

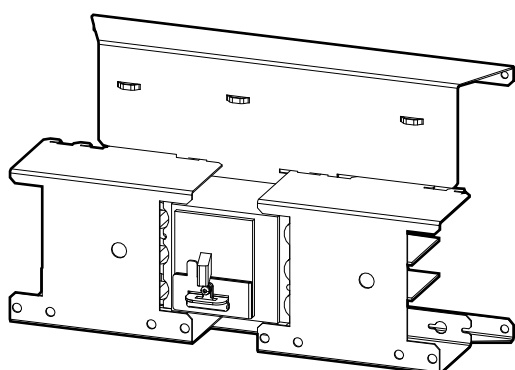
Galaxy VS

Battery Breaker Kit

Installation

GVSBBK20K80H

08/2018



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

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.

Electromagnetic Compatibility

NOTICE

RISK OF ELECTROMAGNETIC DISTURBANCE

This is a product category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

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 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 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.

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

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 Kit GVSBBK20K80H Specifications

⚠ DANGER

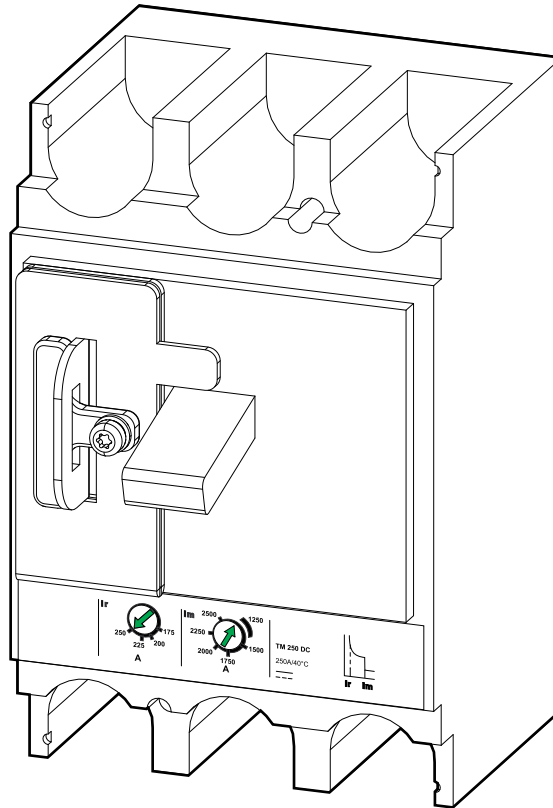
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The battery breaker kit GVSBBK20K80H must only be used with the Galaxy VS UPS.

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

Battery breaker	LV438980
Maximum configuration	4 hour runtime
Battery type	VRLA
Maximum voltage (V)	576
Maximum battery short-circuit level (kA)	35
Minimum short-circuit current to trip circuit breaker (A)	1250

Trip Settings



	20–60 kW	80 kW
Ir (A)	175	225
Im (A)	1250	1250

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 or aluminium 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.

	20–60 kW		80 kW	
	Copper	Aluminum	Copper	Aluminum
Battery +/- (mm ²)	50	70	70	NA
Battery PE (mm ²)	25	35	35	NA

Torque Specifications

Bolt size	Torque
M4	1.7 Nm (1.25 lb-ft)
M6	5 Nm (3.69 lb-ft)
M8	17.5 Nm (12.91 lb-ft)
M10	30 Nm (22 lb-ft)

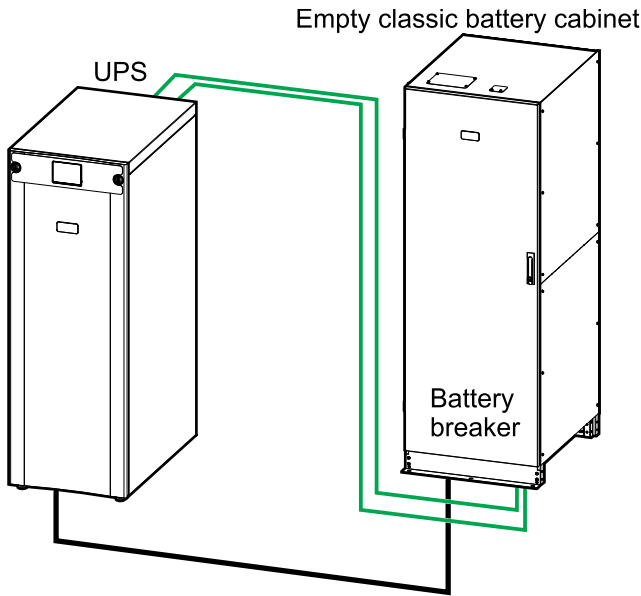
Environment

	Operation	Storage
Temperature	0 °C to 40 °C (32 °F to 104 °F)	-25 °C to 55 °C (-13 °F to 131 °F)

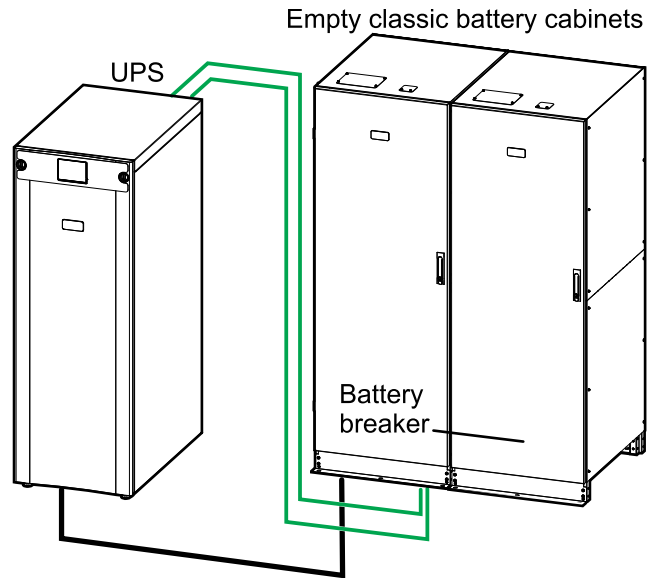
Installation Procedure

NOTE: The illustrations in this manual shows installation in a 700 mm empty battery cabinet. The battery breaker kit can also be installed in a 1100 mm empty battery cabinet or a grounded metal box.

