

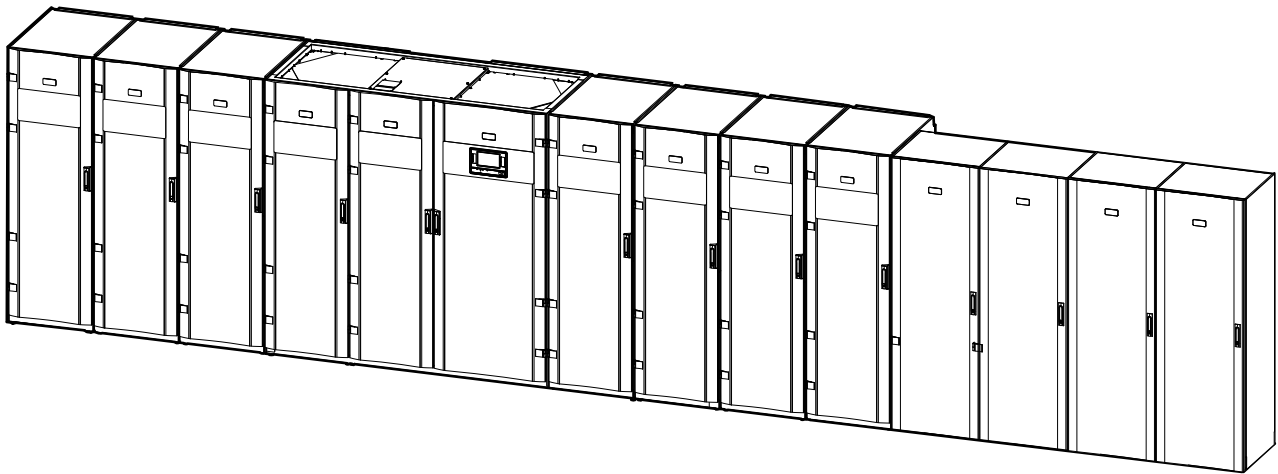
ESS Energy Storage System for UL9540

Galaxy VX UPS (1500 kW I/O Cabinet) and Galaxy Lithium-ion Battery Cabinets

Installation

NOTE: This is a Solution Manual and replaces individual installation manuals for these products.

Latest updates are available on the Schneider Electric website
6/2025



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Access to Your Product Manuals Online

Find the ESS Energy Storage System Manuals Here:

Scan the QR code to go to the online manual portal:



https://www.productinfo.schneider-electric.com/galaxyvx_ul/

Here you can find your ESS Energy Storage System manuals, Galaxy VX UPS manuals, and installation manuals for your auxiliary products and options.

This online manual portal is available on all devices and offers digital pages, search functionality across the different documents in the portal, and PDF download for offline use.

Learn More About the Galaxy VX Here:

Go to <https://www.se.com/ww/en/product-range/63732> to learn more about this product.

Learn More About the Galaxy Lithium-ion Battery Cabinet Here:

Go to <https://www.se.com/ww/en/product-range/66102> to learn more about this product.

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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.

Per IEC 62040-1: "Uninterruptible power systems (UPS) -- Part 1: Safety Requirements," this equipment, including battery access, must be inspected, installed and maintained by a skilled person.

The skilled person is a person with relevant education and experience to enable him or her to perceive risks and to avoid hazards which the equipment can create (reference IEC 62040-1, section 3.102).

FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Electromagnetic Compatibility

NOTICE
RISK OF ELECTROMAGNETIC DISTURBANCE Galaxy VX UPS 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.
NOTICE
RISK OF ELECTROMAGNETIC DISTURBANCE Galaxy Lithium-ion Battery Cabinet is a product category C2 UPS product. In a residential environment, this product may cause radio inference, 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

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 disconnect devices, battery disconnect devices, 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:

- 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.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR 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 will result in death or serious injury.

⚠ WARNING

CHEMICAL HAZARD

This product can expose you to chemicals including Tetrabromobisphenol A, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

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

This manual contains important safety instructions that should be followed during the installation and maintenance of the UPS system.

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.
- Disconnection devices for AC and DC must be provided by others, be readily accessible, and the function of the disconnect device marked for its function.
- 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 touch current/leakage current, the earthing/grounding conductor must be connected first.
- 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.

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

The label below must be added if:

1. The UPS input is connected through external isolators that, when opened, isolate the neutral, OR
2. The UPS input is connected via an IT power system.

The label must be placed adjacent to all upstream power disconnection devices that isolate the neutral.

The label below must be also added if backfeed protection is provided external to the equipment. See for more details. The label must be placed adjacent to all upstream power disconnection devices.

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.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Always perform correct Lockout/Tagout before working on the UPS.
- A UPS with autostart enabled will automatically restart when the mains supply returns.
- If autostart is enabled on the UPS, a label must be added on the UPS to warn about this functionality.

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

Add the label below on the UPS if autostart has been enabled:

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Autostart is enabled. The UPS will automatically restart when the mains supply returns.

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

NOTICE

RISK OF UNINTENTIONAL DEVICE OPERATION

If a residual current-operated protective device (RCD-B) is used upstream as ground fault protection, then the RCD-B shall be sized to not trip on the leakage current of this product. The start-up leakage current can be up to 3 A. The continuous maximum leakage current is 350 mA.

Failure to follow these instructions can result in equipment damage.

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.

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 battery module type.

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

NOTICE

RISK OF EQUIPMENT DAMAGE

- Lithium-ion batteries should not be stored beyond 15 months from the date of production. If they are stored for longer the calendar degradation will cause the batteries to be irreversible degraded beyond what is expected – a reduced runtime will be the consequence. Performance guarantee will be measured from the time of deployment or from production date +15 months, whichever comes first. For storage beyond 15 months, contact Schneider Electric.
- If the UPS system remains de-energized for a long period, Schneider Electric recommends to shut down the battery cabinet completely.

Failure to follow these instructions can result in equipment damage.

⚠️ CAUTION

RISK OF PERSONAL INJURY

This product contains electrolyte and other chemicals. If the product is received with external damage that causes a person to come into contact with the electrolyte, please proceed as follows:

- **EYE AND SKIN CONTACT:** Immediately flush with plenty of water and seek medical assistance.
- **RESPIRATORY INHALATION:** Immediately move away from vaporized gas, get fresh air and rest, and seek medical assistance if necessary.

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

Specifications

Specifications for ESS Energy Storage System at 480 V (VAC, 3-phase, 50/60Hz)

Arc flash related calculation of the battery system is estimated with the Direct-Current Incident Energy Calculations referenced in Informative Annex D of NFPA 70E Standard for Electrical Safety in the Workplace. The ESS system is assumed to estimate the worst-case scenario of 17 LIBSESMG17UL battery cabinets in parallel. Estimated arc flash: < 0.97 cal/cm².

ESS Model	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input (kVA)	Max. power output (kVA)	Ambient temperature range (°C)	Max. short-circuit current (kA)
GVX500K1500GS-3LIBSESMG17UL	757	601	103.8	755	500	23±5	100
GVX500K1500GS-4LIBSESMG17UL	757	601	138.4	755	500	23±5	100
GVX500K1500GS-5LIBSESMG17UL	757	601	173	755	500	23±5	100
GVX500K1500GS-6LIBSESMG17UL	757	601	207.6	755	500	23±5	100
GVX500K1500GS-7LIBSESMG17UL	757	601	242.2	755	500	23±5	100
GVX500K1500GS-8LIBSESMG17UL	757	601	276.8	755	500	23±5	100
GVX500K1500GS-9LIBSESMG17UL	757	601	311.4	755	500	23±5	100
GVX500K1500GS-10LIBSESMG17UL	757	601	346	755	500	23±5	100
GVX500K1500GS-11LIBSESMG17UL	757	601	380.6	755	500	23±5	100
GVX500K1500GS-12LIBSESMG17UL	757	601	415.2	755	500	23±5	100
GVX500K1500GS-13LIBSESMG17UL	757	601	449.8	755	500	23±5	100
GVX500K1500GS-14LIBSESMG17UL	757	601	484.4	755	500	23±5	100
GVX500K1500GS-15LIBSESMG17UL	757	601	519	755	500	23±5	100
GVX500K1500GS-16LIBSESMG17UL	757	601	553.6	755	500	23±5	100
GVX500K1500GS-17LIBSESMG17UL	757	601	588.2	755	500	23±5	100
GVX500K1500GS-JC4-3LIBSESMG17UL	757	601	103.8	755	500	23±5	100
GVX500K1500GS-JC4-4LIBSESMG17UL	757	601	138.4	755	500	23±5	100
GVX500K1500GS-JC4-5LIBSESMG17UL	757	601	173	755	500	23±5	100
GVX500K1500GS-JC4-6LIBSESMG17UL	757	601	207.6	755	500	23±5	100
GVX500K1500GS-JC4-7LIBSESMG17UL	757	601	242.2	755	500	23±5	100
GVX500K1500GS-JC4-8LIBSESMG17UL	757	601	276.8	755	500	23±5	100
GVX500K1500GS-JC4-9LIBSESMG17UL	757	601	311.4	755	500	23±5	100

Specifications

ESS Model	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input (kVA)	Max. power output (kVA)	Ambient temperature range (°C)	Max. short-circuit current (kA)
GVX500K1500GS-JC4-10LIBSESMG17UL	757	601	346	755	500	23±5	100
GVX500K1500GS-JC4-11LIBSESMG17UL	757	601	380.6	755	500	23±5	100
GVX500K1500GS-JC4-12LIBSESMG17UL	757	601	415.2	755	500	23±5	100
GVX500K1500GS-JC4-13LIBSESMG17UL	757	601	449.8	755	500	23±5	100
GVX500K1500GS-JC4-14LIBSESMG17UL	757	601	484.4	755	500	23±5	100
GVX500K1500GS-JC4-15LIBSESMG17UL	757	601	519	755	500	23±5	100
GVX500K1500GS-JC4-16LIBSESMG17UL	757	601	553.6	755	500	23±5	100
GVX500K1500GS-JC4-17LIBSESMG17UL	757	601	588.2	755	500	23±5	100
GVX750K1500GS-4LIBSESMG17UL	1136	902	138.4	1133	736	23±5	100
GVX750K1500GS-5LIBSESMG17UL	1136	902	173	1133	750	23±5	100
GVX750K1500GS-6LIBSESMG17UL	1136	902	207.6	1133	750	23±5	100
GVX750K1500GS-7LIBSESMG17UL	1136	902	242.2	1133	750	23±5	100
GVX750K1500GS-8LIBSESMG17UL	1136	902	276.8	1133	750	23±5	100
GVX750K1500GS-9LIBSESMG17UL	1136	902	311.4	1133	750	23±5	100
GVX750K1500GS-10LIBSESMG17UL	1136	902	346	1133	750	23±5	100
GVX750K1500GS-11LIBSESMG17UL	1136	902	380.6	1133	750	23±5	100
GVX750K1500GS-12LIBSESMG17UL	1136	902	415.2	1133	750	23±5	100
GVX750K1500GS-13LIBSESMG17UL	1136	902	449.8	1133	750	23±5	100
GVX750K1500GS-14LIBSESMG17UL	1136	902	484.4	1133	750	23±5	100
GVX750K1500GS-15LIBSESMG17UL	1136	902	519	1133	750	23±5	100
GVX750K1500GS-16LIBSESMG17UL	1136	902	553.6	1133	750	23±5	100
GVX750K1500GS-17LIBSESMG17UL	1136	902	588.2	1133	750	23±5	100
GVX750K1500GS-JC4-4LIBSESMG17UL	1136	902	138.4	1133	736	23±5	100
GVX750K1500GS-JC4-5LIBSESMG17UL	1136	902	173	1133	750	23±5	100
GVX750K1500GS-JC4-6LIBSESMG17UL	1136	902	207.6	1133	750	23±5	100
GVX750K1500GS-JC4-7LIBSESMG17UL	1136	902	242.2	1133	750	23±5	100
GVX750K1500GS-JC4-8LIBSESMG17UL	1136	902	276.8	1133	750	23±5	100
GVX750K1500GS-JC4-9LIBSESMG17UL	1136	902	311.4	1133	750	23±5	100

ESS Model	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input (kVA)	Max. power output (kVA)	Ambient temperature range (°C)	Max. short-circuit current (kA)
GVX750K1500GS-JC4-10LIBSESMG17UL	1136	902	346	1133	750	23±5	100
GVX750K1500GS-JC4-11LIBSESMG17UL	1136	902	380.6	1133	750	23±5	100
GVX750K1500GS-JC4-12LIBSESMG17UL	1136	902	415.2	1133	750	23±5	100
GVX750K1500GS-JC4-13LIBSESMG17UL	1136	902	449.8	1133	750	23±5	100
GVX750K1500GS-JC4-14LIBSESMG17UL	1136	902	484.4	1133	750	23±5	100
GVX750K1500GS-JC4-15LIBSESMG17UL	1136	902	519	1133	750	23±5	100
GVX750K1500GS-JC4-16LIBSESMG17UL	1136	902	553.6	1133	750	23±5	100
GVX750K1500GS-JC4-17LIBSESMG17UL	1136	902	588.2	1133	750	23±5	100
GVX1000K1500GS-5LIBSESMG17UL	1514	1203	173	1510	920	23±5	100
GVX1000K1500GS-6LIBSESMG17UL	1514	1203	207.6	1510	1000	23±5	100
GVX1000K1500GS-7LIBSESMG17UL	1514	1203	242.2	1510	1000	23±5	100
GVX1000K1500GS-8LIBSESMG17UL	1514	1203	276.8	1510	1000	23±5	100
GVX1000K1500GS-9LIBSESMG17UL	1514	1203	311.4	1510	1000	23±5	100
GVX1000K1500GS-10LIBSESMG17UL	1514	1203	346	1510	1000	23±5	100
GVX1000K1500GS-11LIBSESMG17UL	1514	1203	380.6	1510	1000	23±5	100
GVX1000K1500GS-12LIBSESMG17UL	1514	1203	415.2	1510	1000	23±5	100
GVX1000K1500GS-13LIBSESMG17UL	1514	1203	449.8	1510	1000	23±5	100
GVX1000K1500GS-14LIBSESMG17UL	1514	1203	484.4	1510	1000	23±5	100
GVX1000K1500GS-15LIBSESMG17UL	1514	1203	519	1510	1000	23±5	100
GVX1000K1500GS-16LIBSESMG17UL	1514	1203	553.6	1510	1000	23±5	100
GVX1000K1500GS-17LIBSESMG17UL	1514	1203	588.2	1510	1000	23±5	100
GVX1000K1500GS-JC4-5LIBSESMG17UL	1514	1203	173	1510	920	23±5	100
GVX1000K1500GS-JC4-6LIBSESMG17UL	1514	1203	207.6	1510	1000	23±5	100
GVX1000K1500GS-JC4-7LIBSESMG17UL	1514	1203	242.2	1510	1000	23±5	100
GVX1000K1500GS-JC4-8LIBSESMG17UL	1514	1203	276.8	1510	1000	23±5	100
GVX1000K1500GS-JC4-9LIBSESMG17UL	1514	1203	311.4	1510	1000	23±5	100
GVX1000K1500GS-JC4-10LIBSESMG17UL	1514	1203	346	1510	1000	23±5	100
GVX1000K1500GS-JC4-11LIBSESMG17UL	1514	1203	380.6	1510	1000	23±5	100

ESS Model	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input (kVA)	Max. power output (kVA)	Ambient temperature range (°C)	Max. short-circuit current (kA)
GVX1000K1500GS-JC4-12LIBSESMG17UL	1514	1203	415.2	1510	1000	23±5	100
GVX1000K1500GS-JC4-13LIBSESMG17UL	1514	1203	449.8	1510	1000	23±5	100
GVX1000K1500GS-JC4-14LIBSESMG17UL	1514	1203	484.4	1510	1000	23±5	100
GVX1000K1500GS-JC4-15LIBSESMG17UL	1514	1203	519	1510	1000	23±5	100
GVX1000K1500GS-JC4-16LIBSESMG17UL	1514	1203	553.6	1510	1000	23±5	100
GVX1000K1500GS-JC4-17LIBSESMG17UL	1514	1203	588.2	1510	1000	23±5	100
GVX1250K1500GS-6LIBSESMG17UL	1893	1504	207.6	1888	1104	23±5	100
GVX1250K1500GS-7LIBSESMG17UL	1893	1504	242.2	1888	1250	23±5	100
GVX1250K1500GS-8LIBSESMG17UL	1893	1504	276.8	1888	1250	23±5	100
GVX1250K1500GS-9LIBSESMG17UL	1893	1504	311.4	1888	1250	23±5	100
GVX1250K1500GS-10LIBSESMG17UL	1893	1504	346	1888	1250	23±5	100
GVX1250K1500GS-11LIBSESMG17UL	1893	1504	380.6	1888	1250	23±5	100
GVX1250K1500GS-12LIBSESMG17UL	1893	1504	415.2	1888	1250	23±5	100
GVX1250K1500GS-13LIBSESMG17UL	1893	1504	449.8	1888	1250	23±5	100
GVX1250K1500GS-14LIBSESMG17UL	1893	1504	484.4	1888	1250	23±5	100
GVX1250K1500GS-15LIBSESMG17UL	1893	1504	519	1888	1250	23±5	100
GVX1250K1500GS-16LIBSESMG17UL	1893	1504	553.6	1888	1250	23±5	100
GVX1250K1500GS-17LIBSESMG17UL	1893	1504	588.2	1888	1250	23±5	100
GVX1250K1500GS-JC4-6LIBSESMG17UL	1893	1504	207.6	1888	1250	23±5	100
GVX1250K1500GS-JC4-7LIBSESMG17UL	1893	1504	242.2	1888	1250	23±5	100
GVX1250K1500GS-JC4-8LIBSESMG17UL	1893	1504	276.8	1888	1250	23±5	100
GVX1250K1500GS-JC4-9LIBSESMG17UL	1893	1504	311.4	1888	1250	23±5	100
GVX1250K1500GS-JC4-10LIBSESMG17UL	1893	1504	346	1888	1250	23±5	100
GVX1250K1500GS-JC4-11LIBSESMG17UL	1893	1504	380.6	1888	1250	23±5	100
GVX1250K1500GS-JC4-12LIBSESMG17UL	1893	1504	415.2	1888	1250	23±5	100
GVX1250K1500GS-JC4-13LIBSESMG17UL	1893	1504	449.8	1888	1250	23±5	100
GVX1250K1500GS-JC4-14LIBSESMG17UL	1893	1504	484.4	1888	1250	23±5	100
GVX1250K1500GS-JC4-15LIBSESMG17UL	1893	1504	519	1888	1250	23±5	100

ESS Model	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input (kVA)	Max. power output (kVA)	Ambient temperature range (°C)	Max. short-circuit current (kA)
GVX1250K1500GS-JC4-16LIBSESMG17UL	1893	1504	553.6	1888	1250	23±5	100
GVX1250K1500GS-JC4-17LIBSESMG17UL	1893	1504	588.2	1888	1250	23±5	100
GVX1500K1500GS-8LIBSESMG17UL	2271	1804	276.8	2265	1472	23±5	100
GVX1500K1500GS-9LIBSESMG17UL	2271	1804	311.4	2265	1500	23±5	100
GVX1500K1500GS-10LIBSESMG17UL	2271	1804	346	2265	1500	23±5	100
GVX1500K1500GS-11LIBSESMG17UL	2271	1804	380.6	2265	1500	23±5	100
GVX1500K1500GS-12LIBSESMG17UL	2271	1804	415.2	2265	1500	23±5	100
GVX1500K1500GS-13LIBSESMG17UL	2271	1804	449.8	2265	1500	23±5	100
GVX1500K1500GS-14LIBSESMG17UL	2271	1804	484.4	2265	1500	23±5	100
GVX1500K1500GS-15LIBSESMG17UL	2271	1804	519	2265	1500	23±5	100
GVX1500K1500GS-16LIBSESMG17UL	2271	1804	553.6	2265	1500	23±5	100
GVX1500K1500GS-17LIBSESMG17UL	2271	1804	588.2	2265	1500	23±5	100
GVX1500K1500GS-JC4-8LIBSESMG17UL	2271	1804	276.8	2265	1472	23±5	100
GVX1500K1500GS-JC4-9LIBSESMG17UL	2271	1804	311.4	2265	1500	23±5	100
GVX1500K1500GS-JC4-10LIBSESMG17UL	2271	1804	346	2265	1500	23±5	100
GVX1500K1500GS-JC4-11LIBSESMG17UL	2271	1804	380.6	2265	1500	23±5	100
GVX1500K1500GS-JC4-12LIBSESMG17UL	2271	1804	415.2	2265	1500	23±5	100
GVX1500K1500GS-JC4-13LIBSESMG17UL	2271	1804	449.8	2265	1500	23±5	100
GVX1500K1500GS-JC4-14LIBSESMG17UL	2271	1804	484.4	2265	1500	23±5	100
GVX1500K1500GS-JC4-15LIBSESMG17UL	2271	1804	519	2265	1500	23±5	100
GVX1500K1500GS-JC4-16LIBSESMG17UL	2271	1804	553.6	2265	1500	23±5	100
GVX1500K1500GS-JC4-17LIBSESMG17UL	2271	1804	588.2	2265	1500	23±5	100
GVX1750K1500GS-8LIBSESMG17UL	2271	1804	276.8	2265	1472	23±5	100
GVX1750K1500GS-9LIBSESMG17UL	2271	1804	311.4	2265	1500	23±5	100
GVX1750K1500GS-10LIBSESMG17UL	2271	1804	346	2265	1500	23±5	100
GVX1750K1500GS-11LIBSESMG17UL	2271	1804	380.6	2265	1500	23±5	100
GVX1750K1500GS-12LIBSESMG17UL	2271	1804	415.2	2265	1500	23±5	100
GVX1750K1500GS-13LIBSESMG17UL	2271	1804	449.8	2265	1500	23±5	100

ESS Model	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input (kVA)	Max. power output (kVA)	Ambient temperature range (°C)	Max. short-circuit current (kA)
GVX1750K1500GS-14LIBSESMG17UL	2271	1804	484.4	2265	1500	23±5	100
GVX1750K1500GS-15LIBSESMG17UL	2271	1804	519	2265	1500	23±5	100
GVX1750K1500GS-16LIBSESMG17UL	2271	1804	553.6	2265	1500	23±5	100
GVX1750K1500GS-17LIBSESMG17UL	2271	1804	588.2	2265	1500	23±5	100
GVX1750K1500GS-JC4-8LIBSESMG17UL	2271	1804	276.8	2265	1472	23±5	100
GVX1750K1500GS-JC4-9LIBSESMG17UL	2271	1804	311.4	2265	1500	23±5	100
GVX1750K1500GS-JC4-10LIBSESMG17UL	2271	1804	346	2265	1500	23±5	100
GVX1750K1500GS-JC4-11LIBSESMG17UL	2271	1804	380.6	2265	1500	23±5	100
GVX1750K1500GS-JC4-12LIBSESMG17UL	2271	1804	415.2	2265	1500	23±5	100
GVX1750K1500GS-JC4-13LIBSESMG17UL	2271	1804	449.8	2265	1500	23±5	100
GVX1750K1500GS-JC4-14LIBSESMG17UL	2271	1804	484.4	2265	1500	23±5	100
GVX1750K1500GS-JC4-15LIBSESMG17UL	2271	1804	519	2265	1500	23±5	100
GVX1750K1500GS-JC4-16LIBSESMG17UL	2271	1804	553.6	2265	1500	23±5	100
GVX1750K1500GS-JC4-17LIBSESMG17UL	2271	1804	588.2	2265	1500	23±5	100

Specifications for 500-1500 kW UPS System

	UPS rating	500 kW	750 kW	1000 kW	1250 kW	1500 kW
Input	Connections	L1, L2, L3 + G ¹				
	Input voltage range (V) ²	408-576				
	Frequency (Hz)	40-70				
	Nominal input current (A)	646	969	1291	1615	1937
	Maximum input current (A) ³	757	1136	1514	1893	2271
	Input current limitation (A)	760	1140	1520	1900	2280
	Maximum short circuit rating	100 kA RMS				
	Total harmonic distortion (THDI)	<3% at 100% load, <4% at 50% load, <9% at 25% load				
	Input power factor	0.99 at >40% load, 0.98 at >20% load, 0.97 at >10% load				
	Protection	Contactors				
	Ramp-in	Adaptive 1-300 seconds				
Bypass	Connections	1250 kW I/O: L1, L2, L3, G or L1, L2, L3, N, G 1500 kW I/O ⁴ : L1, L2, L3, G				
	Bypass voltage range (V)	432-528				
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ± 0.1 , ± 3 , ± 10 . Default is ± 3				
	Nominal bypass current (A)	642	964	1284	1605	1926
	Maximum short circuit rating	1250 kW I/O: 100 kA l _{cw} 1500 kW I/O: 100 kA RMS (conditioned by an internal molded switch with 90 kA peak magnetic trip)				
	Thyristor I ² t (kA*s ²)	1250 kW I/O: 9165 1500 kW I/O: 16245	1250 kW I/O: 9165 1500 kW I/O: 16245	1250 kW I/O: 9165 1500 kW I/O: 16245	1250 kW I/O: 9165 1500 kW I/O: 16245	16245 (1500 kW I/O)
	BF2 magnetic trip	1250 kW I/O: 39 kA 1500 kW I/O: 39 kA				
	Protection	1250 kW I/O with preinstalled backfeed breaker BF2: Molded switch with trip for backfeed protection 1250 kW I/O with GVXOPT001 installed: Molded switch with trip for backfeed protection 1500 kW I/O with preinstalled backfeed breaker BF2: Molded switch with trip for backfeed protection				

1. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
2. The system can operate at 600 V for 1 minute.
3. At nominal input voltage and full charge.
4. 4-wire connection with neutral is not compliant per FCC regulations for the 1500 kW I/O cabinet.

	UPS rating	500 kW	750 kW	1000 kW	1250 kW	1500 kW
Output	Connections	1250 kW I/O: L1, L2, L3, G, GEC ⁵ or L1, L2, L3, N, G 1500 kW I/O ⁶ : L1, L2, L3, G, GEC ⁵				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes Battery operation: 128% for 10 seconds, 115% for 1 minute Bypass operation: 110% ⁷ continuous, 1000% for 60 milliseconds for systems with 1250 kW I/O cabinet, and 1000% for 100 milliseconds for systems with 1500 kW I/O cabinet				
	Output voltage tolerance	Balanced load: $\pm 1\%$, Unbalanced load: $\pm 3\%$				
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	601	902	1203	1504	1804
	Maximum short circuit rating ⁸	100 kA RMS				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short-Circuit Capabilities (Bypass not Available), page 27.				
	Total harmonic distortion (THDU)	<2% at 100% linear load, <3% at 100% non-linear load				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (free-running)				
	Slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Load crest factor	Up to 3 (THDU < 5%)				
	Load power factor	0.7 leading to 0.5 lagging without derating				

5. Per NEC 250.30.

6. 4-wire connection with neutral is not compliant per FCC regulations for the 1500 kW I/O cabinet.

7. 125% for 480 V.

8. Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.

Specifications for Lithium-ion Battery Cabinets

Charging power in % of output power	40% at ≤ 80% load, 15% at 100% load
Nominal battery voltage (VDC) at 3.8 V per cell	517
Peak current at voltage (A)	450
Charge current default rate (CA rate)	0.7
Maximum continuous charge current rate (CA rate)	1.0
Float charge voltage (VDC) at 4.2 V per cell	571
End of discharge voltage (VDC) at 3.0 V per cell	408
Nominal float voltage (VDC)	571
Maximum continuous 100% depth of discharge power (kW)	184
Maximum partial depth of discharge power (kW)	231
Short circuit rating value (kA) - I _{sc} , RMS (I _{sc} , MAX)	2.9 (9.0)

NOTE: If the battery temperature is higher than the threshold after a full discharge at maximum continuous discharge power, the UPS may have to reduce the charge current to zero to protect the battery.

NOTE: The battery temperature must return to room temperature ± 3 °C (5 °F) before a new discharge at maximum continuous discharge power. If not, the battery breaker may be tripped due to overtemperature protection.

NOTE: The working temperature for the busbars should be no more than 100 °C (212 °F).

Overview of Configurations

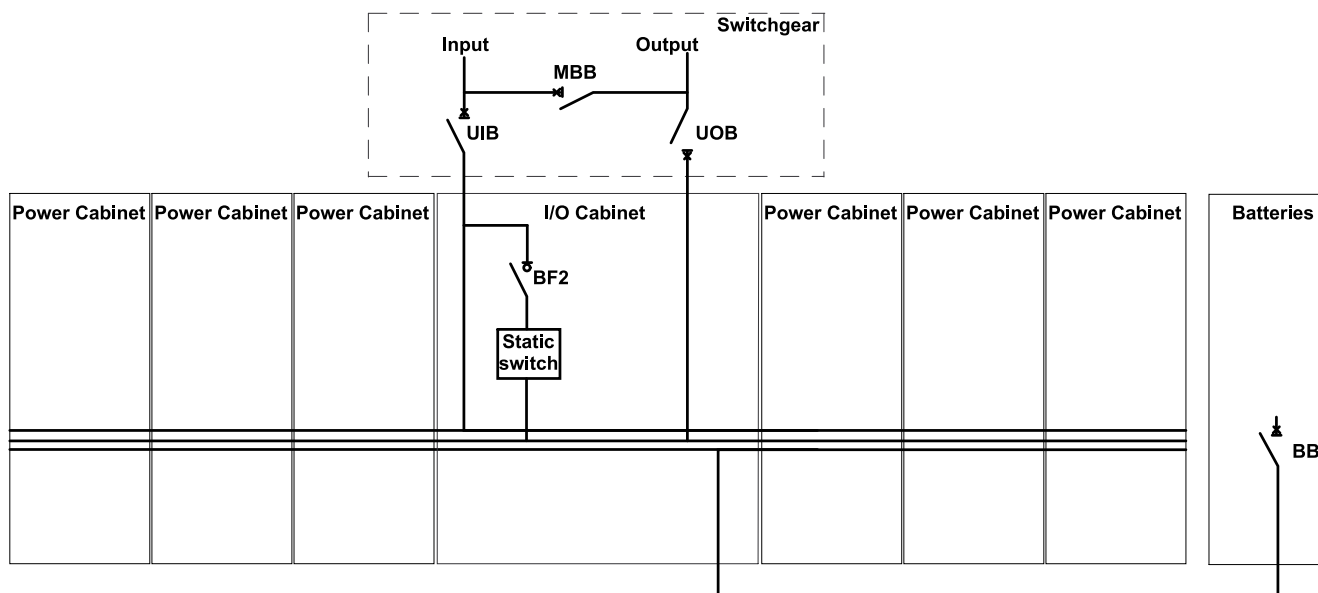
Breakers in the System

UIB	Unit input breaker
SSIB	Static switch input breaker
BB	Battery breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker
BF2	Backfeed protection switch

Overview of UPSs with 1500 kW I/O Cabinet – Single Utility/Mains

The illustration shows a 1500 kW UPS. The principle is the same for the other UPSs with the 1500 kW I/O cabinet.

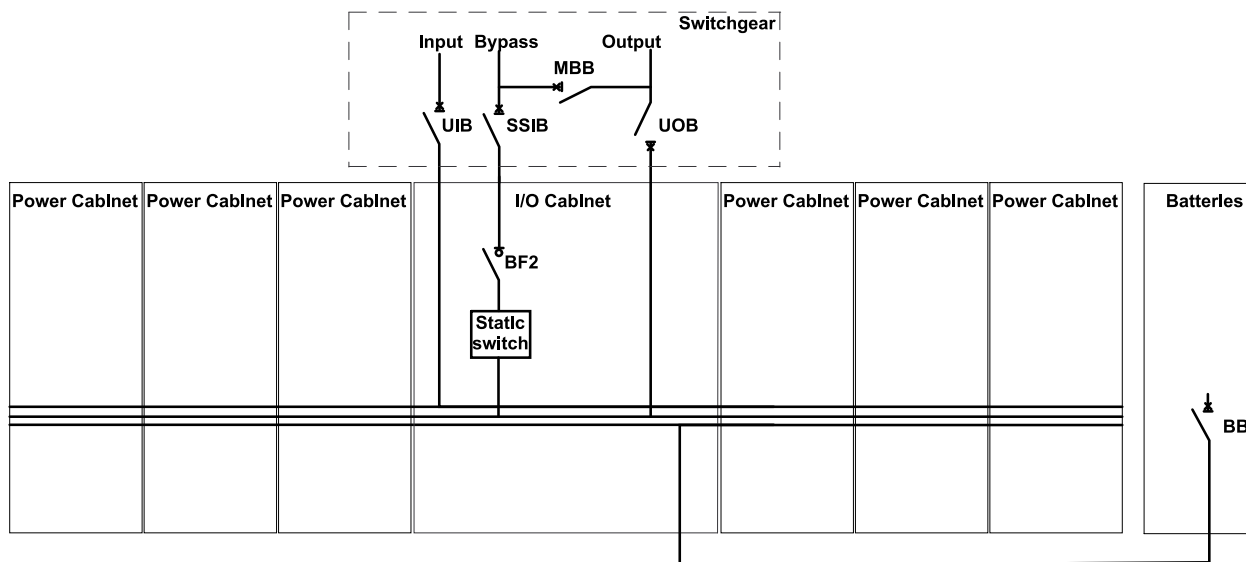
Galaxy VX 1500 kW UPS



Overview of UPSs with 1500 kW I/O Cabinet – Dual Utility/Mains

The illustration shows a 1500 kW UPS. The principle is the same for the other UPSs with the 1500 kW I/O cabinet.

Galaxy VX 1500 kW UPS



Recommended Upstream Protection and Cable Sizes

⚠ CAUTION

HAZARD OF FIRE

- Connect only to a circuit with the below specifications.
- Connect only to a circuit provided with a maximum branch circuit overcurrent protection, as specified in the UPS rating tables below, in accordance with the National Electrical Code, ANSI/NFPA70, and the Canadian Electrical Code, Part I, C22.1.

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

NOTE: Overcurrent protection is to be provided by others.

NOTE: All wiring must comply with all applicable national and/or electrical code (National Electrical Code, ANSI/NFPA 70).

Cable sizes in this manual are based on Table 310.15 of the National Electrical Code 2014 (NEC) with the following assertions:

- 90 °C (194 °F) conductors (THHN) for 75 °C (167 °F) termination
- Not more than 3 current carrying conductors in each conduit
- An ambient temperature of max. 30 °C (86 °F)
- Use of copper or aluminum conductors for the UPS.
- Use of copper conductors for the Lithium-ion cabinet.
- 100% rated breakers
- Nominal operating conditions

If the ambient room temperature is greater than 30 °C (86 °F), use larger or additional parallel conductors in accordance with the correction factors of the NEC. The maximum allowable conductor size is 600 kcmil.

Equipment Grounding Conductors (EGC) are sized in accordance with NEC Article 250.122 and Table 250.122 Minimum size equipment conductor for grounding equipment.

NOTE: Always consider the EGC size according to the complete electrical installation.

NOTICE

RISK OF EQUIPMENT DAMAGE

To ensure correct load sharing in bypass operation in a parallel system, the following recommendations apply:

- The bypass cables must be of the same length for all UPSs.
- The output cables must be of the same length for all UPSs.
- The input cables must be of the same length for all UPSs in a single mains system.
- Cable formation recommendations must be followed.
- The reactance of busbar layout in the bypass/input and output switchgear must be the same for all UPSs.

If the above recommendations are not followed the result can be uneven load sharing in bypass and overload of individual UPSs.

Failure to follow these instructions can result in equipment damage.

