

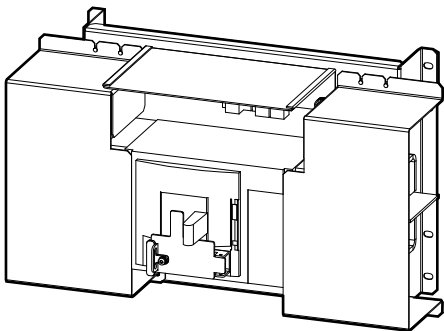
Galaxy VM

Battery Breaker Kit

Installation

GVMBBK630EL

08/2018



Legal Information

The Schneider Electric brand and any registered trademarks of Schneider Electric Industries SAS referred to in this guide are the sole property of Schneider Electric SA and its subsidiaries. They may not be used for any purpose without the owner's permission, given in writing. This guide and its content are protected, within the meaning of the French intellectual property code (Code de la propriété intellectuelle français, referred to hereafter as "the Code"), under the laws of copyright covering texts, drawings and models, as well as by trademark law. You agree not to reproduce, other than for your own personal, noncommercial use as defined in the Code, all or part of this guide on any medium whatsoever without Schneider Electric's permission, given in writing. You also agree not to establish any hypertext links to this guide or its content. Schneider Electric does not grant any right or license for the personal and noncommercial use of the guide or its content, except for a non-exclusive license to consult it on an "as is" basis, at your own risk. All other rights are reserved.

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.

Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS	5
Electromagnetic Compatibility	6
Safety Precautions	6
Electrical Safety	8
Battery Safety	9
Specifications	11
Battery Breaker Kit GVMBBK630EL Specifications	11
Recommended Cable Sizes	12
Torque Specifications.....	12
Environment.....	12
Installation Procedure	13
Mount the Battery Breaker Kit in a Grounded Metal Box.....	13
Mount the Battery Breaker in the Empty Battery Cabinet – Bottom Cable Entry	14
Mount the Battery Breaker in the Empty Battery Cabinet – Top Cable Entry	15
Connect the Signal Cables	16
Connect the Power Cables in a Bottom Cable Entry System	18
Connect the Power Cables in a Top Cable Entry System	20

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

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.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Turn off all power supplying the UPS system before working on or inside the equipment.
- Before working on the UPS system, check for hazardous voltage between all terminals including the protective earth.
- The UPS contains an internal energy source. Hazardous voltage can be present even when disconnected from the mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- The UPS must be properly earthed/grounded and due to a high leakage current, the earthing/grounding conductor must be connected first.

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

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

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

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

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to the equipment or is connected to an IT power distribution system, a label must be fitted at the UPS input terminals, and on all primary power isolators installed 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 Kit GVMBBK630EL Specifications

 DANGER

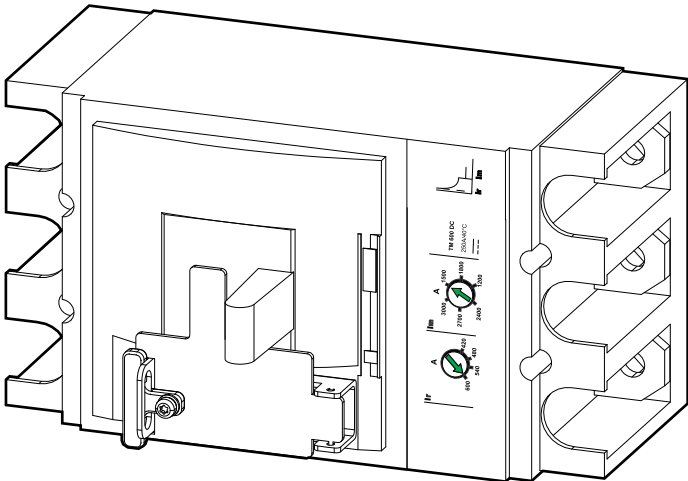
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

The battery breaker kit GVMBBK630EL must only be used with the Galaxy VM UPS.

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

Battery breaker	LV438518 (NSX630S DC MP1 3P). Frame rating: 550 A
Maximum configuration	1 hour runtime for a 200 kVA system
Number of blocks	12 V batteries: 38–42 per battery/string 6 V batteries: 76–84 per battery/string
Battery type	VRLA
Minimum short-circuit current to trip circuit breaker (A)	960
Maximum battery short-circuit level (kA)	35

Trip Settings for Battery Breaker



	160 kVA	200 kVA
Im (A)	Low setting (800 A)	Low setting (800 A)

Recommended Cable Sizes

All wiring must comply with all applicable national and/or electrical codes. The maximum allowable conductor size is 120 mm².

Cable sizes in this manual are based on installation method “C” in table 52–C2 of IEC 60364–5–52 with the following conditions:

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

If the ambient temperature is greater than 30 °C, select larger conductors accordance with the correction factors of the IEC.