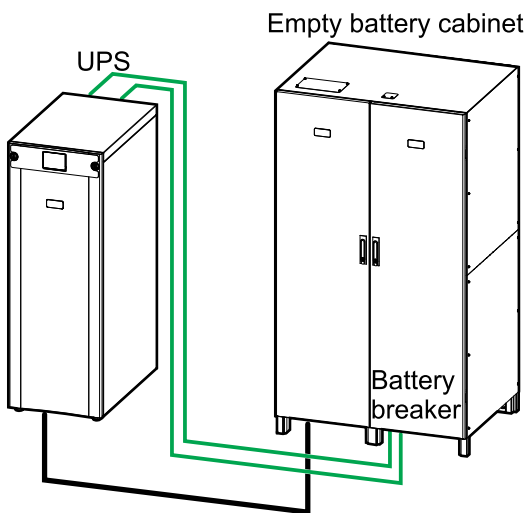
Overview of Cables for Installations with One 700 mm Empty Battery Cabinet (GVEBC7)



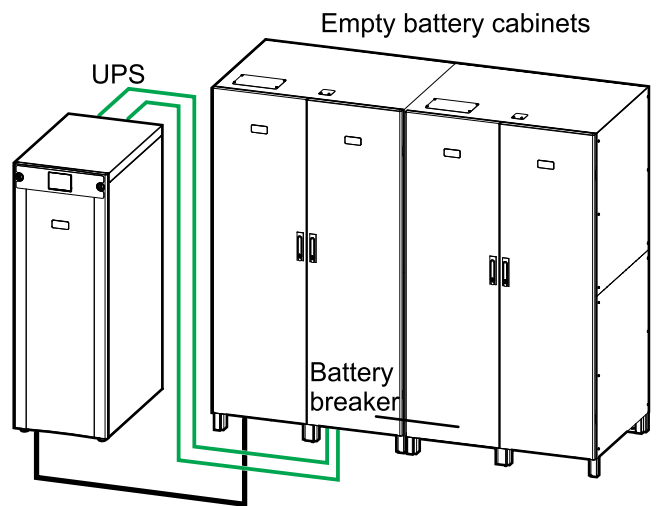
Overview of Cables for Installations with Two 700 mm Empty Battery Cabinets (GVEBC7)



Overview of Cables for Installations with One 1100 mm Empty Battery Cabinet (GVEBC11)



Overview of Cables for Installations with Two 1100 mm Empty Battery Cabinets (GVEBC11)



— Signal cable
— Power cable

NOTE: The distance between the battery bank and the UPS must not exceed 200 m. Contact Schneider Electric for installations with a longer distance.

1. Mount the battery breaker kit. Follow one of the procedures:
 - *Mount the Battery Breaker Kit in a Grounded Metal Box, page 14,*
 - *Mount the Battery Breaker in the Empty Battery Cabinet – Bottom Cable Entry, page 15, or*
 - *Mount the Battery Breaker in the Empty Battery Cabinet – Top Cable Entry, page 15.*
2. *Connect the Signal Cables, page 16.*
3. Connect the power cables, follow one of the procedures:
 - *Connect the Power Cables in a Bottom Cable Entry System, page 19, or*
 - *Connect the Power Cables in a Top Cable Entry System, page 21.*

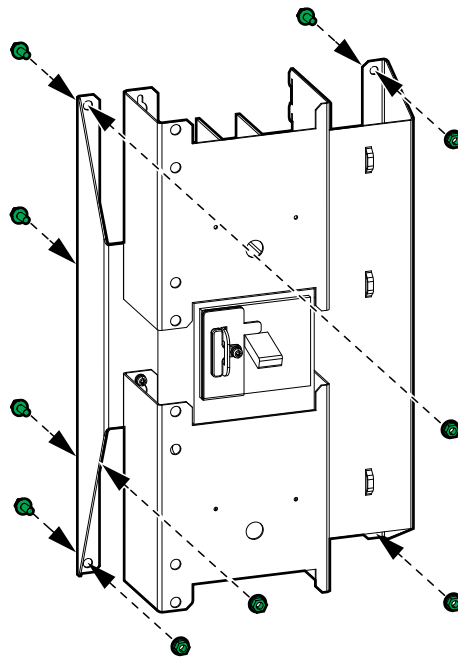
Mount the Battery Breaker Kit in a Grounded Metal Box

⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

Mount the battery breaker in a grounded metal box.