Recommended Upstream Protection and Cable Sizes for 500 kW UPS

	Maximum OCPD (A)	Cable size per phase (AWG/kcmil) Copper / Aluminum	EGC cable size (AWG/kcmil) ⁹ Copper / Aluminum
Input	800 ($I_r = 1.0$)	2x500 / 3x400	1x1/0 / 1x3/0
Bypass	700 ($I_r = 1.0$)	2x350 / 2x500	1x1/0 / 1x3/0
Output	700 ($I_r = 1.0$)	2x350 / 2x500	1x1/0 / 1x3/0

Recommended Upstream Protection and Cable Sizes for 750 kW UPS

	Maximum OCPD (A)	Cable size per phase (AWG/kcmil) Copper / Aluminum	EGC cable size (AWG/kcmil) ⁹ Copper / Aluminum
Input	1200 ($I_r = 1.0$)	3x600 / 4x500	1x3/0 / 1x250
Bypass	1000 ($I_r = 1.0$)	3x400 / 3x600	1x2/0 / 1x4/0
Output	1000 ($I_r = 1.0$)	3x400 / 3x600	1x2/0 / 1x4/0

Recommended Upstream Protection and Cable Sizes for 1000 kW UPS

	Maximum OCPD (A)	Cable size per phase (AWG/kcmil) Copper / Aluminum	EGC cable size (AWG/kcmil) ⁹ Copper / Aluminum
Input	1600 ($I_r = 1.0$)	4x600 / 5x600	1x4/0 / 1x350
Bypass	1600 ($I_r = 0.8$)	4x400 / 4x600	1x4/0 / 1x350
Output	1600 ($I_r = 0.8$)	4x400 / 4x600	1x4/0 / 1x350

Recommended Upstream Protection and Cable Sizes for 1250 kW UPS

NOTE: For a 1250 I/O cabinet, it is preferred to use flexible copper power cables with as small a diameter as possible. The number of power cables needed for this kW rating will make large and inflexible power cables more difficult to install.

	Maximum OCPD (A)	Cable size per phase (AWG/kcmil) Copper / Aluminum	EGC cable size (AWG/kcmil) ⁹ Copper / Aluminum
Input	2000 ($I_r = 1.0$)	5x600 / 6x600	1x250 / 1x400
Bypass	1600 ($I_r = 1.0$)	4x600 / 5x600	1x4/0 / 1x350
Output	1600 ($I_r = 1.0$)	4x600 / 5x600	1x4/0 / 1x350

9. If the conductors are run in conduits, there must be one conductor in each conduit.

Recommended Upstream Protection and Cable Sizes for 1500 kW UPS

	Maximum OCPD (A)	Cable size per phase (AWG/kcmil) Copper / Aluminum	EGC cable size (AWG/kcmil) ¹⁰ Copper / Aluminum
Input	2500 ¹¹	6x600/ 8x600	1x350 / 1x400
Bypass	2000 ¹¹	5x600/ 6x600	1x250 / 1x350
Output	2000 ¹¹	5x600/ 6x600	1x250 / 1x350

Recommended Cable Sizes for Battery Cabinets

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All wiring must comply with all applicable national and/or electrical codes. The maximum allowable cable size is 350 kcmil.

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

Recommended Bolt and Lug Sizes

Recommended Bolt and Lug Sizes for Copper Cables for UPS

Cable Size	Terminal Bolt Diameter	Cable Lug Type	Crimping Tool	Die
1/0 AWG	M12 x 35 mm	LCCF1/0–12–X	CT930	CD-920–2/0 Black P45
2/0 AWG	M12 x 35 mm	LCCF2/0–12–X	CT930	CD-920–3/0 Orange P50
3/0 AWG	M12 x 35 mm	LCCF3/0–12–X	CT930	CD-920–4/0 Purple P54
250 kcmil	M12 x 35 mm	LCCF250–12–X	CT-940CH/CT-2940	CD-920–300 White P66
300 kcmil	M12 x 35 mm	LCCF300–12–6	CT-940CH/CT-2940	CD-920–350 Red P71
400 kcmil	M12 x 35 mm	LCCF400–12–6	CT-940CH/CT-2940	CD-920–500 Brown P87
500 kcmil	M12 x 35 mm	LCCF500–12–6	CT-940CH/CT-2940	CD-920–500A Pink P99
600 kcmil	M12 x 40 mm	LCCF600–12–6	CT-940CH/CT-2940	CD-920–750 Black P106

Recommended Bolt and Lug Sizes for Aluminum Cables for UPS

Cable Size	Terminal Bolt Diameter	Cable Lug Type	Crimping Tool	Die
2/0 AWG	M12 x 40 mm	LAB2/0-12-5	CT930	Olive P54
3/0 AWG	M12 x 40 mm	LAB3/0-12-5	CT930	Ruby P60
250 kcmil	M12 x 40 mm	LAB250-12-5	CT930	Red P71
300 kcmil	M12 x 40 mm	LAB300-12-2	CT930	Blue P76
400 kcmil	M12 x 40 mm	LAB400-12-2	CT930	Green P94

10. If the conductors are run in conduits, there must be one conductor in each conduit.

11. Long-time setting (I_L) = 1.0

Cable Size	Terminal Bolt Diameter	Cable Lug Type	Crimping Tool	Die
500 kcmil	M12 x 40 mm	LAB500-12-2	CT930	Pink P99
600 kcmil	M12 x 40 mm	LAB600-12-2	CT930	Black P106

Recommended Bolt and Lug Sizes for Copper Cables for Battery Cabinets

One Hole Cable Lug

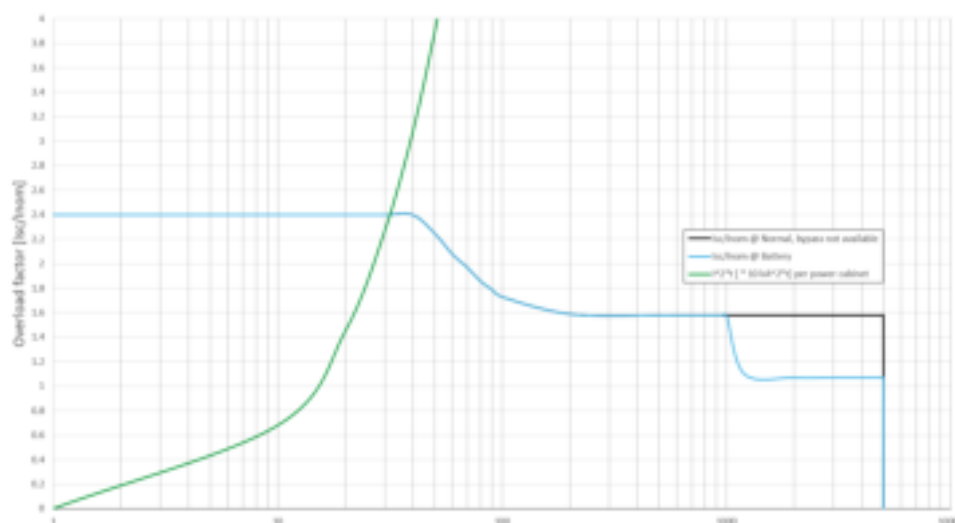
Cable size	Bolt size	Cable lug type	Crimp tool	Die
250 kcmil x 2	M10x30	LCB250-12-X	CT-930	CD-920-250 Yellow P62
350 kcmil	M10x30	LCB350-12-X	CT-930	CD-920-350 Red P71

Two Hole Cable Lug

Cable size	Bolt size	Cable lug type	Crimp tool	Die
250 kcmil x 2	M10x30	LCC250-12-X	CT-930	CD-920-250 Yellow P62
350 kcmil	M10x30	LCC350-12-X	CT-930	CD-920-350 Red P71

Inverter Short-Circuit Capabilities (Bypass not Available)

IK1 – Short-Circuit between a Phase and Neutral



400 V IK1

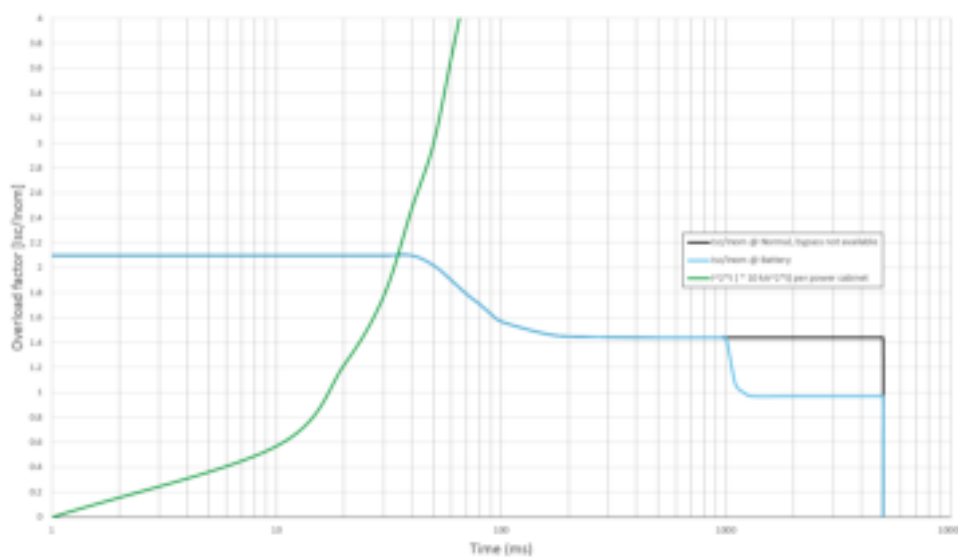
S [kVA]	I _{k10ms} [A] Normal operation /Battery operation	I _{k30ms} [A] Normal operation /Battery operation	I _{k100ms} [A] Normal operation /Battery operation	I _{k500ms} [A] Normal operation /Battery operation	I _{k1s} [A] Normal operation /Battery operation	I _{k5s} [A] Normal operation /Battery operation	I ² t total [A ² s] Normal operation /Battery operation
250	840 /840	820 /840	610 /640	550 /550	550 /550	550 /360	1539100 /874180
500	1680 /1680	1640 /1680	1220 /1280	1100 /1100	1100 /1100	1100 /720	6156400 /3496720
750	2520 /2520	2460 /2520	1830 /1920	1650 /1650	1650 /1650	1650 /1080	13851900 /7867620

400 V IK1 (Continued)

S [kVA]	Ik10ms [A] Normal operation /Battery operation	Ik30ms [A] Normal operation /Battery operation	Ik100ms [A] Normal operation /Battery operation	Ik500ms [A] Normal operation /Battery operation	Ik1s [A] Normal operation /Battery operation	Ik5s [A] Normal operation /Battery operation	I ² t total [A ² s] Normal operation /Battery operation
1000	3360 /3360	3280 /3360	2440 /2560	2200 /2200	2200 /2200	2200 /1440	24625600 /13986880
1250	4200 /4200	4100 /4200	3050 /3200	2750 /2750	2750 /2750	2750 /1800	38477500 /21854500
1500	5040 /5040	4920 /5040	3660 /3840	3300 /3300	3300 /3300	3300 /2160	55407600 /31470480

480 V IK1

S [kVA]	Ik10ms [A] Normal operation /Battery operation	Ik30ms [A] Normal operation /Battery operation	Ik100ms [A] Normal operation /Battery operation	Ik500ms [A] Normal operation /Battery operation	Ik1s [A] Normal operation /Battery operation	Ik5s [A] Normal operation /Battery operation	I ² t total [A ² s] Normal operation /Battery operation
250	– /810	– /810	– /570	– /290	– /290	– /290	– /493600
500	– /1620	– /1620	– /1140	– /580	– /580	– /580	– /1974400
750	– /2430	– /2430	– /1710	– /870	– /870	– /870	– /4442400
1000	– /3240	– /3240	– /2280	– /1160	– /1160	– /1160	– /7897600
1250	– /4050	– /4050	– /2850	– /1450	– /1450	– /1450	– /12340000
1500	– /4860	– /4860	– /3420	– /1740	– /1740	– /1740	– /17769600

IK2 – Short-Circuit between Two Phases

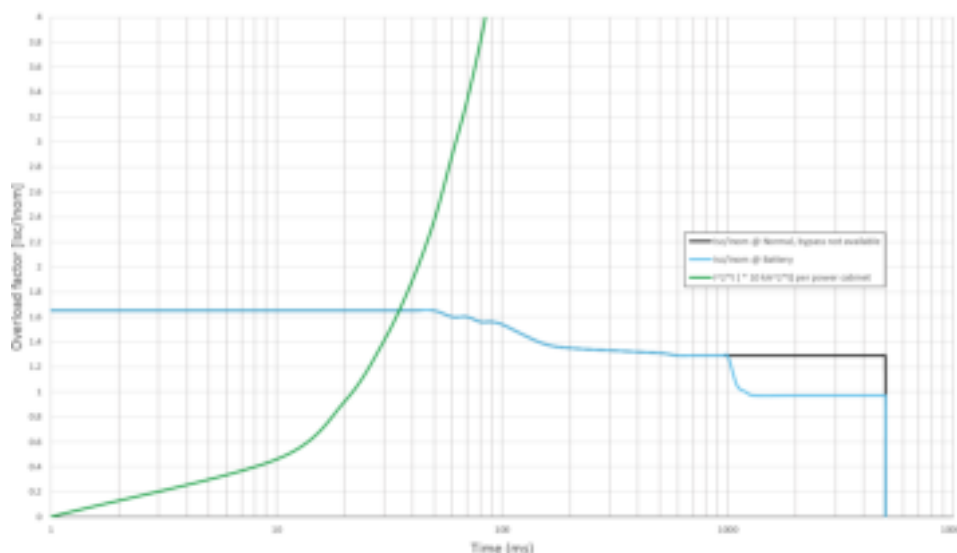
400 V IK2

S [kVA]	Ik10ms [A] Normal operation /Battery operation	Ik30ms [A] Normal operation /Battery operation	Ik100ms [A] Normal operation /Battery operation	Ik500ms [A] Normal operation /Battery operation	Ik1s [A] Normal operation /Battery operation	Ik5s [A] Normal operation /Battery operation	I ² t total [A ² s] Normal operation /Battery operation
250	780 /780	780 /780	600 /600	510 /510	510 /510	510 /330	1312100 /740520
500	1560 /1560	1560 /1560	1200 /1200	1020 /1020	1020 /1020	1020 /660	5248400 /2962080
750	2340 /2340	2340 /2340	1800 /1800	1530 /1530	1530 /1530	1530 /990	11808900 /6664680
1000	3120 /3120	3120 /3120	2400 /2400	2040 /2040	2040 /2040	2040 /1320	20993600 /11848320
1250	3900 /3900	3900 /3900	3000 /3000	2550 /2550	2550 /2550	2550 /1650	32802500 /18513000
1500	4680 /4680	4680 /4680	3600 /3600	3060 /3060	3060 /3060	3060 /1980	47235600 /26658720

480 V IK2

S [kVA]	Ik10ms [A] Normal operation /Battery operation	Ik30ms [A] Normal operation /Battery operation	Ik100ms [A] Normal operation /Battery operation	Ik500ms [A] Normal operation /Battery operation	Ik1s [A] Normal operation /Battery operation	Ik5s [A] Normal operation /Battery operation	I ² t total [A ² s] Normal operation /Battery operation
250	790 /790	770 /770	550 /550	430 /280	430 /280	280 /280	606450 /460820
500	1580 /1580	1540 /1540	1100 /1100	860 /560	860 /560	560 /560	2425800 /1843280
750	2370 /2370	2310 /2310	1650 /1650	1290 /840	1290 /840	840 /840	5458050 /4147380
1000	3160 /3160	3080 /3080	2200 /2200	1720 /1120	1720 /1120	1120 /1120	9703200 /7373120
1250	3950 /3950	3850 /3850	2750 /2750	2150 /1400	2150 /1400	1400 /1400	15161250 /11520500
1500	4740 /4740	4620 /4620	3300 /3300	2580 /1680	2580 /1680	1680 /1680	21832200 /16589520

IK3 – Short-Circuit between All Three Phases



400 V IK3

S [kVA]	Ik10ms [A] Normal operation /Battery operation	Ik30ms [A] Normal operation /Battery operation	Ik100ms [A] Normal operation /Battery operation	Ik500ms [A] Normal operation /Battery operation	Ik1s [A] Normal operation /Battery operation	Ik5s [A] Normal operation /Battery operation	I ² t total [A ² s] Normal operation /Battery operation
250	720 /720	720 /720	670 /640	540 /360	540 /360	540 /360	1507600 /711360
500	1440 /1440	1440 /1440	1340 /1280	1080 /720	1080 /720	1080 /720	6030400 /2845440
750	2160 /2160	2160 /2160	2010 /1920	1620 /1080	1620 /1080	1620 /1080	13568400 /6402240
1000	2880 /2880	2880 /2880	2680 /2560	2160 /1440	2160 /1440	2160 /1440	24121600 /11381760
1250	3600 /3600	3600 /3600	3350 /3200	2700 /1800	2700 /1800	2700 /1800	37690000 /17784000
1500	4320 /4320	4320 /4320	4020 /3840	3240 /2160	3240 /2160	3240 /2160	54273600 /25608960

480 V IK3

S [kVA]	Ik10ms [A] Normal operation /Battery operation	Ik30ms [A] Normal operation /Battery operation	Ik100ms [A] Normal operation /Battery operation	Ik500ms [A] Normal operation /Battery operation	Ik1s [A] Normal operation /Battery operation	Ik5s [A] Normal operation /Battery operation	I ² t total [A ² s] Normal operation /Battery operation
250	670 /660	670 /660	610 /610	440 /440	360 /440	300 /300	580600 /589380
500	1340 /1320	1340 /1320	1220 /1220	880 /880	720 /880	600 /600	2322400 /2357520
650	1742 /1716	1742 /1716	1586 /1586	1144 /1144	936 /1144	780 /780	3924856 /3984209
1000	2680 /2640	2680 /2640	2440 /2440	1760 /1760	1440 /1760	1200 /1200	9289600 /9430080
1250	3350 /3300	3350 /3300	3050 /3050	2200 /2200	1800 /2200	1500 /1500	14515000 /14734500
1500	4020 /3960	4020 /3960	3660 /3660	2640 /2640	2160 /2640	1800 /1800	20901600 /21217680

Torque Specifications

WARNING

HAZARD OF ELECTRIC SHOCK

All electrical connections must be torqued according to this table.

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

Bolt size	Torque	
	UPS	Lithium-ion battery cabinet
M4	—	1.7 Nm (1.25 lb-ft)
M6	5 Nm (3.69 lb-ft)	5 Nm (3.69 lb-ft)
M8	17.5 Nm (12.91 lb-ft)	14 Nm (10.33 lb-ft)
M10	30 Nm (22 lb-ft)	30 Nm (22.13 lb-ft)
M12	50 Nm (36.87 lb-ft)	46 Nm (33.93 lb-ft)

Environment

	Operating	Storage
Temperature	UPS (I/O cabinet and power cabinets): 0 °C to 40 °C (32 °F to 104 °F) 0 °C to 50 °C (32 °F to 122 °F) when derated to 75% power ¹² Lithium-ion battery cabinet: Recommended operating temperature is 18 °C to 28 °C (64 °F to 82 °F)	UPS (I/O cabinet and power cabinets): -25 °C to 55 °C (-13 °F to 131 °F) Lithium-ion battery cabinet: 0 °C to 40 °C (32 °F to 104 °F) Battery modules: Recommended storage for battery modules is 20 °C (68 °F) or cooler (non-freezing)
Relative humidity	UPS (I/O cabinet and power cabinets): 5-95% non-condensing Lithium-ion battery cabinet: 0-95% non-condensing	UPS (I/O cabinet and power cabinets): 10-80% non-condensing Lithium-ion battery cabinet: 0-90% non-condensing Lithium-ion battery modules: Recommended storage for battery modules is 40-80% non-condensing
Elevation	UPS (I/O cabinet and power cabinets): 1000 m (3300 ft): 1.000 1500 m (5000 ft): 0.975 2000 m (6600 ft): 0.950 2500 m (8300 ft): 0.925 3000 m (10000 ft): 0.900 Lithium-ion battery cabinet: 0-3000 m (0-10000 feet)	UPS (I/O cabinet and power cabinets): 0-15000 m (0-50000 ft) Lithium-ion battery cabinet: ?
Audible noise one meter (three feet) from unit	UPS (I/O cabinet and power cabinets): 62 dB at 70% load 69.5 dB at 100% load for 400 V systems 68 dB at 100% load for 480 V systems	
Protection class	IP20	
Color	RAL 9003, gloss level 85%	

12. For temperatures between 40 °C (104 °F) and 50 °C (122 °F), the load power rating must be derated with 2.5% per °C of rated output power. Above 40 °C (104 °F) the minimum input voltage is 340 V, and from 380 V to 340 V, the charge power must be linearly derated from 12% to 1%.

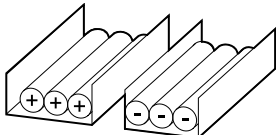
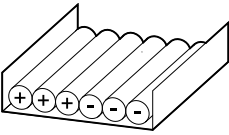
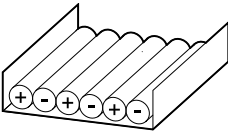
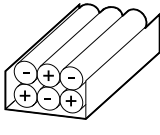
Compliance

	UPS	Battery Cabinet
Safety	IEC 62040-1: 2017, Edition 2.0, Uninterruptible Power Systems (UPS) - Part 1: Safety requirements UL 1778 5th edition	IEC 62619:2017 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications IEC 62477-1:2012+A11:2014 Safety requirements for power electronic converter systems and equipment Part 1: General UL 1973:2022 Batteries for Use in Stationary, Vehicle Auxiliary and Light Electric Rail Applications UL 9540A:2019 Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
EMC/EMI/RFI	IEC 62040-2: 2016, 3rd edition Uninterruptible Power Systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements C2 FCC 15B, class A	IEC 62040-2:2016 Uninterruptible Power Systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements C2 FCC Part 15, Radio Frequency Devices, class A
Performance	IEC 62040-3: 2011-03, 2nd edition Uninterruptible Power Systems (UPS) - Part 3: Method of specifying the performance and test requirements	-
Environmental	IEC 62040-4: 2013-04, 1st edition Uninterruptible Power Systems (UPS) - Part 4: Environmental aspects – Requirements and reporting	IEC 60068-2-1:2007 Environmental testing – Part 2-1: Tests – Test A: Cold IEC 60068-2-2:2007 Environmental testing – Part 2-2: Tests – Test B: Dry heat IEC 60068-2-78:2012 Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state
Markings	CE, C-Tick UL 1778 Listing and CSA C22.2 NO. 107.3	CE, C-Tick ANSI/CAN/UL 1973 Listing
Transportation	ISTA 2B IEC 60721-4-2 Level 2M2	IEC60068-2-27:2008 Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock IEC60068-2-31:2008 Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens IEC60068-2-64:2008 Environmental testing – Part 2-64: Tests – Test Fh: Vibration, broadband random and guidance
Seismic	OSHPD, IBC2012 and CBC2013 to $S_{DS} = 1.83 \text{ g}$	OSHPD, CBC 2019, $S_{DS}=2.0\text{g}$ ($z/h = 1$); 2.5g ($z/h = 0$)
Overvoltage category	III	II
Earthing system	TN, TT, IT	
Protective class	I	
Pollution degree	2	

Guidance for Organizing Battery Cables

NOTE: When the battery bank is placed remotely, the organizing of the cables is important to reduce voltage drop and inductance. The distance between the battery bank and the UPS must not exceed 200 m (656 ft). Contact Schneider Electric for installations with a longer distance.

NOTE: To minimize the risk of electromagnetic radiation, it is highly recommended to follow the below guidance and to use grounded metallic tray supports.

Cable Length				
<30 m	Not recommended	Acceptable	Recommended	Recommended
31–75 m	Not recommended	Not recommended	Acceptable	Recommended
76–150 m	Not recommended	Not recommended	Acceptable	Recommended
151–200 m	Not recommended	Not recommended	Not recommended	Recommended

ESS Energy Storage System Weights and Dimensions

UPS Weights and Dimensions

Commercial reference		Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVX500K1500GS	Total – Power cabinets – I/O cabinet	1956 (4312) 2 x 540 (2 x 1190) 876 (1931)	1970 (77.6)	3200 (126.0) 2 x 600 (2 x 23.6) 2000 (78.7)	900 (35.4)
GVX750K1500GS	Total – Power cabinets – I/O cabinet	2496 (5503) 3 x 540 (3 x 1190) 876 (1931)	1970 (77.6)	3800 (149.6) 3 x 600 (3 x 23.6) 2000 (78.7)	900 (35.4)
GVX1000K1500GS	Total – Power cabinets – I/O cabinet	3036 (6693) 4 x 540 (4 x 1190) 876 (1931)	1970 (77.6)	4400 (173.2) 4 x 600 (4 x 23.6) 2000 (78.7)	900 (35.4)
GVX1250K1500GS	Total – Power cabinets – I/O cabinet	3576 (7884) 5 x 540 (5 x 1190) 876 (1931)	1970 (77.6)	5000 (196.9) 5 x 600 (5 x 23.6) 2000 (78.7)	900 (35.4)
GVX1500K1500GS	Total – Power cabinets – I/O cabinet	4116 (9074) 6 x 540 (6 x 1190) 876 (1931)	1970 (77.6)	5600 (220.5) 6 x 600 (6 x 23.6) 2000 (78.7)	900 (35.4)
GVX1750K1500GS	Total – Power cabinets – I/O cabinet	4656 (10265) 7 x 540 (7 x 1190) 876 (1931)	1970 (77.6)	6200 (244.1) 7 x 600 (7 x 23.6) 2000 (78.7)	900 (35.4)

Battery Cabinet Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
LIBSESMG17UL	490 (1080)	1970 (77.56)	650 (25.59)	587 (23.11)

Junction Cabinet Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
JC4	136 (300)	1970 (77.56)	622 (24.49)	587 (23.11)

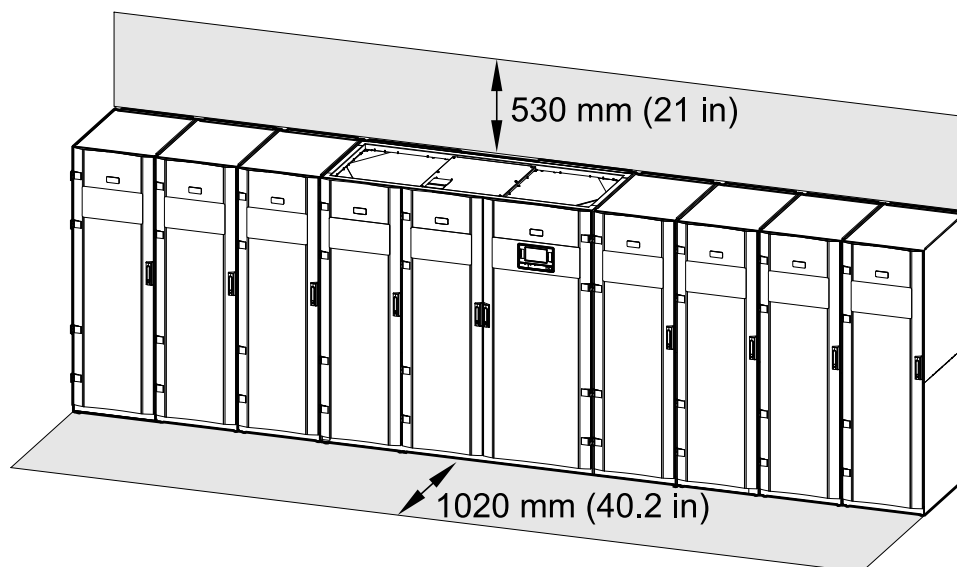
Clearance

NOTE: Clearance dimensions are published for airflow and service access only. Consult with the local safety codes and standards for additional requirements in your local area.

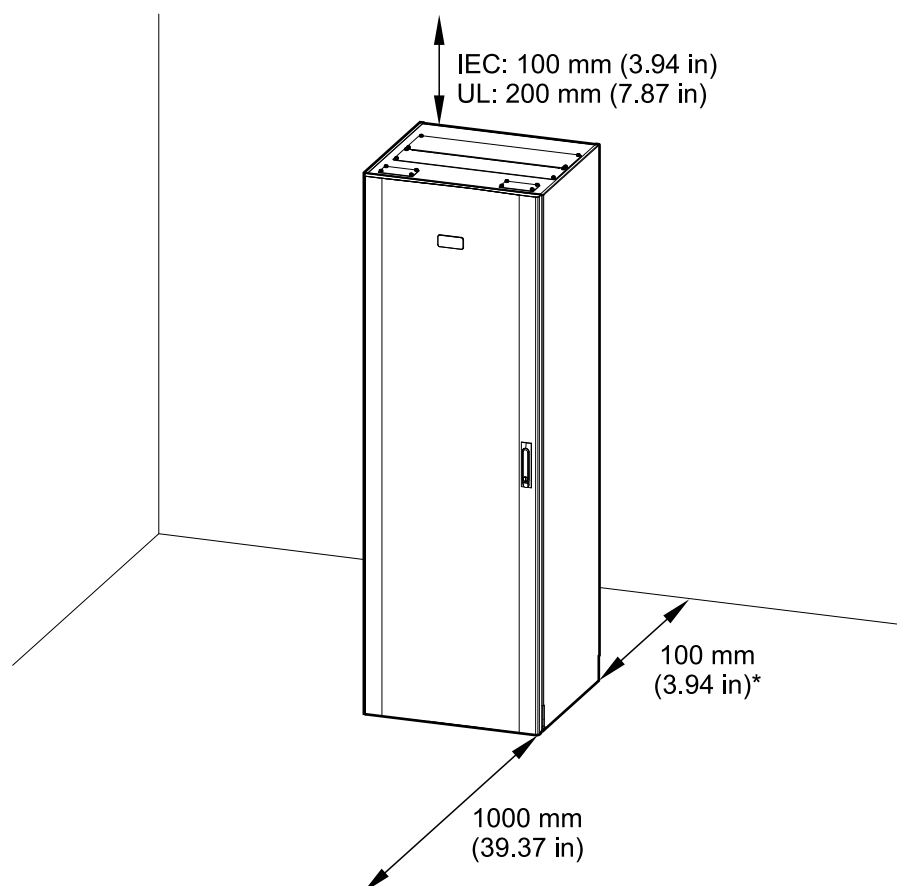
NOTE: The UPS system can be placed up against a wall with no requirement for rear or side access.

NOTE: Clearance dimensions of Lithium-ion Battery Cabinet have been verified by UL 9540A 4th edition (project No. 4789548397, issued by UL on 2021-05-21).

UPS with 1500 kW I/O Cabinet



Lithium-ion Battery Cabinet

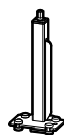
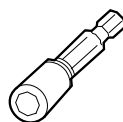


* Rear clearance is only required for Lithium-ion battery cabinet with seismic anchoring.

Overview of Supplied Installation Kits

Installation Kits Shipped with the I/O Cabinet

Installation Kit 0M-816661

Part	Used in	Number of units
Jack	Follow the receiving and unpacking manual to remove the cabinets from the pallet using this installation kit.	1 
Floor protection plate		1 
Hexagonal socket for drilling machine		1 

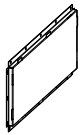
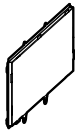
Installation Kit 0M-821667

NOTE: The rear anchoring bracket is shipped on the pallet.

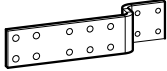
Part	Used in	Number of units
Rear anchoring bracket	Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s), page 47	1 

Installation Kit 0H-9101

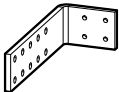
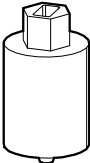
Part	Used in	Number of Units
Angle for left side of the rear anchoring bracket 870-30411	Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s), page 47	1 
Angle for right side of the rear anchoring bracket 870-30412		1 
M8 x 20 hexagonal torx with washer		8 
1 mm leveling shims		30 

Part	Used in	Number of Units
EMC cover left 0M-82316	Position the Cabinets, page 50	1 
EMC cover right 0M-98993		1 
M6 nut with washer		22 
Cable ties for signal cables	Signal Cables, page 70	50 
Temperature sensor 0M-1160	Signal Cable Connections to Classic Battery Cabinets (Boards 0P6547, 0P6549, 0P6552), page 80	2 
Terminator for modbus	Connect the Modbus Cables, page 88	2 

Installation Kit 0H-9161 for Single Mains

Part	Used in	Number of Units
Vertical single mains busbar 880–99058 for L1	Install the Single Utility/Mains Installation Kit 0H-9161, page 66	1 
Vertical single mains busbar 880–99059 for L2		1 
Vertical single mains busbar 880–99057 for L3		1 
Horizontal single mains busbars 880–99060		3 
M10 nut with washer		24 
M10 x 60 hexagonal torx with washer		36 

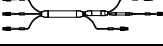
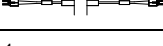
Installation Kit 0H-1102

Part	Used in	Number of units
Neutral busbar 880–5501	Connect the Power Cables in a 480 V System, page 67	1 
M8 x 35 hexagonal torx with washer		4 
Anchor bolt 0M-98831	Position the Cabinets, page 50	2 

Installation Kit 0M-99259

Part	Used in	Number of Units
Front anchoring bracket for I/O cabinet	Mount the Front Anchoring Brackets, page 69	1 

Installation Kit 0H-1074

Part	Used in	Number of Units
Optical fiber cable 0W7819	Route the Signal Cables between the I/O Cabinet and the Power Cabinets, page 70	1 
Optical fiber cable 0W7822		1 
Optical fiber cable 0W7827		1 
Display cable 0W7853	Do not install. Installation must be performed by Schneider Electric.	1 
Display cable 0W7858		1 
Display cable 0W7859		1 

Installation Kit 0H-0889

Part	Used in	Number of Units
PBUS 1 cable 0W7995		1 
PBUS 2 cable 0W7996		1 

Installation Kit 0H-9097

NOTE: Save this installation kit for the field service representative. The busbars will be installed by Schneider Electric during assembly service.

Installation Kit 0H-9128

NOTE: Save this installation kit for the field service representative. The busbars will be installed by Schneider Electric during assembly service.

Installation Kit 0H-9096

NOTE: Save this installation kit for the field service representative. The busbars will be installed by Schneider Electric during assembly service.

Installation Kit 0H-9129

NOTE: Save this installation kit for the field service representative. The busbars will be installed by Schneider Electric during assembly service.

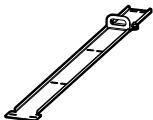
Installation Kit 0M-92449

NOTE: Save this installation kit for the field service representative. The display will be installed by Schneider Electric during assembly service.

Installation Kits Shipped with the Power Cabinet

Installation Kit 0H-9102

NOTE: These installation kit parts are shipped in the packaging of the power cabinet.

Part	Used in	Number of Units
Rear anchoring bracket for power cabinet 0M-818242	Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s), page 47	1 
M8 x 20 hexagonal torx with washer		2 
Front anchoring bracket for power cabinet 0M-816684	Mount the Front Anchoring Brackets, page 69	1 
Long top baying bracket 0M-821220	Position the Cabinets, page 50	1 
M6 x 16 torx screw with washer		15 
M10 nut with washer		24 
M10 x 35 hexagonal torx with washer		12 
1 mm leveling shims		10 
Ground interconnection busbar 880-99027	Save for the field service representative. The busbars will be installed by Schneider Electric during assembly service.	1 
M8 nut with washer		4 
M8 x 35 mm hexagonal torx with washer		4 
Interconnection busbar 880-10146 and 880-9720 from power cabinet to power cabinet (neutral)		1 
Interconnection busbar 0M-140035 power cabinet to power cabinet (battery +)		1

Part	Used in	Number of Units
		
Interconnection busbar 0M-97886 power cabinet to power cabinet (output)		3 
Interconnection busbar 0M-819336 power cabinet to power cabinet (battery -)		1 
Interconnection busbar 0M-97885 power cabinet to power cabinet (input)		3 

Installation Kits Shipped with the Battery Cabinet

Accessory Kit 0M-95318: Busbar Kit

NOTE: Save this accessory kit for the field service representative. The busbars will be installed by Schneider Electric during the start-up service.

