. Connect the output cables to the output terminals and to the UPS grounding plate in UPS 1.
4. Connect the parallel cables from the output terminals in UPS 1 to the output terminals in UPS 2.
5. Connect the battery cables to the battery terminals in UPS 1 and UPS 2.
6. Fasten the cables to the UPS cabinets.
7. Reinstall the protection covers.

## Connect the Power Cables in Dual Utility/Mains Systems

**NOTE:** If the two UPS units are placed side by side, connect cables as indicated below. In other configurations, always make sure that the cables between the UPS units and the bypass source are the same type and the same length. The cables between the UPS units and the load must also be the same type and length.

**NOTE:** The drawings below show configurations without an external system bypass cabinet.



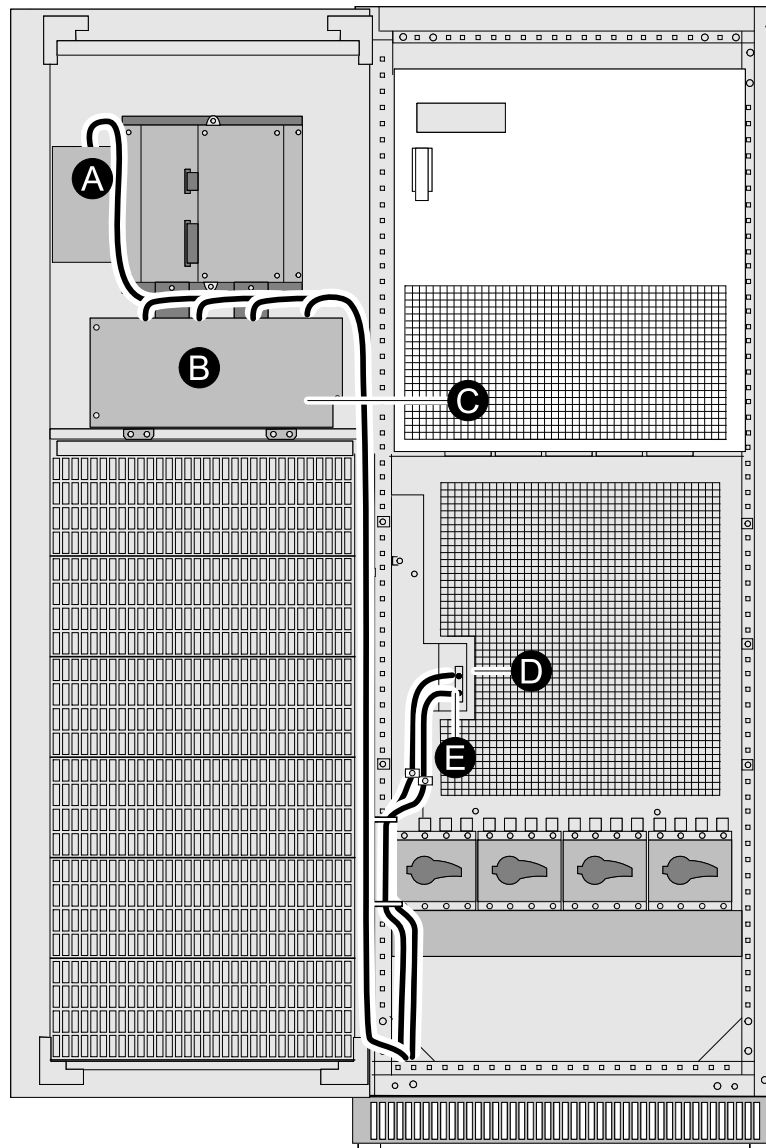
1. Remove the protection covers in the bottom of the UPS cabinets.
2. Connect the input cables to the input terminals and to the UPS grounding plate in UPS 1. Repeat in UPS 2.
3. Connect the bypass cables to the bypass terminals and to the UPS grounding plate in UPS 1. Repeat in UPS 2.
4. Connect the output cables to the output terminals and to the UPS grounding plate in UPS 1.
5. Connect the parallel cables from the output terminals in UPS 1 to the output terminals in UPS 2.
6. Connect the battery cables to the battery terminals in UPS 1 and UPS 2.
7. Fasten the cables to the UPS cabinets.
8. Reinstall the protection covers.

# Connect the Communication Cables

## Overview of Communication Cables in Single Systems

**NOTE:** Run control and communication cables separately from the power cables to ensure sufficient isolation. Reinforce the insulation of the control and communication cables if any risk of contact with the power cables exists.

- A. Network management card (SELV)
- B. Optional communication cards (SELV or LV)
- C. Relay communication card (SELV)
- D. External battery circuit breaker cables (SELV)
- E. General shutdown cable (SELV)

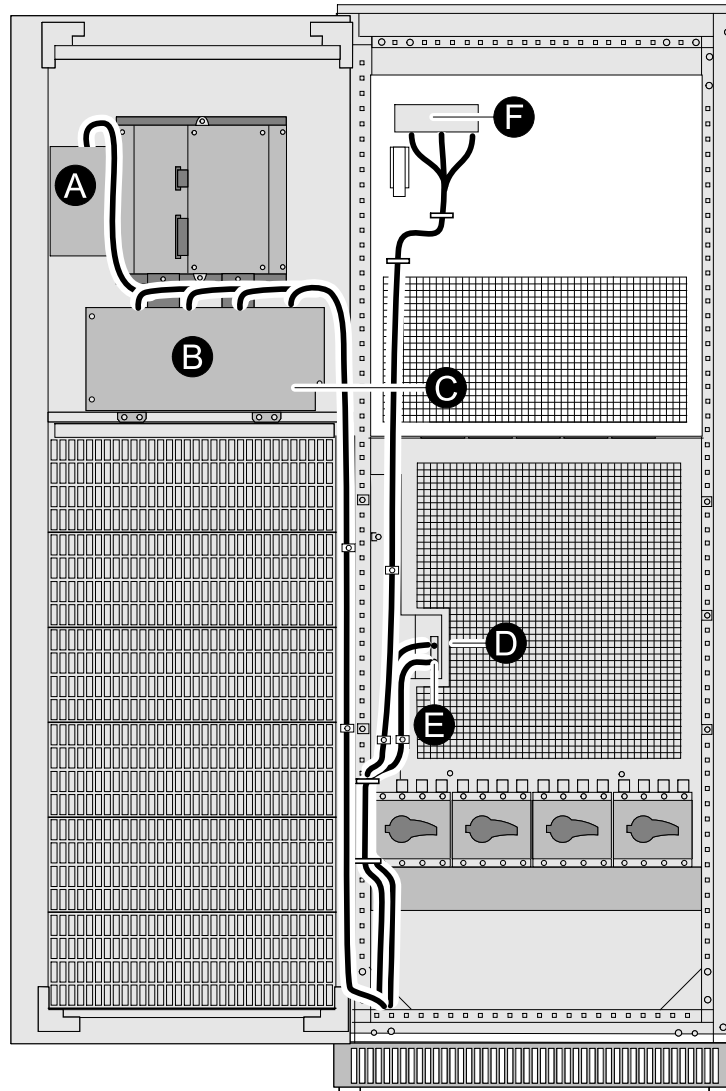




## Overview of Communication Cables in Parallel Systems

**NOTE:** Run control and communication cables separately from the power cables to ensure sufficient isolation. Reinforce the insulation of the control and communication cables if any risk of contact with the power cables exists.

- A. Network management card (SELV)
- B. Optional communication cards (SELV or LV)
- C. Relay communication card (SELV)
- D. External battery circuit breaker cables (SELV)
- E. General shutdown cable (SELV)
- F. INTN board for connection of external bypass cabinet cable (ELV), CAN cables (SELV), and exchange-current cables (SELV).