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

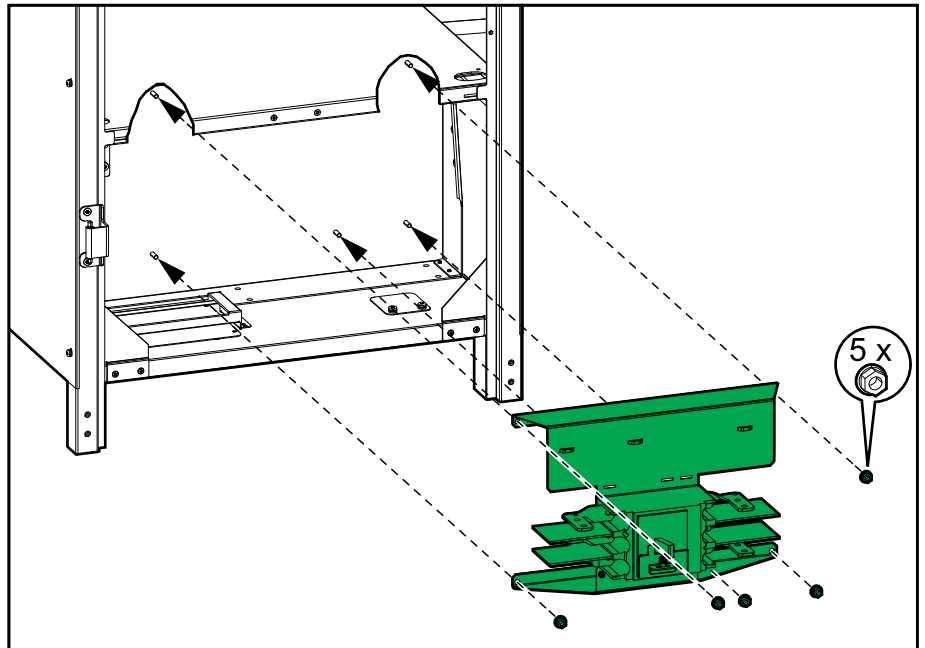


1. Measure and mark the holes for mounting the battery breaker kit in the metal box.
2. Drill holes in each of the marked locations.
3. Mount the battery breaker kit in the metal box.

Mount the Battery Breaker in the Empty Battery Cabinet – Bottom Cable Entry

1. Install the battery breaker kit in the bottom of the empty battery cabinet.

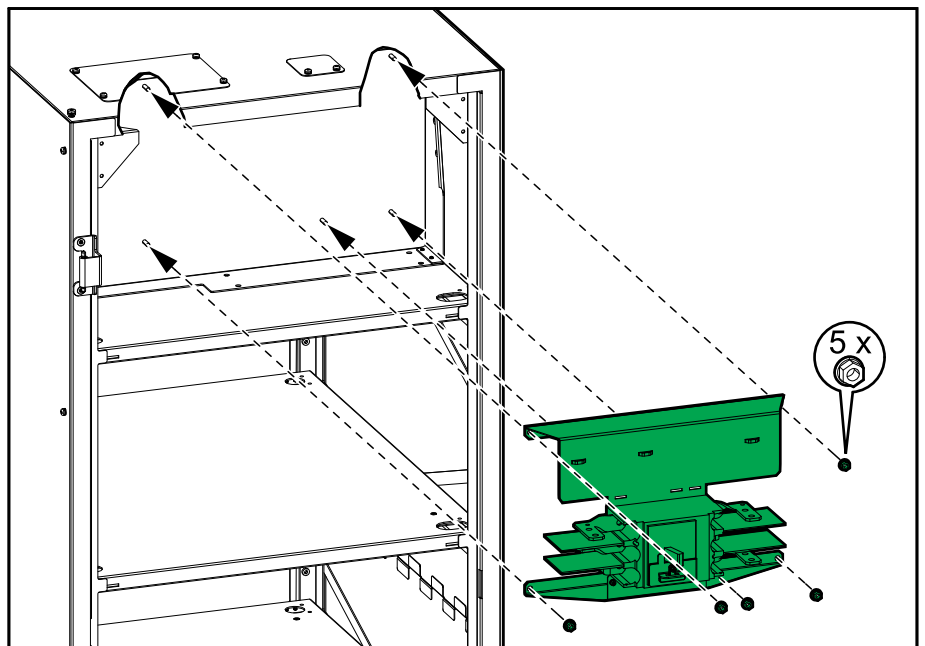
Front View of the Empty Battery Cabinet



Mount the Battery Breaker in the Empty Battery Cabinet – Top Cable Entry

1. Install the battery breaker kit in the top of the empty battery cabinet.

Front View of the Empty Battery Cabinet



Connect the Signal Cables

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

NOTE: The illustrations in this procedure show a bottom cable entry system. The procedure is the same for a top cable entry system.