Accessory Kit 0M-95319: Cover Kit

NOTE: Save this accessory kit for the field service representative. The covers will be installed by Schneider Electric during the start-up service.

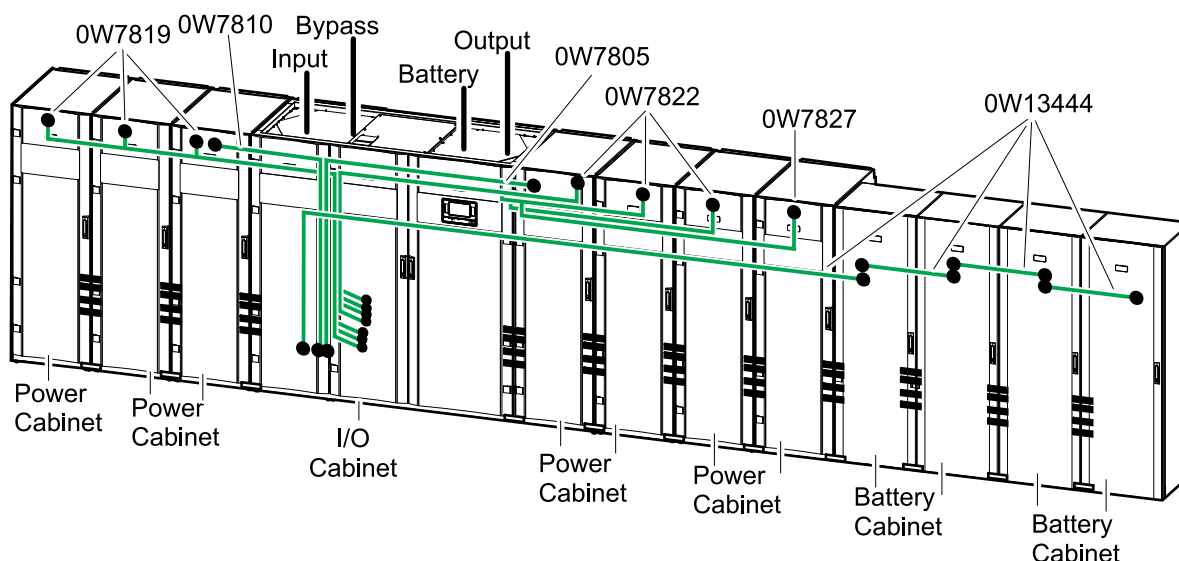
Accessory Kit 0M-95320: Cable Kit

Part Number	Description	Quantity	Used in
0W76926	Signal cable from battery module to battery module – standard	15	Note: Save these signal cables for the field service representative. These signal cables will be installed by Schneider Electric during the start-up service.
0W76936	Signal cable from battery module to battery module – long	1	
0W76933	Signal cable from battery module to RBMS	1	
0W76928	Signal cable from RBMS CAN 2 to RBMS CAN 1 in next battery cabinet	1	Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports, page 102
0W76929	Signal cable from MCCB AUX 1 to UPS	1	
0W76934	Signal cable from MCCB AUX 2 to MCCB AUX 1 in next battery cabinet	1	
0W13444	Signal cable from SGB I/O 1 to the UPS	1	
0W13442	Signal cable from SGB I/O 2 to the UPS	1	
0W76972	Signal cable from SGB I/O 1 to SGB I/O 1 between the battery cabinets	1	

Accessory Kit 0M-95331: Seismic Anchoring and Fuse Kit

Part Number	Description	Quantity	Used in
870-50102	Anchor parts	4	Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s), page 47
870-51172	Interconnection plate between seismic brackets	1	
803-0684	M6 x 12 torx screw with washer	4	
803-0686	M6 x 16 torx with washer	18	Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s), page 47 and Position and Interconnect the Battery Cabinets, page 61.
TME00409	500 A fast acting fuse	3	Note: Save for the field service representative. The fuses will be installed by Schneider Electric during the start-up service.
HUA29593	Washer	6	
HUA13751	M12 x 16 hexagonal screw	6	
HUA41574	3 A rated fuse	2	

Installation Procedure



1. UPS: Follow the receiving and unpacking manual to remove the cabinets from the pallet.
2. UPS: Position the Cabinets, page 50.
3. UPS and Lithium-ion battery cabinets: Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s), page 47.
4. UPS: Prepare the I/O cabinet for power cables. Follow one of the procedures:
 - Prepare the I/O Cabinet for Power Cables in Top Cable Entry Systems, page 64, OR
 - Prepare the I/O Cabinet for Power Cables in Bottom Cable Entry Systems, page 65.
5. UPS: For single mains systems only: Install the Single Utility/Mains Installation Kit 0H-9161, page 66.
6. UPS: Connect the Power Cables in a 480 V System, page 67.
7. UPS: Mount the Front Anchoring Brackets, page 69.
8. UPS: Route the Signal Cables between the I/O Cabinet and the Power Cabinets, page 70.
9. UPS: Prepare for External Signal Cables, page 75.
10. UPS: Connect the Emergency Power Off (EPO), page 81.
11. UPS: Only for external synchronization: Connect External Synchronization, page 82.
12. UPS: Connect Equipment to Input Contacts and Output Relays, page 85.
13. UPS: Connect the Modbus Cables, page 88.
14. UPS: Final mechanical assembly:
 - Final Mechanical Assembly of the I/O Cabinet, page 91, AND
 - Final Mechanical Assembly of the Power Cabinets, page 95.
15. Lithium-ion battery cabinet: Install the Battery Modules in the Battery Cabinet, page 96.
16. Lithium-ion battery cabinet: Position and Interconnect the Battery Cabinets, page 61.
17. Lithium-ion battery cabinet: Install the Front Seismic Anchoring, page 63.

18. Lithium-ion battery cabinet: Install the Battery Modules in the Battery Cabinet, page 96.
19. Lithium-ion battery cabinet: Connect the Power Cables, page 98.
20. Lithium-ion battery cabinet: Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports, page 102.

 DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

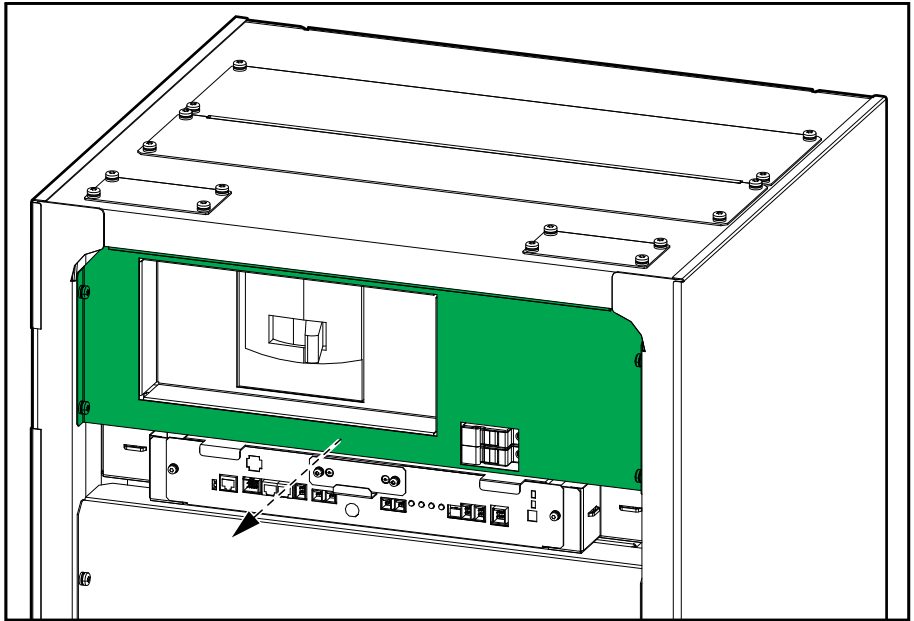
Startup must only be performed by Schneider Electric.

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

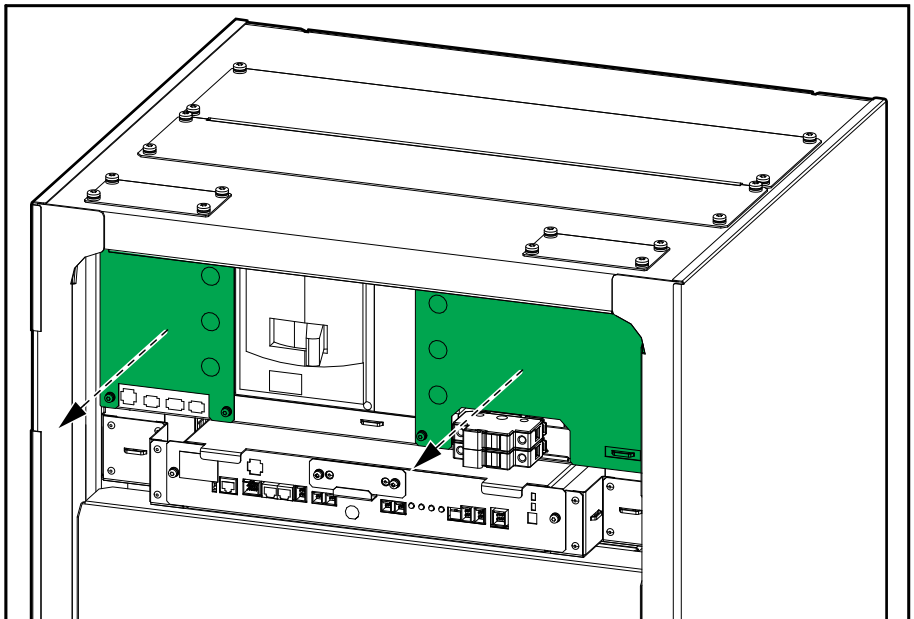
For moving or decommissioning the UPS or the Lithium-ion battery cabinets after installation has been completed, see [Decommission or Move the UPS to a New Location](#), page 110 or [Decommission or Move the Battery Cabinet to a New Location](#), page 115.

Prepare for Installation

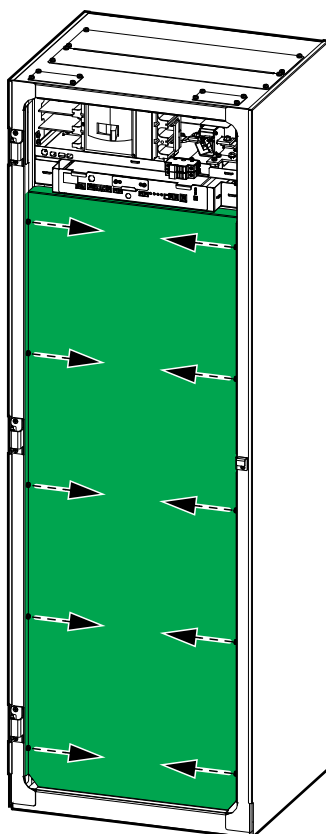
1. Remove the indicated cover.



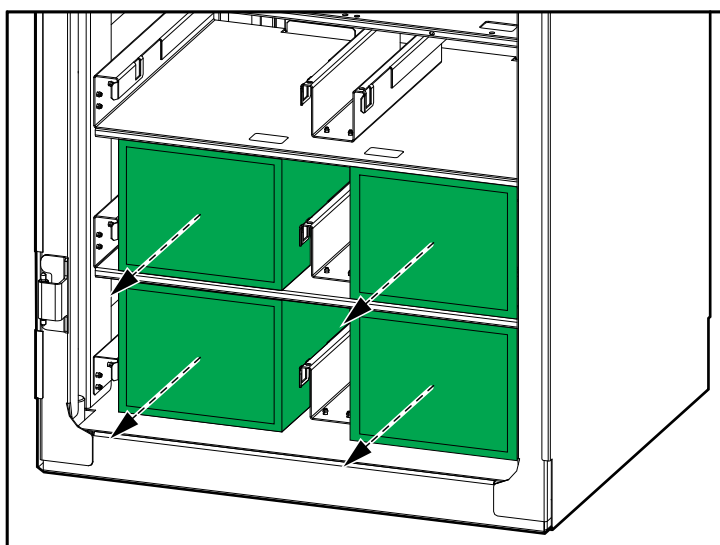
2. Remove the two transparent covers.



3. Remove the plate in front of the battery shelves.



4. Remove the four boxes with accessory kits from the bottom of the cabinet. Refer to for more information on the accessory kits.



Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s)

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Leave the UPS system and battery cabinets covered while making anchoring holes to prevent dust or other conductive particles from entering the system.

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

⚠ DANGER

HAZARD OF TILTING

All rear and front anchoring brackets must be installed.

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

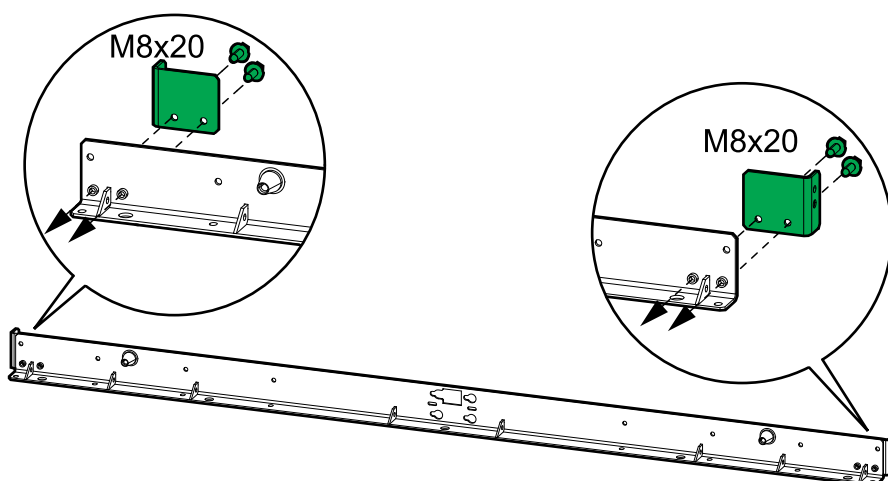
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

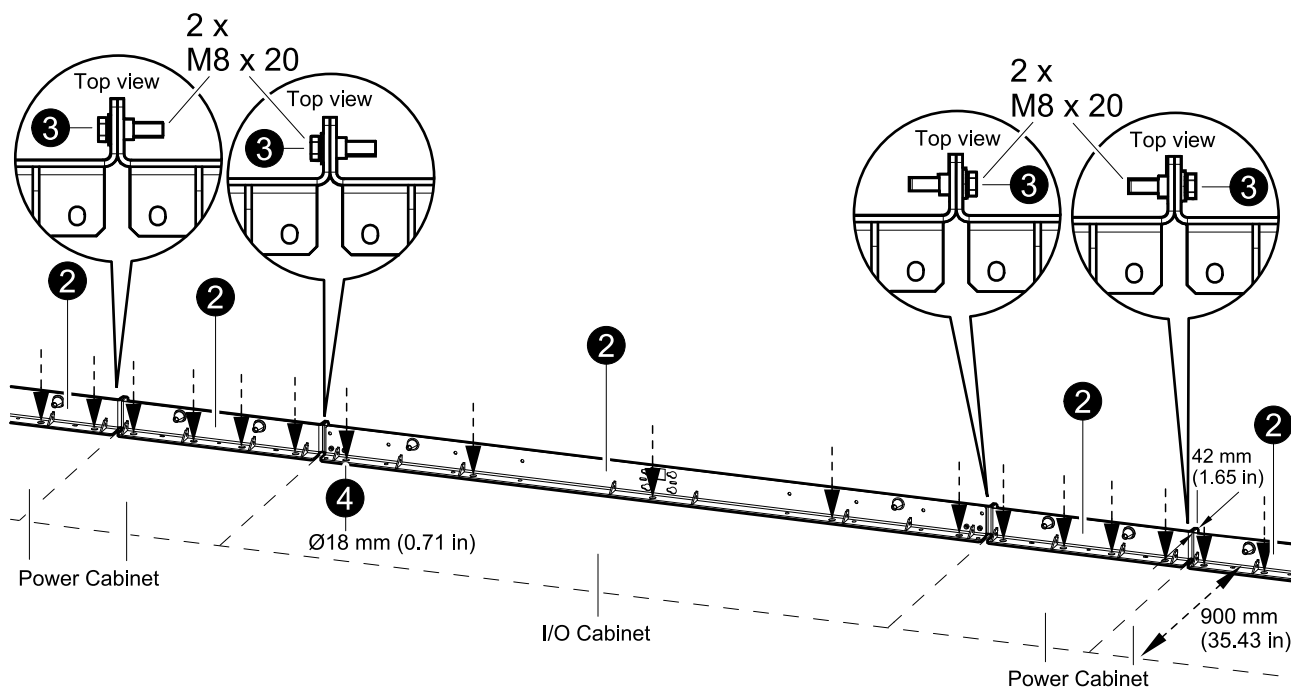
Leave the UPS system covered while making anchoring holes to prevent dust or other conductive particles from entering the system.

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

1. UPS: Use the rear anchoring bracket that was attached to the rear of the I/O cabinet pallet. Fasten the two plates from the installation kit 0H-9101 to the rear anchoring bracket of the I/O cabinet with M8 bolts. Note the direction of the plates.

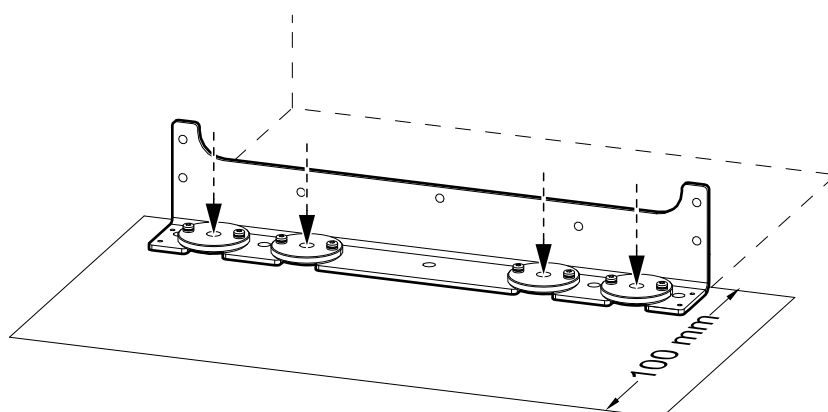


2. Place the rear anchoring brackets for the I/O cabinet and the power cabinets in the final installation area.



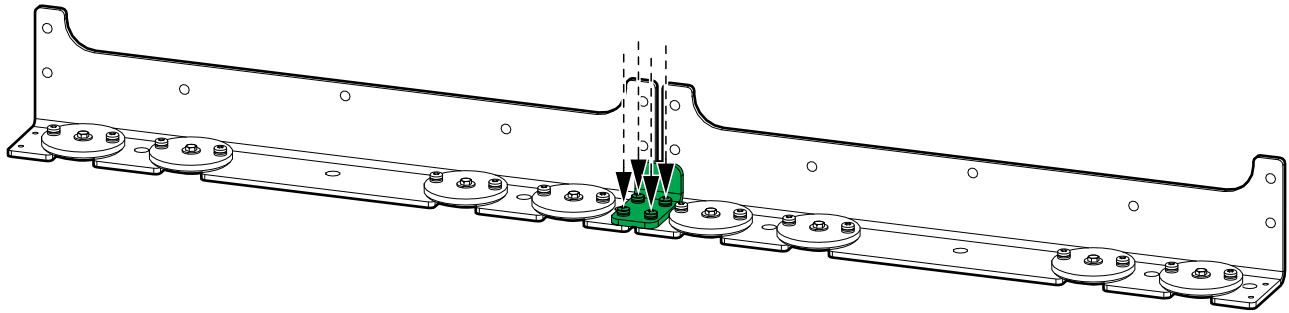
3. Interconnect the rear anchoring brackets using the provided screws and bolts.
4. Mark the hole locations.
5. Drill anchoring holes according to the national and local requirements.
6. Mount the rear anchoring brackets to the floor. Bolts are not supplied.
7. Use a bubble-leveler to ensure that the rear anchoring brackets are level. Use the provided leveling shims if necessary.
8. Lithium-ion battery cabinet: Mount the rear seismic assembly (4 x 870-50102 and M6 x 16 torx screws from accessory kit 0M-95331 and the rear shipping bracket) to the floor. Use appropriate hardware for the floor type – the hole diameter in the rear seismic bracket is $\varnothing 14$ mm. The minimum requirement is M12 strength grade 8.8 hardware.

Rear View



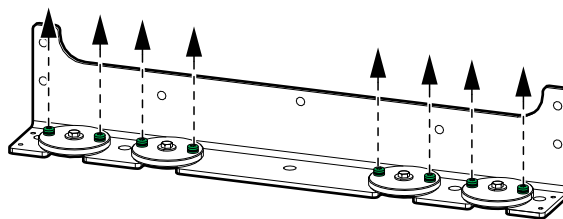
9. In systems with more battery cabinets, interconnect the seismic assemblies with the interconnection plate 870-51172 from the accessory kit 0M-95331.

Rear View



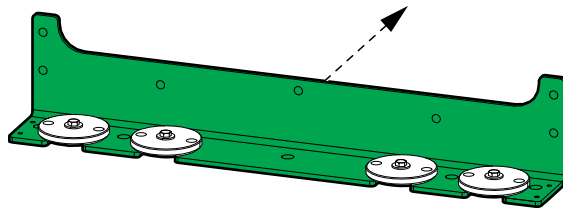
10. Remove the indicated screws.

Rear View



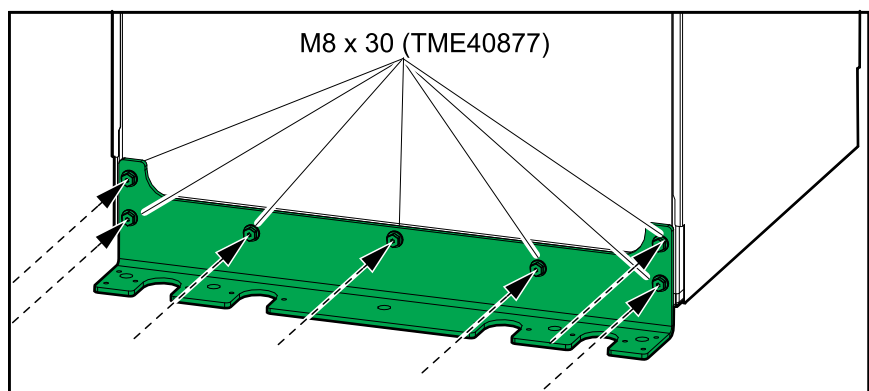
11. Remove the rear seismic bracket.

Rear View



12. Install the rear seismic bracket on the battery cabinet(s).

Rear View



Position the Cabinets

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not step/walk on top of the cabinets.

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

NOTE: The cabinets must be moved to the final installation area individually and cannot be moved after they have been interconnected.

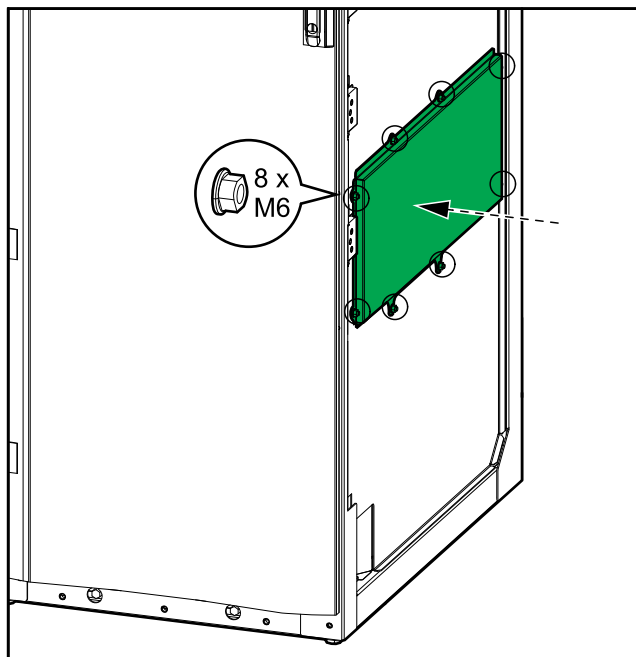
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

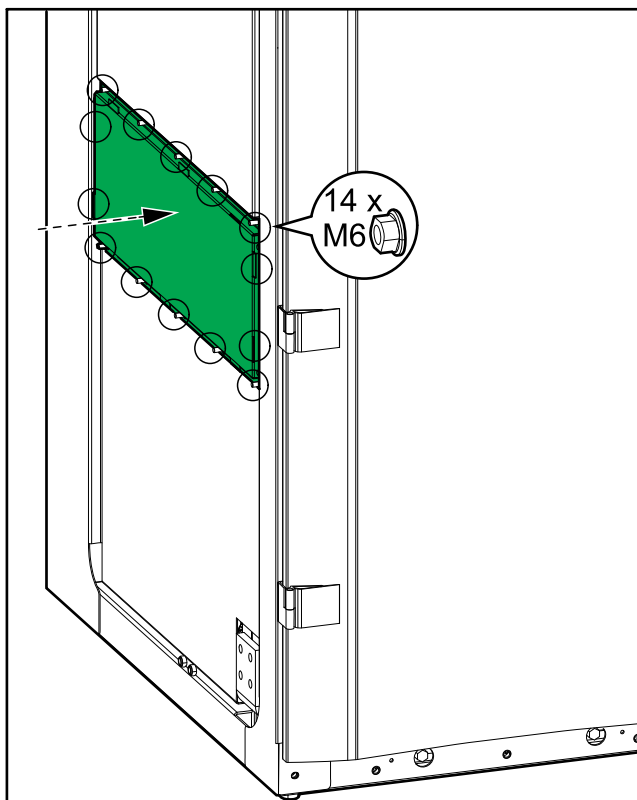
A minimum of one power cabinet and a maximum of four power cabinets must be placed on each side of the I/O cabinet.

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

1. Install the cover 0M-98993 from the installation kit on the right-most power cabinet.



2. Install the interconnection cover 0M-82316 from the installation kit on the left-most power cabinet.



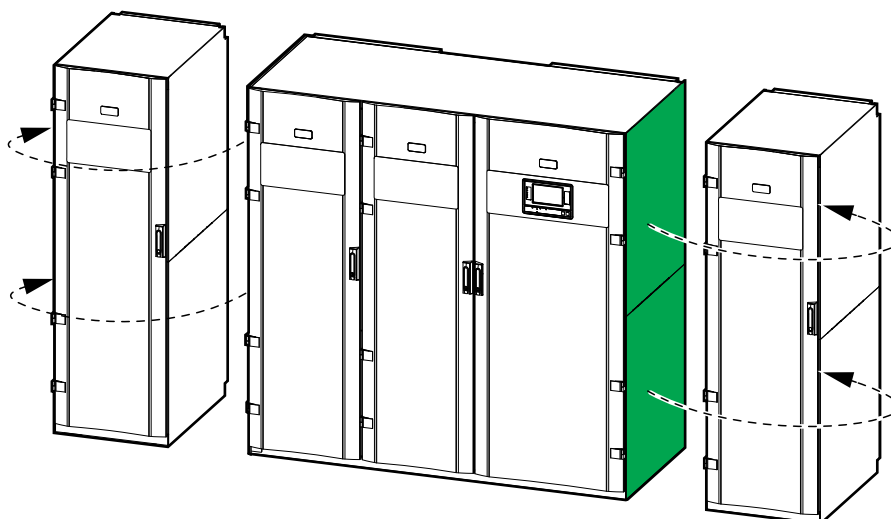
3. Remove the side panels from the I/O cabinet and install them on the left side of the left-most power cabinet and on the right side of the right-most power cabinet.

⚠ ⚠ WARNING

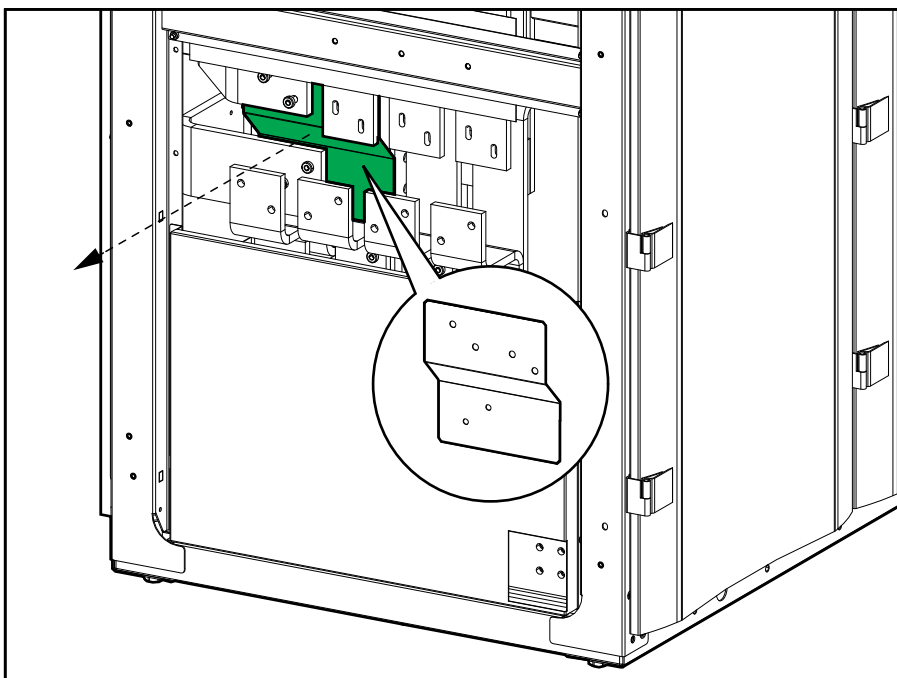
HAZARD OF ARC FLASH

- 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.
- Move and install the indicated side panels in all installation types (including parallel installations with no air gap between the frames or in installations where the right-most power cabinet and/or the left-most power cabinet is placed against a wall).

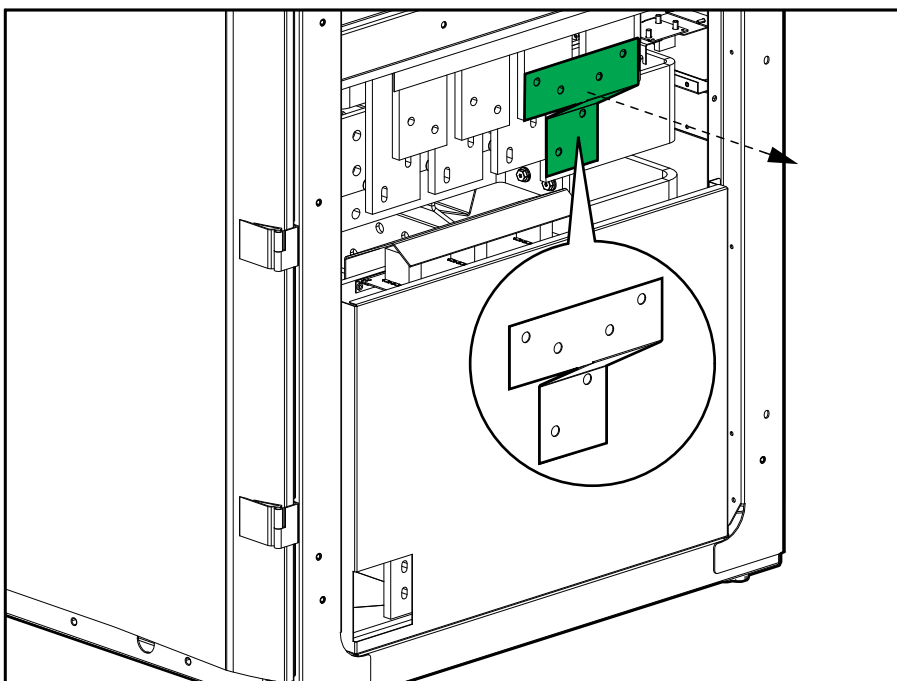
Failure to follow these instructions can result in death, serious injury, or equipment damage.



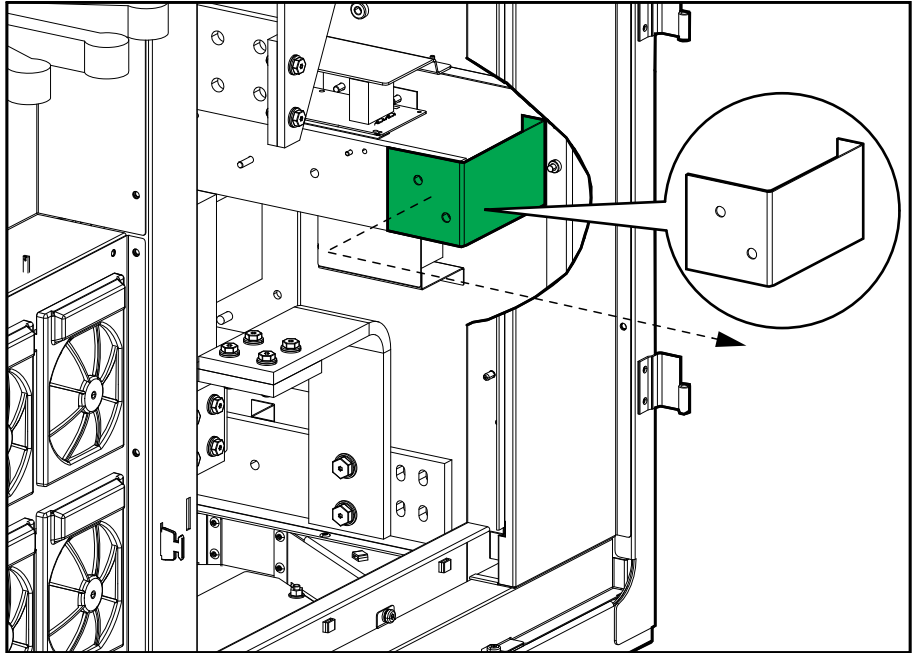
4. Remove and dispose of the indicated transport bracket from the left side of the I/O cabinet.



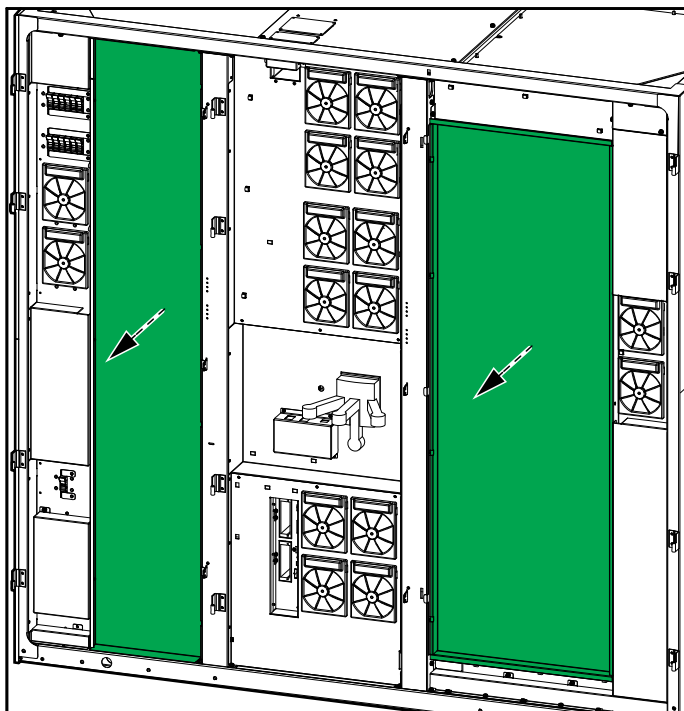
5. Remove and dispose of the indicated transport bracket from the right side of the I/O cabinet.