## Connect the Relay Communication Card

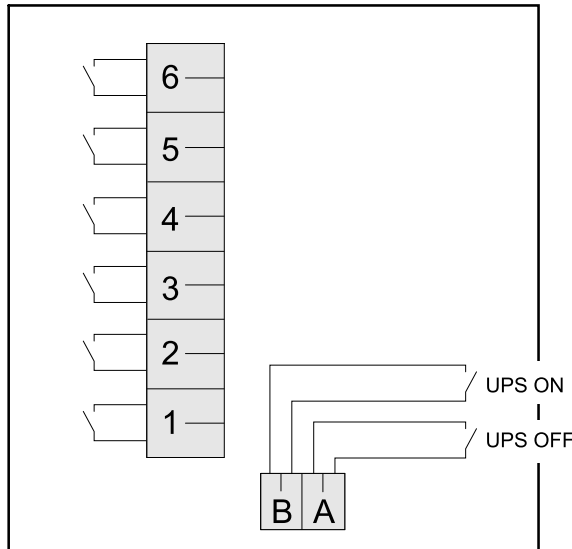
### **⚠ DANGER**

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

Isolate and lockout/tagout all power sources for this card (also known as SECI) before making connections. Never connect SELV (safety extra low voltage) and non-SELV circuits to the different outputs of the same card.

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

**NOTE:** Only one relay communication card can be installed in a UPS.



#### **Output contacts:**

- Permissible voltage: 250 V, 30 VDC
- Permissible current: 2 A
- Cable: 4 x 0.93 mm<sup>2</sup>, Ø 6.6 mm +/- 0.3 mm

Pin	Description
6	Low battery warning
5	Load on battery power
4	Load on automatic bypass
3	Load on UPS
2	Battery inoperable
1	General alarm

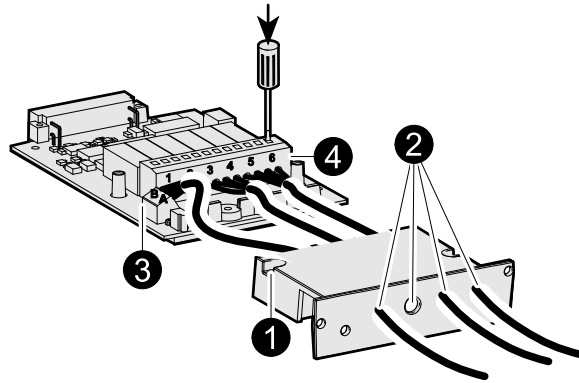
#### **Input contacts:**

- Switched voltage: 5 VDC
- Consumption: 10 mA
- Cable: 4 x 0.34 mm<sup>2</sup>, Ø 5 mm +/- 0.5 mm

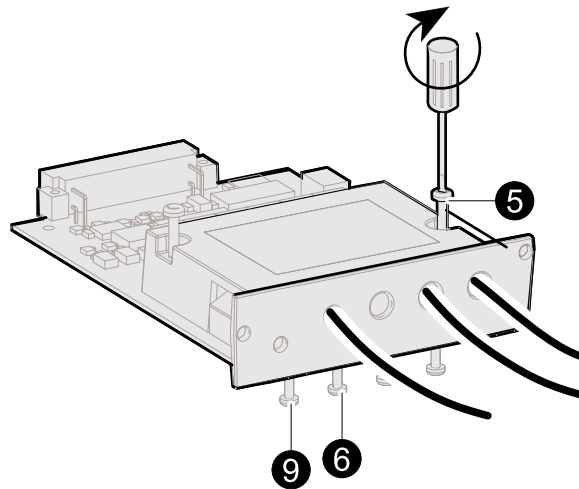
Pin	Description
A	UPS OFF
B	UPS ON

1. Remove the screws and remove the cover from the relay communication card.
2. Run the communication cables through the cable entry holes.
3. Connect the conductors to the input terminals on the relay communication card.

4. Connect the conductors to the output terminals on the relay communication card.



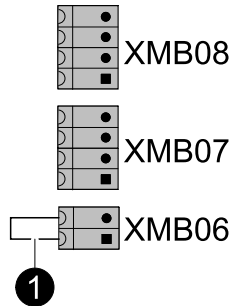
5. Reinstall the cover and secure it with the screws.
6. Tighten the screws to lock the cables.
7. Indicate the location of the power sources on the labels.
8. Insert the card in the slot in the UPS cabinet.
9. Secure the card with two screws.



## Connect General Shutdown or Remote Emergency Power Off

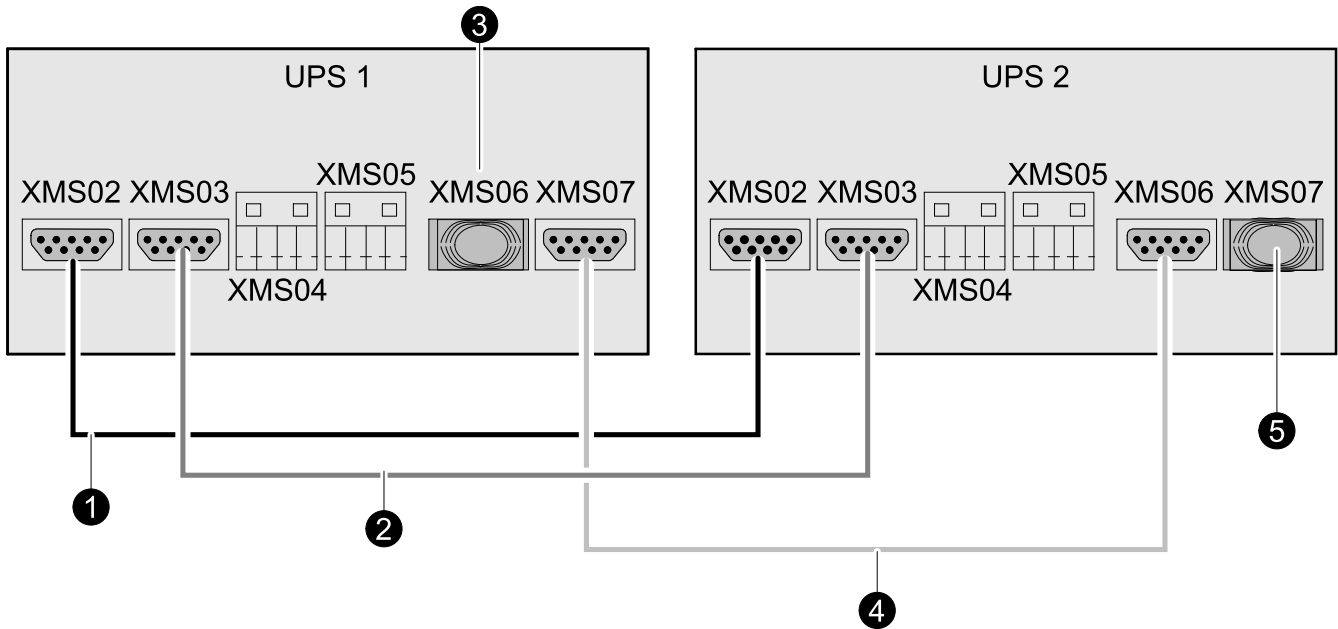
The general shutdown button causes UPS shutdown and opening of the battery circuit breaker (opening of the bypass static switch depends on customisation settings). The REPO (remote emergency power off) option is applicable to installations where pressing the button also causes the upstream utility/mains source and bypass source circuit breakers to open. In parallel systems, there must be a single general shutdown button with a separate contact for each UPS unit.

1. Remove the wire jumper from the terminal block.
2. Connect the general shutdown normally closed contact to terminals 1 and 2 (SELV).
3. Secure the cable.



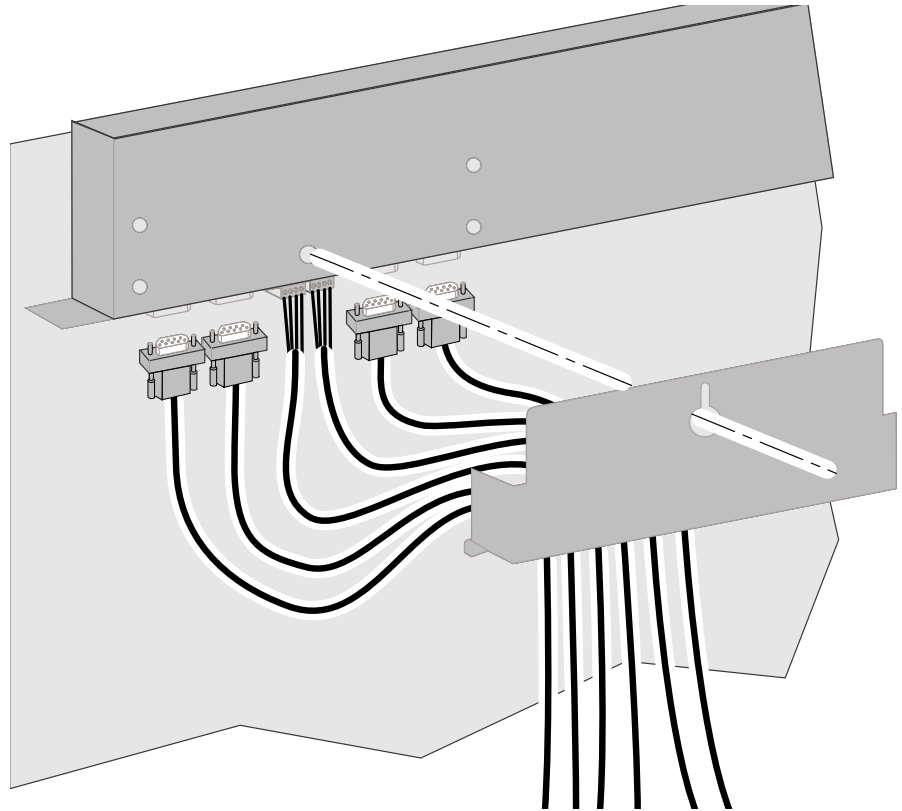
## Connect Parallel Communication Cables in Redundant Parallel Systems