1. Install the temperature sensor provided with the UPS.

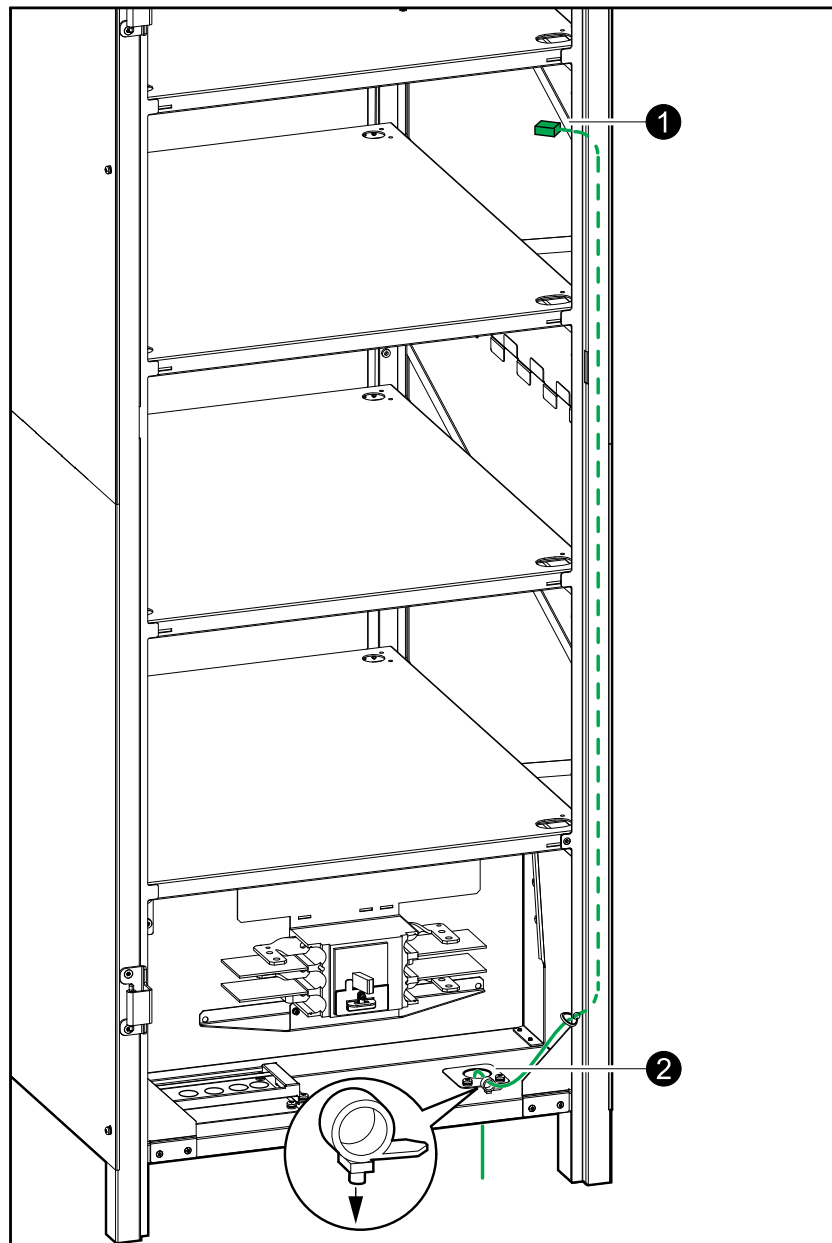
⚠ WARNING

HAZARD OF FIRE

Position the temperature sensor as described to ensure correct temperature measurements.

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

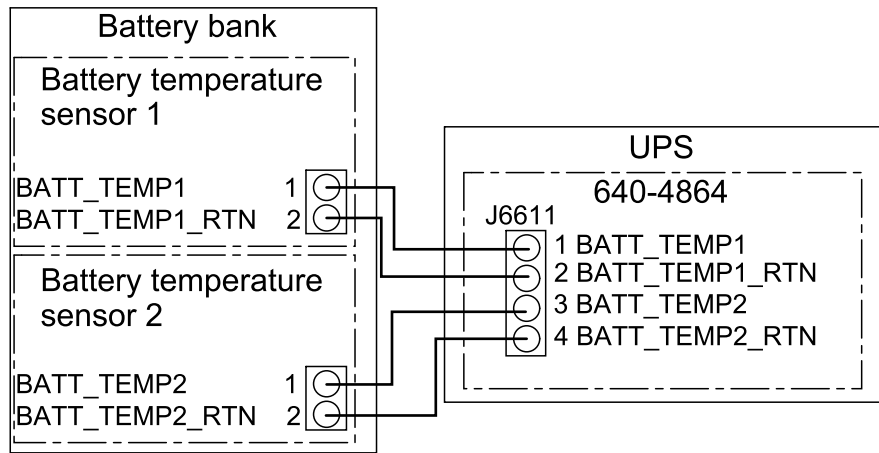
Front View of the Empty Battery Cabinet



- Route the battery temperature sensor cables through the top or the bottom of the empty battery cabinet(s) to the UPS and connect as shown.

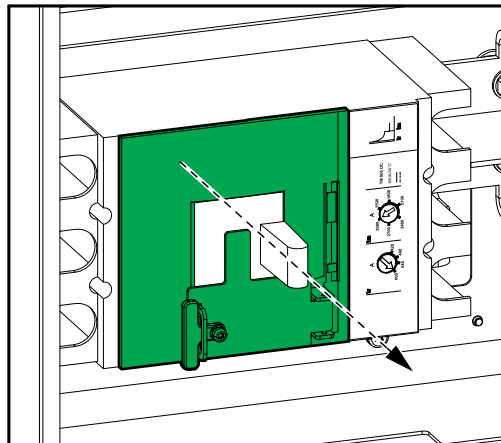
NOTE: One temperature sensor is provided with the UPS. Contact Schneider Electric if you want to buy an additional temperature sensor.

NOTE: The battery temperature sensor cables are considered Class 2/SELV. Class 2/SELV circuits must be isolated from the primary circuitry.