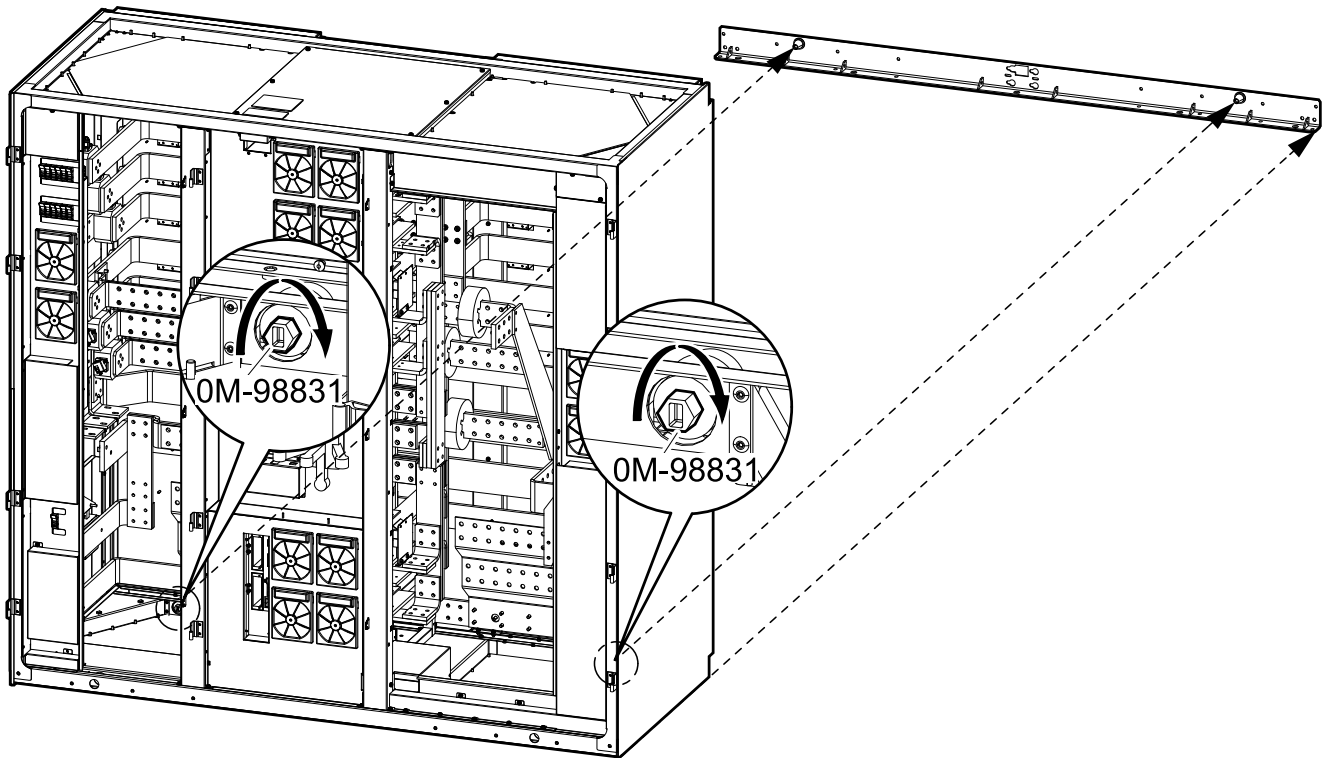
6. Remove and dispose of the indicated transport bracket from the right side of the I/O cabinet.



7. Remove the two metal plates from the I/O cabinet.



8. Push the I/O cabinet into position against the rear anchoring bracket – the I/O cabinet will connect to the conic outcroppings on the rear anchoring bracket.



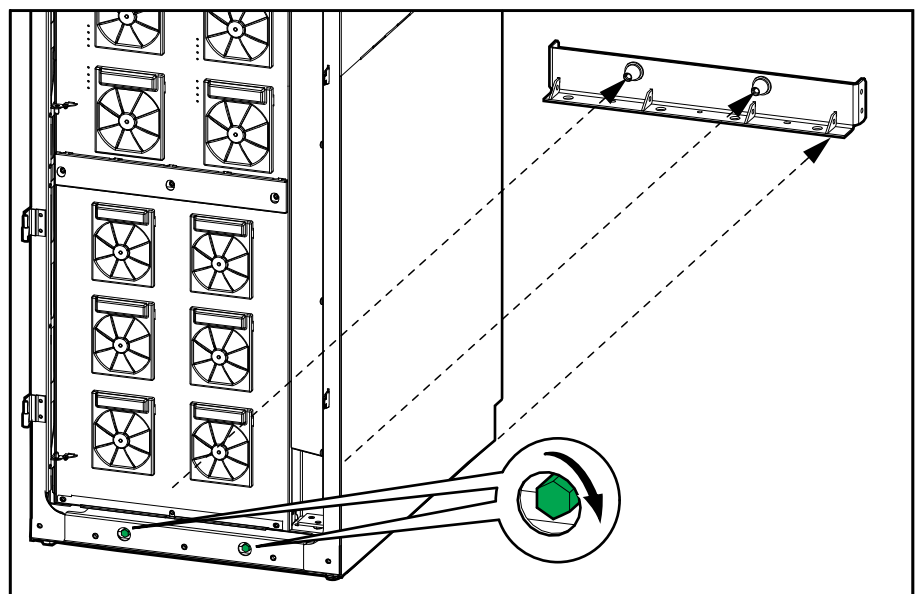
9. Fasten the cabinet to the rear anchoring bracket with the two anchor bolts from the installation kit. Torque to 50 Nm (36.87 lb-ft).
10. Push the power cabinets one by one into position against the rear anchoring brackets – the cabinets will connect to the conic outcroppings on the brackets.

⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

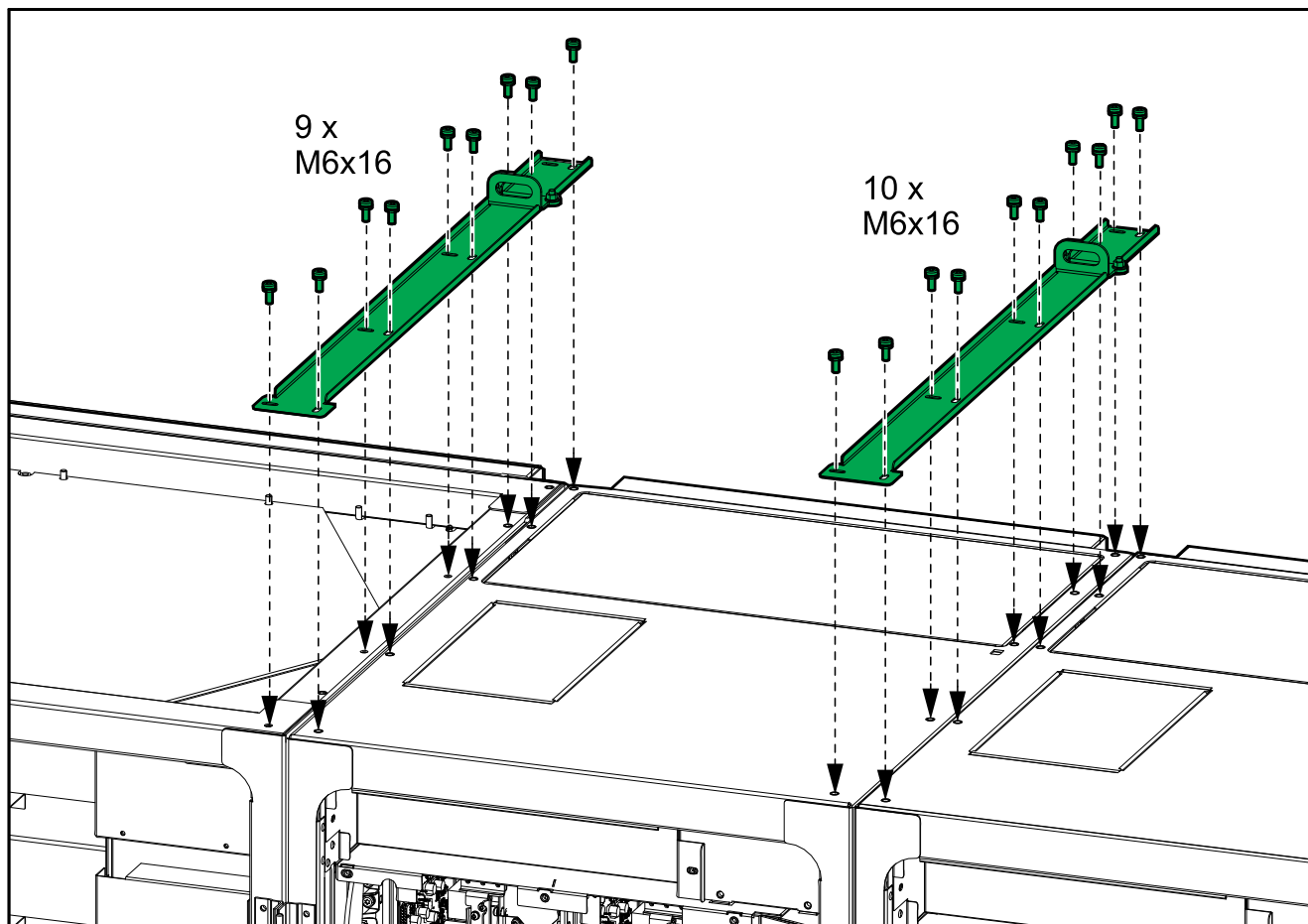
When pushing the power cabinet into position, push on the frame to avoid damaging the signal cables.

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

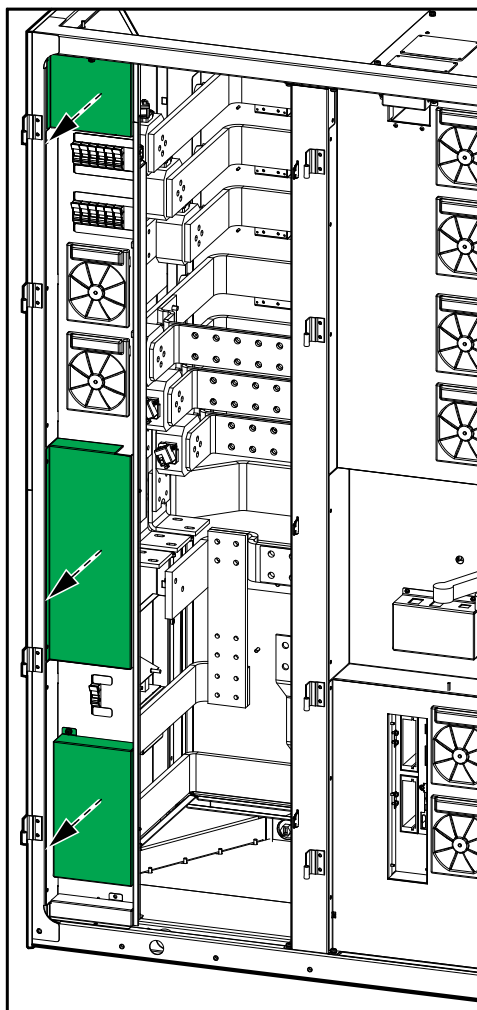


11. Fasten the cabinets to the rear anchoring brackets by tightening the bolts on the front of the cabinets. Torque to 50 Nm (36.87 lb-ft).
12. Lower the two front feet on all cabinets until they connect with the floor – use a bubble-leveler to ensure that the cabinets are level. Use the provided levelling shims if necessary.
13. Install the top baying brackets on the top of the cabinets and fasten with the provided screws.

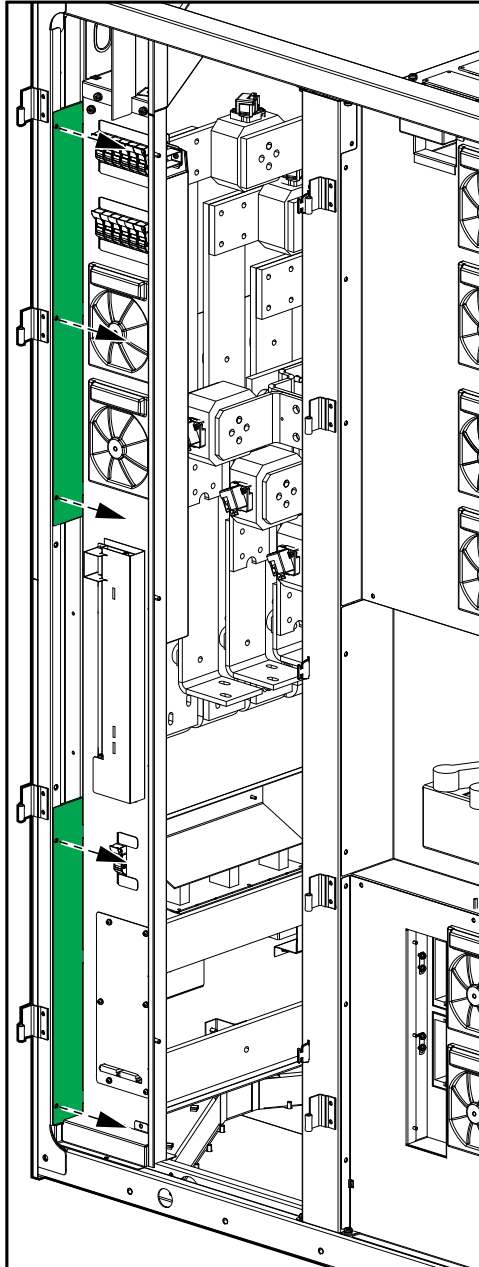
Front View of the I/O Cabinet and Two Power Cabinets



14. Remove the three indicated plates in the left side of the I/O cabinet.

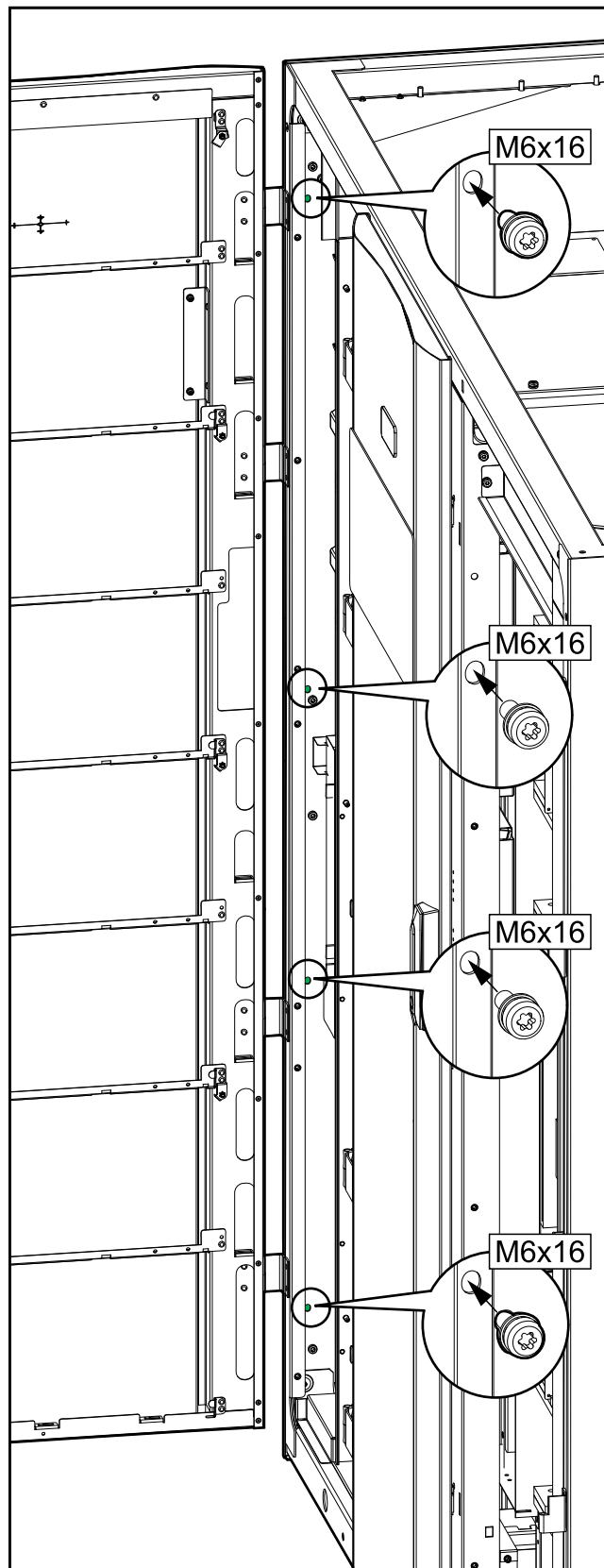


15. Remove the two indicated plates in the left side of the I/O cabinet.



16. Mount the M6 screws from the installation kit from right to left in the four marked locations between the I/O cabinet and the power cabinet placed to the left of the I/O cabinet.

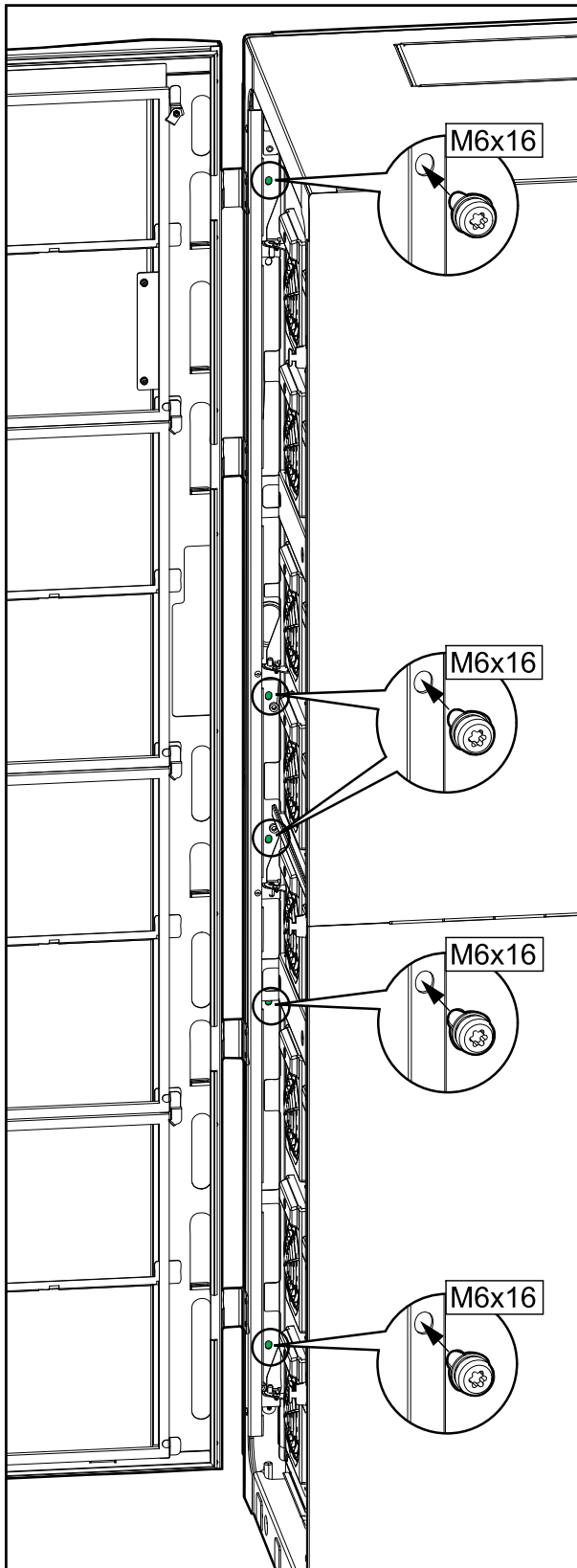
From the Power Cabinet on the Left Side of the I/O Cabinet to the I/O Cabinet



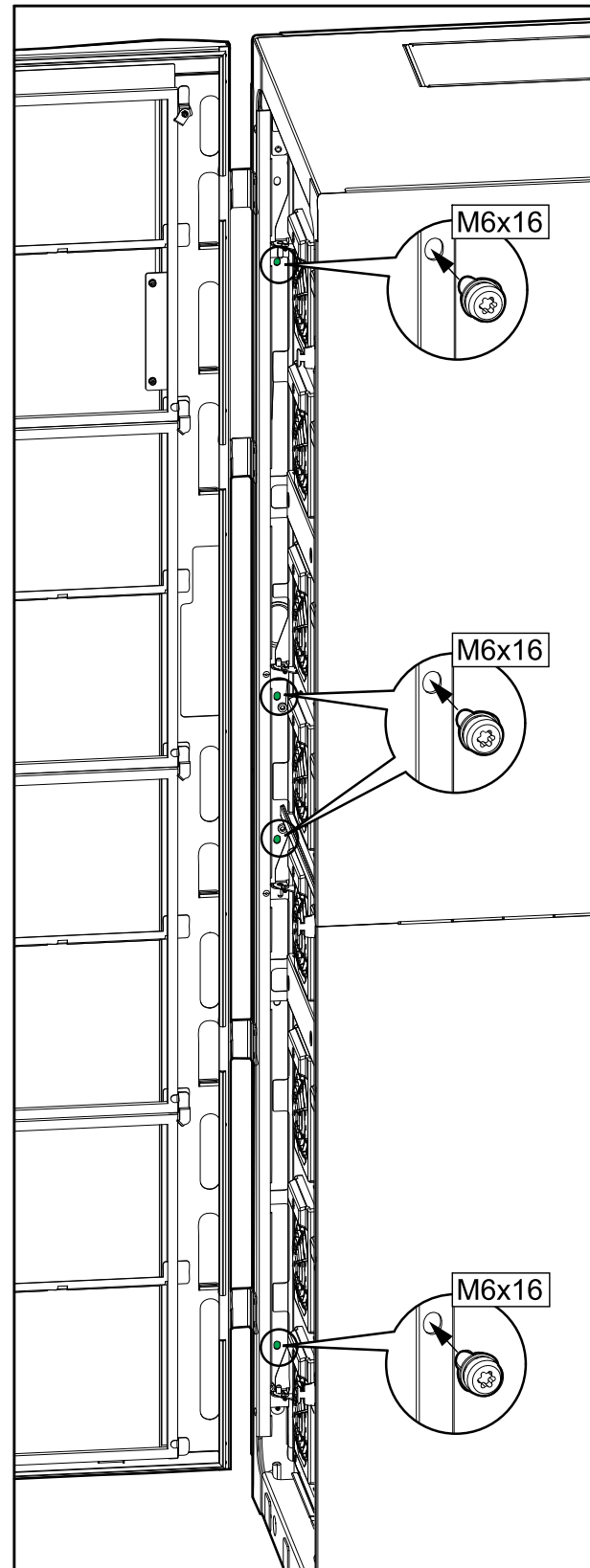
17. Mount the M6 screws from the installation kit from right to left to tighten the cabinets together:

- in the five marked positions between the power cabinets.
- in the four marked positions between the I/O cabinet and the power cabinet on the right side of the I/O cabinet.

From Power Cabinet to Power Cabinet

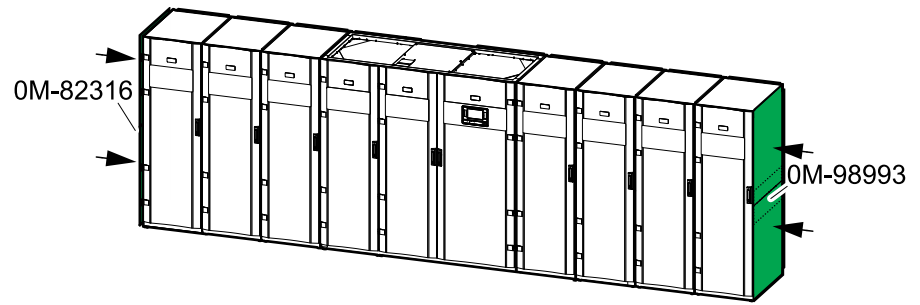


From Power Cabinet on the Right Side of the I/O Cabinet to the I/O Cabinet



18. Verify that the right-most power cabinet and the left-most power cabinet for the I/O cabinet has the covers (0M-98993 and 0M-82316) and the side panels installed before continuing.

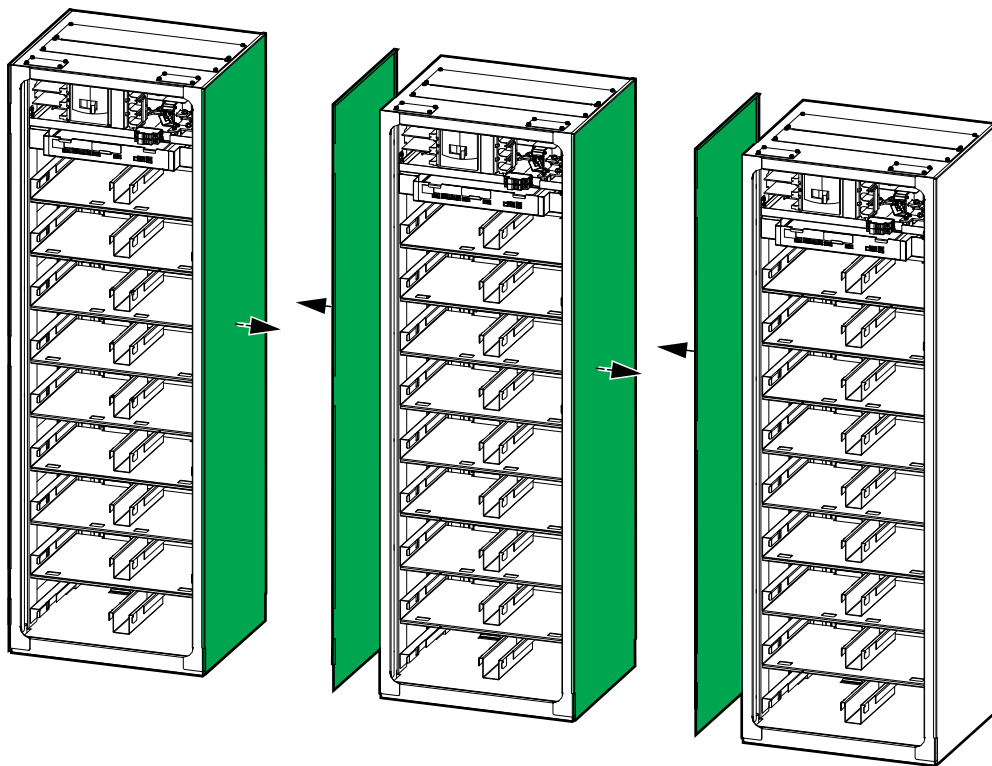
1500 kW I/O with Maximum Number of Power Cabinets



Position and Interconnect the Battery Cabinets

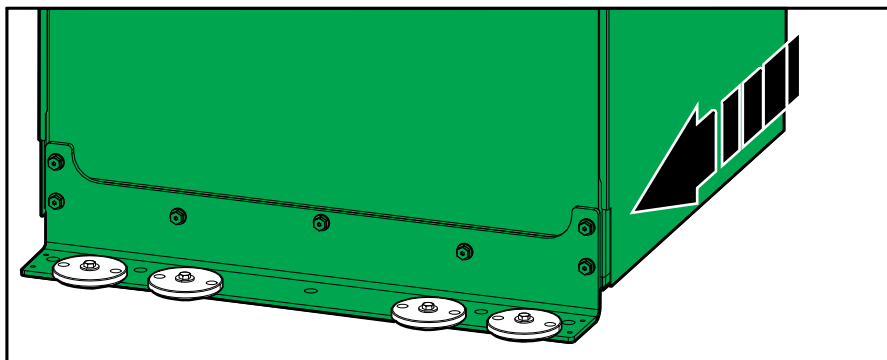
NOTE: This procedure describes how to position and interconnect several battery cabinets. If your system only has one battery cabinet, you only need to follow step 2 and step 3.

1. Remove the side panels that are adjacent to the other battery cabinets.

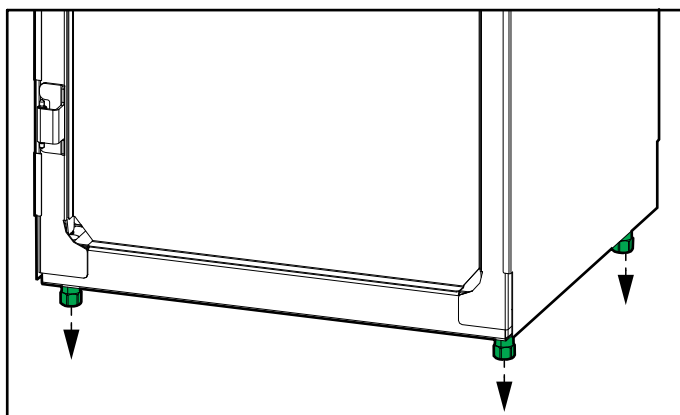


2. Push the right-most battery cabinet into position. For seismic anchoring, ensure that the rear seismic bracket connects to the rear anchors.

Rear View

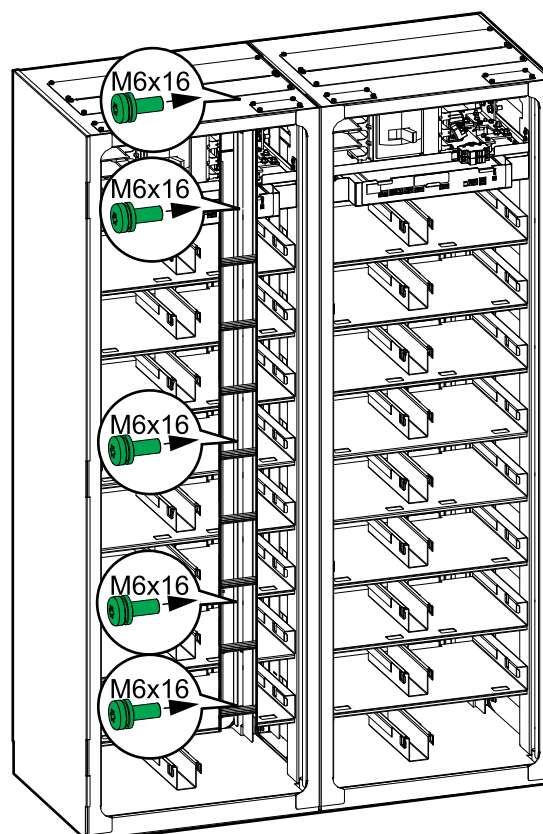
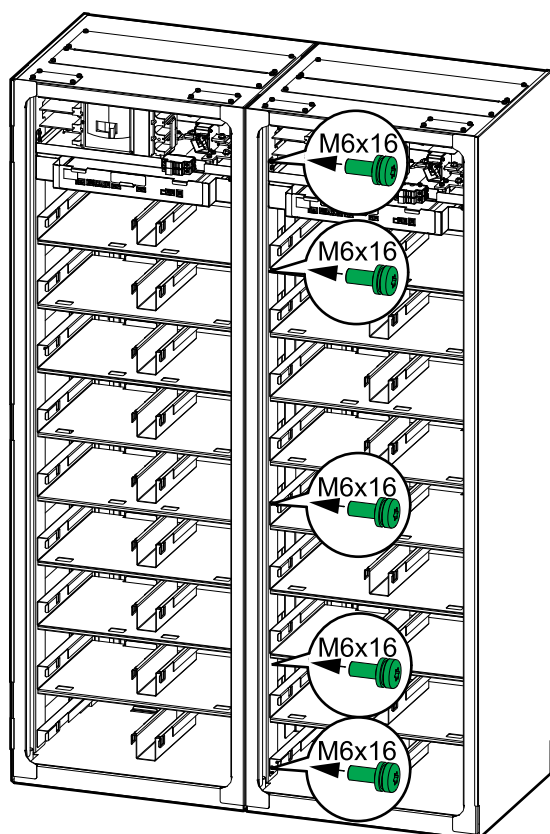


3. Lower the levelling feet until they connect with the floor - use a bubble-leveler to ensure that the cabinet is level.



4. Push the second right-most battery cabinet into position, align with the seismic anchoring (if any), and level the battery cabinet as described in step 2 and step 3.
5. Install the ten interconnection screws (five in the front and five in the rear) between the two battery cabinets.

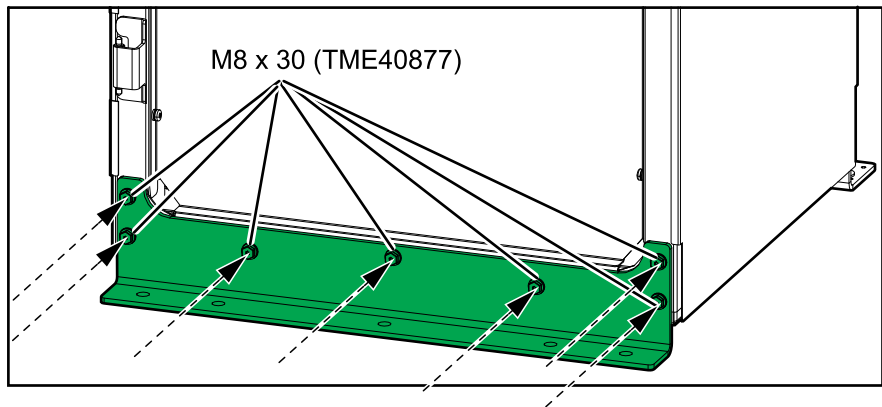
NOTE: To reach the five interconnection screws in the rear of the left-most battery cabinet, the left side panel can be removed. Reinstall the left side panel on the left-most battery cabinet after interconnection.



6. Push the third battery cabinet into position, align with the seismic anchoring (if any), level the battery cabinet, and interconnect with the other battery cabinets as described in step 2, step 3, and step 5. Continue until all the battery cabinets are in place, levelled, and interconnected.

Install the Front Seismic Anchoring

1. Install the front seismic bracket (front shipping bracket) on the battery cabinet.



2. Anchor the front seismic bracket to the floor using appropriate hardware for the floor type – the hole diameter in the front seismic bracket is $\varnothing 14$ mm. The minimum requirement is M12 strength grade 8.8 hardware.

NOTE: Floor anchoring bolts are not supplied.

Prepare the I/O Cabinet for Power Cables in Top Cable Entry Systems

⚠ DANGER

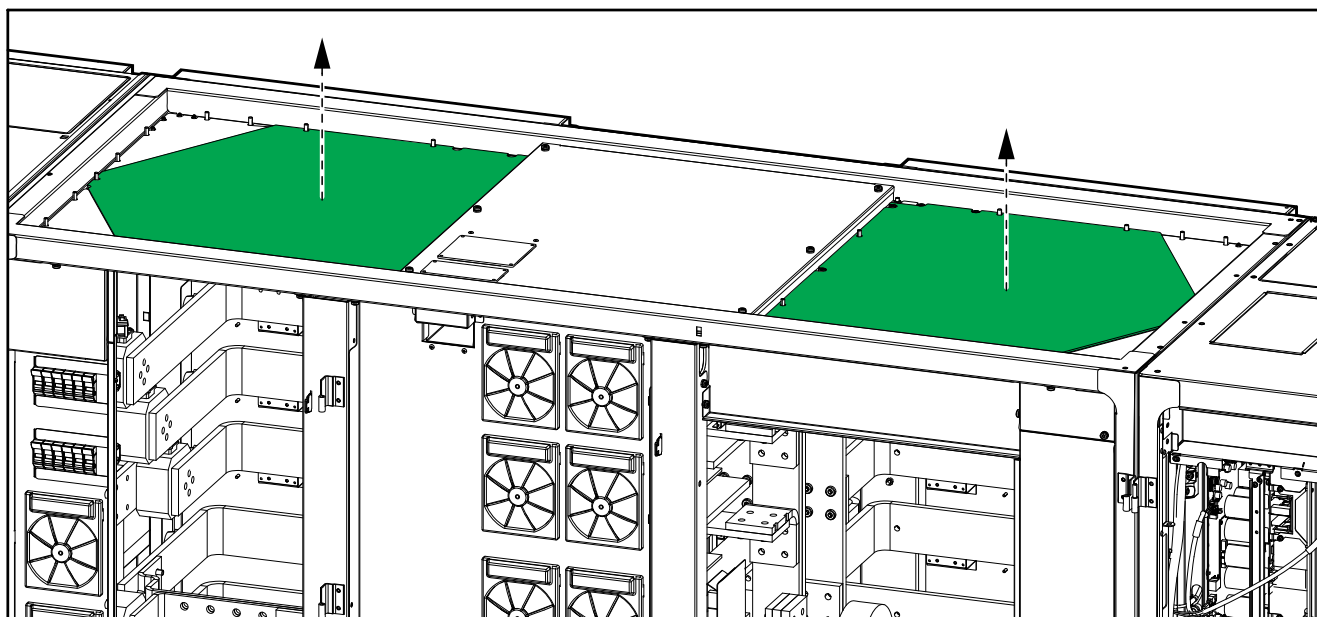
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

1. Loosen the bolts and remove the gland plates from the top of the I/O cabinet.

Front View of the I/O Cabinet



2. Drill or cut holes for cables/conduits in the top gland plate.
3. Install conduits and reinstall the top gland plate.

⚠ 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.