**NOTE:** The 10 m (33 ft) supplied cables limit the distance between two UPS units to approximately 6 m (20 ft).



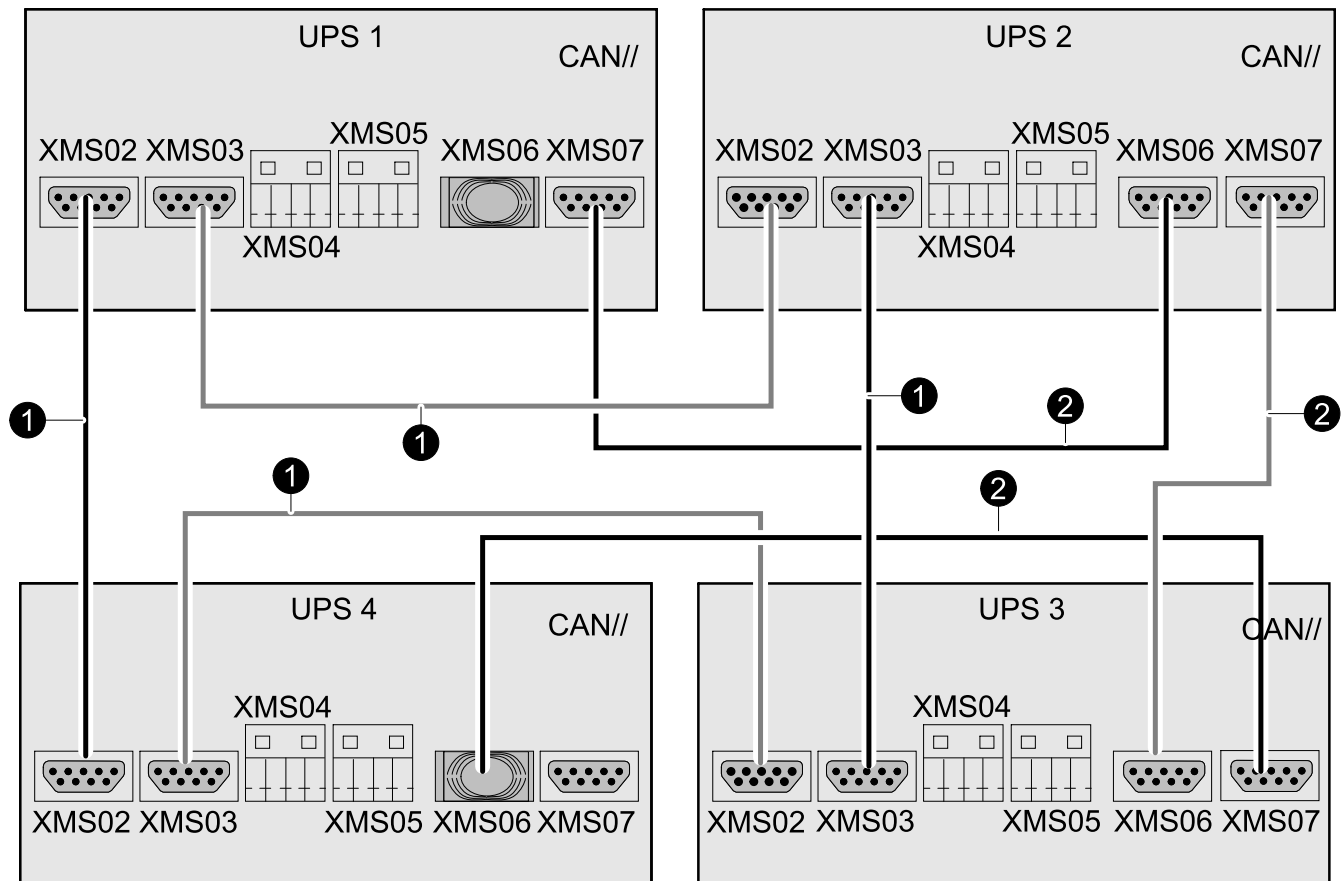
1. Connect a communication cable from XMS02 in UPS 1 to XMS02 in UPS 2.
2. Connect a communication cable from XMS03 in UPS 1 to XMS03 in UPS 2.
3. Install a blue plug in connector XMS06 in UPS 1.
4. Connect a communication cable from XMS07 in UPS 1 to XMS06 in UPS 2.
5. Install a red plug in connector XMS07 in UPS 2.

6. Install the protection cover supplied with the parallel system over the communication cables.



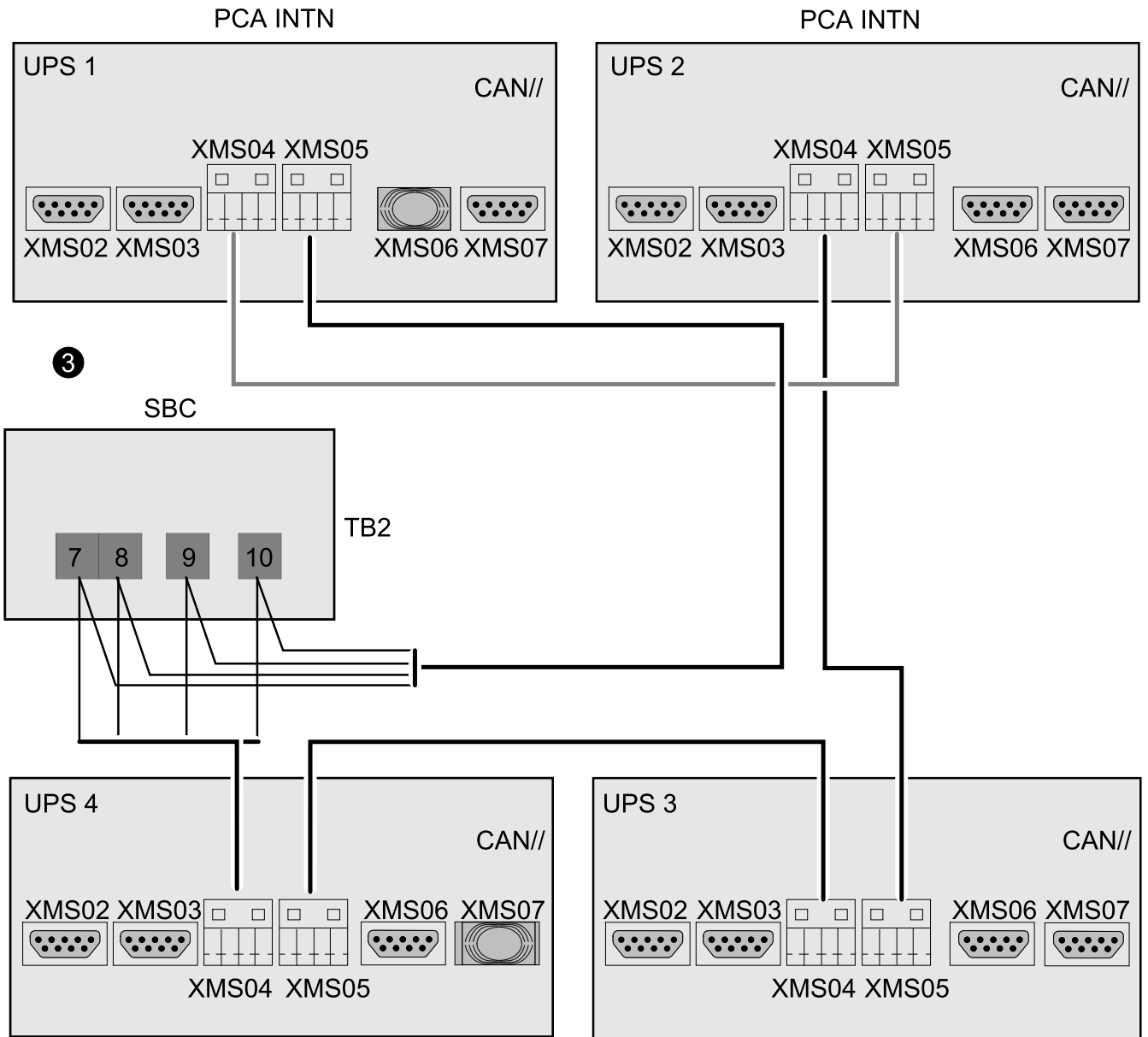
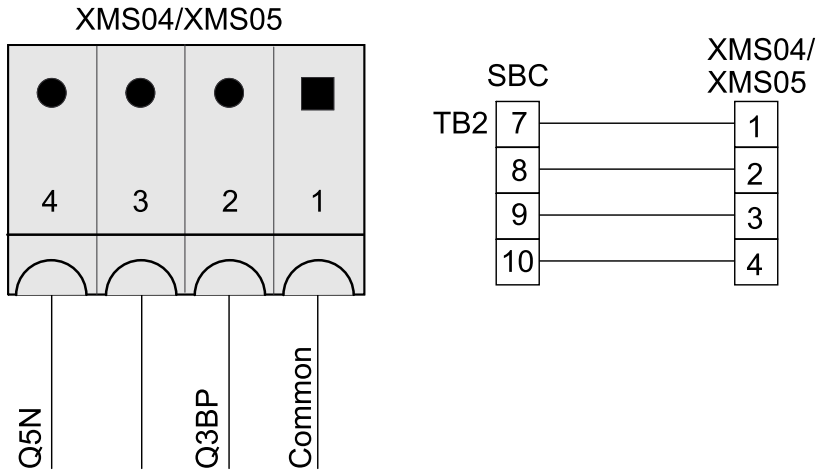
## Connect Parallel Communication Cables in Parallel Capacity Systems

