

Easy UPS 3M

Battery Breaker Box

Installation

E3MBBB60K80H, E3MBBB100K200H

09/2019



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Important Safety Instructions — SAVE THESE INSTRUCTIONS

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



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



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

DANGER

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

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

WARNING

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

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

CAUTION

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

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

NOTICE

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

Failure to follow these instructions can result in equipment damage.

Please Note

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

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

Electromagnetic Compatibility

NOTICE

RISK OF ELECTROMAGNETIC DISTURBANCE

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

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

Failure to follow these instructions can result in equipment damage.

Safety Precautions

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Read all instructions in the installation manual before installing or working on this product.

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 product 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.

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 product in a temperature controlled indoor environment free of conductive contaminants and humidity.
- Install the product 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 product 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 product and do not cover the ventilation openings when the product is in operation.

Failure to follow these instructions can result in equipment damage.

Electrical Safety

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

Battery Safety

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

When replacing batteries, always replace with the same type and number of batteries or battery packs. Refer to the label in the classic battery cabinet for information on batteries in your system.

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

NOTICE

HAZARD OF EQUIPMENT DAMAGE

Refer to the UPS installation manual for detailed specifications for the UPS system.

Failure to follow these instructions can result in equipment damage.

Battery Breaker Specifications

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

This product must only be used with the Easy UPS 3M.

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

NOTE: A maximum of four battery strings can be connected to the battery breaker.

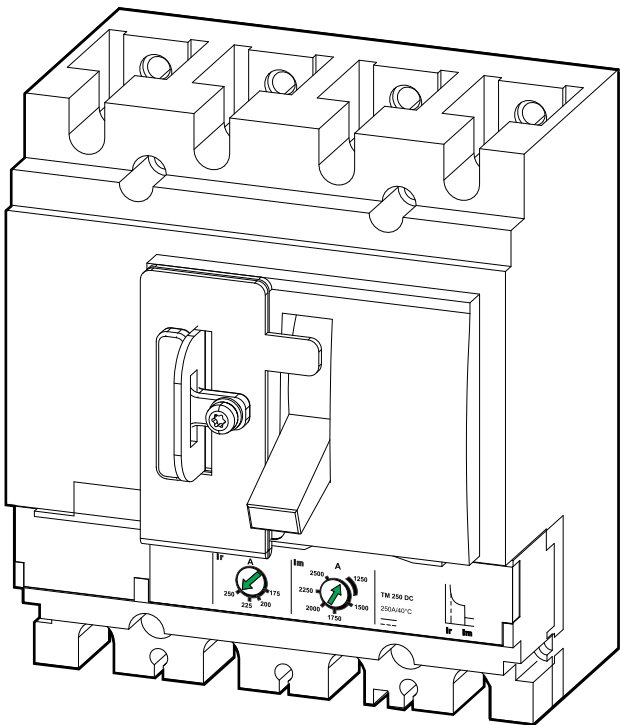
	60–80 kVA	100–200 kVA
Battery breaker	Compact NSX250S DC (LV438990)	Compact NSX630S DC (LV438274)
Maximum configuration	4 hours runtime	4 hours runtime for 40–50 battery blocks 1 hour runtime for 36–38 battery blocks
Battery type	VRLA	
Maximum battery short-circuit level (kA)	20 kA	
Minimum short-circuit current to trip the circuit breaker (A)	1250	1500

Battery Breaker Box Weight and Dimensions

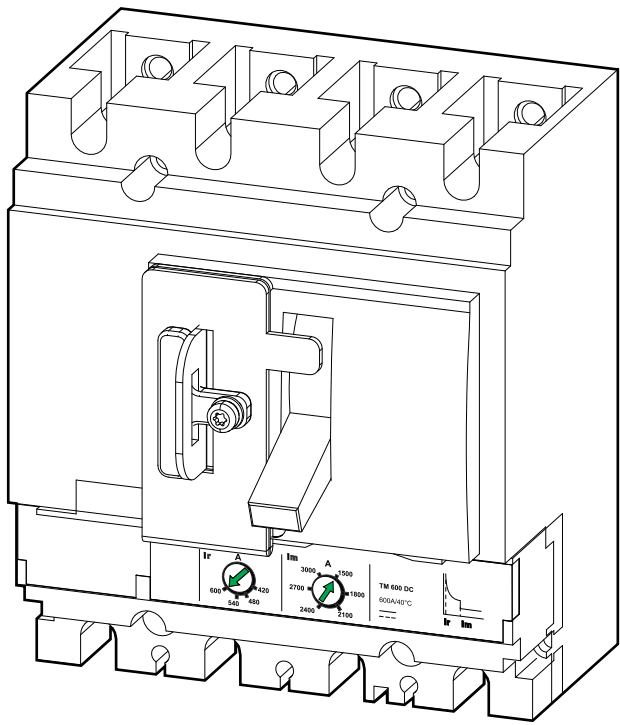
	Weight kg	Height mm	Width mm	Depth mm
Battery breaker box E3MBBB60K80H	25	650	500	280
Battery breaker box E3MBBB100K200H	38	800	500	280