160 kVA	200 kVA
2 x 70 mm ²	2 x 95 mm ²

Torque Specifications

Bolt size	Torque
M4	1.7 Nm (1.25 lb-ft)
M5	2.5 Nm (1.84 lb-ft)
M6	5 Nm (3.69 lb-ft)
M8	17.5 Nm (12.91 lb-ft)
M10	30 Nm (22 lb-ft)
M12	50 Nm (36.87 lb-ft)
M14	75 Nm (55.31 lb-ft)

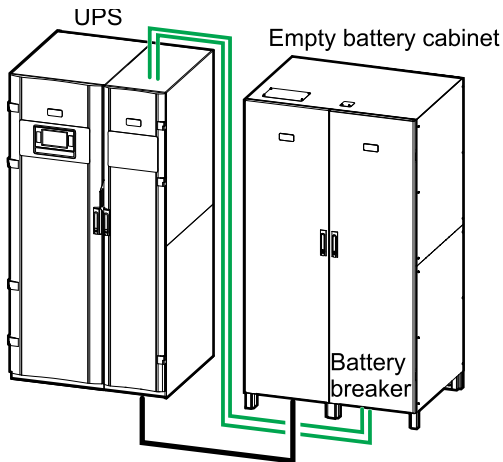
Environment

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

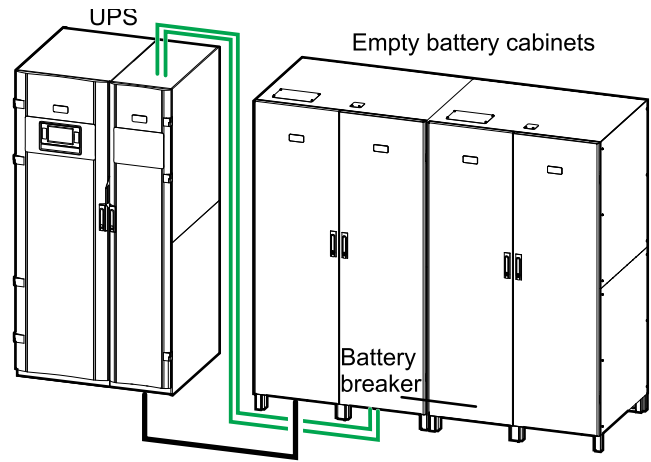
Installation Procedure

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

Overview of Cables for Installations with One Empty Battery Cabinet



Overview of Cables for Installations with Two Empty Battery Cabinets



1. Mount the battery breaker kit. Follow one of the procedures:
 - *Mount the Battery Breaker Kit in a Grounded Metal Box, page 13, or*
 - *Mount the Battery Breaker in the Empty Battery Cabinet – Bottom Cable Entry, page 14, 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 18, or*
 - *Connect the Power Cables in a Top Cable Entry System, page 20.*

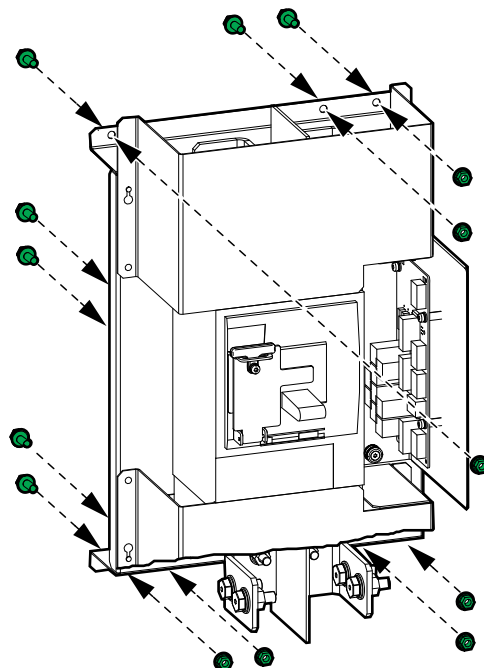
Mount the Battery Breaker Kit in a Grounded Metal Box

⚠ 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.