**NOTE:** The 10 m (33 ft) supplied cables limit the distance between two UPS units to approximately 6 m (20 ft).



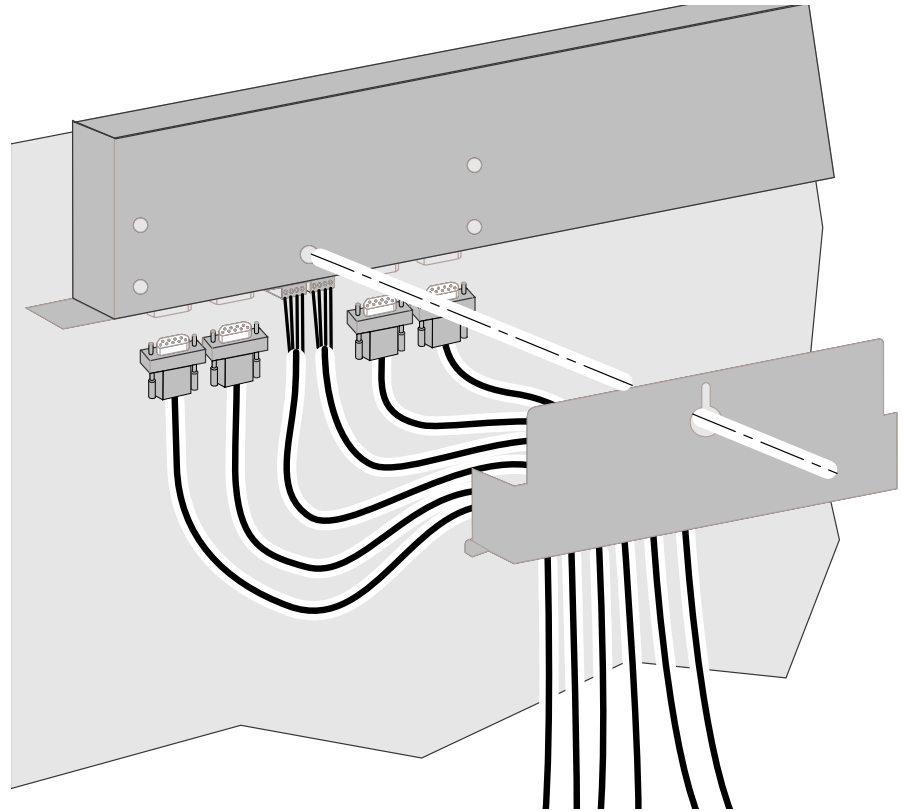
1. Use the XMS02 and XMS03 terminals to create a loop between all UPS units as shown on the illustration (all the XMS02 and XMS03 terminals must be used).

- Daisy-chain the UPS units using the XMS06 and XMS07 terminals. Fit a blue plug in the connector on the first UPS units and a red plug in the connector on the last UPS unit (all the XMS06 and XMS07 connectors must be used).



- Connect terminals 7, 8, 9, and 10 on the auxiliary terminal block TB2 in the system bypass cabinet to UPS terminal blocks XMS04/XMS05 pins 1, 2, 3, and 4 and create a loop connection between the system bypass cabinet and the UPS units as shown.