Trip Settings

60-80 kVA Battery Breaker



100-200 kVA Battery Breaker



	UPS rating	60 kVA	80 kVA	100 kVA	120 kVA	160 kVA	200 kVA
(1) 60-80 kVA Battery Breaker	Ir (A)	200	250	—	—	—	—
	Im (A)	1250	1250	—	—	—	—
(2) 60-80 kVA Battery Breakers	Ir (A)	175	175	175	200	250	—
	Im (A)	1250	1250	1250	1250	1250	—
(1) 100-200 kVA Battery Breaker	Ir (A)	—	—	420	420	480	600
	Im (A)	—	—	1500	1500	1500	1500
(2) 100-200 kVA Battery Breakers	Ir (A)	—	—	—	420	420	420
	Im (A)	—	—	—	1500	1500	1500

Recommended Cable Sizes

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

NOTE: Overcurrent protection is to be provided by others.

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

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

- Installation method C

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

Cable Size for Cables Between UPS and Battery Breaker

	Connection	60 kVA	80 kVA	100 kVA	120 kVA	160 kVA	200 kVA
(1) 60-80 kVA Battery Breaker	DC+, N, DC- (mm ²)	50	70	–	–	–	–
	PE (mm ²)	25	35	–	–	–	–
(2) 60-80 kVA Battery Breakers ¹	DC+, N, DC- (mm ²)	50	50	50	50	70	–
	PE (mm ²)	25	25	25	25	35	–
(1) 100-200 kVA Battery Breaker	DC+, N, DC- (mm ²)	–	–	2x70	2x70	2x95	2x120
	PE (mm ²)	–	–	70	70	95	120
(2) 100-200 kVA Battery Breakers ²	DC+, N, DC- (mm ²)	–	–	–	150	150	150
	PE (mm ²)	–	–	–	95	95	95

Cable Size per String for Cables Between Battery Breaker and Battery Bank

Number of Battery Strings	Connection	60 kVA	80 kVA	100 kVA	120 kVA	160 kVA	200 kVA
1 battery string	Batt+, N, Batt- (mm ²)	50	70	2x70	2x70	2x95	2x120
	PE (mm ²)	25	35	70	70	95	120
2 battery strings	Batt+, N, Batt- (mm ²)	25	35	70	70	95	120
	PE (mm ²)	16	16	35	35	50	70
3 battery strings	Batt+, N, Batt- (mm ²)	16	16	50	50	50	70
	PE (mm ²)	16	16	25	25	25	35
4 battery strings	Batt+, N, Batt- (mm ²)	16	16	35	35	35	50
	PE (mm ²)	16	16	16	16	16	25

Torque Specifications

Bolt Size	Torque
M8	20 Nm
M10	30 Nm

Environment

	Operation	Storage
Temperature	0 °C to 40 °C	-25 °C to 55 °C

1. Both battery breakers must be closed when supplying loads higher than 80 kVA
2. Both battery breakers must be closed when supplying loads higher than 120 kVA

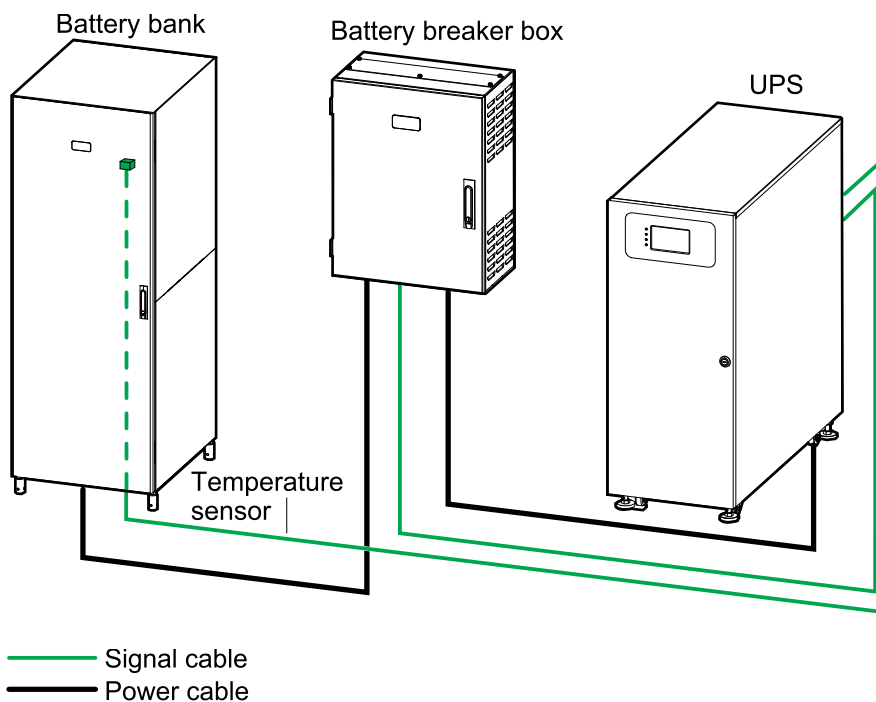
Installation Procedure

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Place the battery breaker box as close to the battery bank as possible to limit the length of unprotected battery cable.