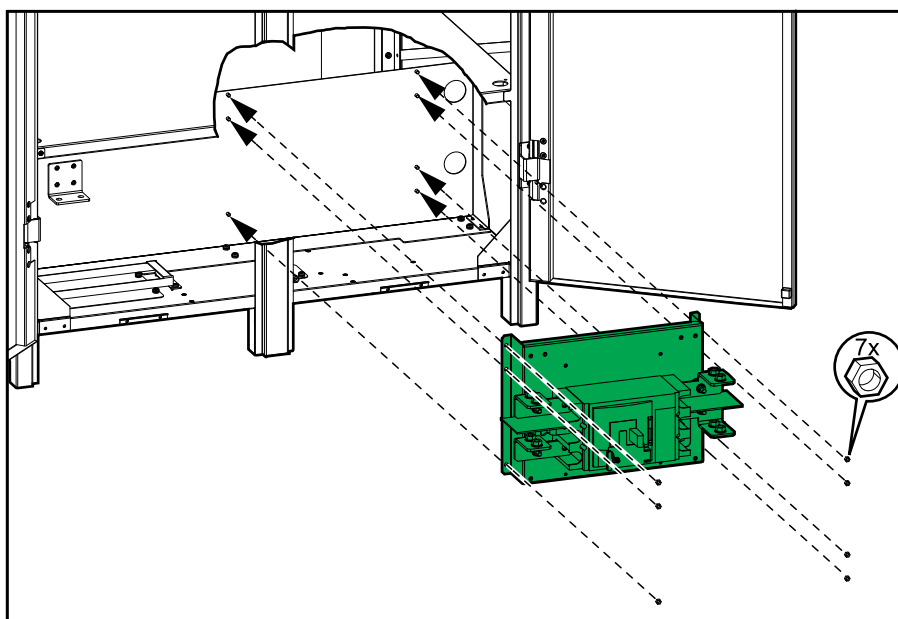


1. Measure and mark the holes for mounting the battery breaker kit in the metal box.
2. Drill holes in each of the marked locations.
3. Mount the battery breaker kit in the metal box.

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

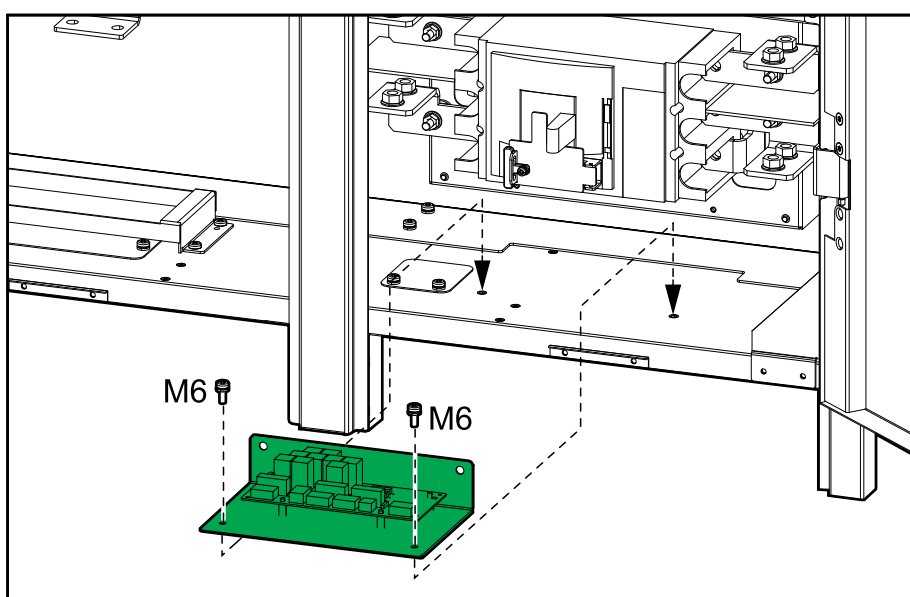
1. Install the battery breaker kit in the bottom of the empty battery cabinet.

Front View of the Empty Battery Cabinet



2. Install the signal board assembly in the bottom of the empty battery cabinet.

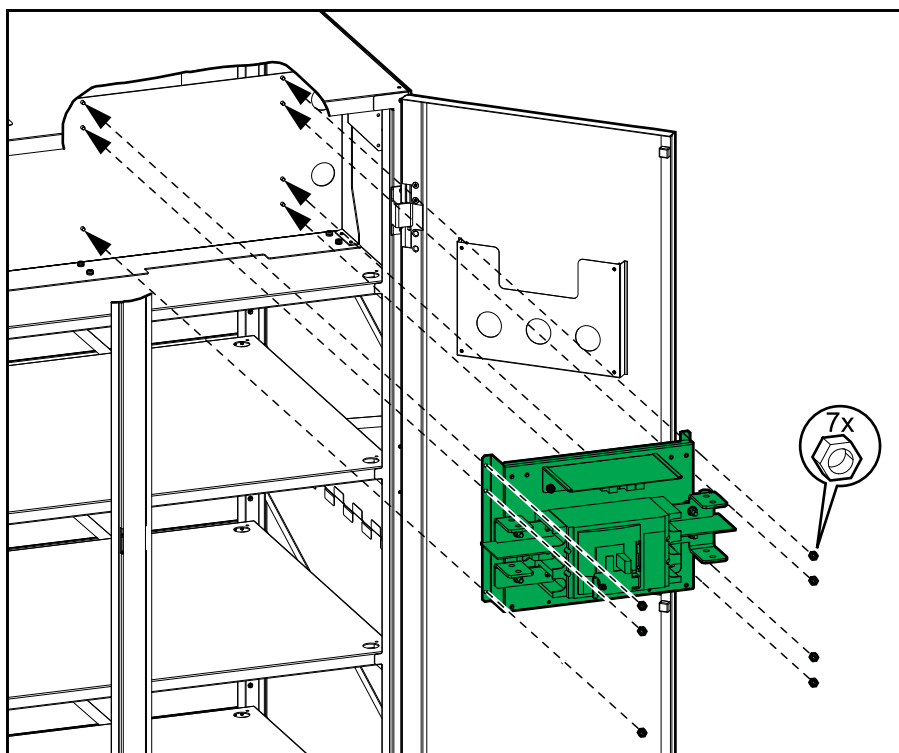
Front View of the Empty Battery Cabinet



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 0M-1160 provided with the UPS.