Prepare the I/O Cabinet for Power Cables in Bottom Cable Entry Systems

⚠ DANGER

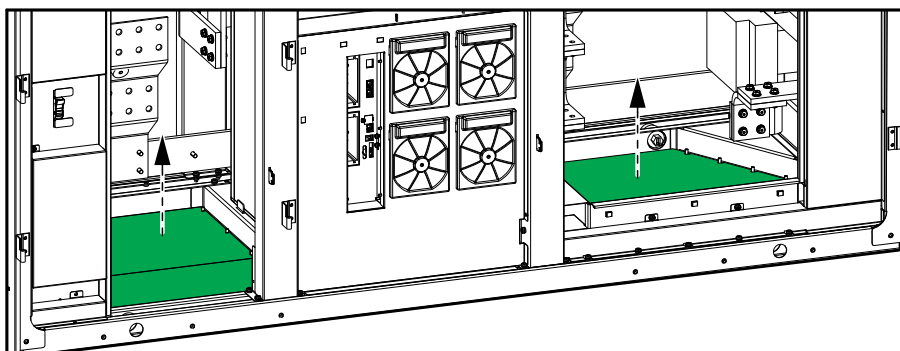
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

1. Loosen the bolts and remove the gland plates in the bottom of the I/O cabinet.

Front View of the I/O Cabinet



2. Drill or cut holes for cables/conduits in the bottom gland plate.
3. Install conduits and reinstall the bottom gland plate.

⚠ 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.

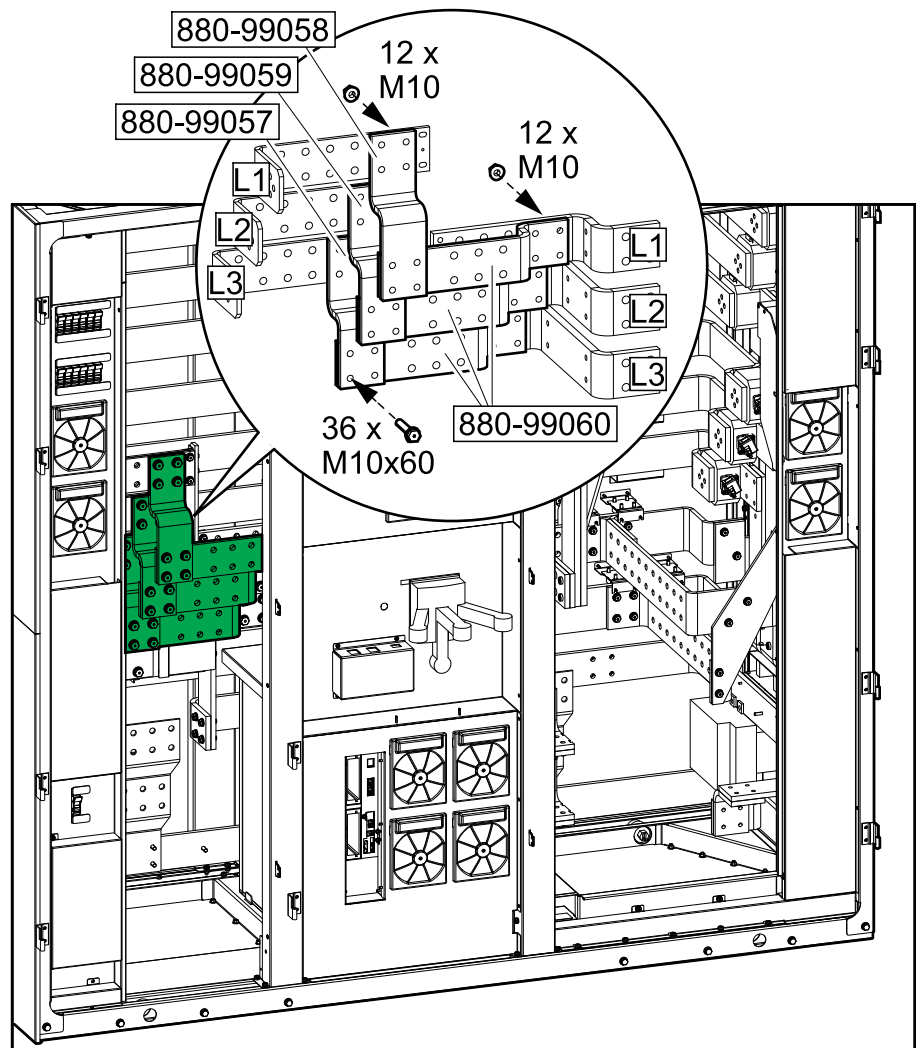
Install the Single Utility/Mains Installation Kit 0H-9161

NOTE: This procedure is only applicable to single utility/mains systems.

1. Install the single utility/mains installation kit 0H-9161 between the input and bypass busbars. Connect L1 to L1, L2 to L2, and L3 to L3.

NOTE: Two busbars are required for each connection.

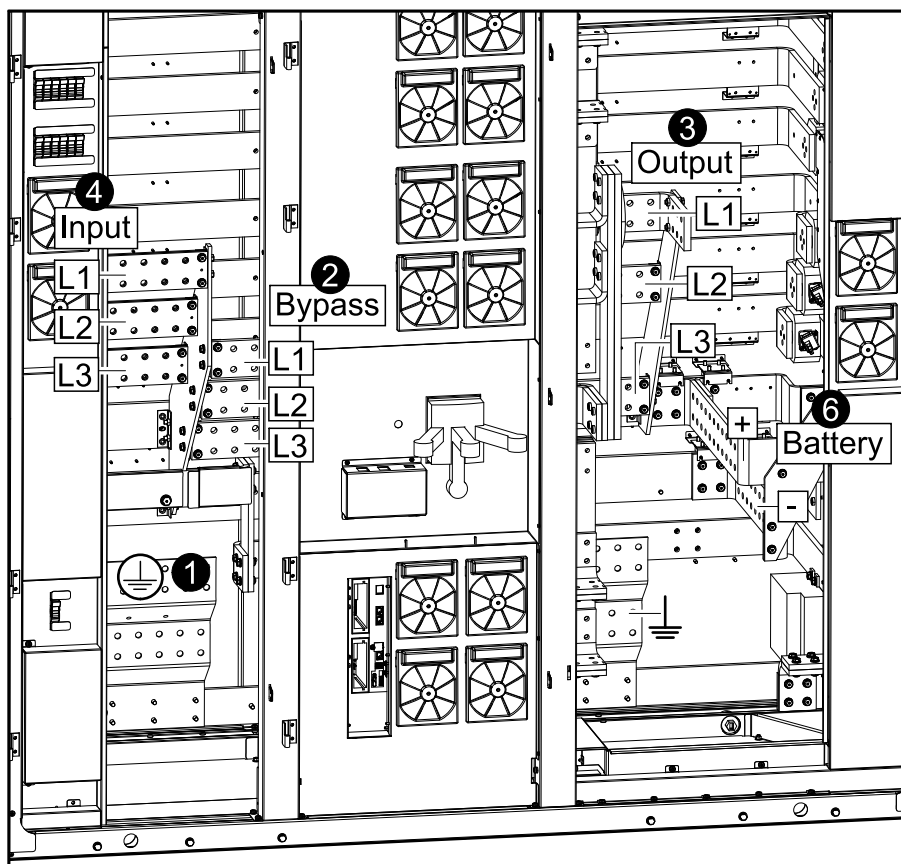
Front View of the I/O Cabinet



Connect the Power Cables in a 480 V System

The grounding electrode conductor must be installed per NEC 250.30 and sized per NEC 250.66.

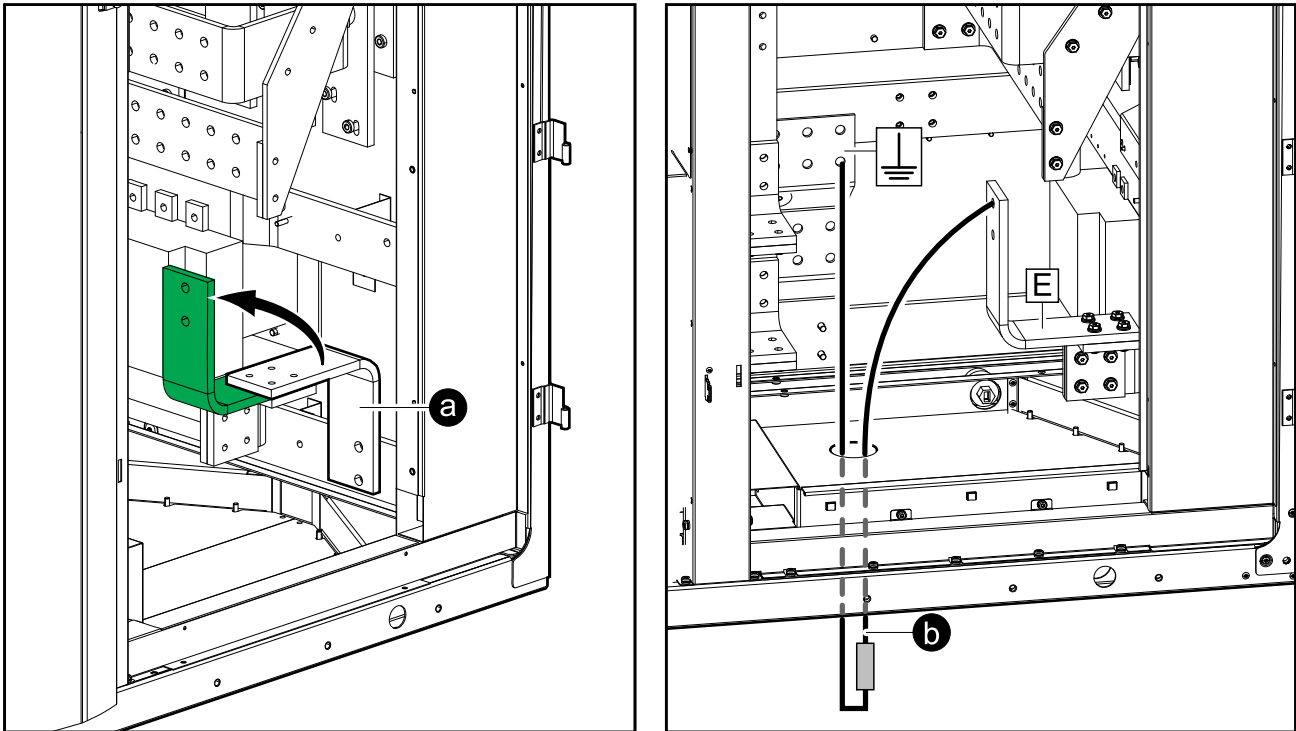
1. Connect the equipment grounding conductor/PE to the PE busbar.



2. Only applicable to dual mains systems: Connect the bypass cables.
3. Connect the output cables.
4. Connect the input cables.

5. For high impedance grounding systems only:

NOTE: For high impedance grounding systems, the installation must include a ground-fault detection circuitry.



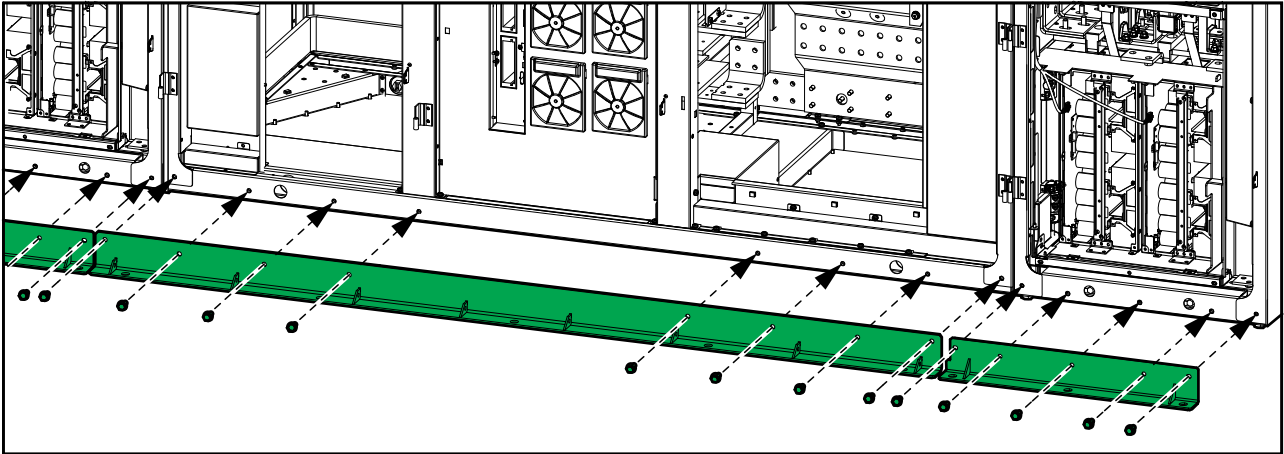
a. Rotate the jumper busbar so it does not create a connection.

b. Connect an external impedance between the “E” terminal and the equipment grounding conductor according to NEC 2014 article 250.36.

6. Connect the battery cables to the battery + and battery – terminals.

Mount the Front Anchoring Brackets

1. Fasten the front anchoring brackets to the front of the cabinets using the provided bolts.



2. Anchor the front anchoring brackets to the floor.

NOTE: Floor anchoring bolts are not supplied.

Signal Cables

⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

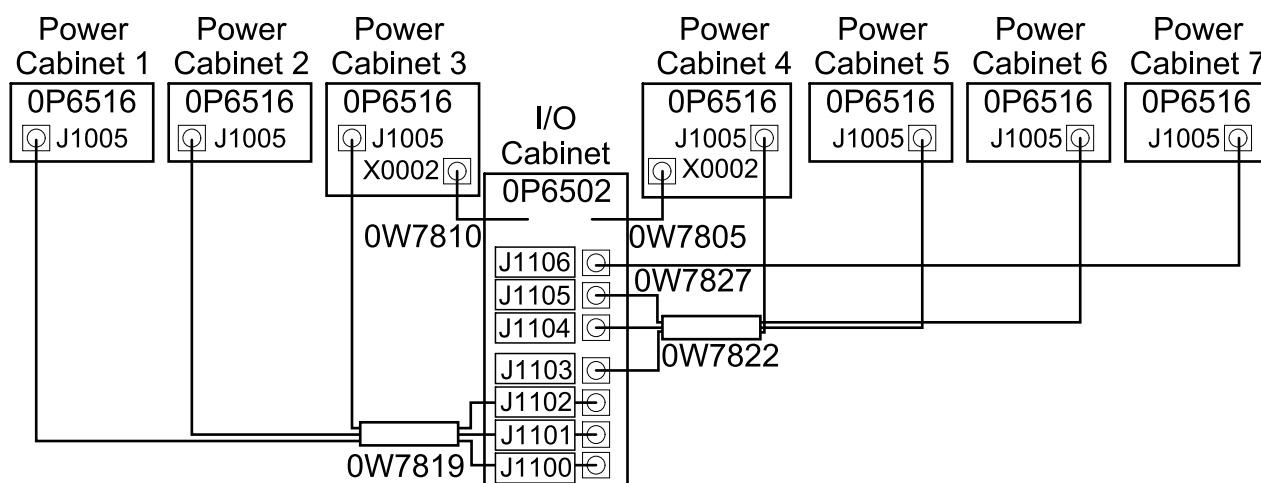
- All Class 2/SELV signal cables shall be double insulated/jacket cable and minimum rated for 30 VDC. All non-Class 2/non-SELV signal cables shall be double insulated/jacket cable and minimum rated for 600 VAC.
- The cable supplying the shunt trip shall be a jacket cable and rated for 600 VAC. The cables shall be sized taking the cable voltage drop and the recommendation of the shunt trip manufacturer into consideration.

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

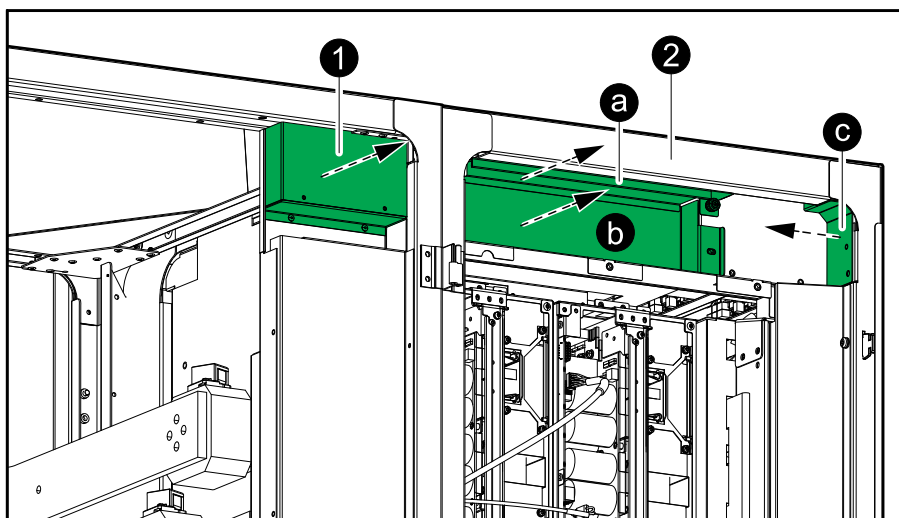
Route the Signal Cables between the I/O Cabinet and the Power Cabinets

NOTE: Do not connect the signal cables. Signal cables will be connected by Schneider Electric during the assembly service.

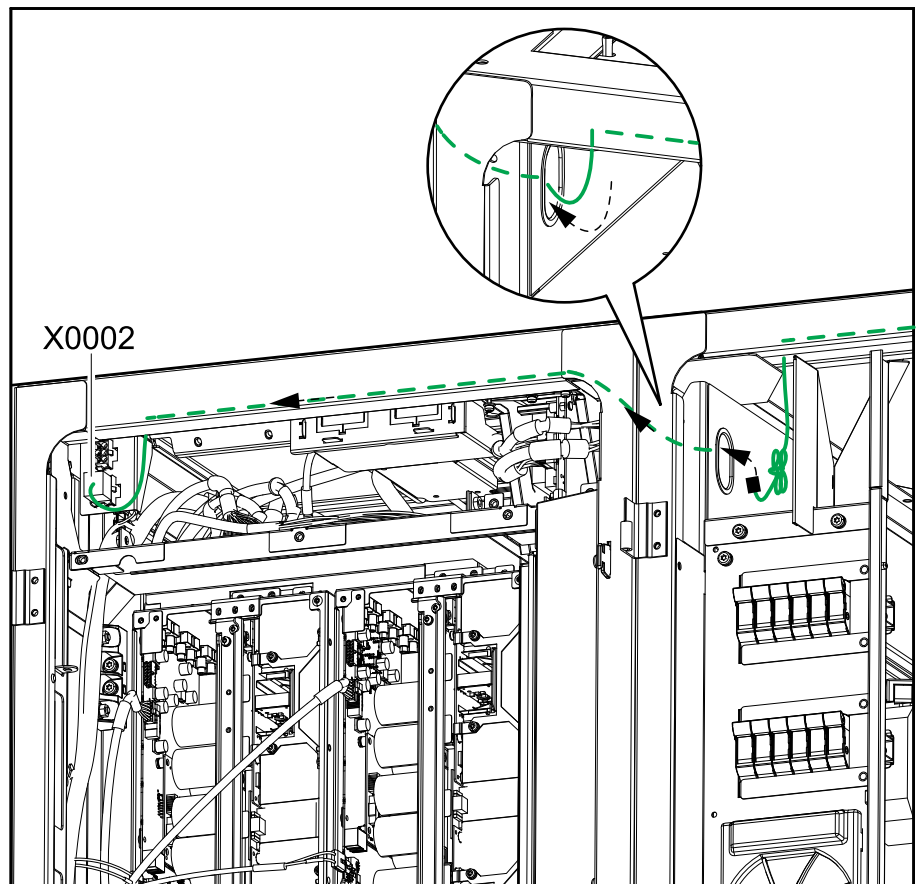
Overview of Signal Cables between the Power Cabinets and the I/O Cabinet



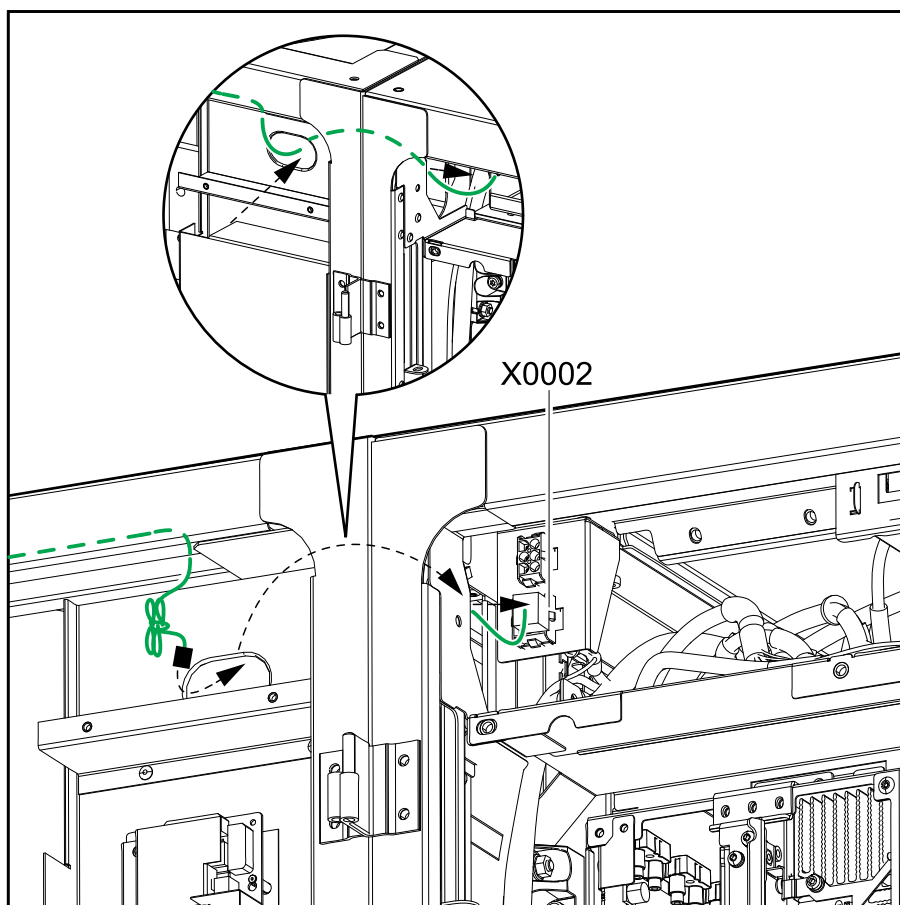
1. Remove the plate in the upper right corner of the I/O cabinet.



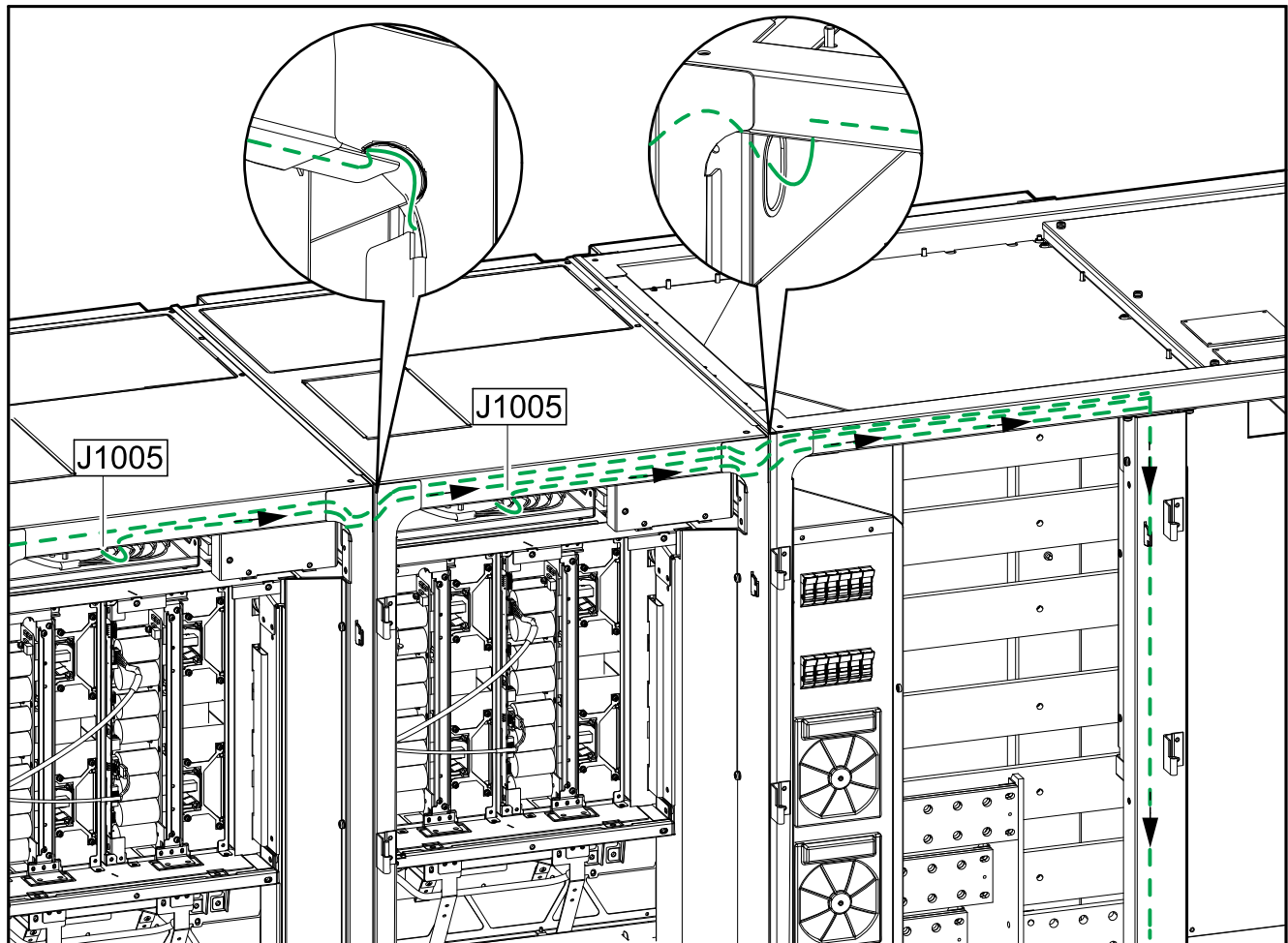
2. Remove the three plates (a-c) on all power cabinets.
3. Remove and dispose of all 0W11379 signal cables connected to the X0002 terminals of all power cabinets.
4. Route the signal cable connected in the left side of the I/O cabinet to the X0002 terminal in the power cabinet to the left of the I/O cabinet.



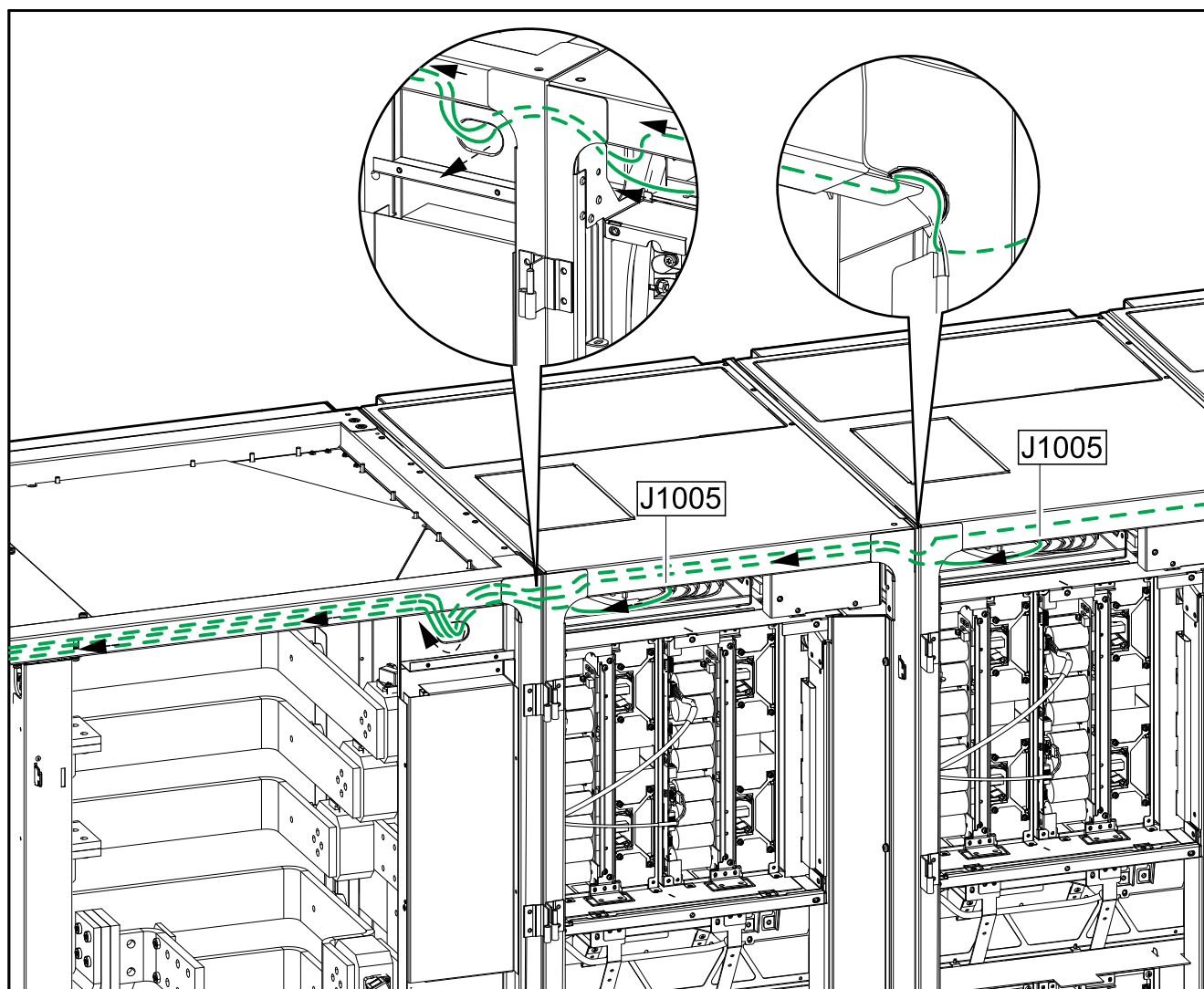
5. Route the signal cable connected in the right side of the I/O cabinet to the X0002 terminal in the power cabinet to the right of the I/O cabinet.



6. Route the signal cable 0W7819 from 0P6516 terminal J1005 in power cabinets 1–3 (on the left side of the I/O cabinet) and into the I/O cabinet as shown on the illustration and fasten the cable.



7. Route the signal cable 0W7822 from 0P6516 terminal J1005 in power cabinet 4 and power cabinets 5–6 if available (on the right side of the I/O cabinet) and into the I/O cabinet as shown on the illustration and fasten the cable.



8. In redundant systems only, route the signal cable 0W7827 from 0P6516 terminal J1005 in power cabinet 7 and into the I/O cabinet and fasten the cable.

Prepare for External Signal Cables

Class 2/SELV

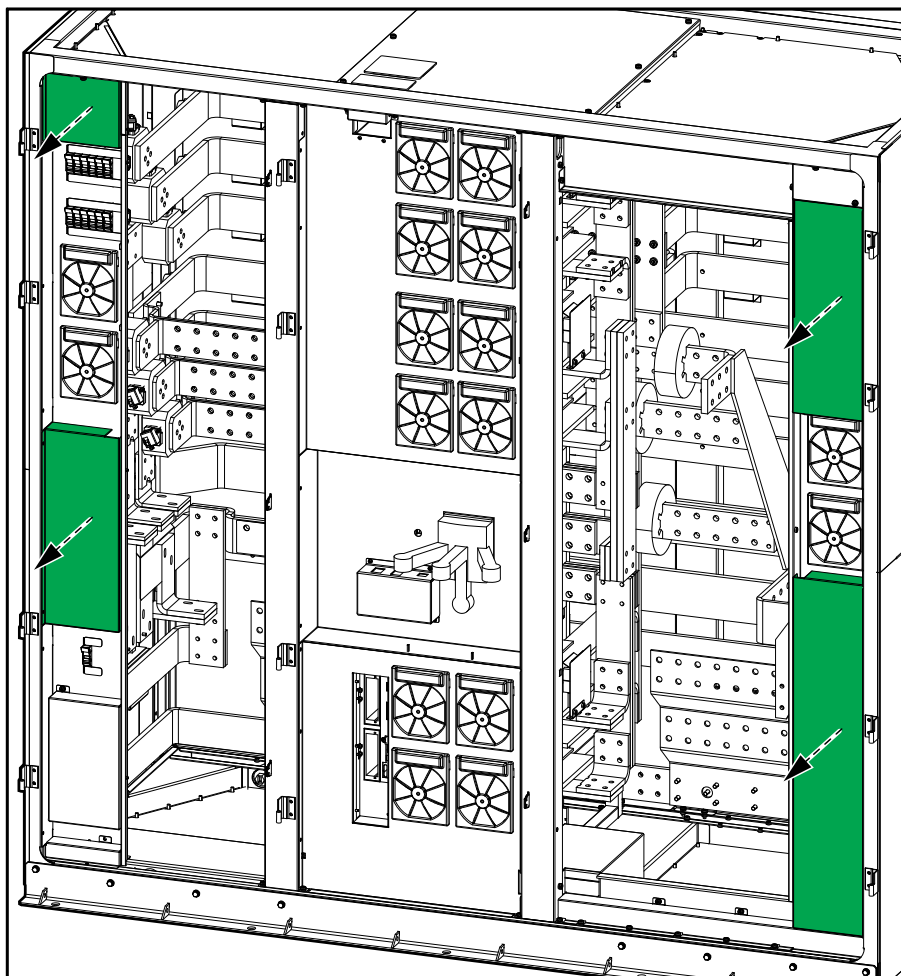
Board	Terminal	Description	See
0P6548	J5502-J5506, J5508, J5510–J5512	Input contacts	Connect Equipment to Input Contacts and Output Relays, page 85
0P6548	J5520-J5525, J5528	Output relays	
0P6548	J5527	Kirk key control	Signal Cable Connections to the Switchgear (Boards 0P6547, 0P6548, 0P6549), page 79
0P6548	J5514	UOB lamp control	
0P6548	J5515	MBB lamp control	
0P6548	J5516	SIB lamp control	
0P6548	J5517	SSIB lamp control	
0P6548	J5509	UOB 2	
0P6547	J4931-J4932	24 V SELV supply	
0P6547	J4936-J4938	EPO	
0P3643	PBUS 1 and PBUS 2	PBUS	Connect the Emergency Power Off (EPO), page 81
0P6502		Modbus	Connect the Modbus Cables, page 88

Non-Class 2/Non-SELV

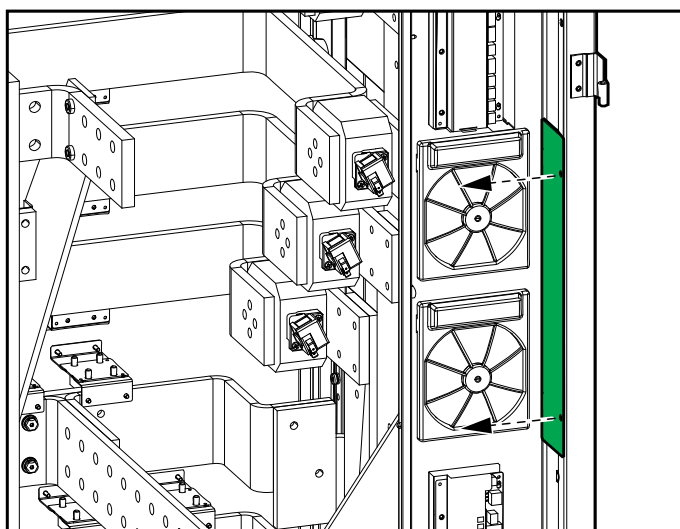
Board	Terminal	Description	See
0P6547	J4939-J4941 ¹³	Output relays	Connect Equipment to Input Contacts and Output Relays, page 85
0P6549	J5607	MBB	Signal Cable Connections to the Switchgear (Boards 0P6547, 0P6548, 0P6549), page 79
0P6549	J5608	SIB	
0P6549	J5620	SSIB	
0P6549	J5621	UOB	
0P6549	J5622	UIB	
0P6549	J5611-J5613	External synchronization	Connect External Synchronization, page 82
0P6548	J5529	Battery temperature sensor 1	Signal Cable Connections to Classic Battery Cabinets (Boards 0P6547, 0P6549, 0P6552), page 80
0P6549	J5609	Battery breaker 1	
0P6549	J5610	Battery breaker 2	
0P6547	J4942-J4943	24 V supply 1	
0P6547	J4929-J4930	24 V supply 2	
0P6547	J4923	DC shunt trip 1	
0P6547	J4924	DC shunt trip 2	
0P6552	J9019	Battery breaker 3	
0P6552	J9020	Battery breaker 4	
0P6552	J9021	Battery temperature sensor 2	
0P6552	J9022-J9023	24 V supply 3	
0P6552	J9024-J9025	24 V supply 4	

13. These output relays can also be Class 2/SELV but the three output relays must have identical reference.

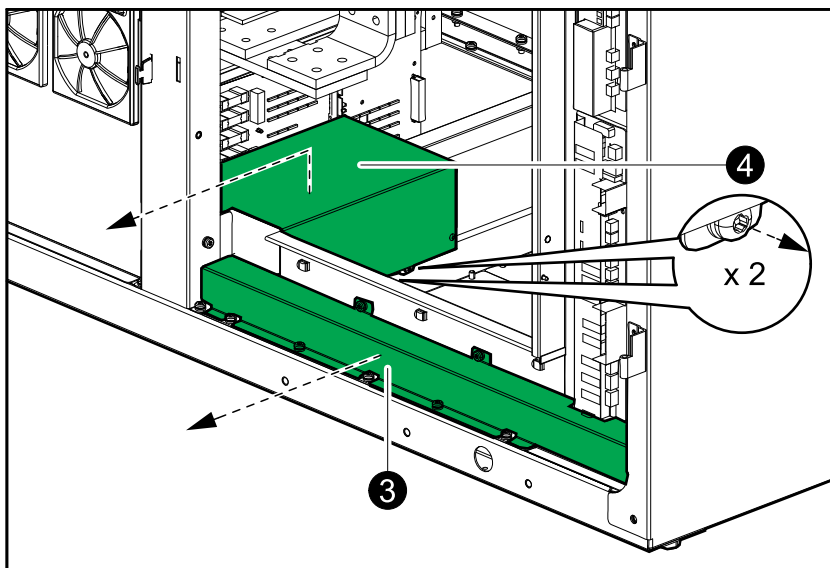
1. Remove the four indicated plates.