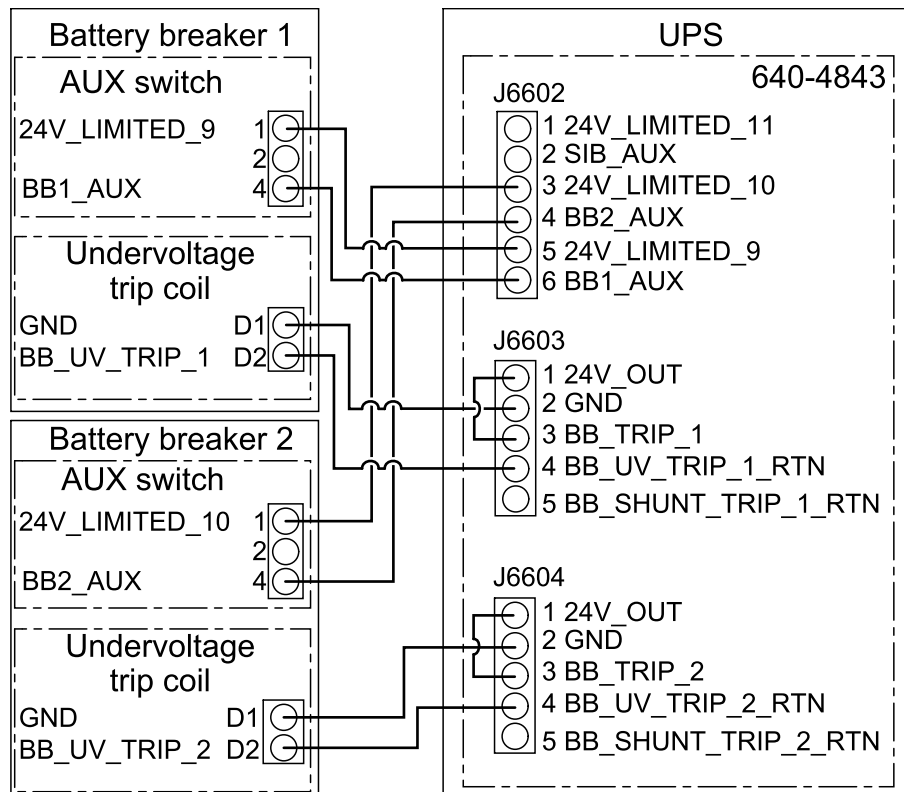
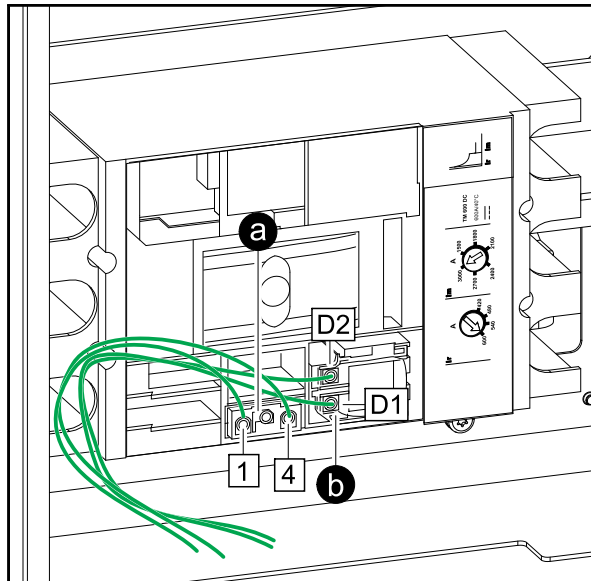
- Route the signal cables through the top or the bottom of the empty battery cabinet to the battery breaker.
- Remove the cover on the battery breaker.

Front View of the Battery Breaker



5. Connect the signal cables:
 - a. Connect the signal cables to the AUX switch.
 - b. Connect the signal cables to the undervoltage trip coil.

Front View of the Battery Breaker



6. Reinstall the breaker cover on the battery breaker.

Connect the Power Cables in a Bottom Cable Entry System

⚠ DANGER

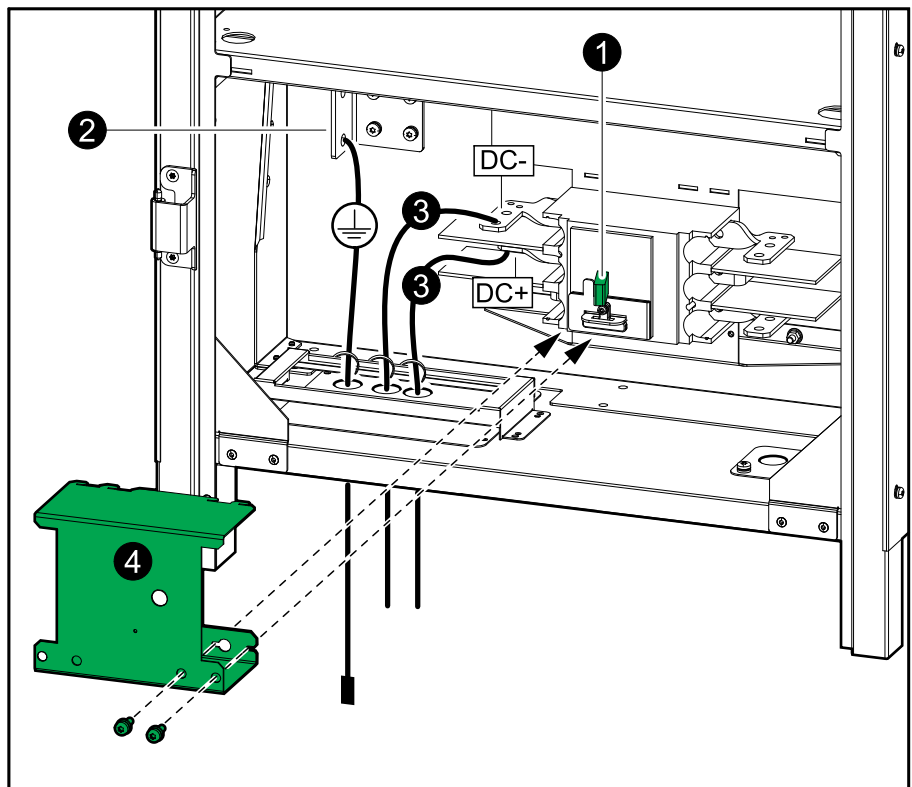
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