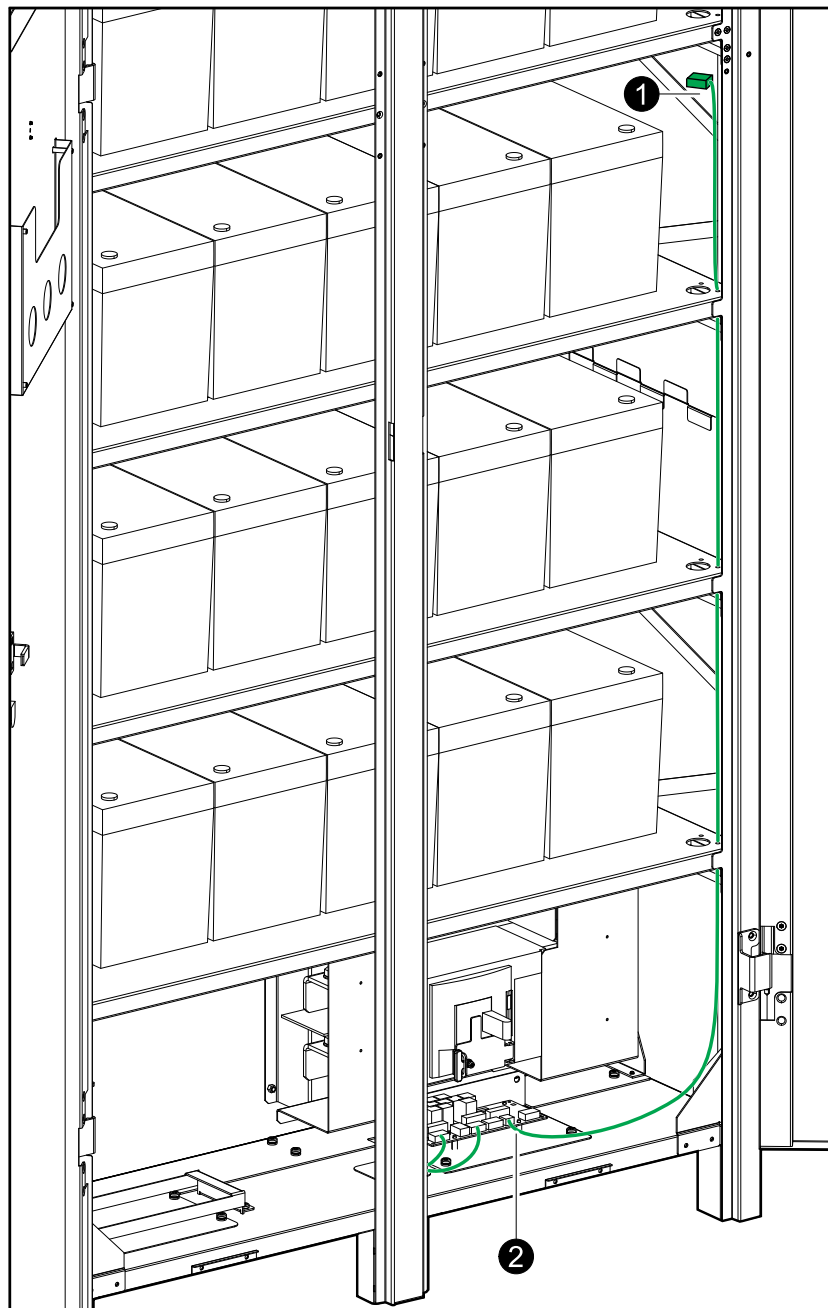
⚠ DANGER

HAZARD OF FIRE

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

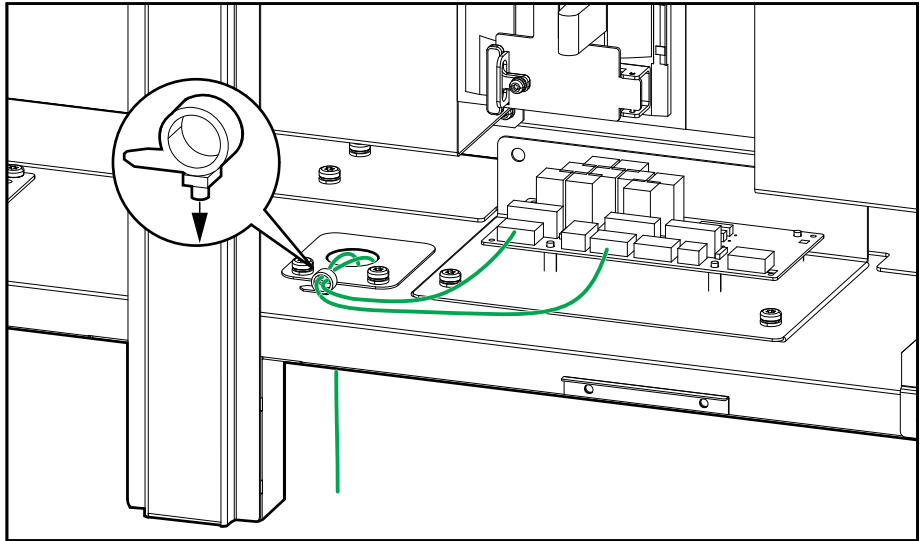
Failure to follow these instructions will result in death or serious injury.