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



1. *Mount the Battery Breaker Box to the Wall, page 14.*
2. *Prepare the Battery Breaker Box for Cables, page 16.*
3. *Connect the Signal Cables, page 19.*
4. *Connect the Power Cables, page 21.*
5. *Final Installation Steps, page 23.*

Mount the Battery Breaker Box to the Wall

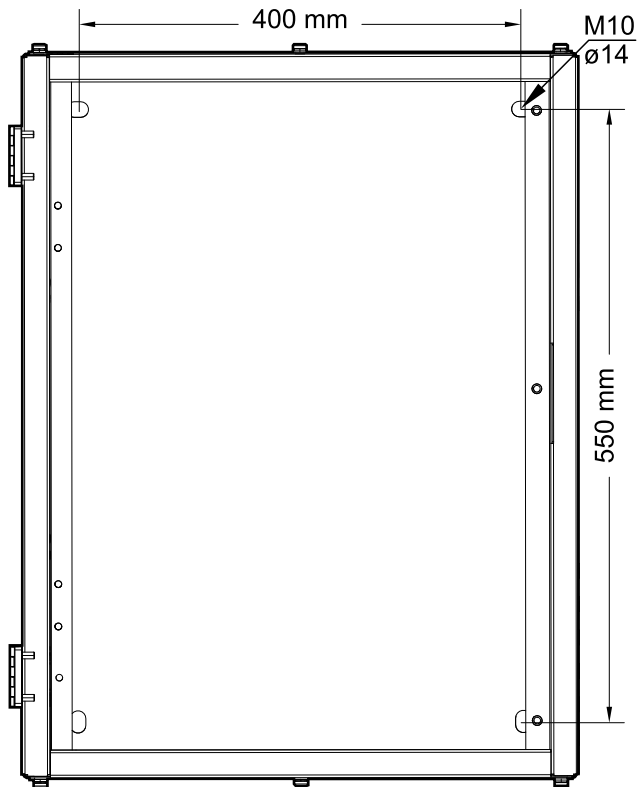
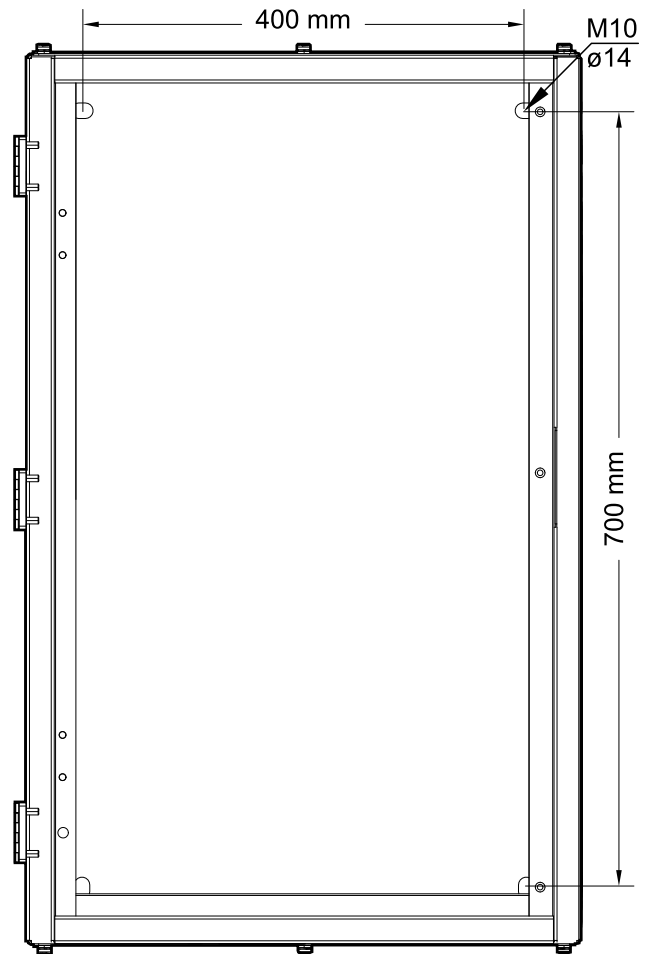
⚠ CAUTION

RISK OF INJURY OR EQUIPMENT DAMAGE

- Mount the battery breaker box to a wall or a rack that is structurally sound and able to support the weight of the unit.
- Use appropriate hardware (not supplied) to mount the battery breaker box to the wall.