4. Install the protection cover supplied with the parallel system over the communication cables.

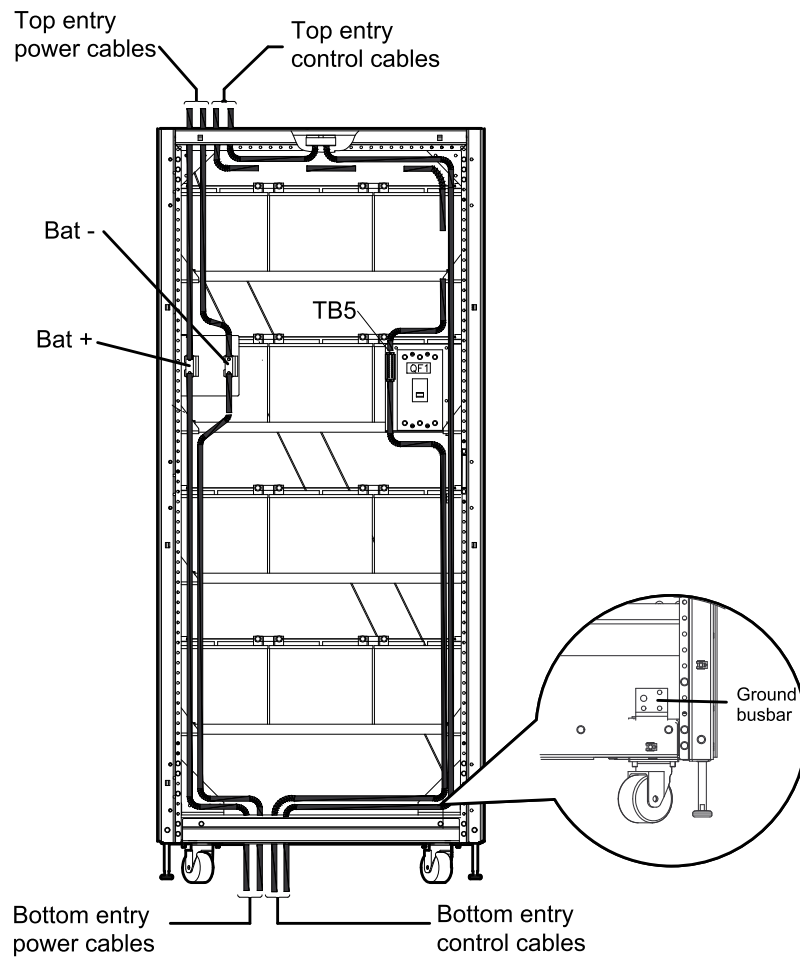


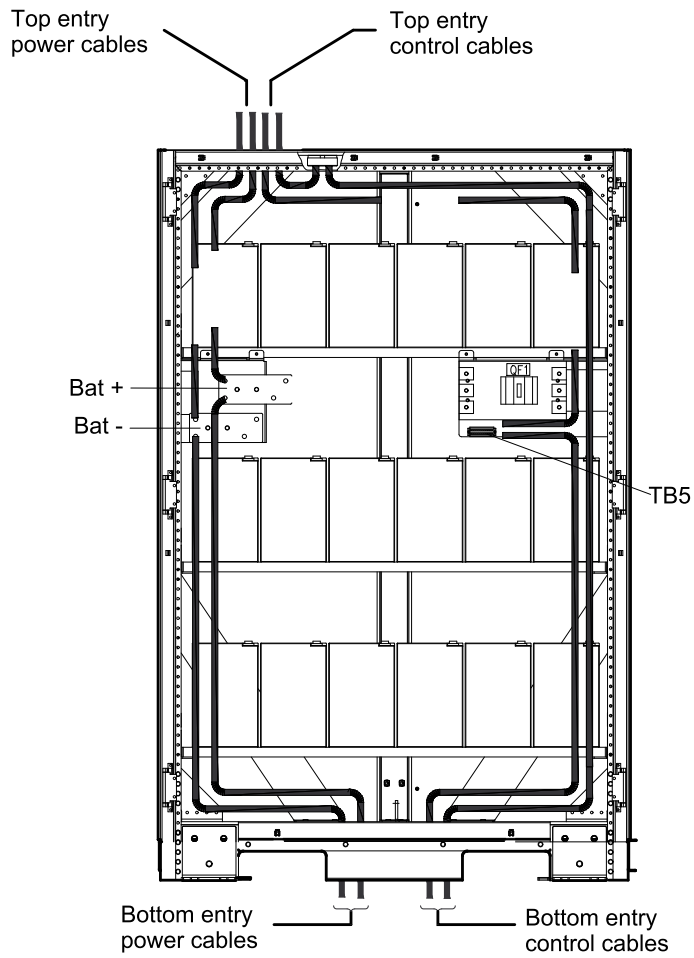


# Install an External Battery Cabinet

## Install the ATIZ Board and the Ground Busbar

### 26 Inch and 32 Inch Battery Cabinet



**48 Inch Battery Cabinet**

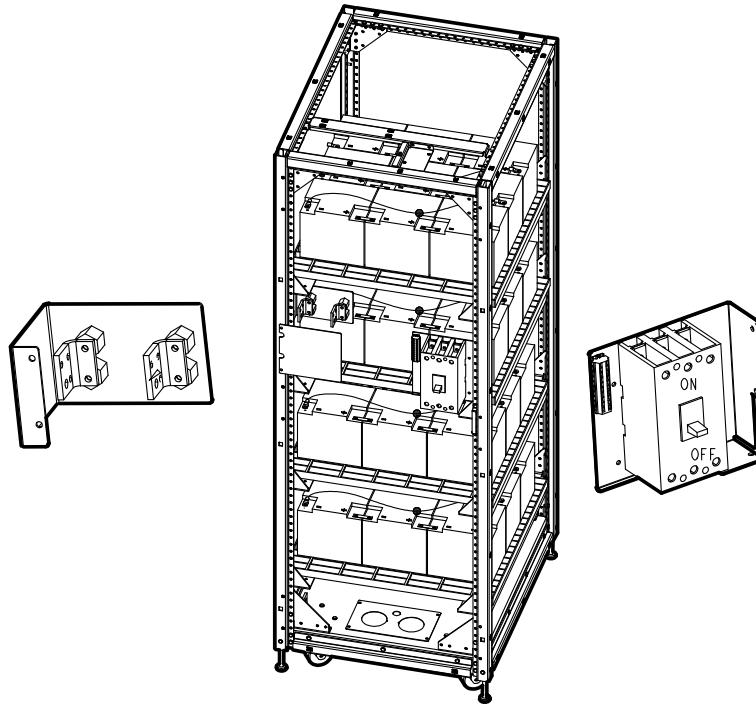
1. If the ATIZ board option has been purchased, install the ATIZ board in the first battery cabinet.
2. Install the ground busbar.

**Install the Battery Circuit Breaker****⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Protect the battery circuit with a DC battery circuit breaker equipped with an undervoltage coil (MN 24 VDC). The battery circuit breaker must be rated. The undervoltage coil must be wired to the UPS as shown in the **Connection Diagrams** below.

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

**NOTE:** In systems with several battery cabinets, only one battery circuit breaker is necessary.



**NOTE:** The battery circuit breaker is preinstalled in the battery cabinet.

1. Secure the XR1 connector box to the battery cabinet frame.
2. Secure the temperature sensor to the battery cabinet frame.
3. When the batteries have been connected to the circuit breaker, install the front cover in front of the circuit breaker.

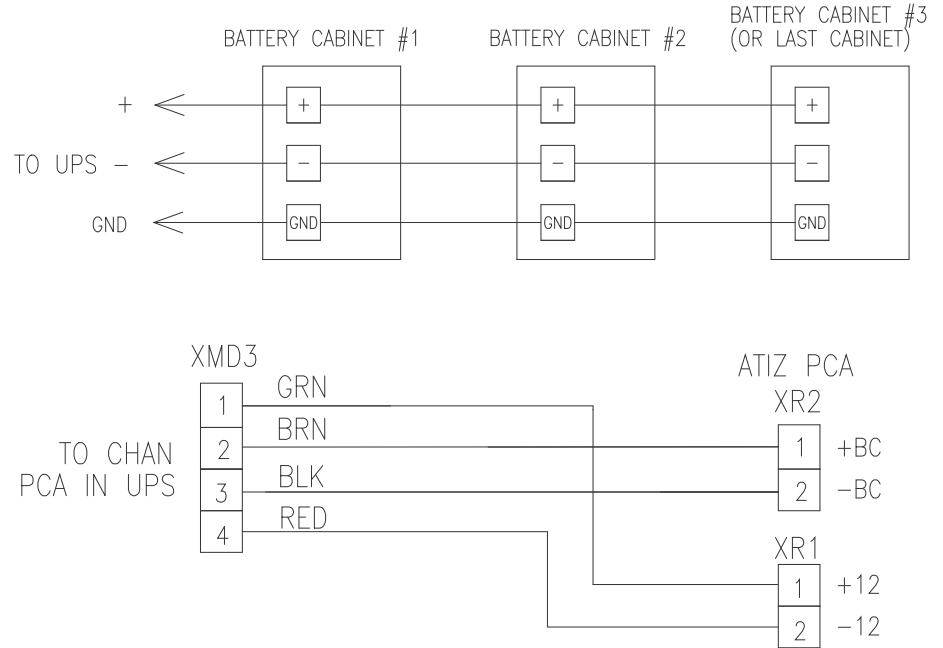
**Battery Circuit Breaker Control Wiring**

TB5	QF1 wire color
1	Brown
2	Brown
3	Yellow
4	Blue / yellow
5	Jumper 2 to 4

## Connect the Power and Control Cables

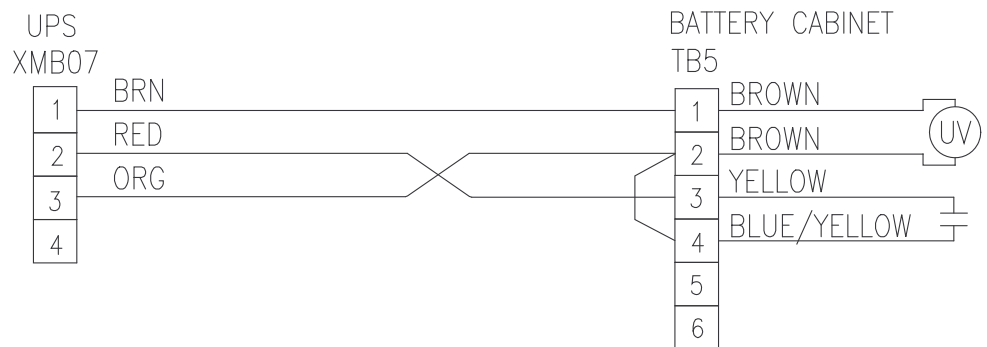
1. Route the power and ATIZ cables between the UPS and battery cabinets as shown below. For multiple adjacent cabinets, cables interconnect through openings in the middle cabinet(s).