Front View of the Battery Cabinet



2. Connect the temperature sensor to the terminals J3803–3 and J3803–4 on the signal board.
3. Route the signal cables through either the top or the bottom of the battery cabinet.

Front View of the Battery Cabinet



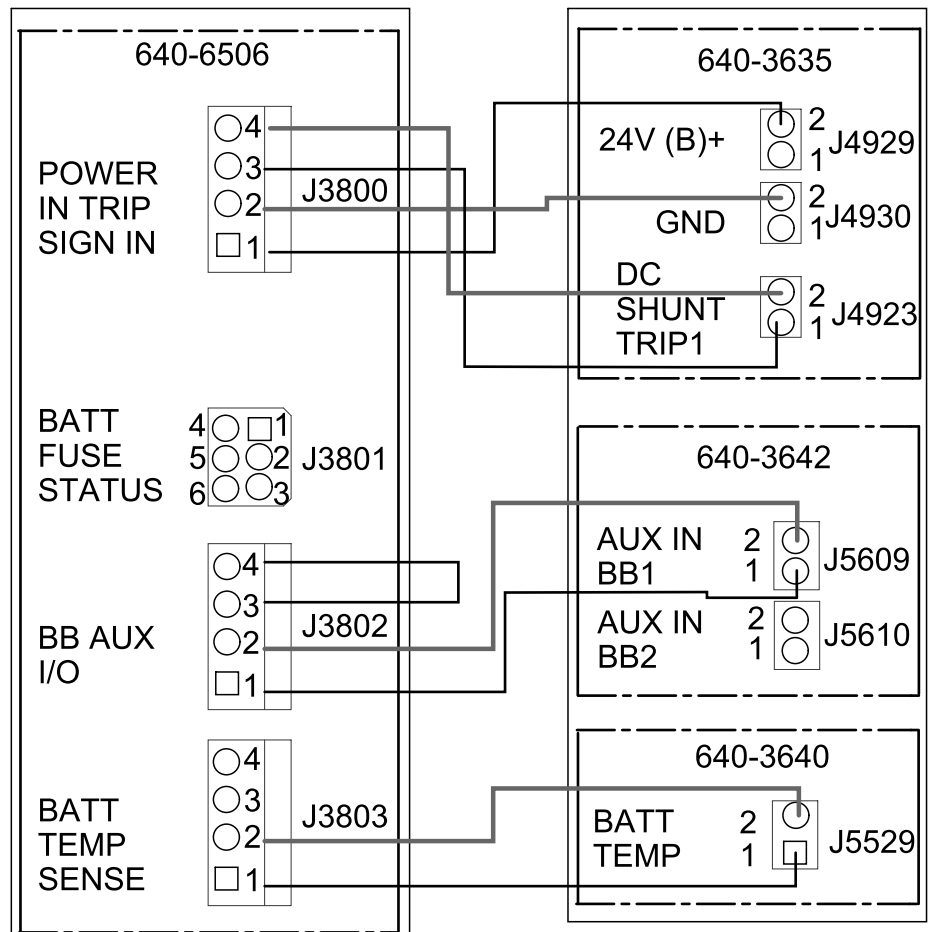
4. Connect the following signal cables between the I/O cabinet and the battery cabinet:

NOTE: All circuits connected must have the same 0 V reference. The signal cables must have a minimum rating of 600 V.

NOTE: Remove the jumper between J5609 pin 1 and 2 before connecting signal cables to J5609.

Classic Battery Cabinet

I/O Cabinet



Connect the Power Cables in a Bottom Cable Entry System

⚠ DANGER

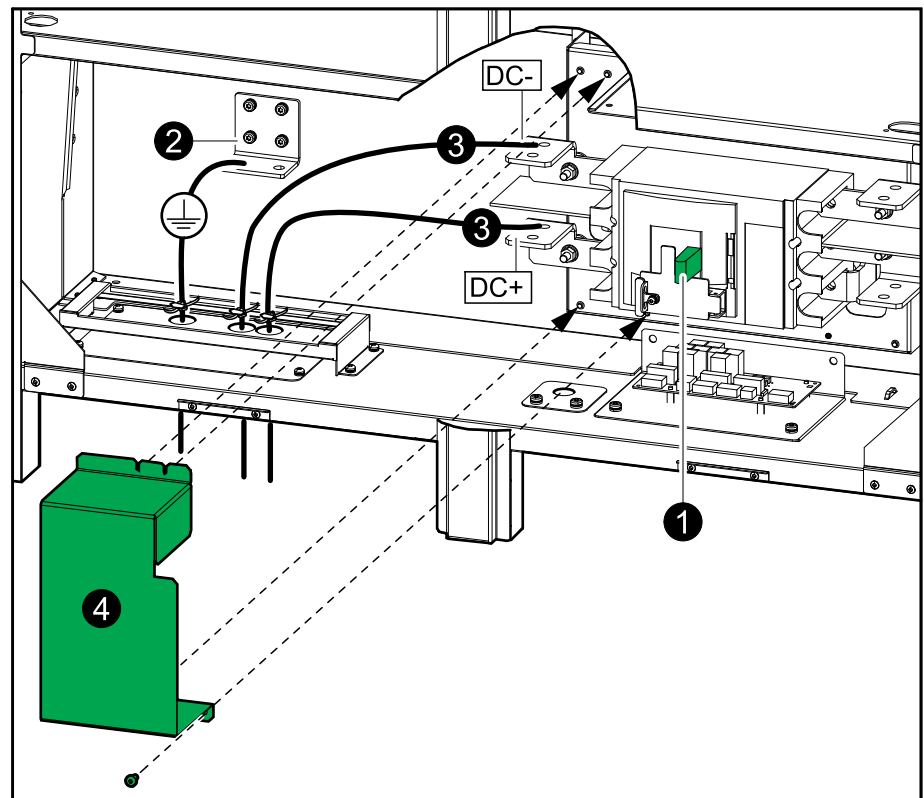
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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 breaker in the OFF position.