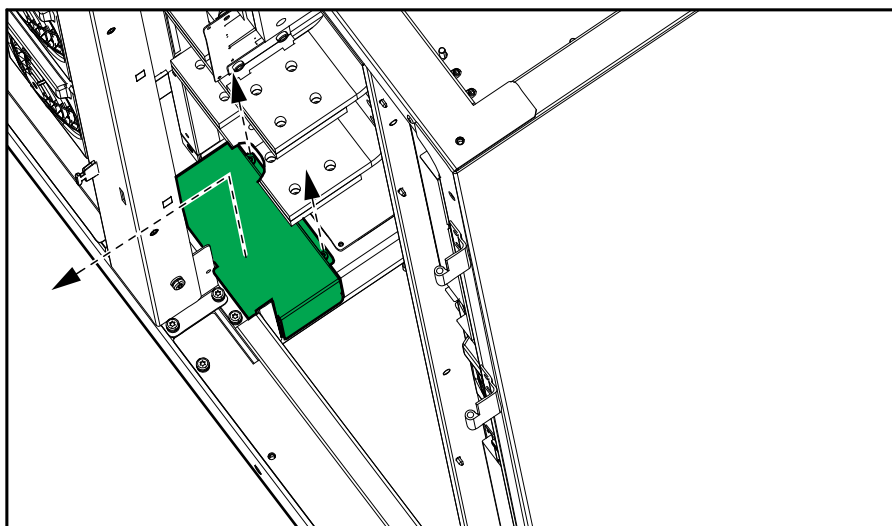
2. Remove the indicated plate for routing of non-Class 2/non-SELV cables.



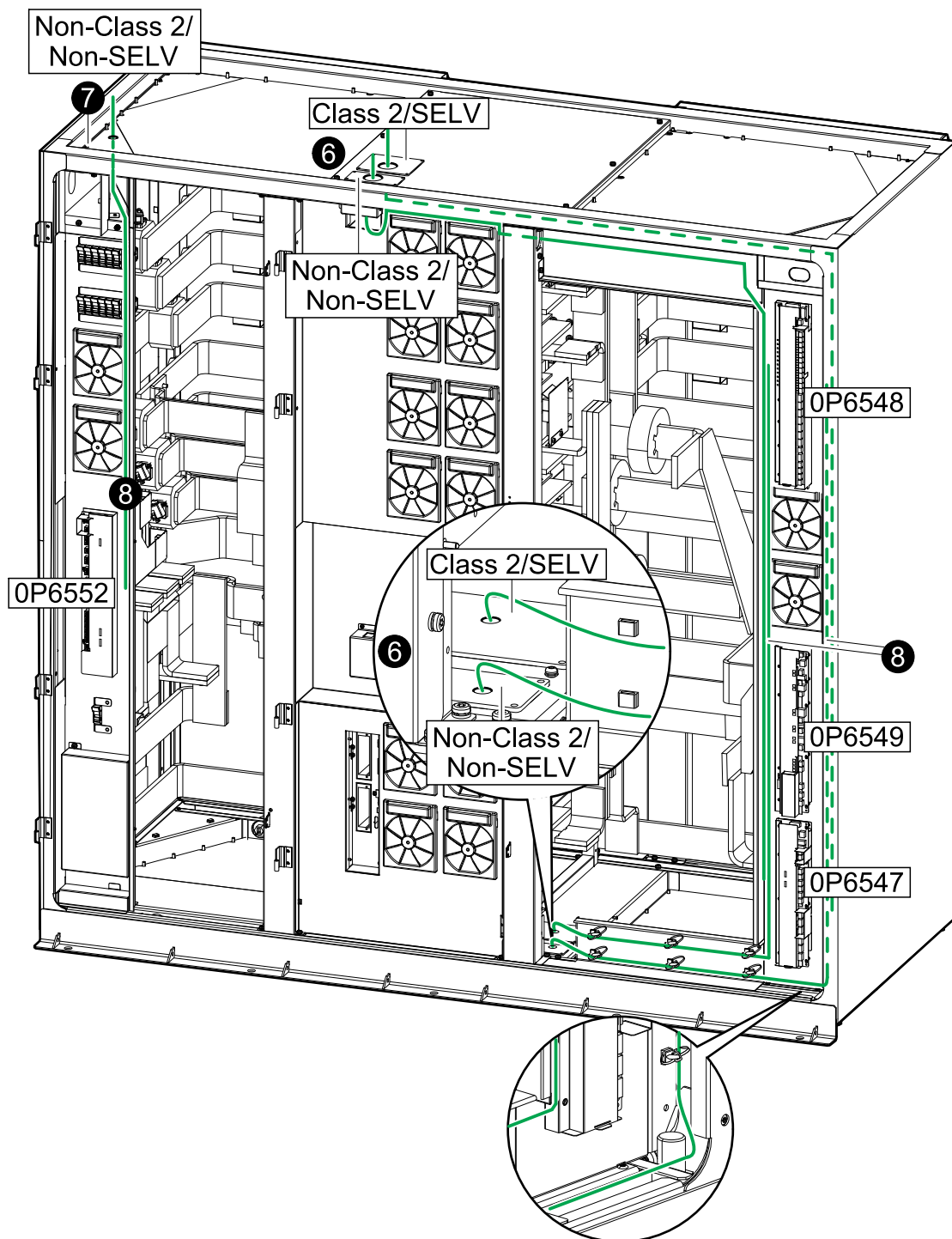
3. **For bottom cable entry only:** remove the plate in front of the cable channel for non-Class 2/non-SELV cables.



4. **For bottom cable entry only:** loosen the two screws on the right side of the box and remove the box.
5. **For bottom cable entry only:** loosen the two screws behind the box and lift out the box.



6. Remove the two gland plates from either the top or the bottom of the I/O cabinet and drill holes for the applicable Class 2/SELV and non-Class 2/non-SELV cables in the table below. Install conduits and reinstall the plates.



7. In installations with three or four battery banks, remove the top gland plate in the left corner of the I/O cabinet and drill holes for the applicable non-Class 2/non-SELV cables below. Install conduits and reinstall the plates.
8. Route the cables through the top or bottom and to the boards as shown on the illustration.

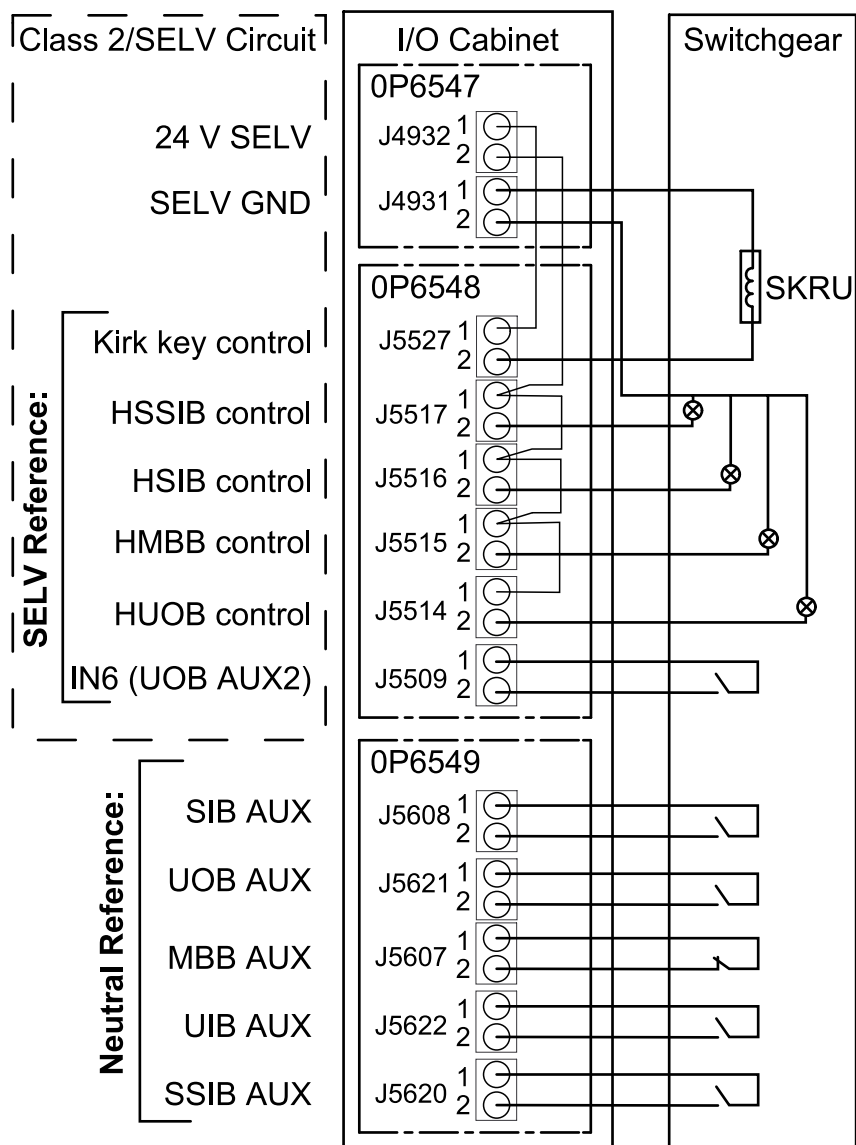
NOTE: Do not connect the signal cables. Signal cables will be connected by Schneider Electric during the assembly service.

Signal Cable Connections to the Switchgear (Boards 0P6547, 0P6548, 0P6549)

NOTE: The unit output breaker UOB must include two separated AUX switches.

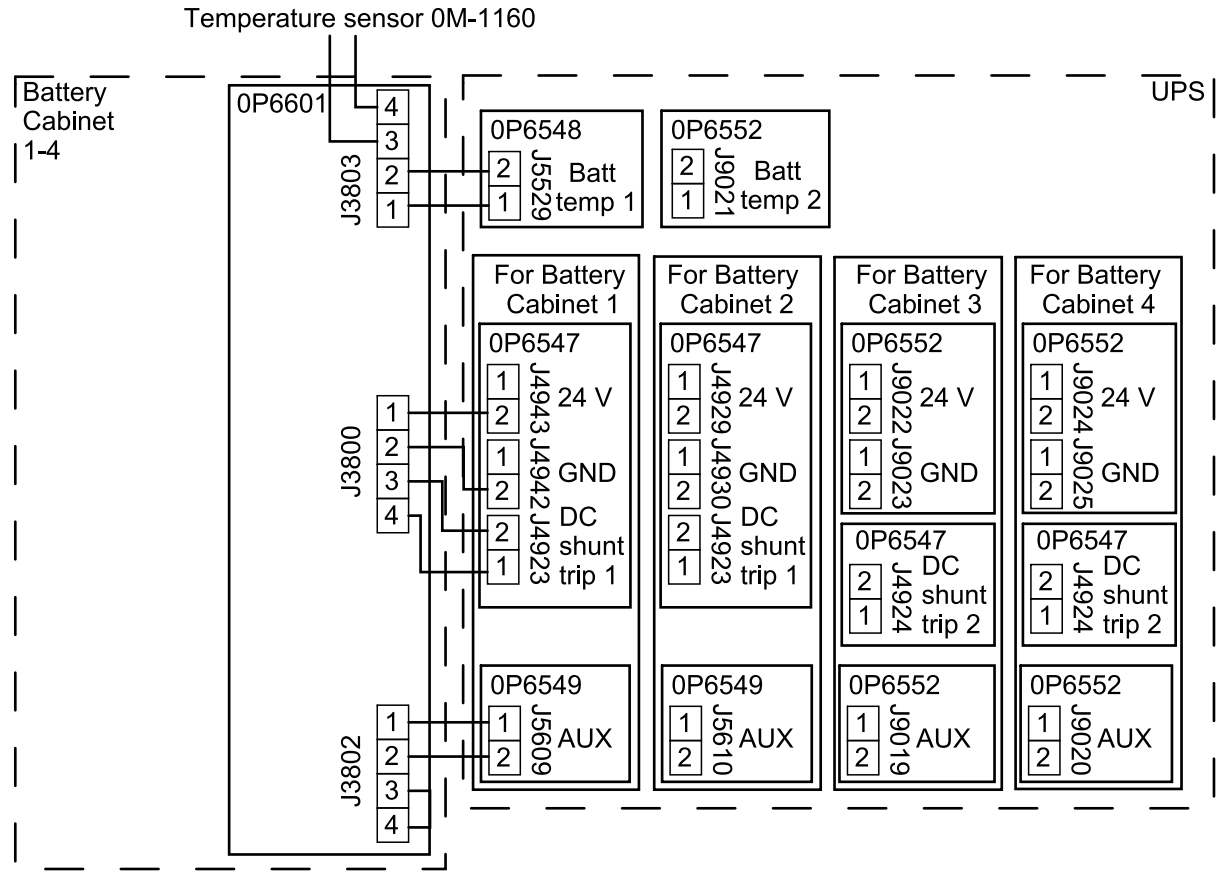
NOTE: The solenoid key release unit (SKRU) is only applicable to 480 V systems.

All circuits connected must have the same 0 V reference.

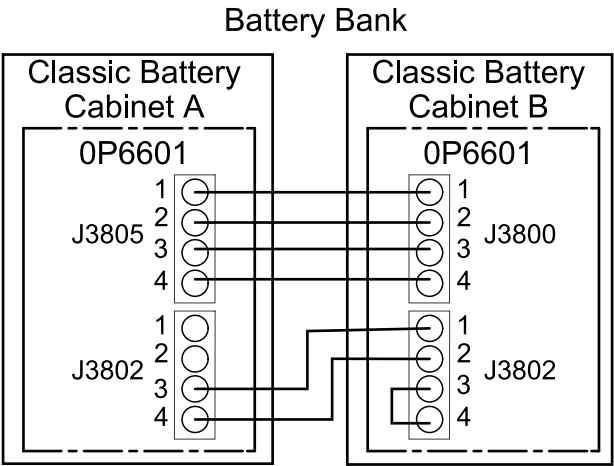


Signal Cable Connections to Classic Battery Cabinets (Boards 0P6547, 0P6549, 0P6552)

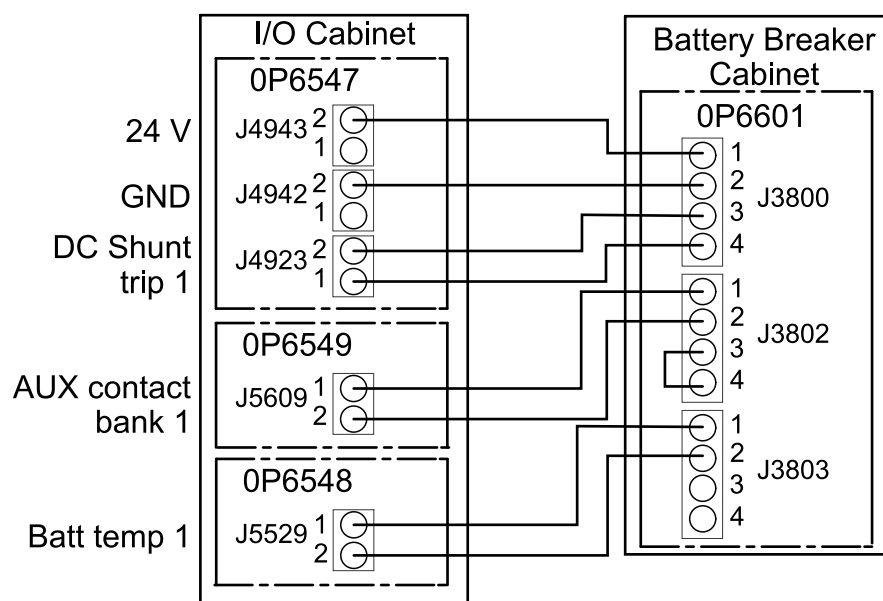
NOTE: The illustration below shows a system with four battery banks, each consisting of one classic battery cabinet. Connect signal cables according to the number of classic battery cabinets in your installation.



If the battery bank is consisting of two classic battery cabinets, connect signal cables between the two classic battery cabinets in one battery bank as shown.



Signal Cable Connections to Battery Breaker Cabinet (Boards 0P6547, 0P6548, 0P6549)



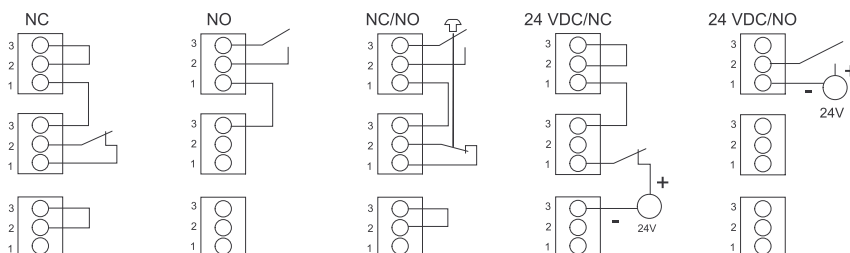
Connect the Emergency Power Off (EPO)

Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2/SELV.

All circuits connected must have the same 0 V reference.

The EPO input supports 24 VDC.

1. Route the cables from your EPO through the top or bottom of the I/O cabinet and to the EPO terminals J4936–J4938 on 0P6547 as shown in Prepare for External Signal Cables, page 75.
2. Connect the building EPO to the terminal block according to one of the options below.



NOTE: Do not connect the terminal block to the board. Signal cables will be connected by Schneider Electric during the assembly service.

Connect External Synchronization

The maximum voltage for external synchronization is equal to the input voltage range given in the specifications. The non-Class 2/non-SELV cables for external synchronization shall be a jacket cable and rated for 600 VAC.

1. Route the external synchronization cables through the top or bottom of the I/O cabinet to 0P6549 as shown in *Prepare for External Signal Cables*, page 75.

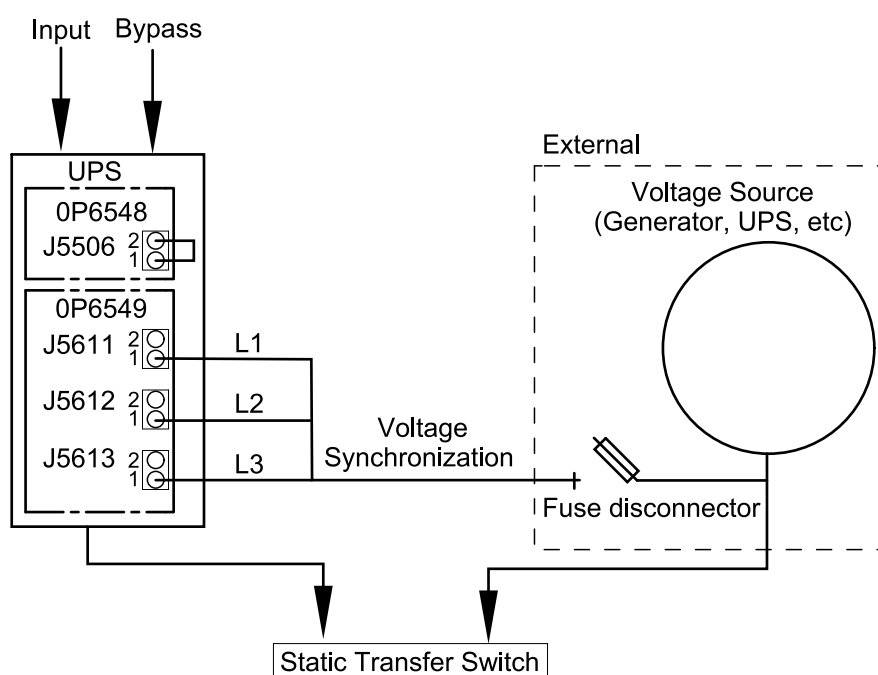
2. Connect the three phases to the terminal block:
 - a. Connect L1 to J5611 on 0P6549.
 - b. Connect L2 to J5612 on 0P6549.
 - c. Connect L3 to J5613 on 0P6549.

NOTE: The phases from the synchronization source must be protected by a fuse of maximum 0.5 A.

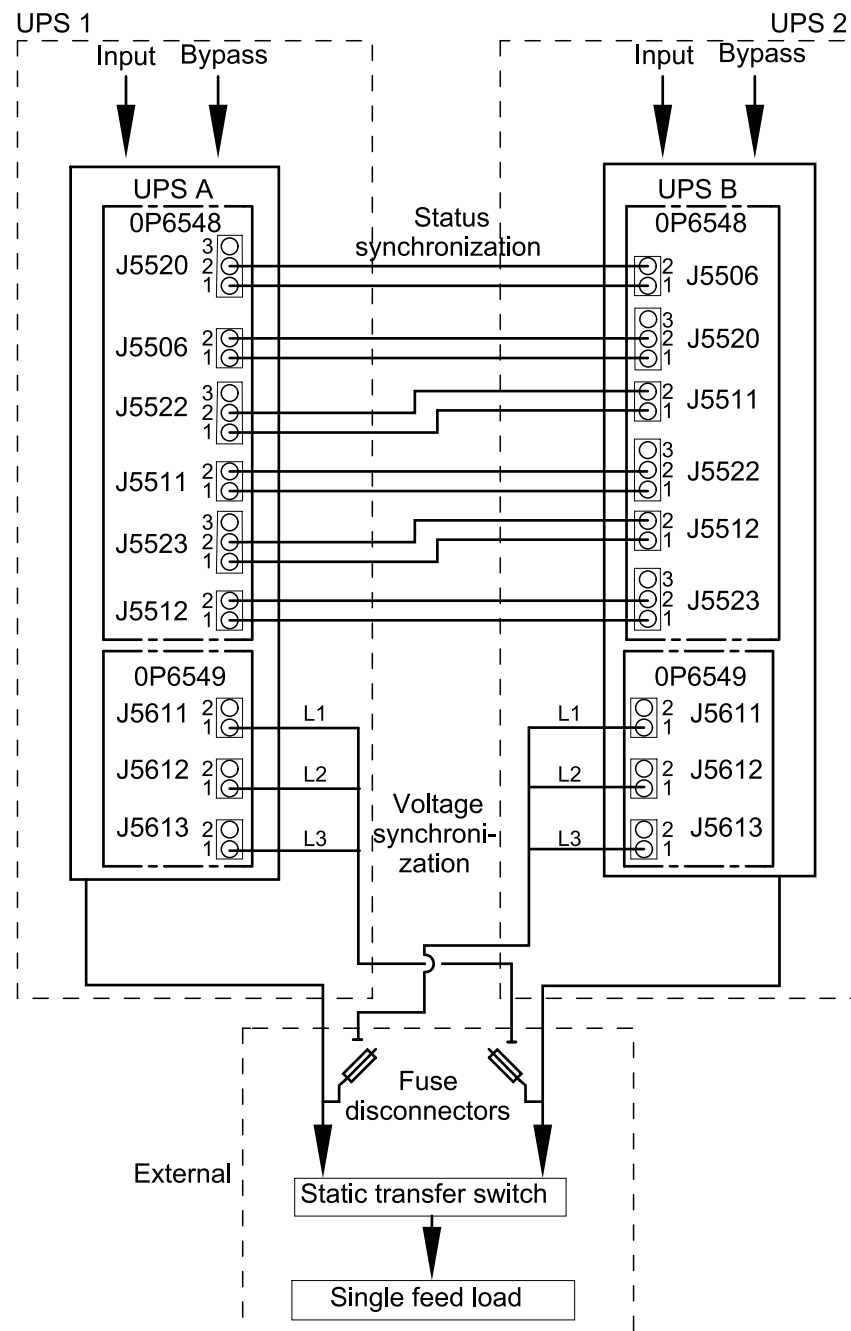
NOTE: Do not connect the terminal block to the board. Signal cables will be connected by Schneider Electric during the assembly service.

- a. Connect L1 to J5611 on 0P6549.
- b. Connect L2 to J5612 on 0P6549.
- c. Connect L3 to J5613 on 0P6549.

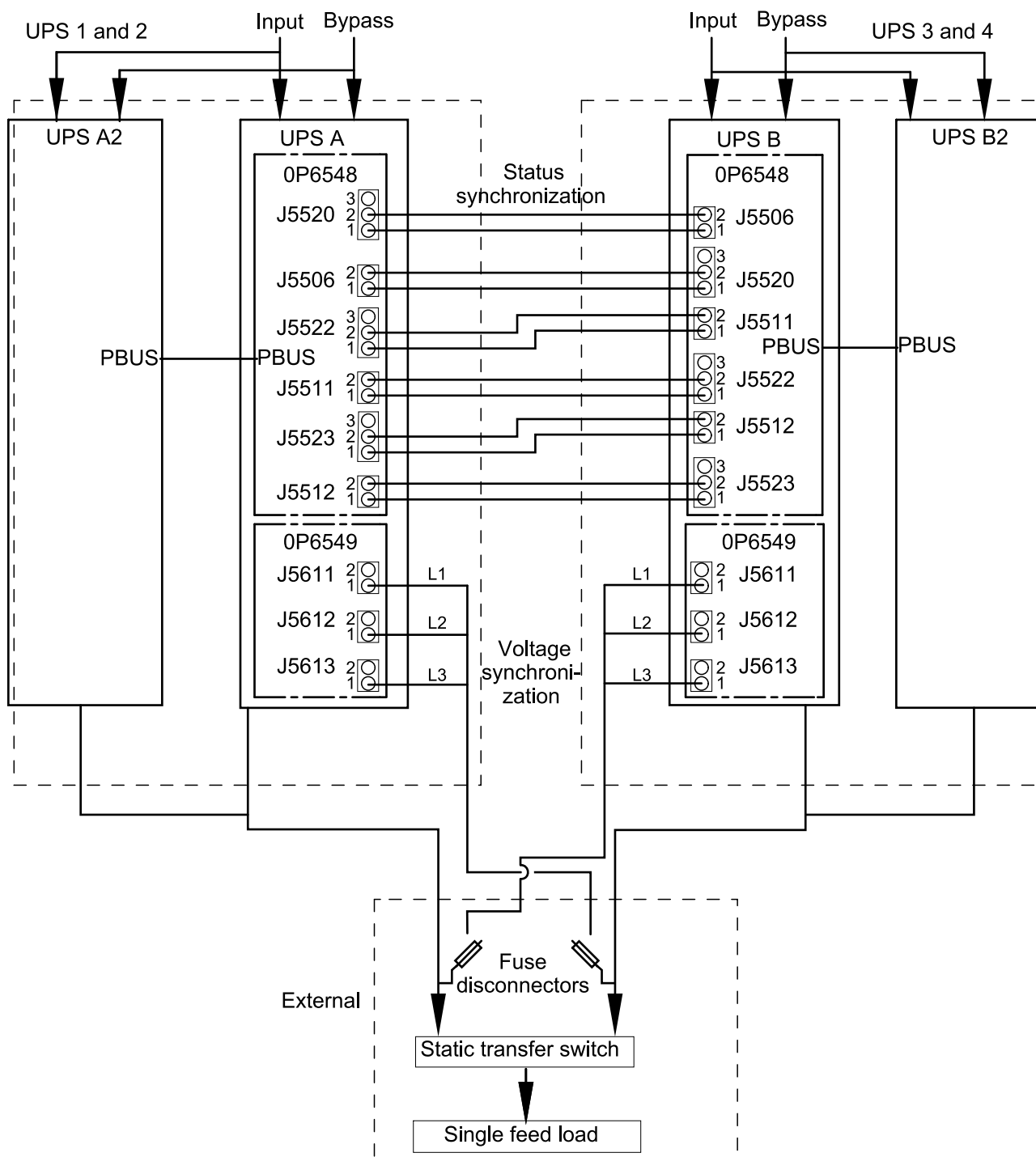
Signal Cable Connections for Basic UPS Synchronization to a Fixed Voltage Source (Boards 0P6548, 0P6549)



Signal Cable Connections for Dual UPS Synchronization with a Floating Synchronization Master (Boards 0P6548, 0P6549)



Signal Cable Connections for Fixed Parallel Synchronization Master (Boards 0P6548, 0P6549)



Connect Equipment to Input Contacts and Output Relays

1. Route the signal cables from your contacts/relays through the top or bottom of the I/O cabinet and to the boards in the right side of the I/O cabinet as shown in Prepare for External Signal Cables, page 75.
2. Connect your equipment to the terminal blocks of the input contacts and/or output relays. Make a clear identification of the signal cables connected.

NOTE: Do not connect the terminal block to the board. Signal cables will be connected by Schneider Electric during the assembly service.

Overview of Input Contacts and Output Relays

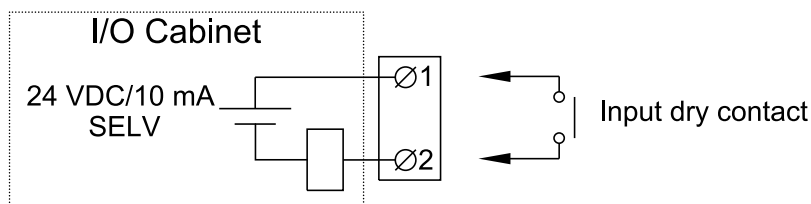
Input Contacts

Do not connect any circuit to the input contacts unless it can be confirmed that the circuit is Class 2/SELV.

All circuits connected must have the same 0 V reference.

The input contacts support 24 VDC 10 mA.

The switch SW5500 on OP6548 is used to select between internal SELV supply for inputs (standard setting) and external supply¹⁴. If external supply is selected, the supply must be connected to J5530.



Name	Description	Location
IN 1 (Contact 1)	Configurable input contact	OP6548 terminal J5502 ¹⁵
IN 2 (Contact 2)	Configurable input contact	OP6548 terminal J5503 ¹⁵
IN 3 (Contact 3)	Configurable input contact	OP6548 terminal J5504 ¹⁵
IN 4 (Contact 4)	Configurable input contact	OP6548 terminal J5505 ¹⁵
IN 5 (Contact 5)	Configurable input contact	OP6548 terminal J5510 ¹⁵
IN 6	UOB redundant AUX contact	OP6548 terminal J5509 ¹⁵
IN 7	Transformer temperature switch	OP6548 terminal J5508 ¹⁵
IN 8	External bonding contact	OP6548 terminal J5507 ¹⁵
IN 9	Forced external synchronization input	OP6548 terminal J5506 ¹⁵
IN 10	External synchronization requested	OP6548 terminal J5511 ¹⁵
IN 11	Use static bypass standby	OP6548 terminal J5512 ¹⁵
IN 14	MegaTie	OP6552 terminal J9027 ¹⁵

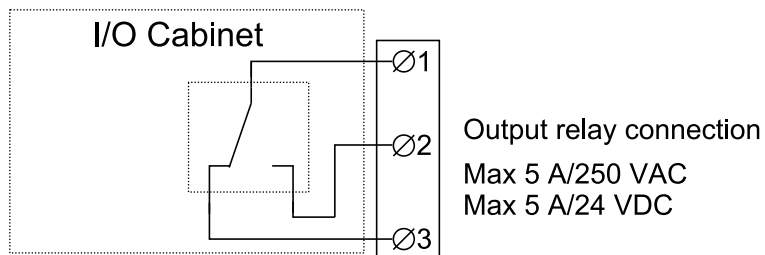
Output Relays

NOTE: Maximum 250 VAC 5 A must be connected to the output relays.

14. An external supply is useful in parallel systems where inputs are connected between different UPSs. This is to have a common reference and to avoid cross currents.

15. Class 2/SELV wiring

All external circuitry must be fused with maximum 5 A fast acting fuses.



Name	Description	Location
OUT 1 (Relay 1)	Configurable output relay	0P6547 terminal J4939
OUT 2 (Relay 2)	Configurable output relay	0P6547 terminal J4940
OUT 3 (Relay 3)	Configurable output relay	0P6547 terminal J4941
OUT 4	Forced external synchronization output	0P6548 terminal J5520 ¹⁶
OUT 5	MegaTie	0P6548 terminal J5521 ¹⁶
OUT 6	External synchronization requested output	0P6548 terminal J5522 ¹⁶
OUT 7	UPS in inverter ON	0P6548 terminal J5523 ¹⁶
OUT 8 (Relay 4)	Configurable output relay	0P6548 terminal J5524 ¹⁶
OUT 9 (Relay 5)	Configurable output relay	0P6548 terminal J5525 ¹⁶
OUT 10 (Relay 6)	Configurable output relay	0P6548 terminal J5528 ¹⁶
OUT 14	Bonding contactor	0P6552 terminal J9029 ¹⁶

NOTE: Refer to the operation manual for configuration options.