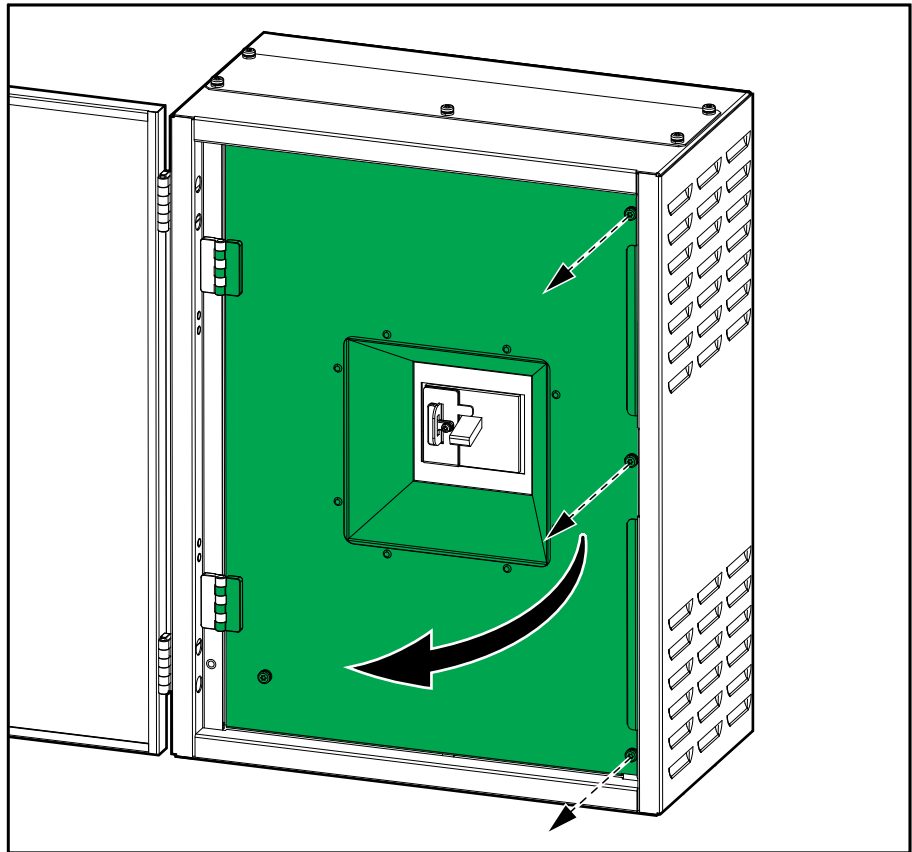
Failure to follow these instructions can result in injury or equipment damage.

NOTE: Four M10 x 30 torx and nuts are supplied for mounting the battery breaker box to a rack.

60–80 kVA Battery Breaker Box**100–200 kVA Battery Breaker Box**

1. Measure and mark the four mounting hole locations on the wall.
2. Drill holes in each of the four marked locations.

3. Loosen the three screws and open the inner door.



4. Mount the battery breaker box to the wall.

Prepare the Battery Breaker Box for Cables

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

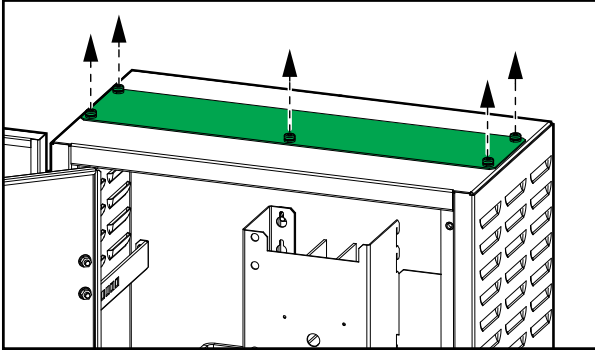
Do not drill or punch holes for cables or grommets with the gland plates installed, and do not drill or punch holes in close proximity to the UPS.

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

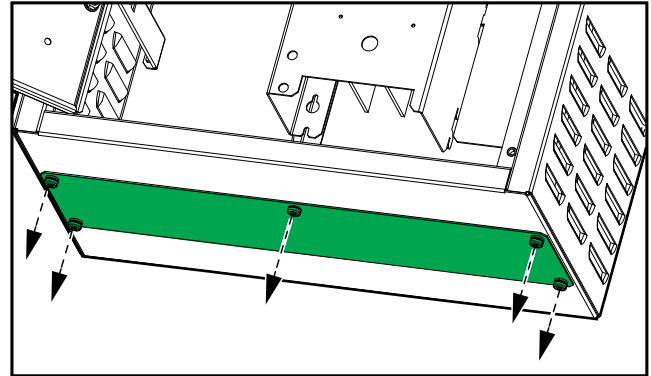
1. Remove the gland plates:

- **For bottom cable entry:** Remove the bottom gland plate.
- **For top cable entry – only available for the 60–80 kVA battery breaker box:** Remove the top gland plate.