1. Lockout/Tagout the battery breaker in the OFF position.

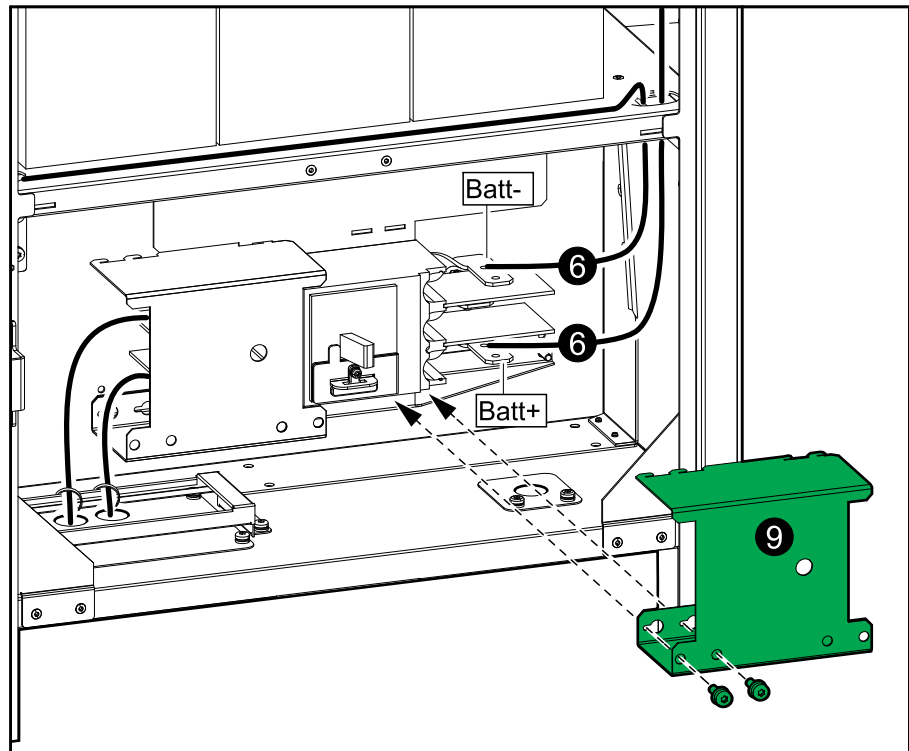
Front View of the Empty Battery Cabinet



2. Connect the PE cable.
3. Connect the DC cables (DC+, DC-) from the UPS.
4. Install the protection cover over the terminals on the left side of the battery breaker.
5. Install the batteries as described in the installation manual supplied with the empty battery cabinet.

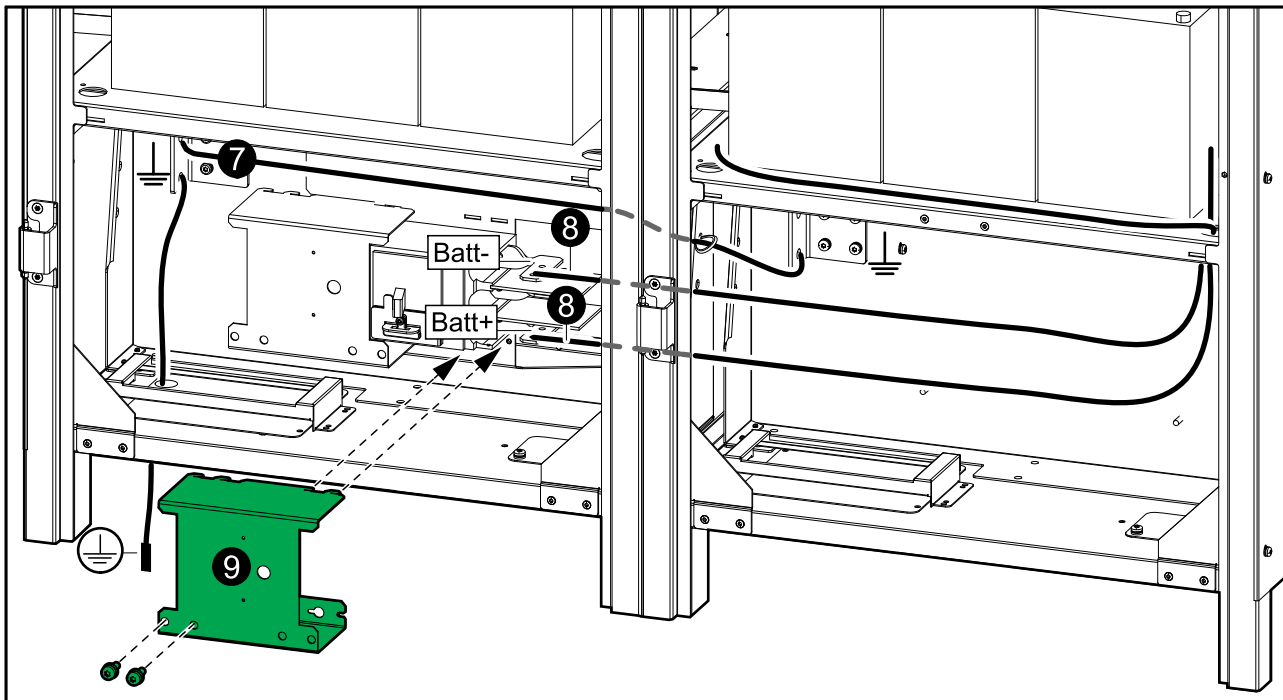
6. Connect the battery cables (Batt+, Batt-) from the batteries in the empty battery cabinet 1 to the battery breaker.