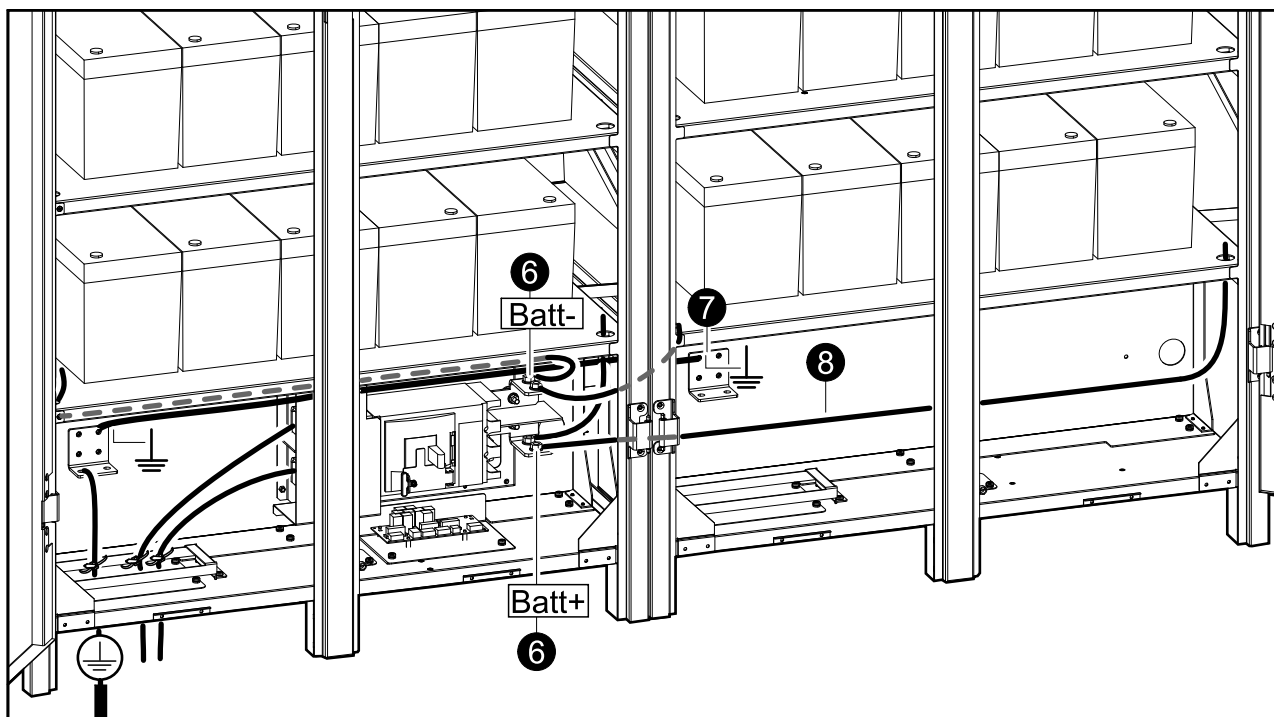
Front View of the Empty Battery Cabinet



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.