### Power Cable and ATIZ Connections for 26 Inch, 32 Inch, and 48 Inch Battery Cabinets

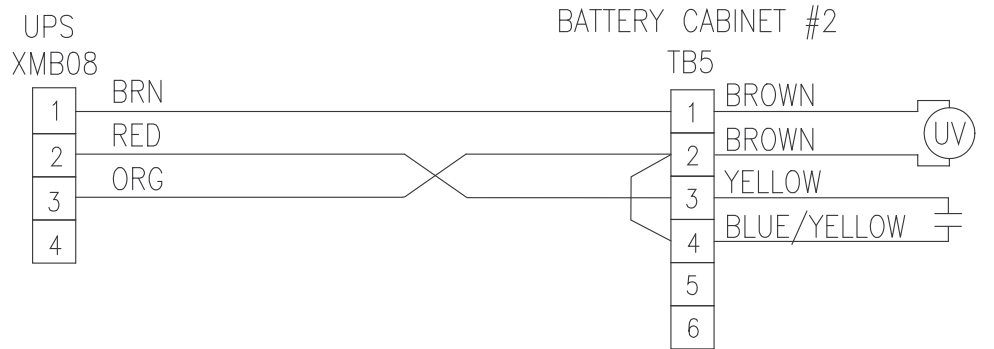
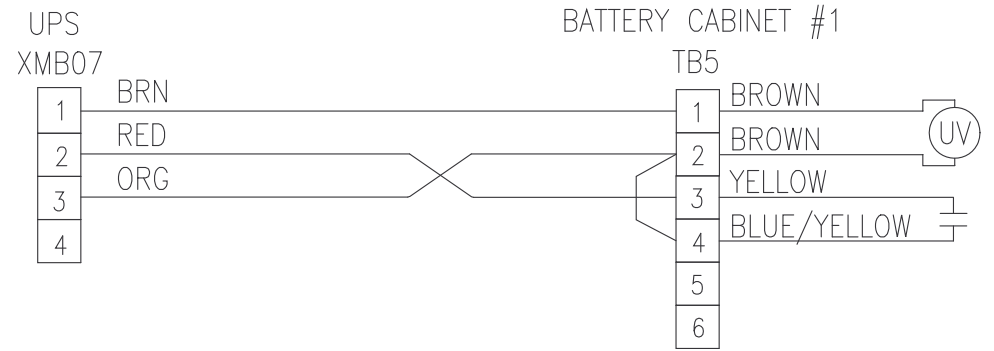


2. Route the control cables between the UPS and the battery cabinets as shown in the illustration relevant to your configuration. For multiple adjacent cabinets, cables interconnect through openings in the middle cabinet(s).
  - a. For installation of three or four battery cabinets: Move jumper to pins 5 and 6 in battery cabinet 1 and move jumper to pins 2 and 3 in battery cabinet 3.
  - b. For installation of four battery cabinets: Move jumper to pins 5 and 6 in battery cabinet 2 and move jumper to pins 2 and 3 in battery cabinet 4.

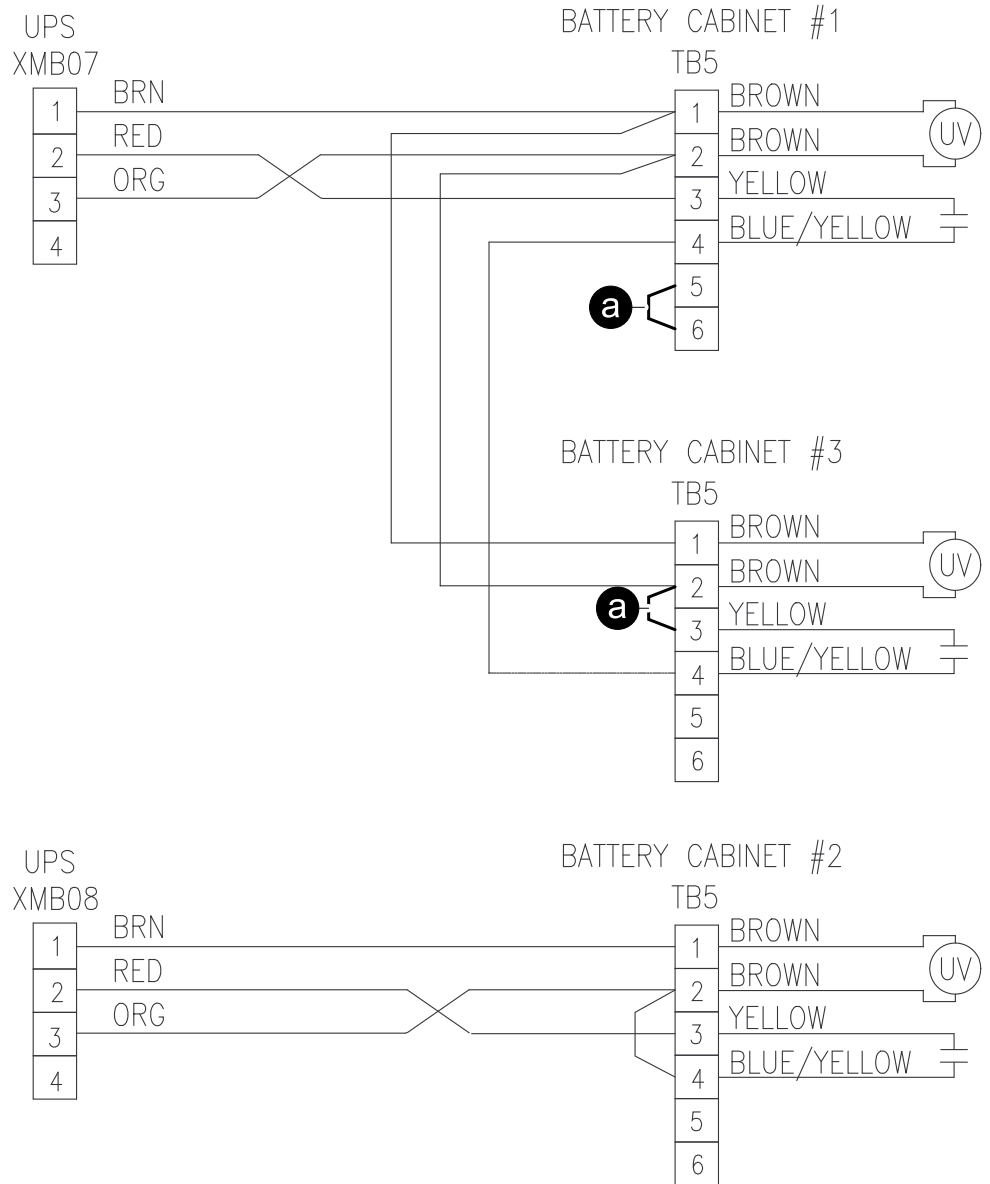
### Control Cable Connections for One 26 Inch and 32 Inch Battery Cabinet