Front View of Empty Battery Cabinet 1



7. **Only for installation with two empty battery cabinets:** Connect the ground cable from empty battery cabinet 1 to empty battery cabinet 2.

Front View of Empty Battery Cabinet 1 and 2



8. **Only for installation with two empty battery cabinets:** Connect the battery cables (Batt+,Batt-) from the batteries in empty battery cabinet 2 to the battery breaker.
9. Install the protection cover over the terminals on the right side of the battery breaker.

Connect the Power Cables in a Top Cable Entry System

⚠ DANGER

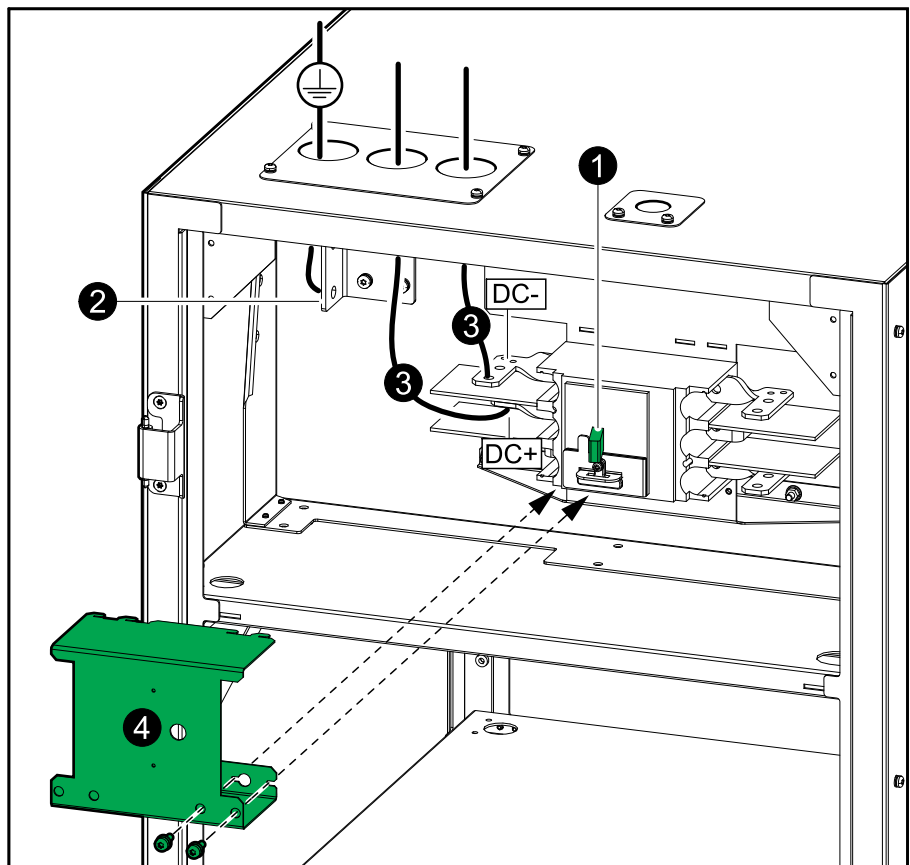
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