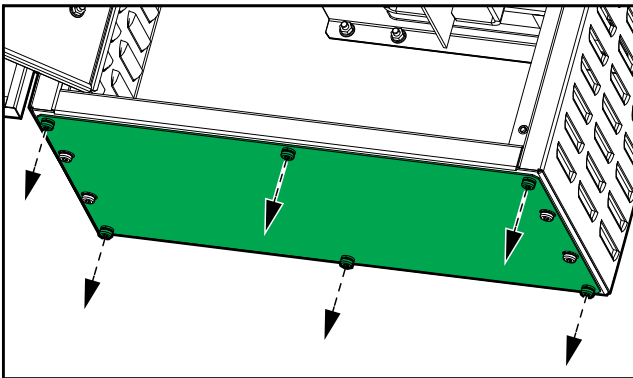
60–80 kVA Battery Breaker Box Top Cable Entry



60–80 kVA Battery Breaker Box Bottom Cable Entry



100–200 kVA Battery Breaker Box Bottom Cable Entry



2. Drill or punch holes for cables or grommets in the gland plate(s).

3. Install grommets (if applicable) and refit the gland plate(s).

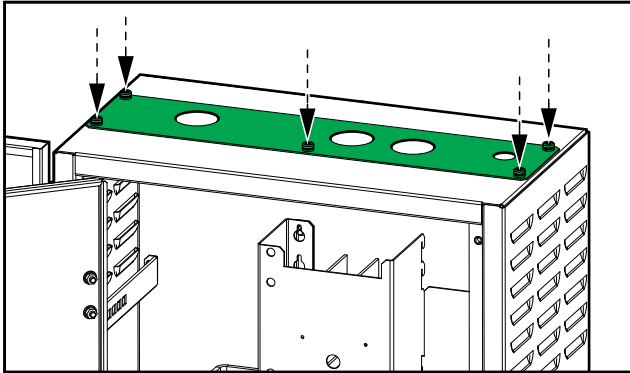
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

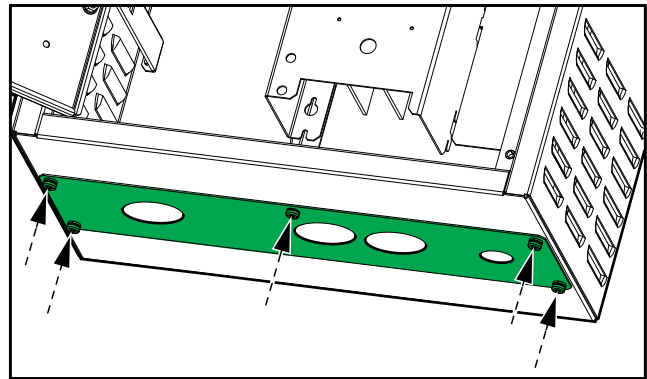
Ensure that there are no sharp edges that can damage the cables.

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

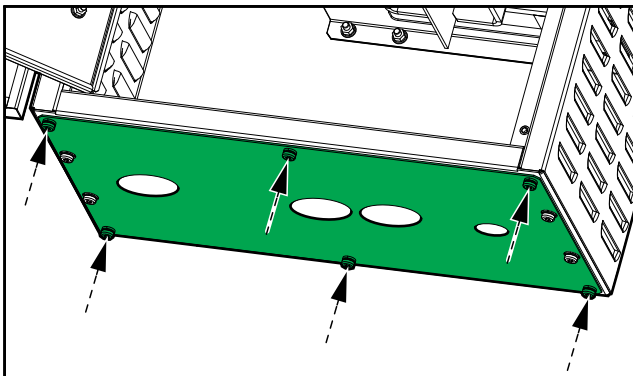
60–80 kVA Battery Breaker Box Top Cable Entry



60–80 kVA Battery Breaker Box Bottom Cable Entry



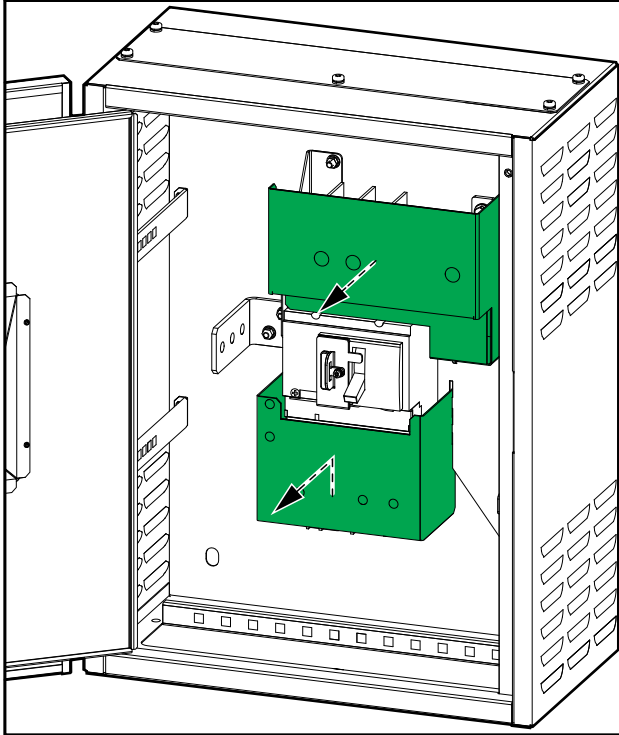
100–200 kVA Battery Breaker Box Bottom Cable Entry