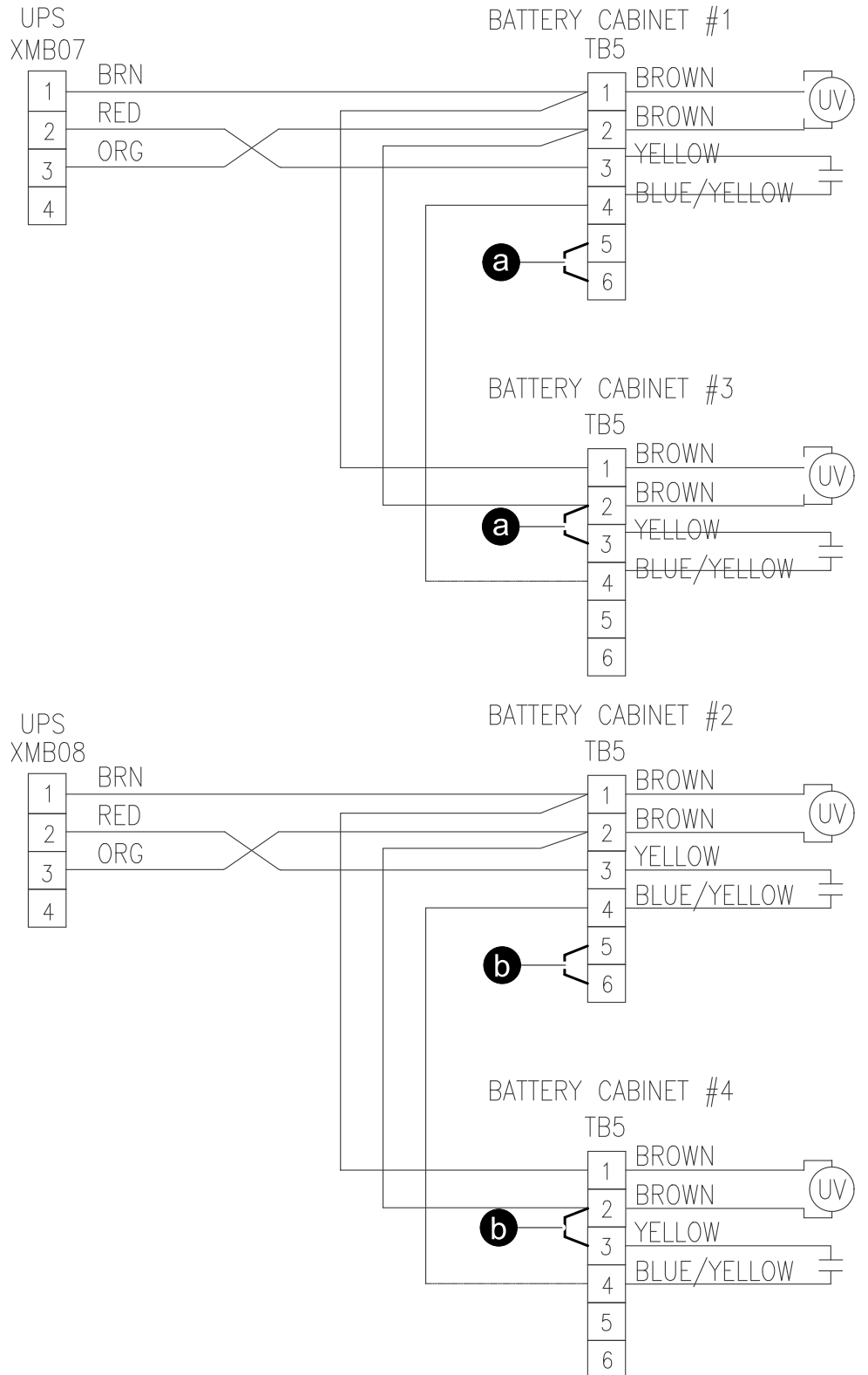
### Control Cable Connections for Two 26 Inch and 32 Inch Battery Cabinets



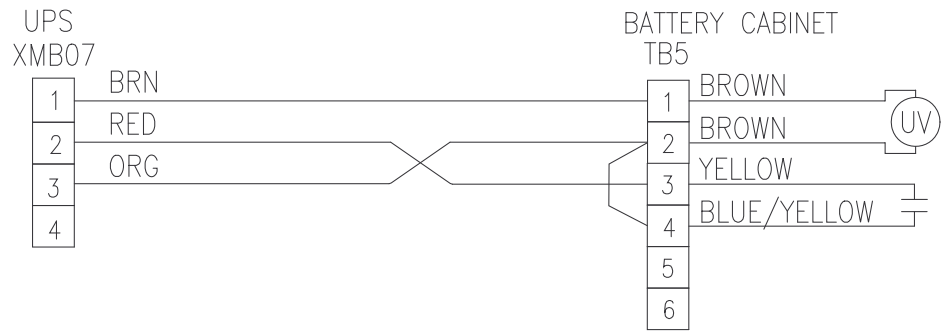
### Control Cable Connections for Three 26 Inch and 32 Inch Battery Cabinets



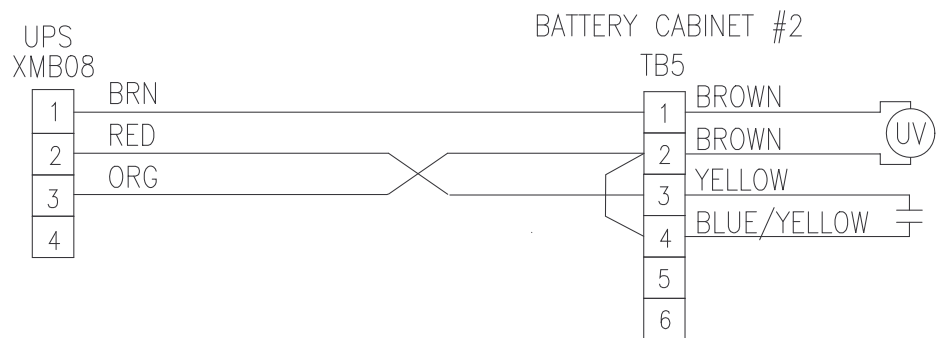
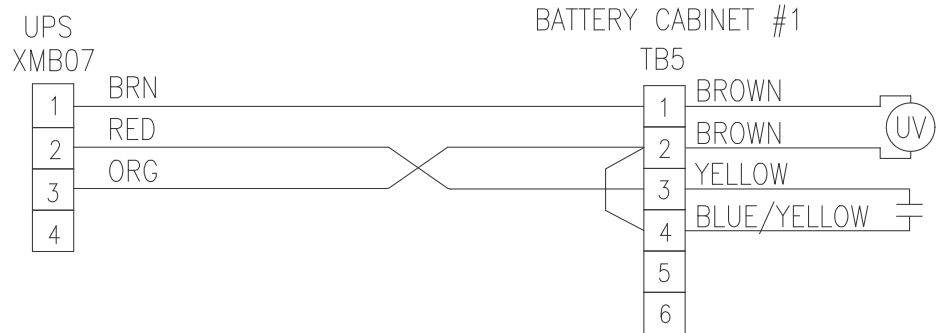
**Control Cable Connections for Four 26 Inch and 32 Inch Battery Cabinets**