1. Lockout/Tagout the battery breaker in the OFF position.

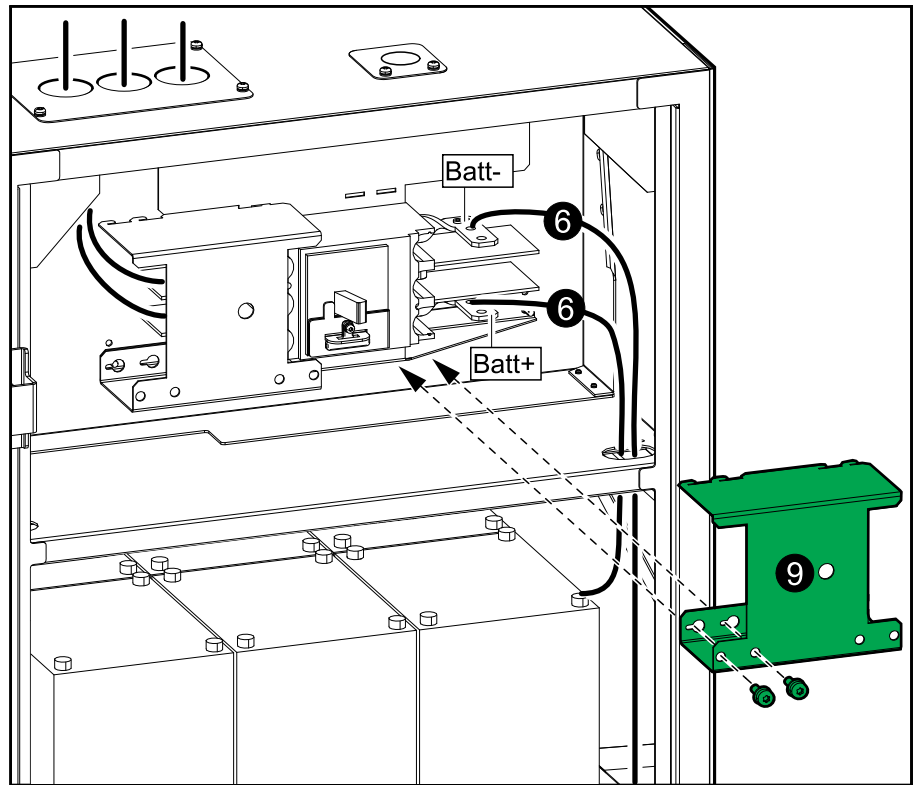
Front View of the Empty Battery Cabinet



2. Connect the PE cable.
3. Connect the DC cables (DC+, DC-) from the UPS.
4. Install the protection cover over the terminals on the left side of the battery breaker.
5. Install the batteries as described in the installation manual supplied with the empty battery cabinet.

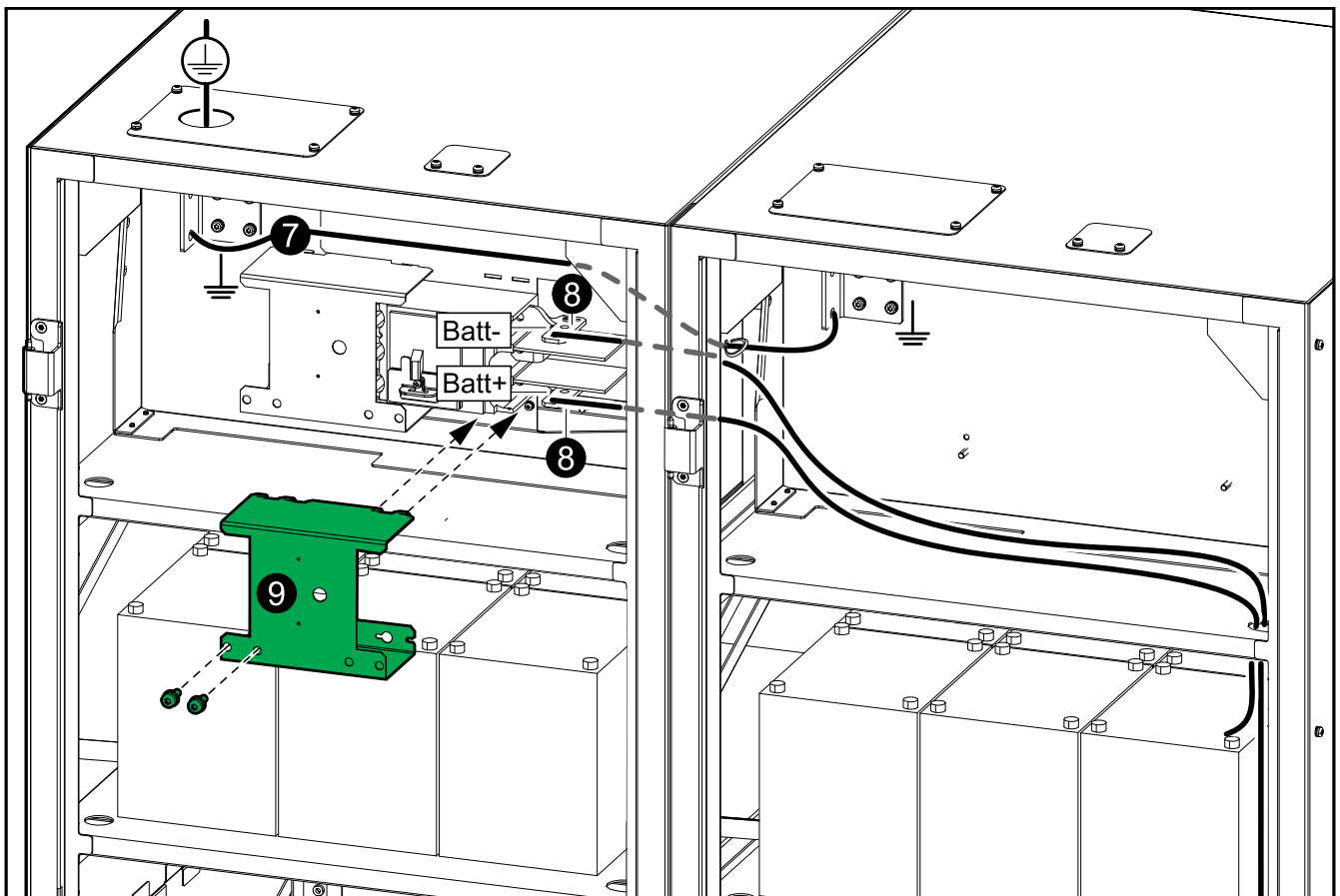
6. Connect the battery cables (Batt+, Batt-) from the batteries in the empty battery cabinet 1 to the battery breaker.

Front View of Empty Battery Cabinet 1



7. **Only for installation with two empty battery cabinets:** Connect the ground cable from empty battery cabinet 1 to empty battery cabinet 2.

Front View of Empty Battery Cabinet 1 and 2



8. **Only for installation with two empty battery cabinets:** Connect the battery cables (Batt+,Batt-) from the batteries in empty battery cabinet 2 to the battery breaker.
9. Install the protection cover over the terminals on the right side of the battery breaker.

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990-5947A-001