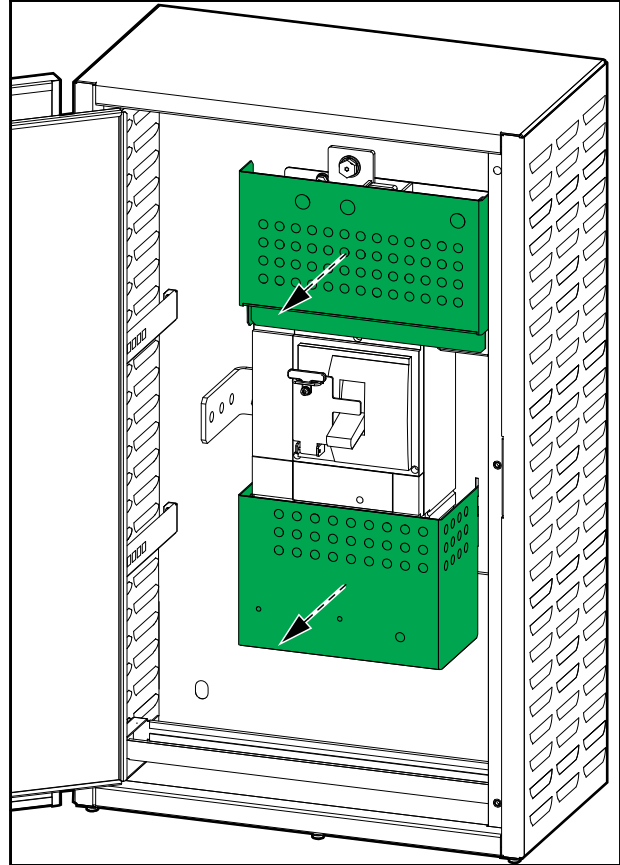
Connect the Signal Cables

1. Loosen the screws of the inner covers and lift the inner covers up and out of the battery breaker box.

60–80 kVA Battery Breaker Box

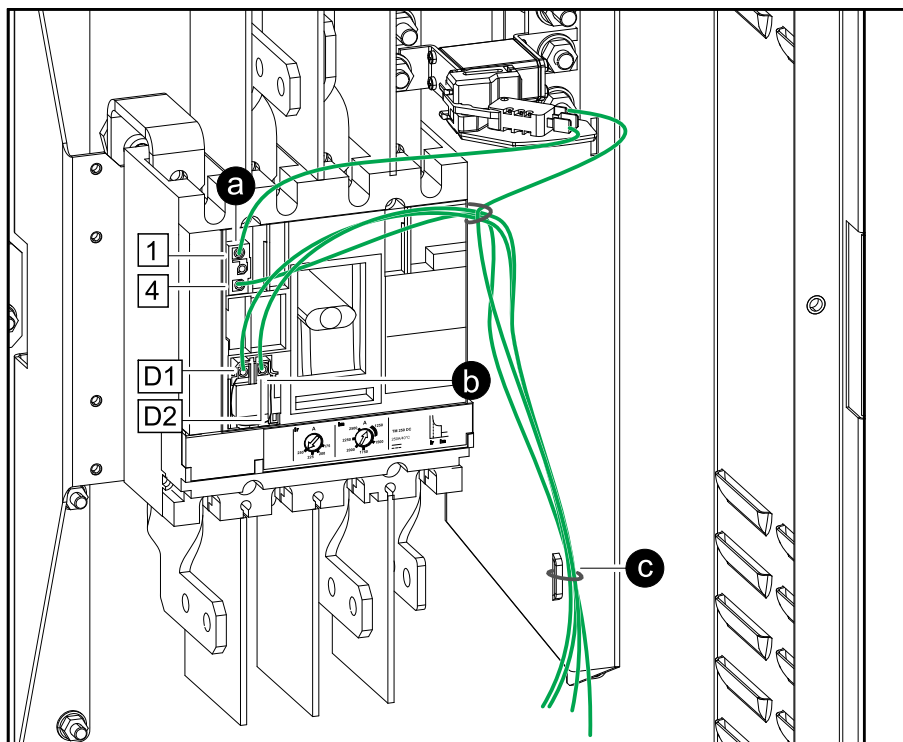


100–200 kVA Battery Breaker Box



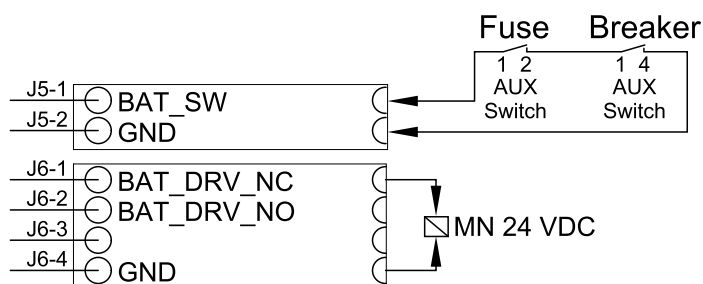
2. Route the signal cables through the bottom of the battery breaker box. For the 60–80 kVA battery breaker box, you can also route the signal cables through the top.