**Control Cable Connections for One 48 Inch Battery Cabinet**

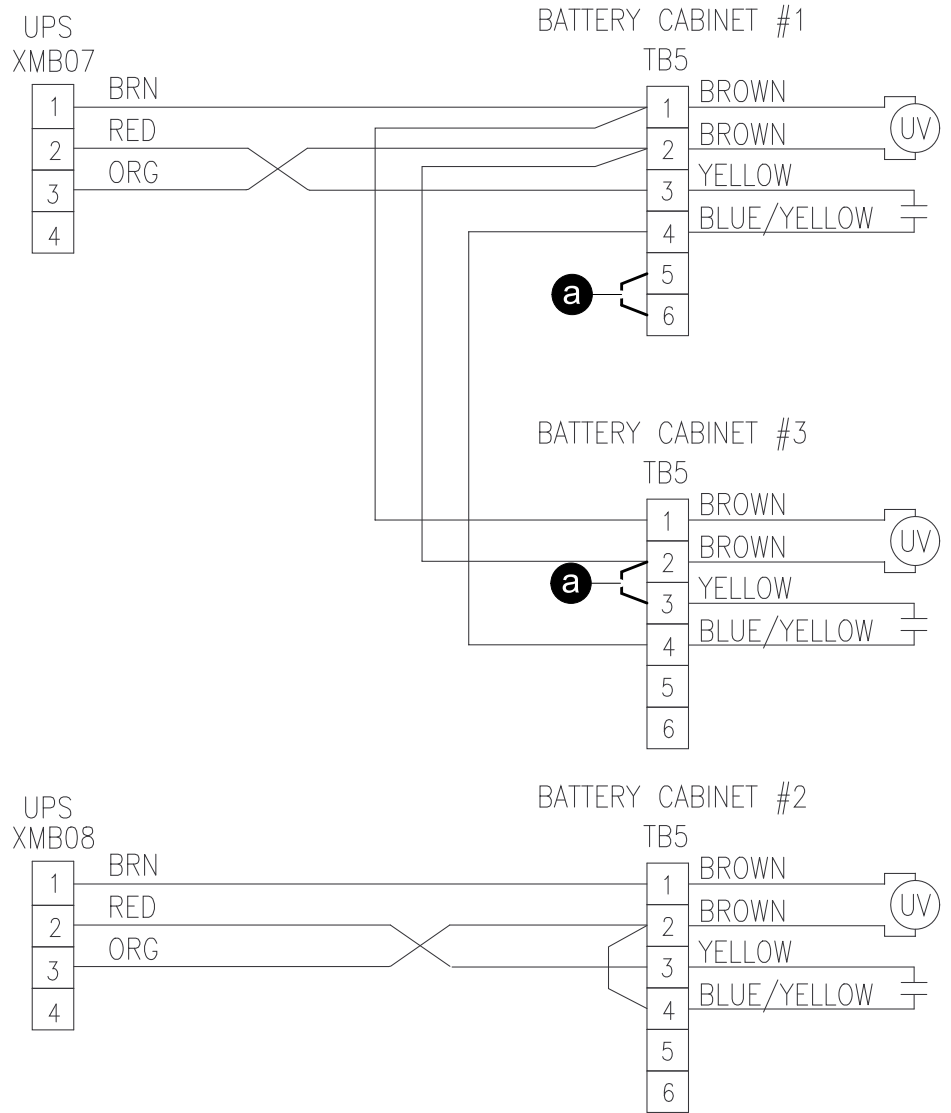


**Control Cable Connections for Two 48 Inch Battery Cabinets**

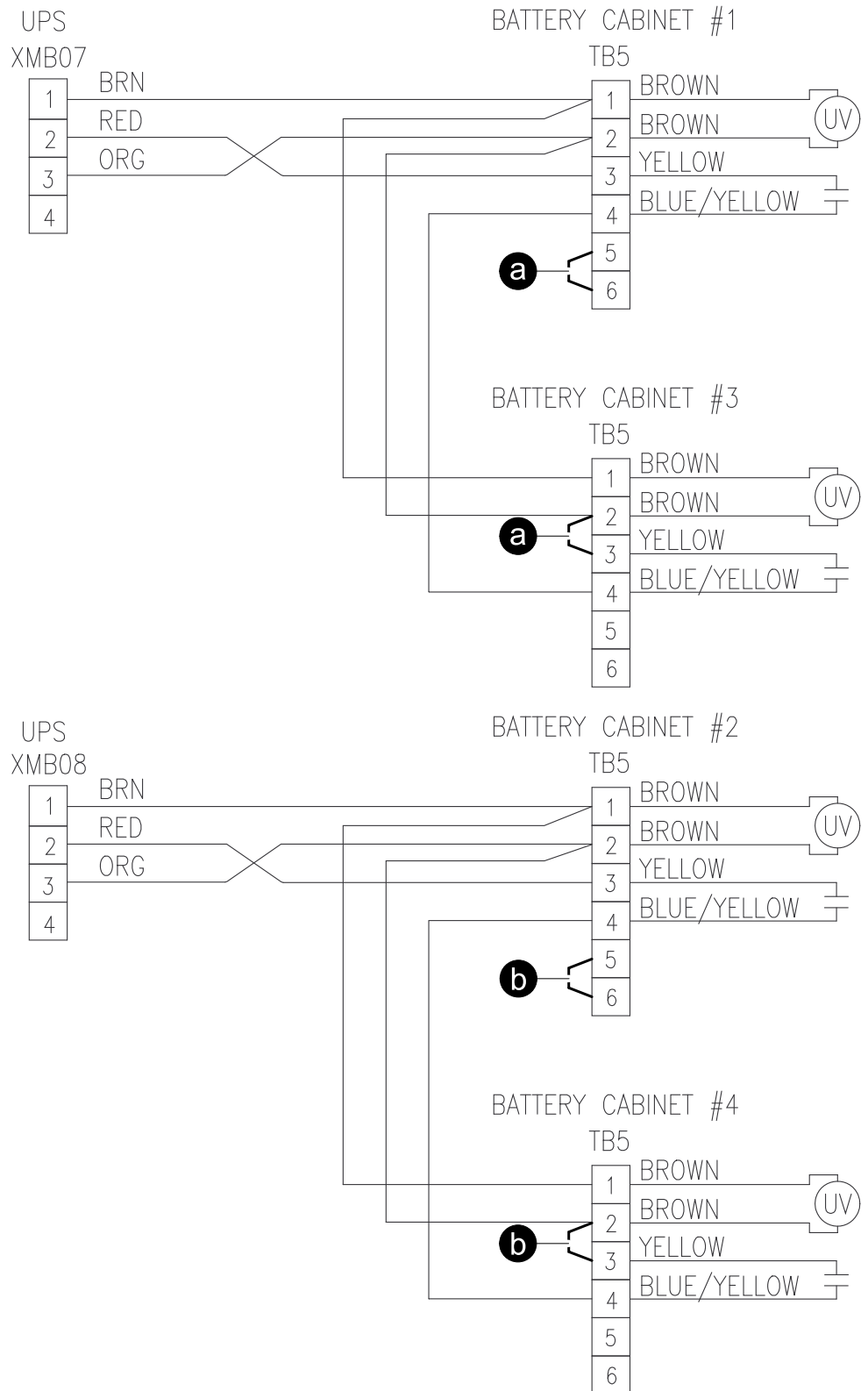




### Control Cable Connections for Three 48 Inch Battery Cabinets



### Control Cable Connections for Four 48 Inch Battery Cabinets



## Install the Batteries

### **⚠ DANGER**

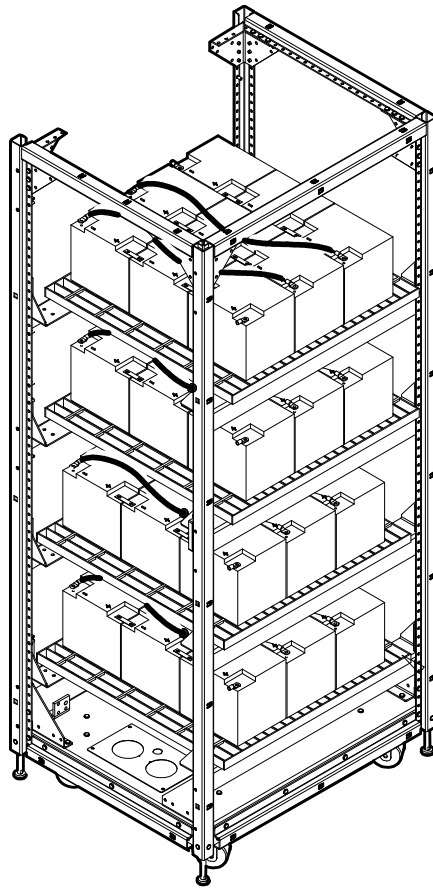
#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Batteries must only be installed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.

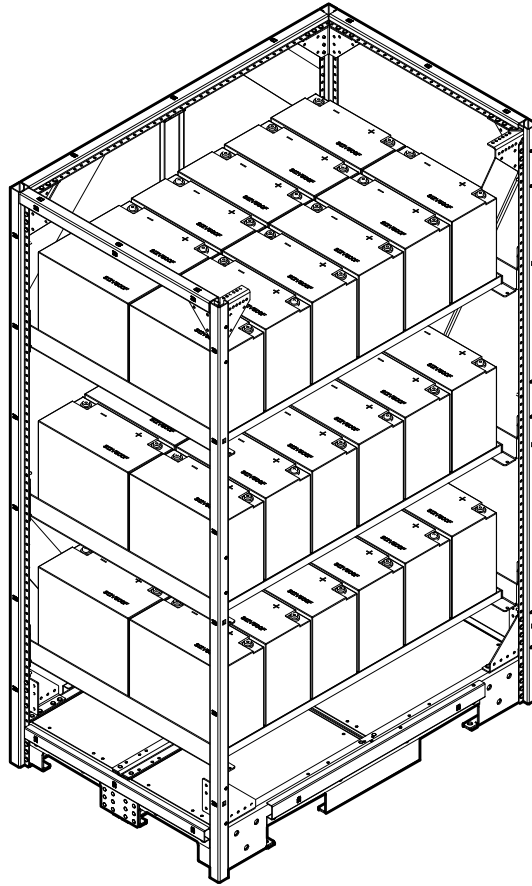
**Failure to follow these instructions will result in death or serious injury.**

**NOTE:** A minimum clearance of 150 mm (5.90 in) is required between the top of the battery cells and the next shelf.

#### **26 Inch Battery Cabinet**



### 48 Inch Battery Cabinet



1. Place the battery cells on each shelf and interconnect the batteries.
2. Interconnect all the battery assemblies from each shelf and connect the complete battery assembly to the battery circuit breaker.







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