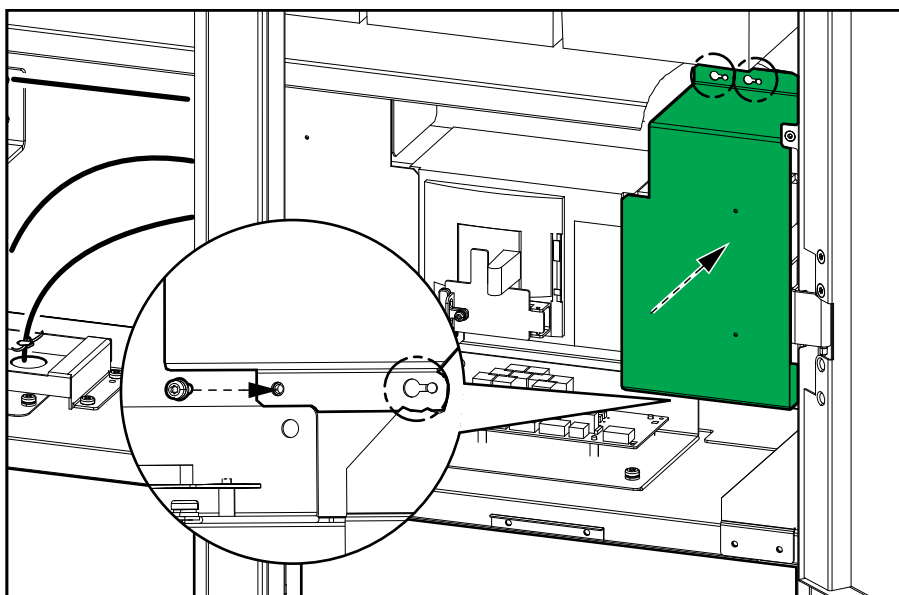
6. Connect the battery cables (Batt+, Batt-) from the batteries in the empty battery cabinet 1 to the battery breaker.

Front View of Two Battery Cabinets



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

Front View of the Battery Cabinet



Connect the Power Cables in a Top Cable Entry System

⚠ DANGER

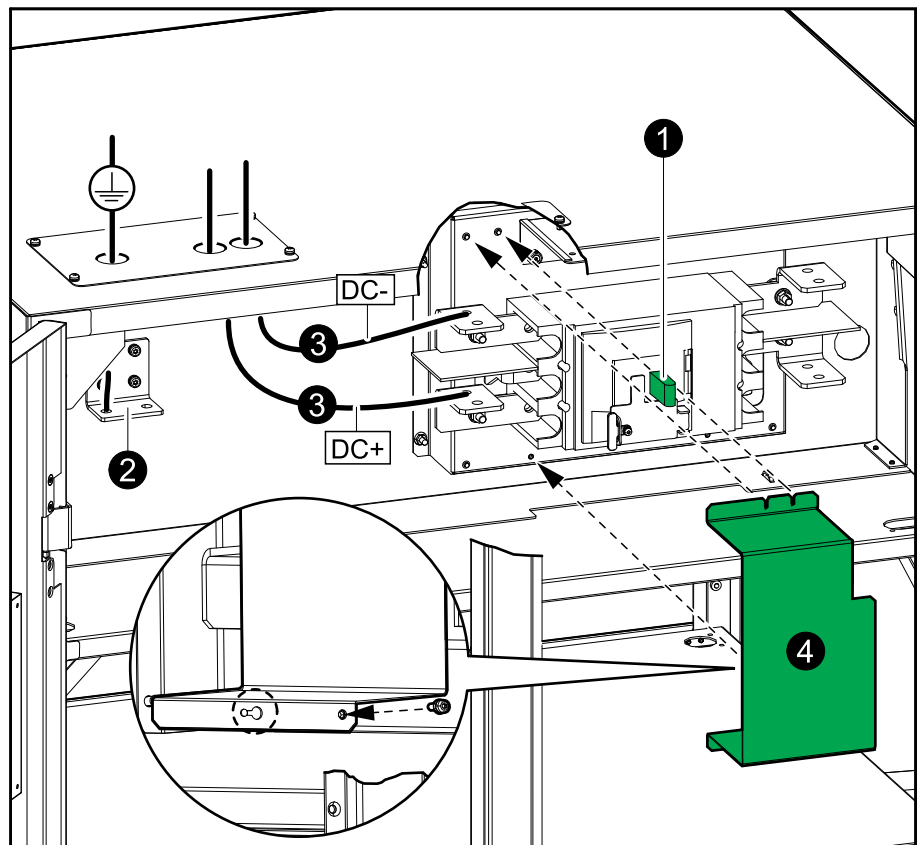
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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 breaker in the OFF position.