3. Remove the cover from the battery breaker.

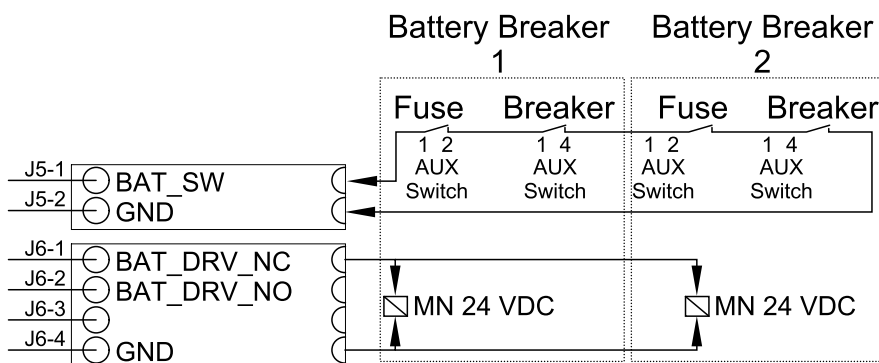


4. Connect the signal cables according to one of the diagrams below:

Signal Cables in Installations with One Battery Breaker Box



Signal Cables in Installations with Two Battery Breaker Boxes



- Connect the AUX switch signal cables from the battery breaker(s) and fuse(s) to J5-1 and J5-2 in the UPS.
 - Connect the undervoltage trip coil signal cables from the battery breaker (s) to J6-1 and J6-4 in the UPS.
5. Fasten the signal cables with cable ties (provided) to the cable relief.

Connect the Power Cables

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Perform a total power off of the UPS system before connecting the power cables to the battery breaker box.

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

For TT and TN systems each stand alone cabinet of the system must be individually connected to the protective earthing terminal in the distribution board that supplies the system.

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

WARNING

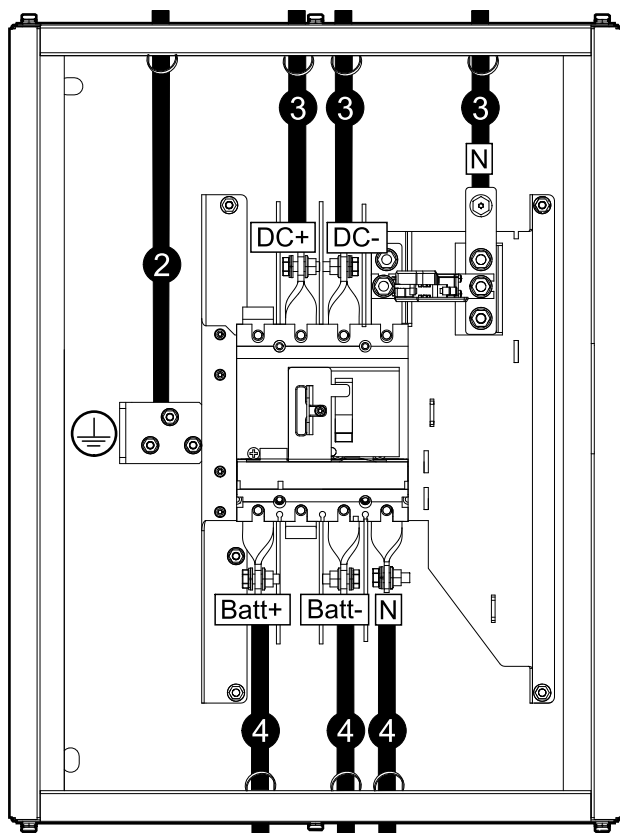
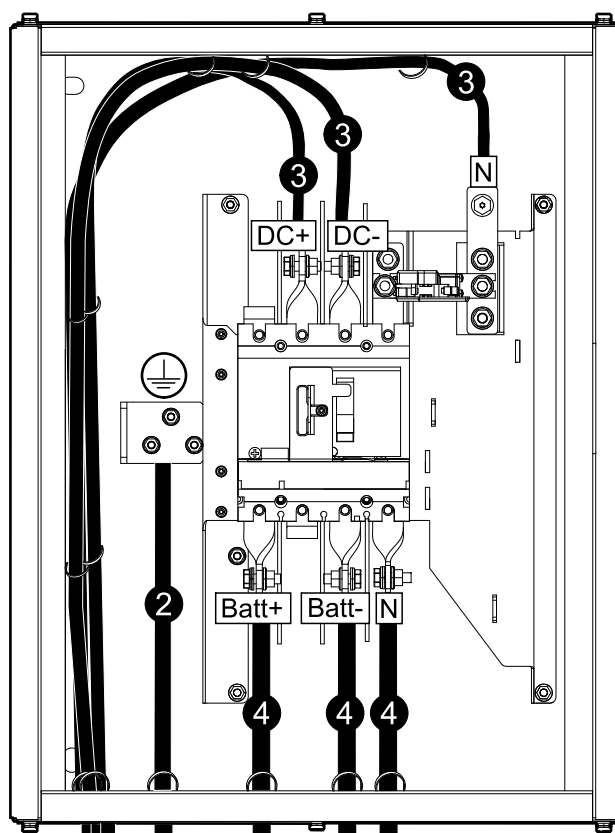
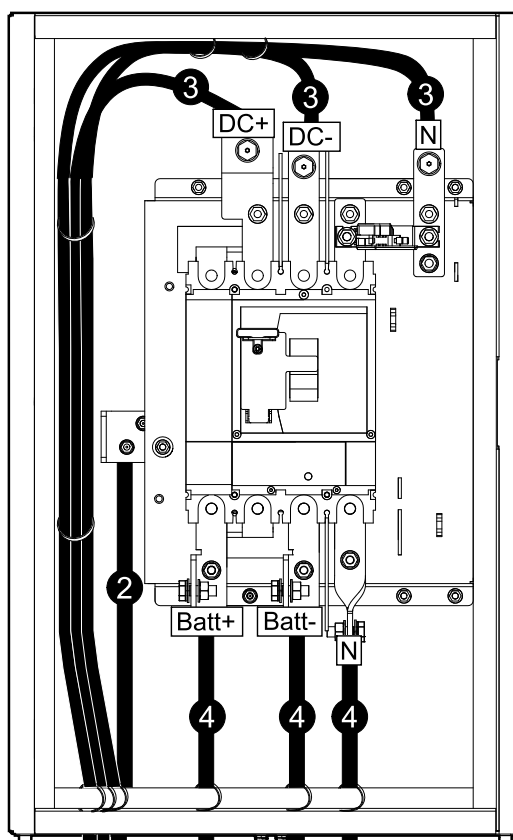
HAZARD OF ARC FLASH