¹⁶. Class 2/SELV wiring

External Communication

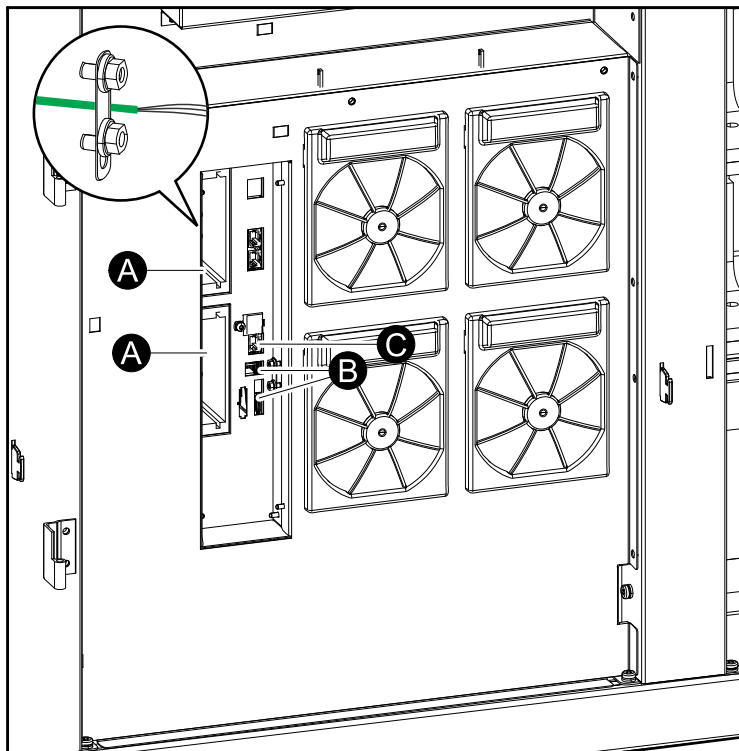
The following interfaces are supported:

- A. Two smart slots for optional network management cards (AP9630, AP9631, AP9635CH).

NOTE: If the input dry contact AP9810 is connected to AP9631 or AP9635CH, the total length of cables for connected equipment must not exceed 30 m (98 ft). Use the plate for shielding.

- B. Modbus and modbus dip switch settings.
- C. Network/ethernet.

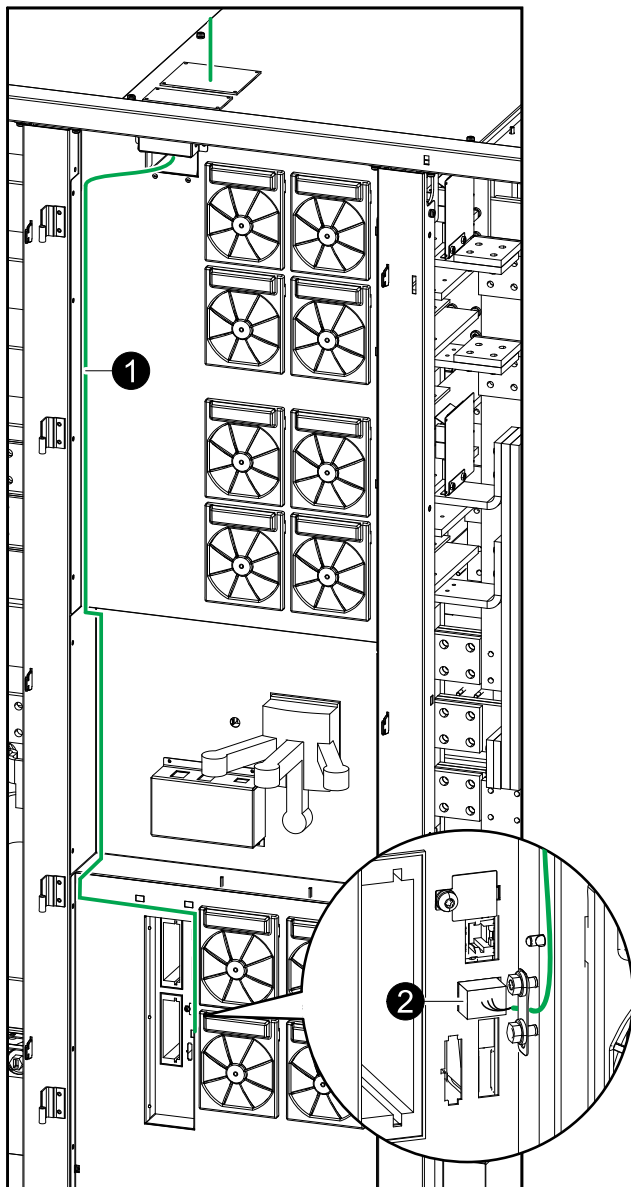
Front View of the I/O Cabinet



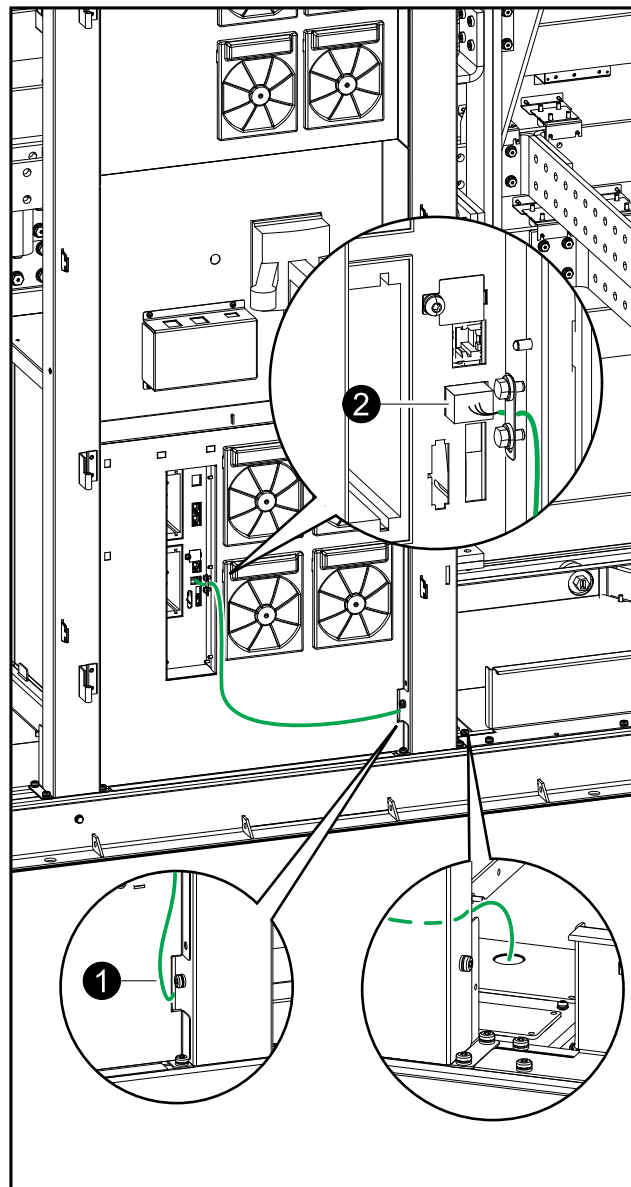
Connect the Modbus Cables

NOTE: Terminators for Modbus connection is provided in the installation kit 0H-9101.

Front View of the I/O Cabinet in Top Cable Entry Systems



Front View of the I/O Cabinet in Bottom Cable Entry Systems

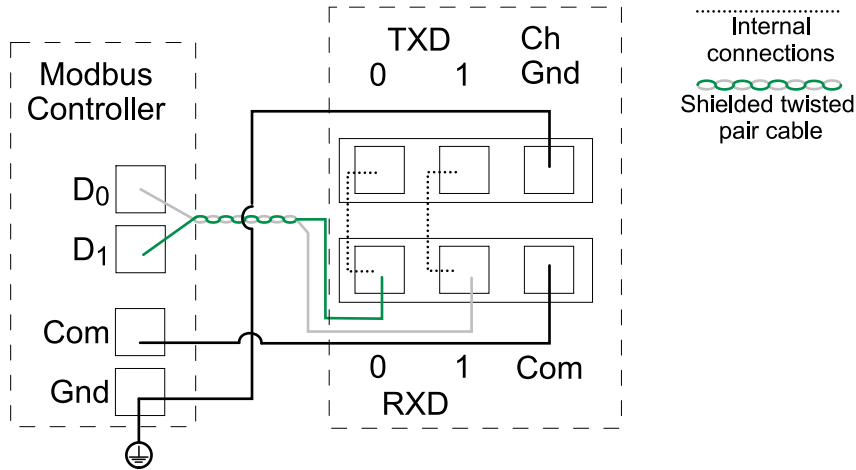


1. Route the cables as shown on the illustrations.

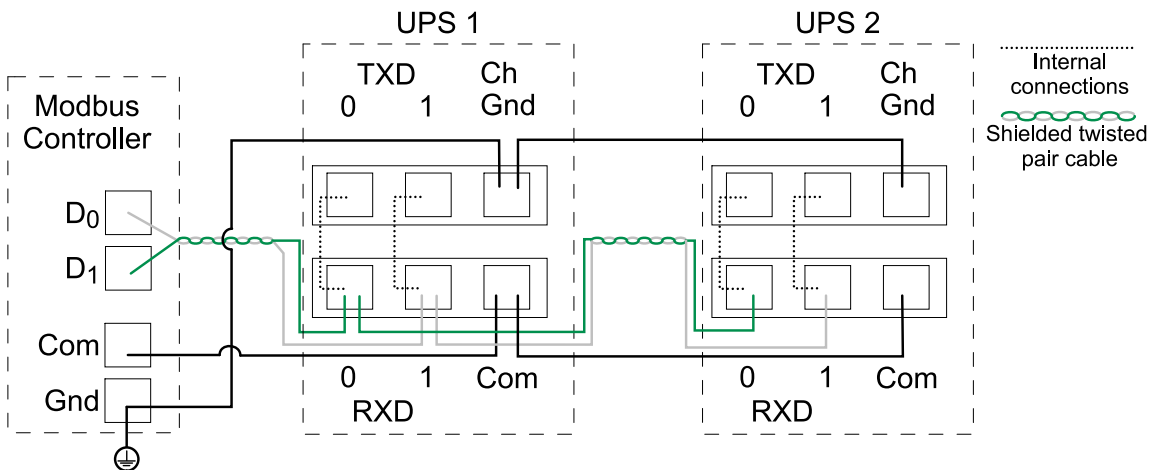
2. Connect the Modbus cables. Use either 2-wire or 4-wire connection. Shield the cables as shown.

NOTE: Shielded cables must be used for Modbus connections. The shield connection to the ground must be as short as possible (ideally below 1 cm). All Modbus signal cables shall be double insulated/jacket cable and minimum rated for 30 VDC.

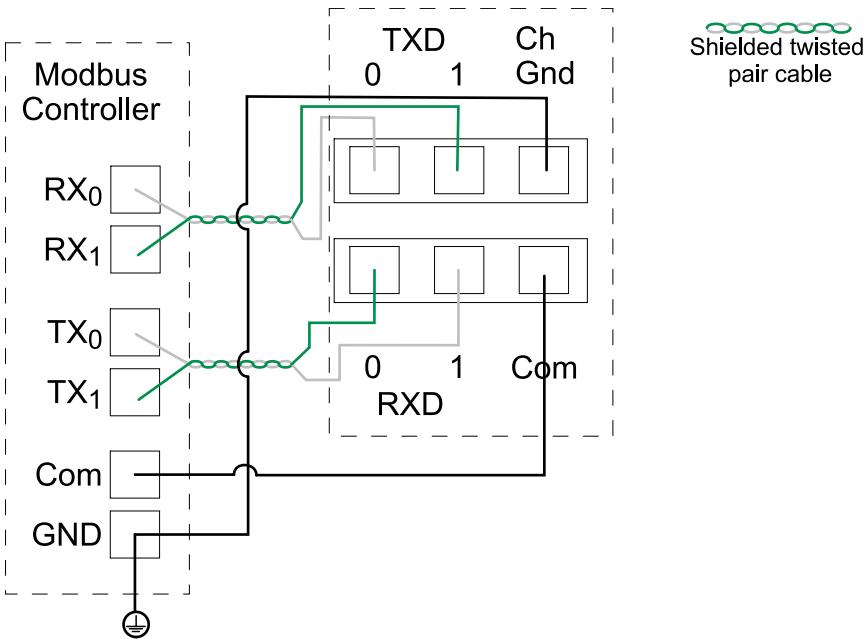
2-Wire Connection with One UPS



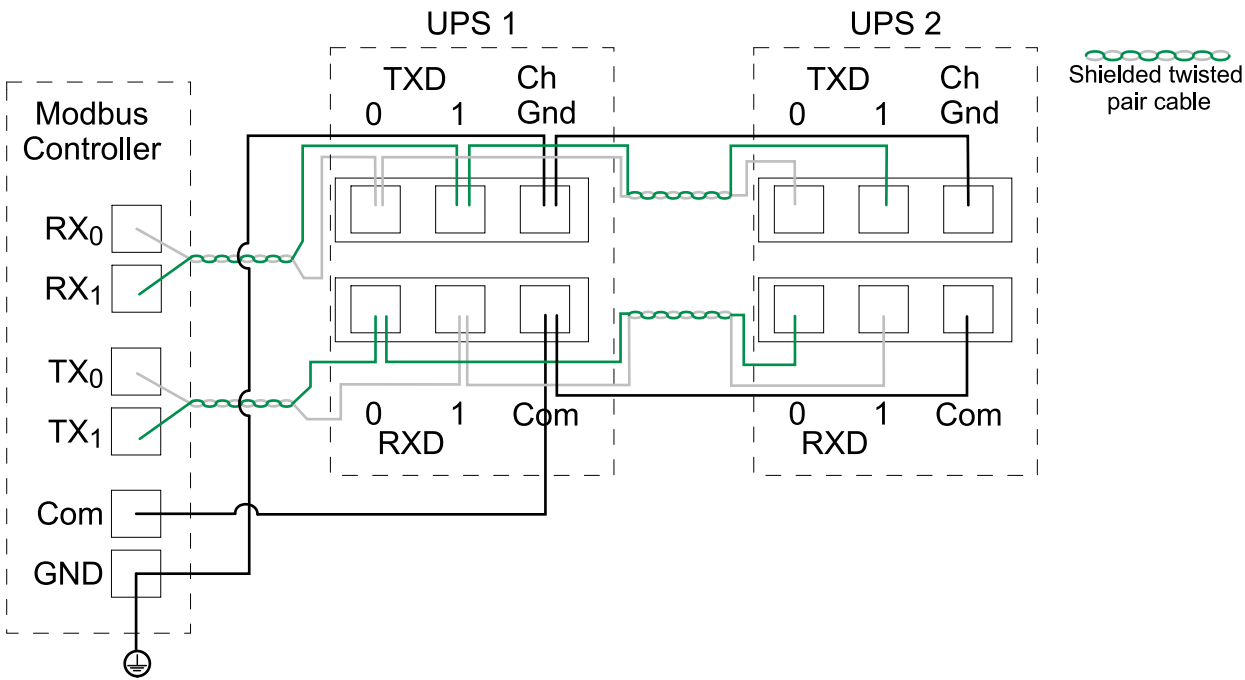
Example: 2-Wire Connection with Two UPSs



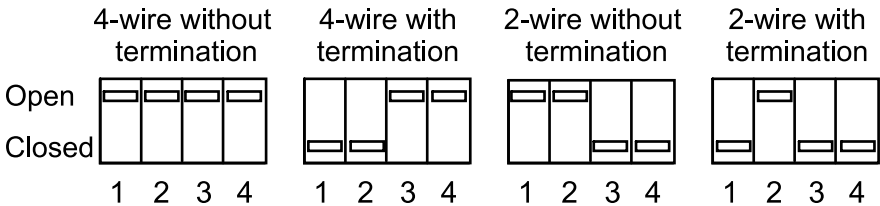
Example: 4-Wire Connection with One UPS



Example: 4-Wire Connection with Two UPSs



3. Set the Modbus dip switches to match your installation.



Final Mechanical Assembly of the I/O Cabinet

⚠️⚠️ DANGER

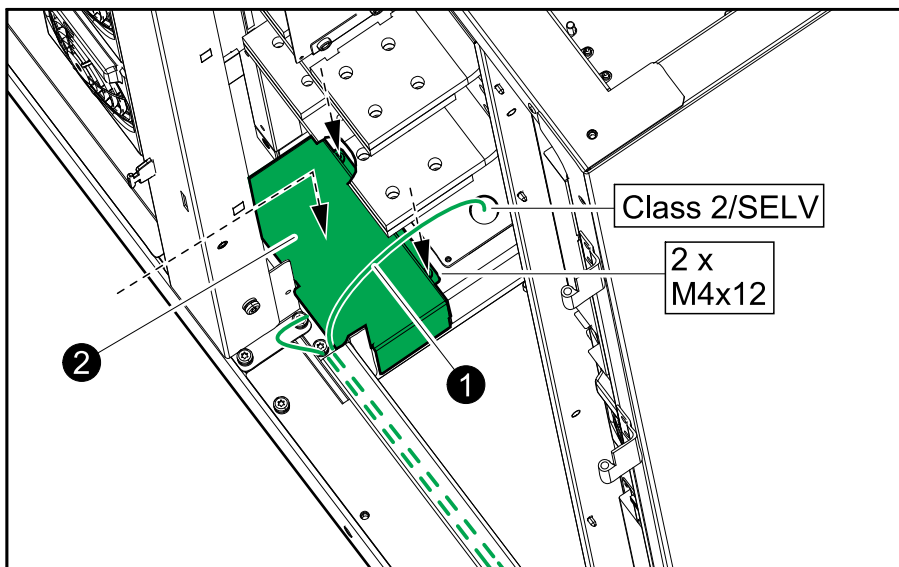
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All panels and covers must be properly reinstalled prior to energizing the UPS.

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

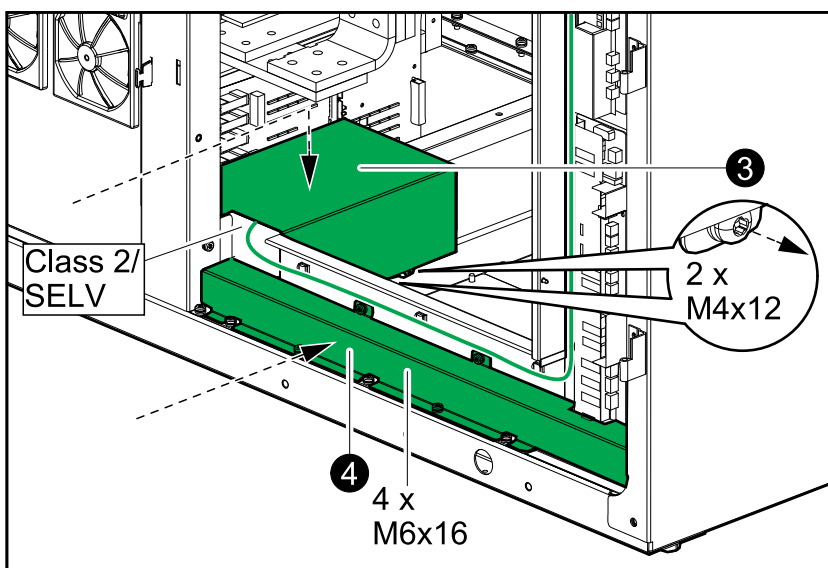
1. Lift up the Class 2/SELV cables.

Front View of the I/O Cabinet



2. Reinstall the indicated box over the non-Class 2/non-SELV cables.
3. Reinstall the indicated box over Class 2/SELV cables.

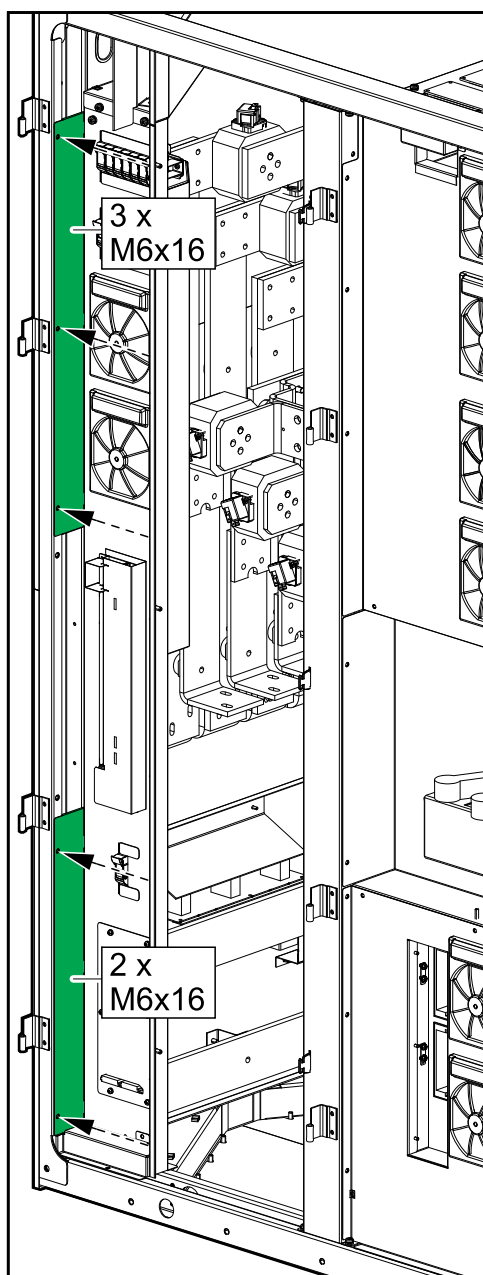
Front View of the I/O Cabinet



4. Reinstall the plate over the cable channel for non-Class 2/non-SELV cables.

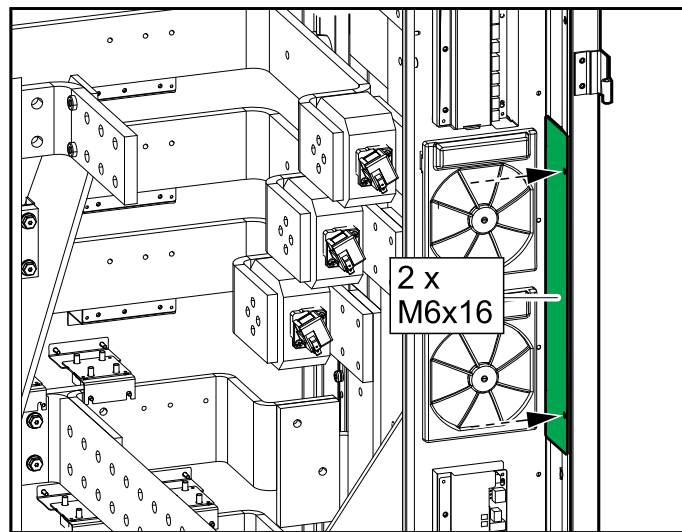
5. Reinstall the two plates in the left side.

Front View of the I/O Cabinet



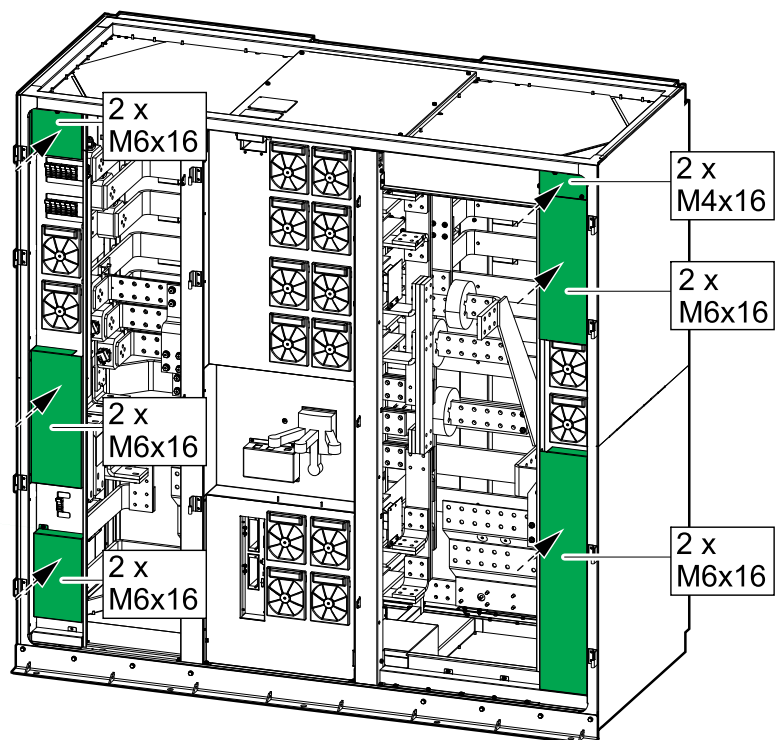
6. Reinstall the plate in the right side.

Front View of the I/O Cabinet



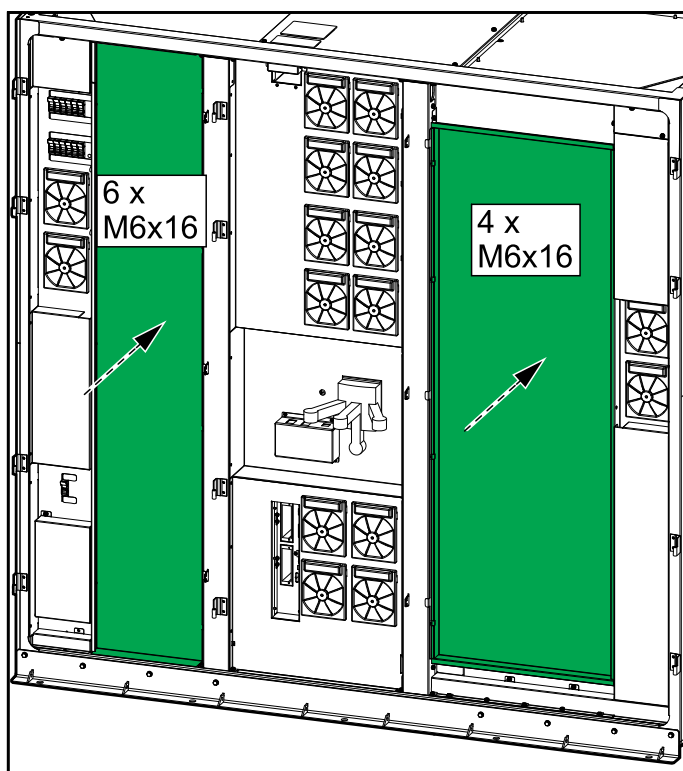
7. Reinstall the six plates in the left and right sides of the I/O cabinet.

Front View of the I/O Cabinet



8. Reinstall the two metal plates.

Front View of the I/O Cabinet



9. Close the front doors.

Final Mechanical Assembly of the Power Cabinets

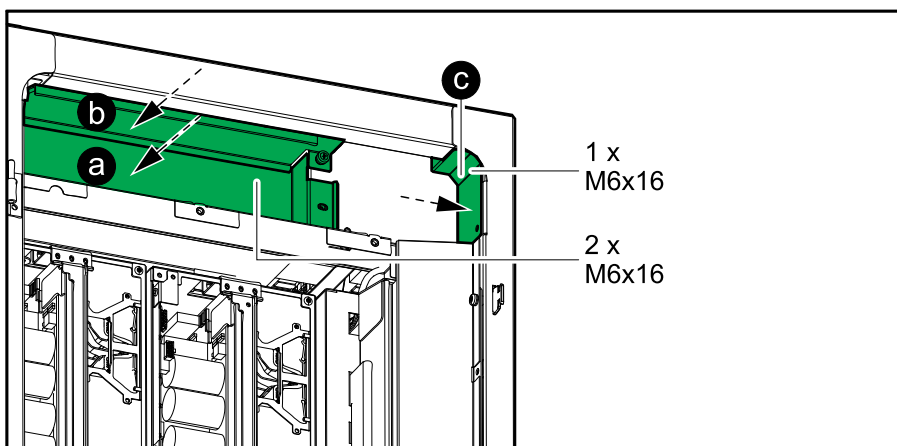
⚠️⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All panels and covers must be properly reinstalled prior to energizing the UPS.

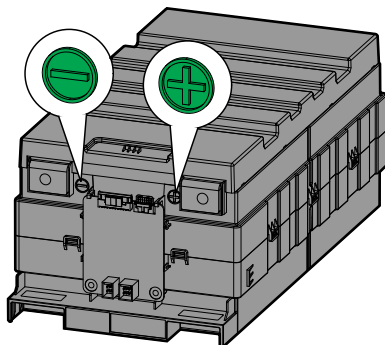
Failure to follow these instructions will result in death or serious injury.

1. Reinstall the three plates in the given order (a-c) on each power cabinet.

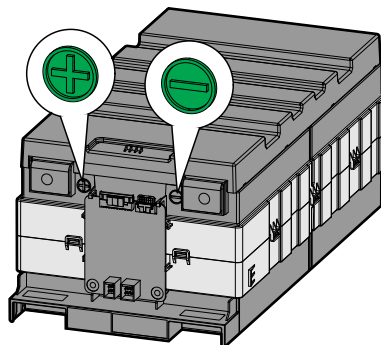


Install the Battery Modules in the Battery Cabinet

Type A Battery Module



Type B Battery Module



⚠️ ⚠️ WARNING

HAZARD OF INJURY AND ELECTRIC SHOCK

- Be careful when installing and removing the battery modules (>17 kg).

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

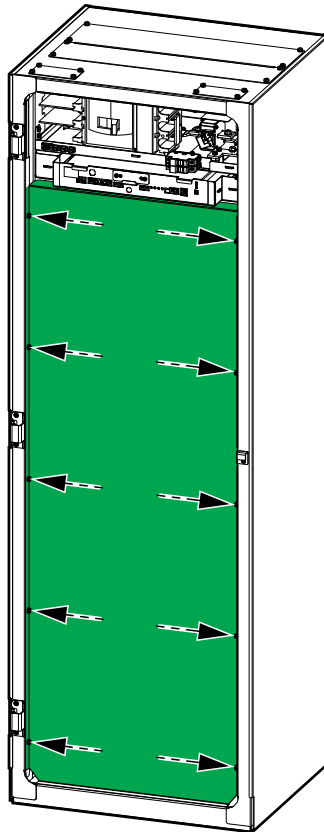
1. Install the battery modules on the shelves from top to bottom.

NOTE: Pay special attention to the location of type A and type B battery modules.

Battery Configurations for Battery Cabinets with 17, 16, 13, and 10 Battery Modules



2. Reinstall the plate in front of the battery shelves.



Connect the Power Cables

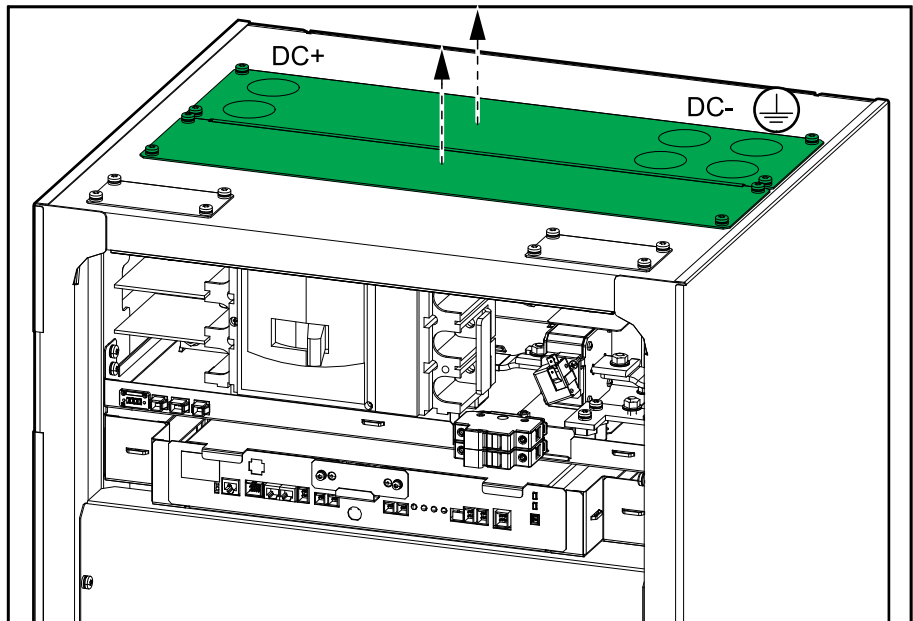
⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill or punch holes with the gland plates installed and do not drill or punch holes in close proximity to the battery cabinet.

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

1. Remove the gland plates.



2. Drill or punch holes for cables/conduits in the rear gland plate according to the label on the gland plate.

⚡⚠ 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.

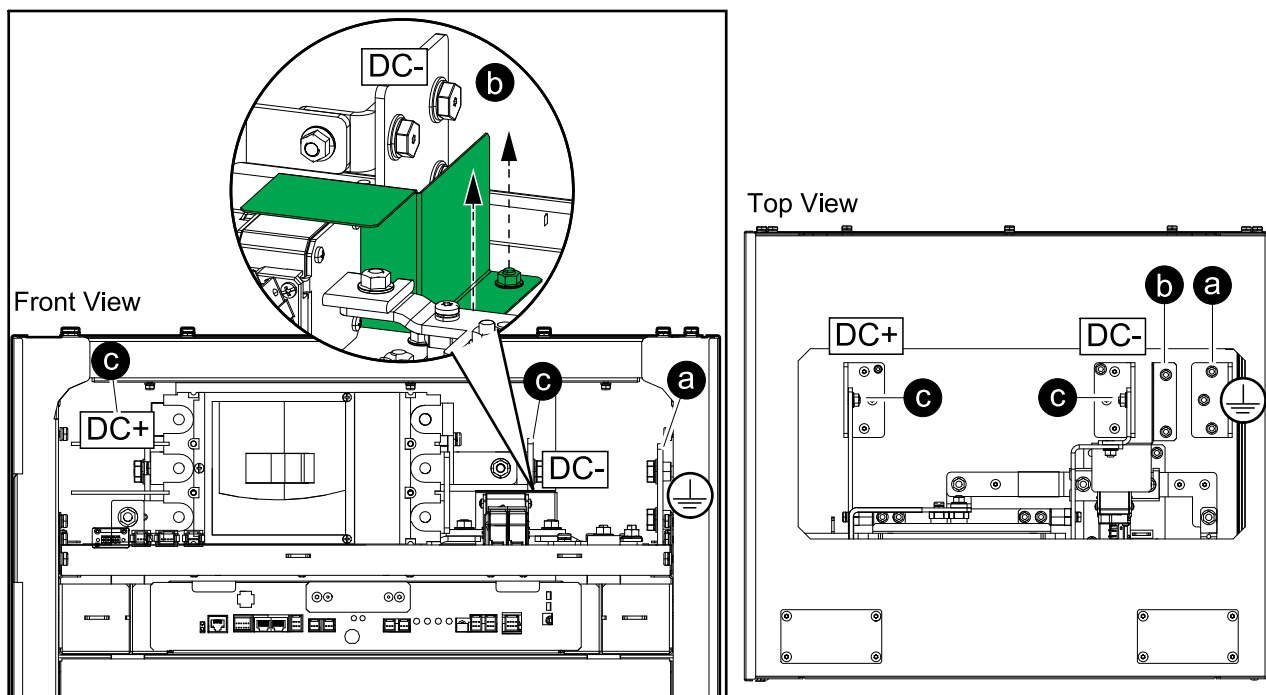
3. Install conduits (if applicable) and reinstall the gland plates.