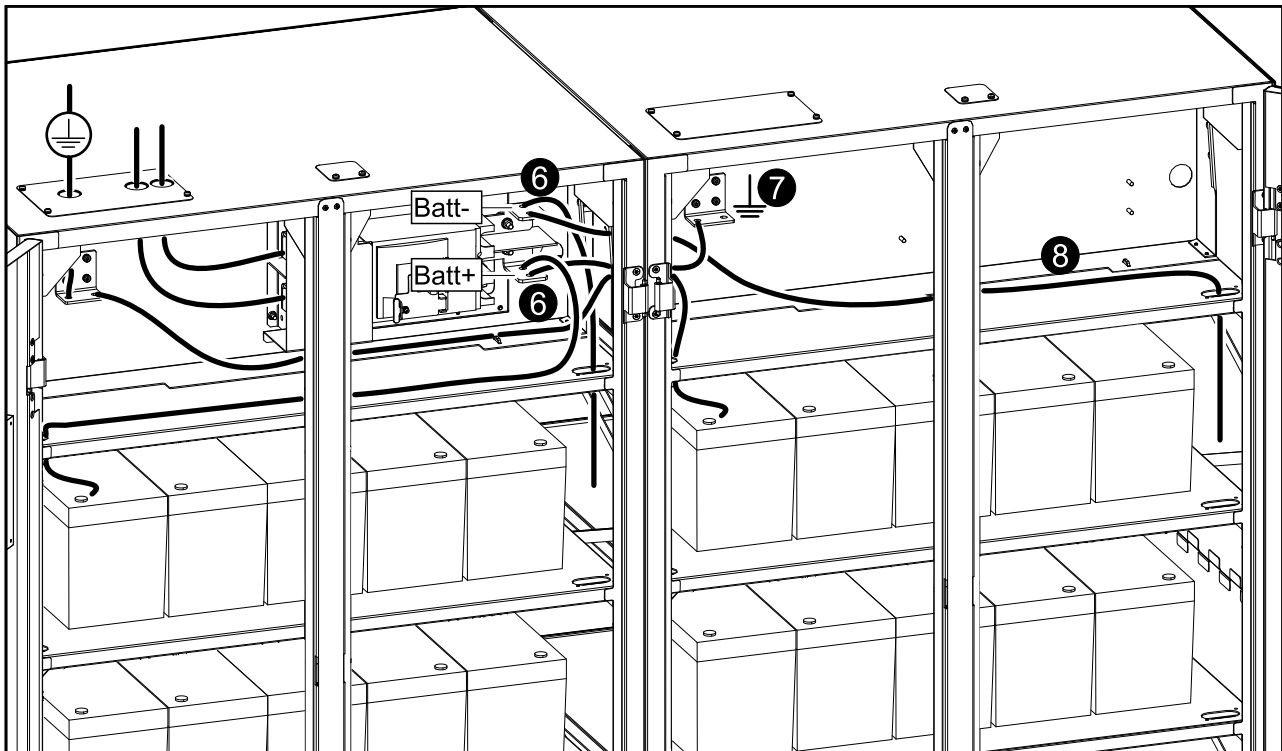
Front View of the Empty Battery Cabinet



2. Connect the PE.
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.

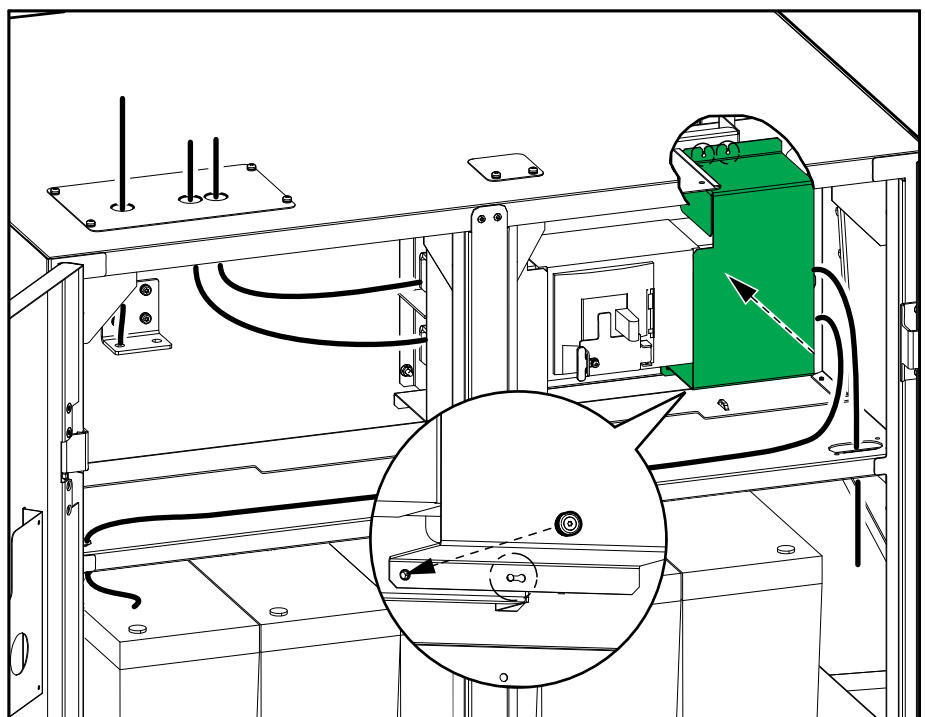
6. Connect the battery cables (Batt+, Batt-) from the batteries in the empty battery cabinet 1 to the battery breaker.

Front View of Two Empty Battery Cabinets



7. **Only for installation with two empty battery cabinets:** Connect the ground cable from the empty battery cabinet 1 to empty battery cabinet 2.
8. **Only for installation with two empty battery cabinets:** Connect the battery cables (Batt+, Batt-) from the batteries in the empty battery cabinet 2 to the battery breaker.
9. Install the protection cover over the terminals on the right side of the battery breaker.

Front View of the Empty Battery Cabinet



Printed in.
Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmaison – France
+ 33 (0) 1 41 29 70 00

Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmaison
France

+ 33 (0) 1 41 29 70 00

www.schneider-electric.com

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

© 2018 – 2018 Schneider Electric. All rights reserved.

990–91201–001