Use the provided M8/M10 bolts and nuts to connect the power cables.

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

1. Lockout/Tagout the battery breaker.

2. Route the PE cables through either the top or bottom of the battery breaker box and connect.

60–80 kVA Battery Breaker Box Top Cable Entry**60–80 kVA Battery Breaker Box Bottom Cable Entry****100–200 kVA Battery Breaker Box**

3. Route the DC cables from the UPS through either the top or bottom of the battery breaker box and connect (DC+, N, DC-).

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Reinstall the inner cover in the top of the battery breaker box before continuing with the installation.

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

4. Route the battery cables from the battery bank through the bottom of the battery breaker box and connect (Batt+, N, Batt-).

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

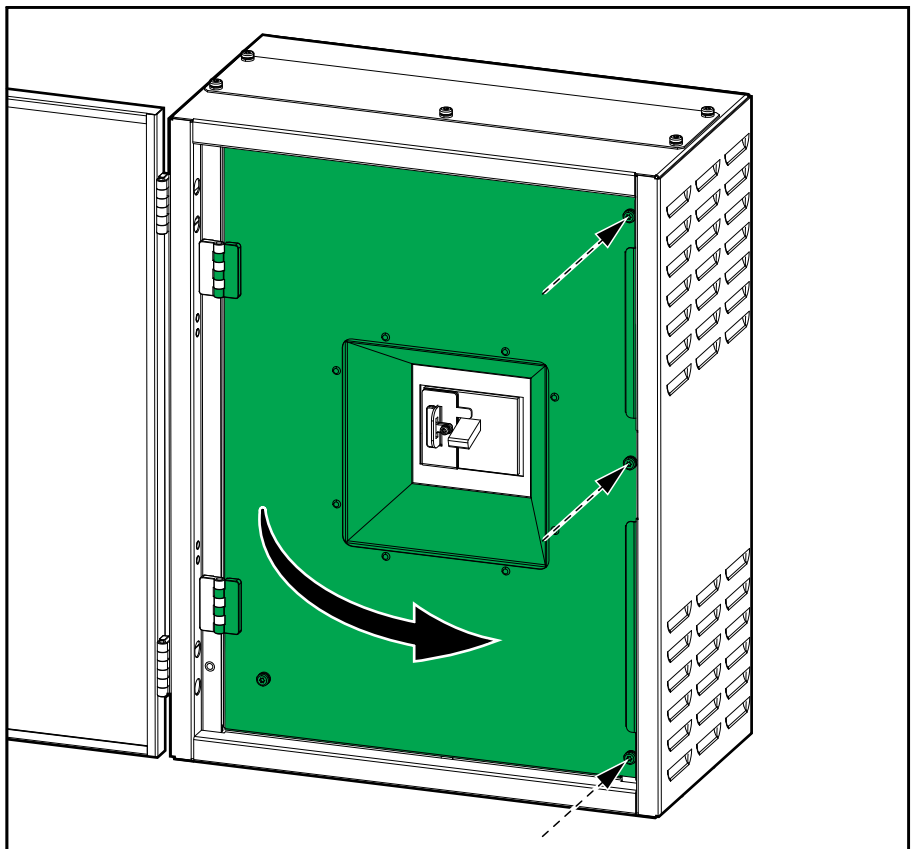
- Reinstall the inner cover in the bottom of the battery breaker box before continuing with the installation.
- Ensure correct polarity.

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

5. Fasten the cables to the cable reliefs in the left side, the top, and the bottom of the battery breaker box.

Final Installation Steps

1. Close the inner and fasten with the three screws.



2. Close the front door of the battery breaker box.

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