4. Route the power cables through the gland plate and connect to the terminals:

- a. Connect the PE cable to the PE terminal/Connect the EGC cable to the grounding terminal.
- b. For installations with two hole cable lugs only, temporarily remove the protection cover.

NOTE: The protection cover must be reinstalled when the DC- cable has been connected.

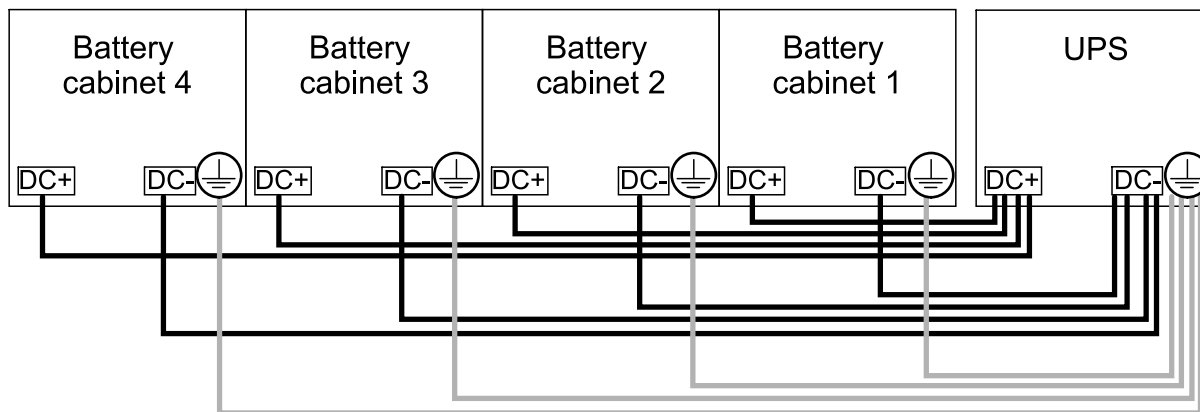
- c. Connect the DC+ and DC- cables to the DC+ and DC- terminals.



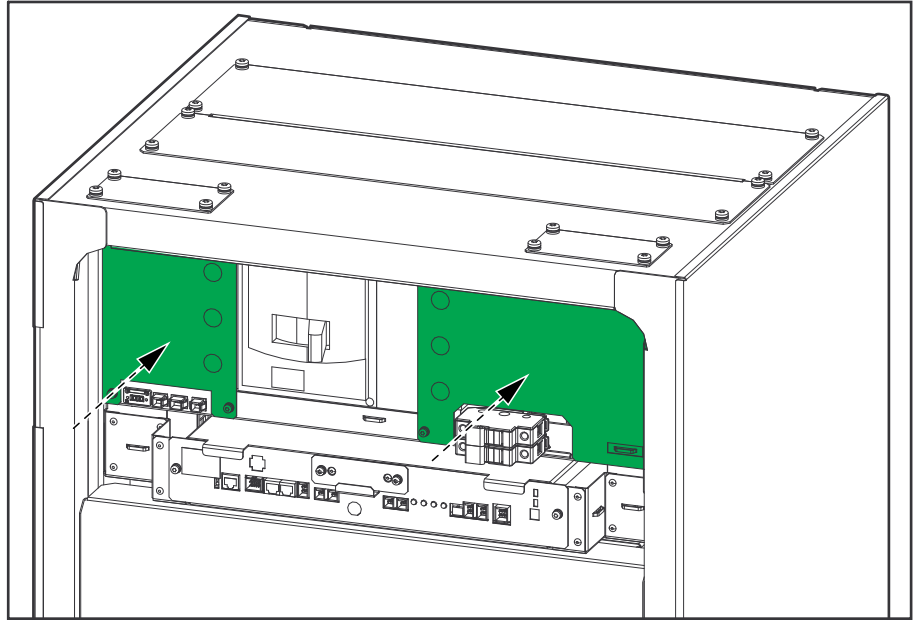
5. Connect the power cables in the UPS. If more battery cabinets are part of the solution, connect all battery cabinets to the UPS according to the diagram below.

NOTE: If the combined short circuit current of the battery cabinets exceeds the short circuit rating of the UPS, a pull box with fuses or an external box with a battery breaker must be installed. Please contact Schneider Electric for more information and refer to the submittal drawings for your specific UPS.

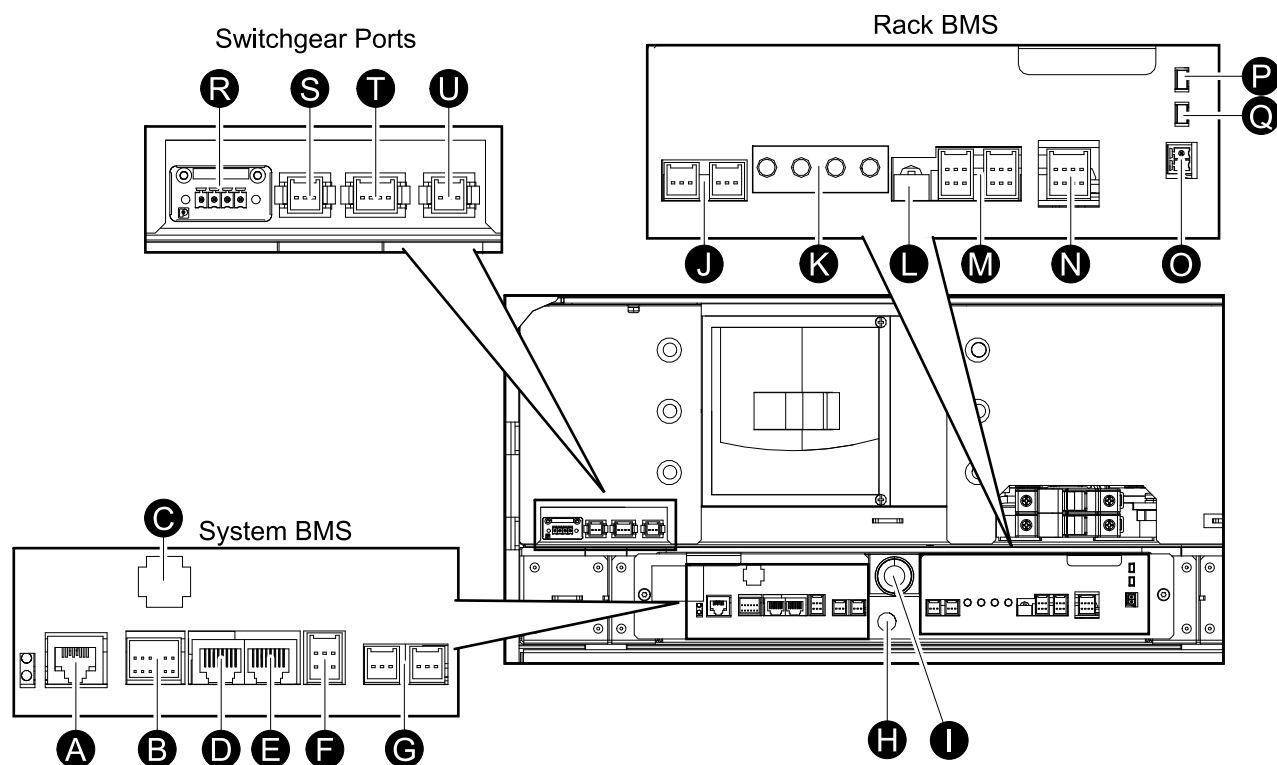
2-Wire Connection



6. Reinstall the two transparent covers.



Overview of Communication Interface



- A. TCP/IP
- B. DRY CONTACT ports
- C. SMPS I/O
- D. CAN I/O
- E. RS485
- F. System BMS CAN I/O
- G. DC OUT 1 and DC OUT 2
- H. Reset switch
- I. Start-up button
- J. DC IN 1 and DC IN 2
- K. Status LEDs
- L. CAN bus loop termination resistor switch
- M. CAN 1 port, CAN 2 port
- N. Module
- O. EPO
- P. PSU 1 LED
- Q. PSU 2 LED
- R. SG IO 1
- S. SG IO 2
- T. MCCB AUX 1
- U. MCCB AUX 2

Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports

⚡⚠ DANGER

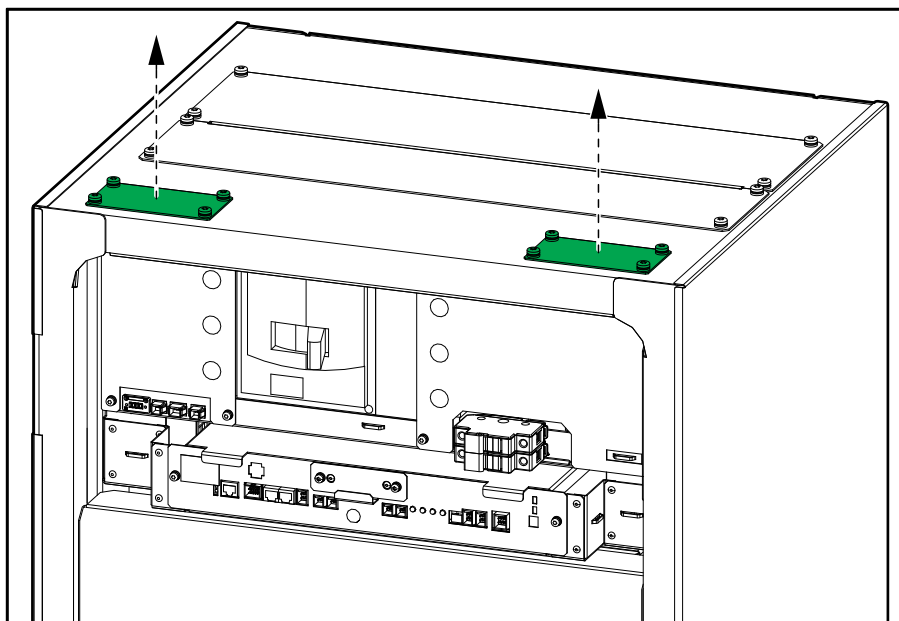
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill or punch holes with the gland plates installed and do not drill or punch holes in close proximity to the battery cabinet.

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

NOTE: Please refer to the UPS submittal drawings to get a complete overview of the connections before preparing for and routing the signal cables.

1. Remove the gland plates for signal cables.



2. Drill or punch holes for cables/conduits and install conduits (if applicable).

⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

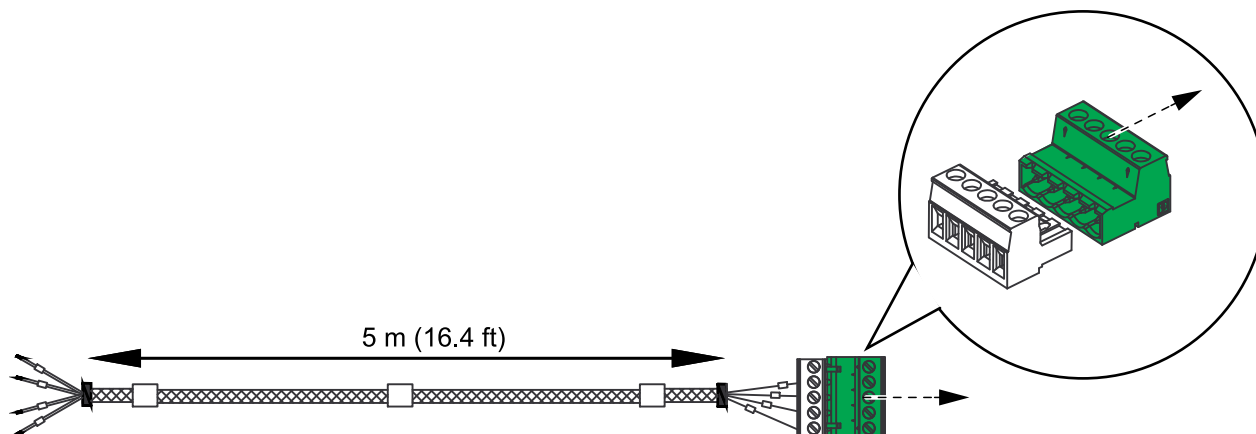
Failure to follow these instructions will result in death or serious injury.

3. The provided SELV signal cable 0W13444 and the ELV signal cables 0W76929 and 0W13442 are 5 m (16.4 ft) long. You can extend the length of the three signal cables if the distance to the UPS is more than the expected 5 m (16.4 ft). Follow one of the instructions below:

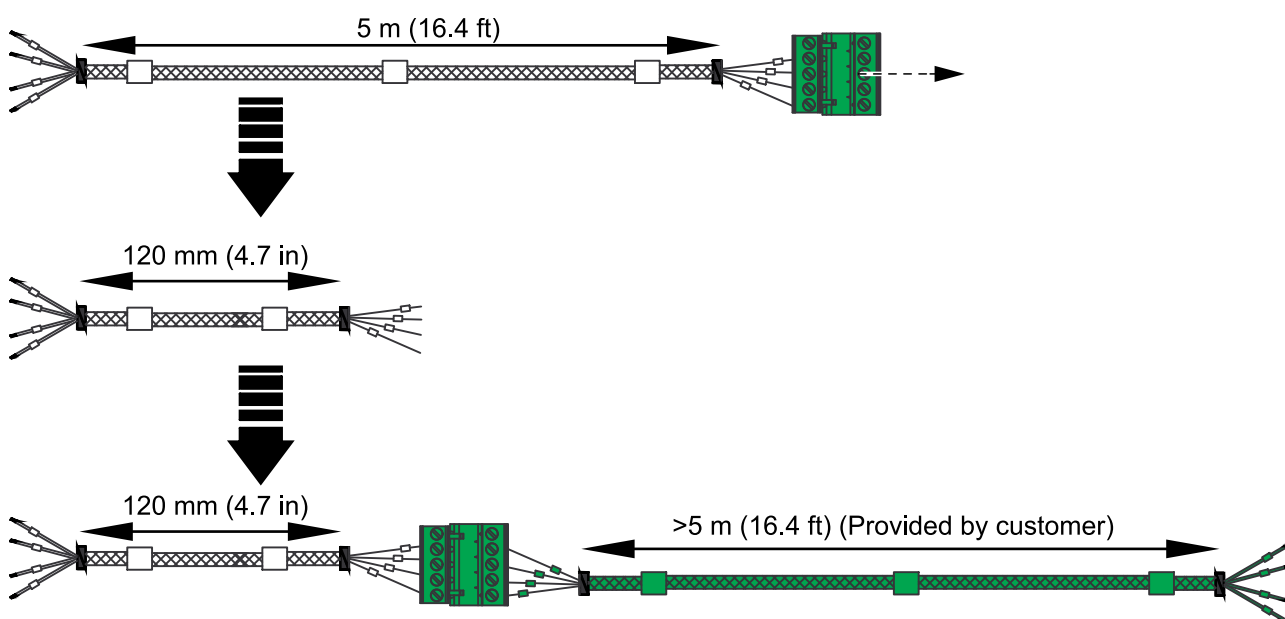
Signal cable specifications

0W13444	4 conductors, 22 AWG, 600 V ETFE UL10086, strand, 90 °C
0W76929	2 conductors, 24 AWG, 600 V ETFE UL10086, double insulation, strand, 90 °C
0W13442	2 conductors, 22 AWG, 600 V ETFE UL10086, double insulation, strand, 90 °C

- **The provided signal cable is long enough to reach between the battery cabinet and the UPS:** Remove the male adapter connector from the end of the signal cables and continue to the next step. OR



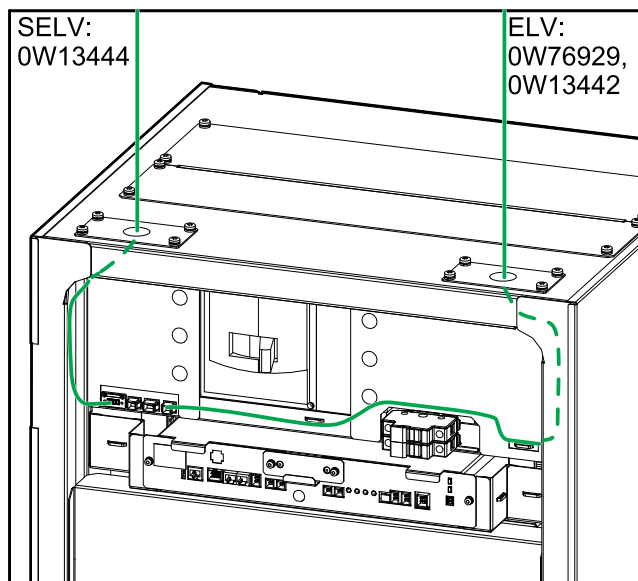
- **The provided signal cable is NOT long enough to reach between the battery cabinet and the UPS:** Remove the female connector and the male adapter connector from the end of the signal cable, shorten the signal cable to 120 mm (4.7 in) length, and reattach the labels and the female connector and male adapter connector to the signal cable. Attach a signal cable¹⁷ (not provided) to the male adapter connector in the correct length to reach from the battery cabinet to the UPS. As an alternative, you can also crimp the signal cable extensions. Ensure that the crimp point is inside the battery cabinet, not in conduits or cable trays outside the battery cabinet.



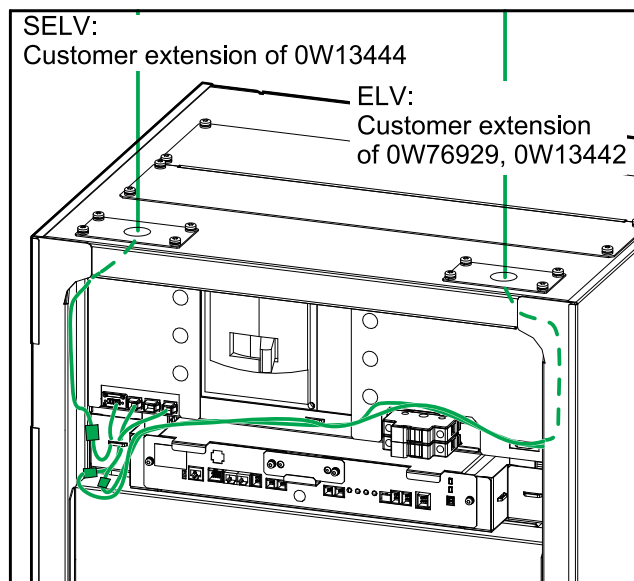
17. Select the extension signal cables according to the *Signal cable specifications*.

4. Route the SELV signal cable 0W13444 and the ELV signal cables 0W76929 and 0W13442 into the battery cabinet and to the switchgear ports. Do not connect the signal cables, Schneider Electric service will complete the connections during start-up.

With Provided Signal Cables

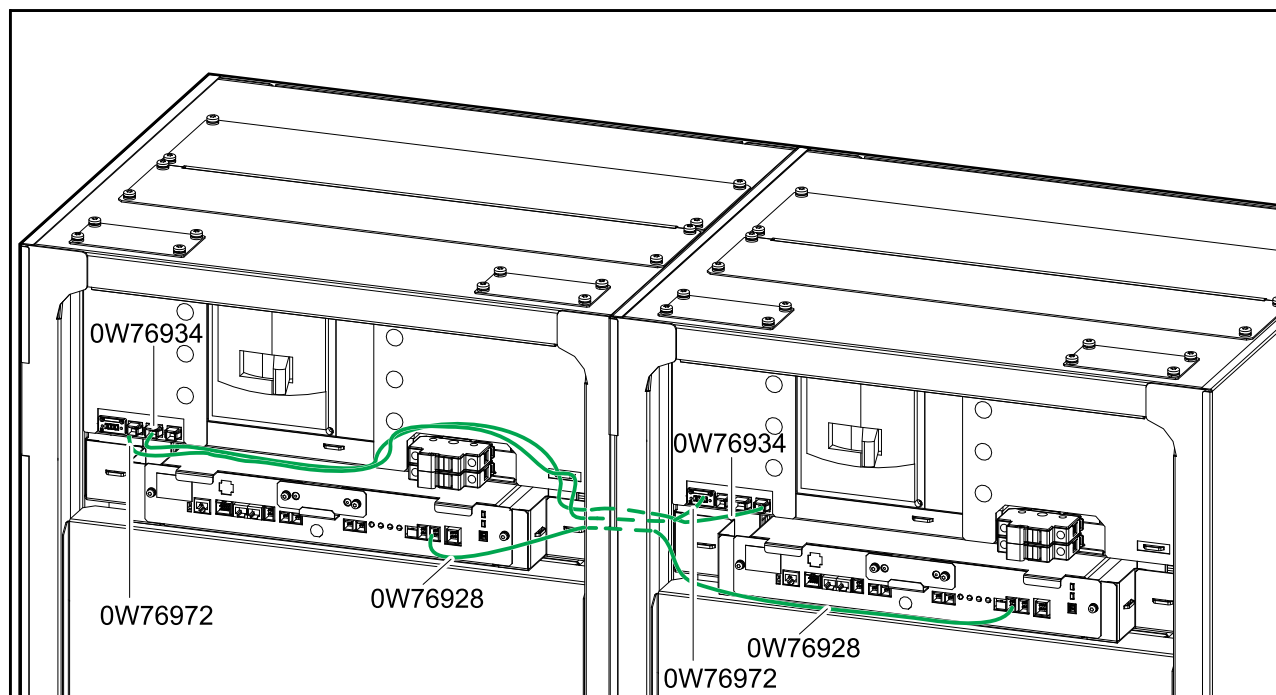


With Extended Signal Cables

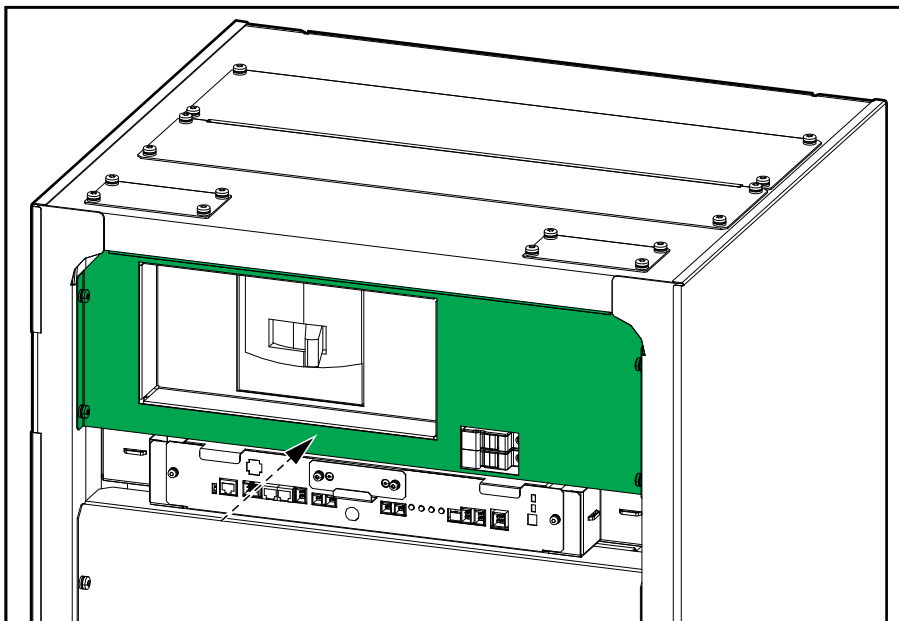


5. Route the signal cable 0W76928, 0W76934, and 0W76972 through the openings in the sides of the battery cabinets and to the ports in the rack BMS and the switchgear ports. Do not connect the signal cables, Schneider Electric service will complete the connections during start-up.

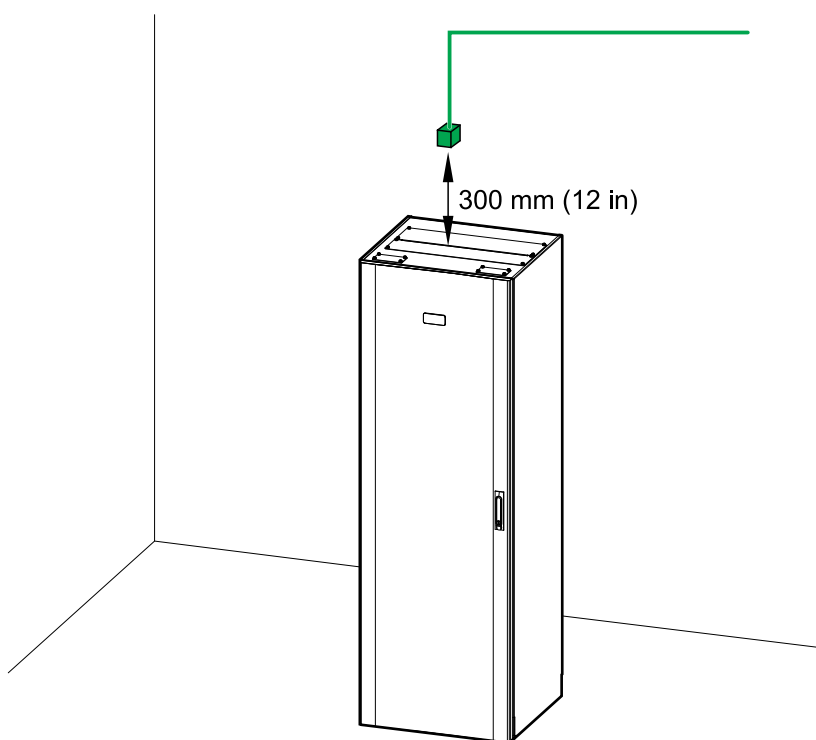
NOTE: All cables between rack BMS and rack BMS as well as between system BMS and rack BMS are considered Class 2/SELV.



6. Reinstall the plate in front of the battery breaker.



7. Reinstall the front door of the battery cabinet.
8. Install the temperature sensor provided with the UPS above the battery cabinet, approximately 300 mm (12 in) from the top. Route the signal cable to the UPS and connect according to the instructions in the UPS installation manual.



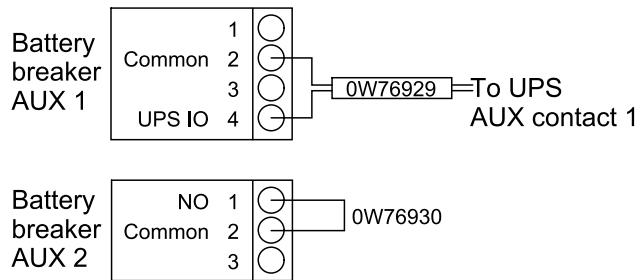
NOTE: The temperature sensor measures the ambient temperature. Do not place the temperature sensor close to external heating or cooling equipment which may give an incorrect measurement of the ambient temperature.

Overview of Signal Cables between the Battery Cabinets and the Auxiliary Contacts in the UPS

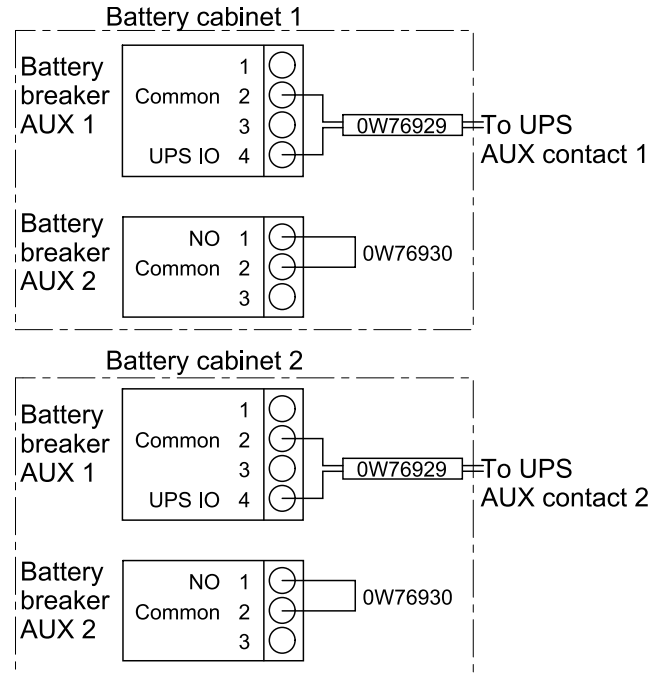
The connection of auxiliary contacts is dependent on the number of battery breakers supported by the UPS. In the examples below two banks of battery breakers are supported.

NOTE: If the combined short circuit current of the battery cabinets exceeds the short circuit rating of the UPS, a pull box with fuses or an external box with a battery breaker must be installed. Please contact Schneider Electric for more information.

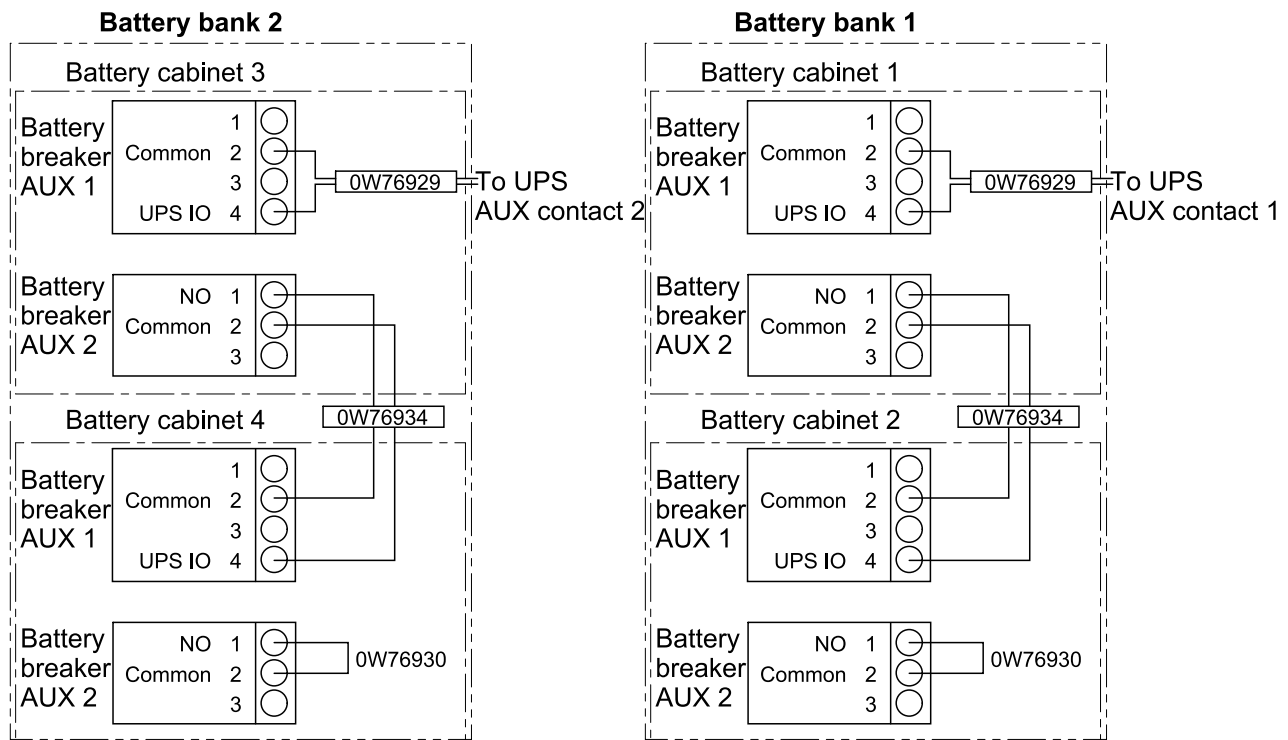
System with One Battery Cabinet



System with Two Battery Cabinets



System with Four Battery Cabinets in Two Battery Banks

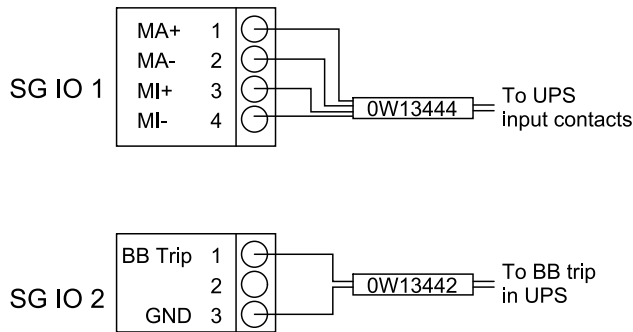


Overview of Signal Cables for Alarms and Battery Breaker Trip

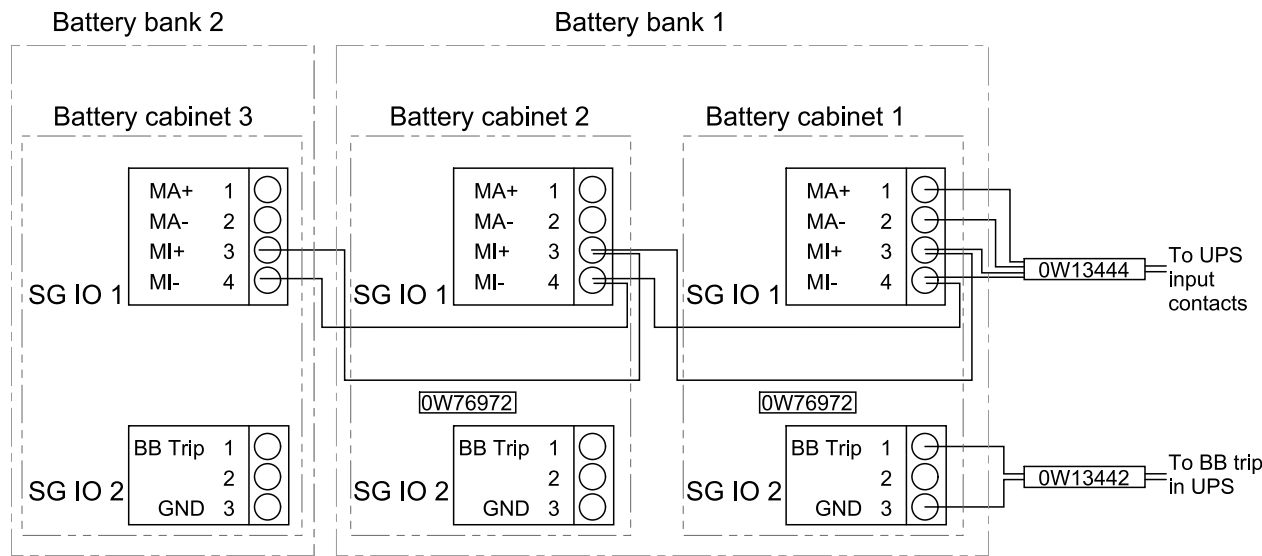
In systems with more battery cabinets, only the system BMS of battery cabinet 1 (the battery cabinet closest to the UPS) is connected to the UPS. Remove signal cable 0W13441 between the SMPS I/O port and the DRY CONTACT ports on battery cabinet 2 and battery cabinet 3.

- SG IO 1: Used for sending signals for minor and major alarms to the UPS.
- SG IO 2: Used for receiving trip signal from the UPS.

System with One Battery Cabinet



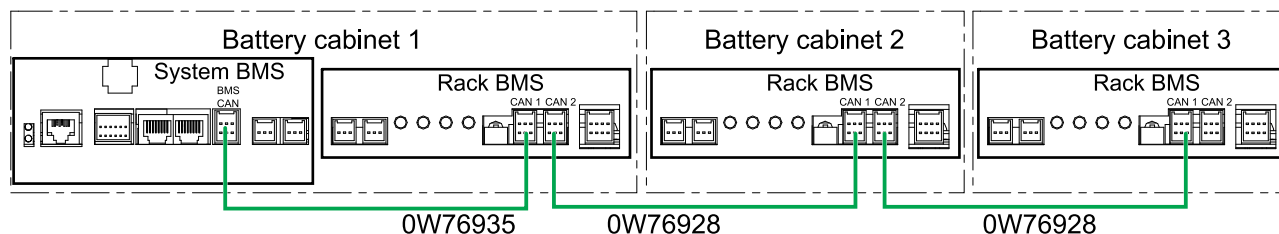
System with Three Battery Cabinets in Two Battery Banks



Overview of CAN Bus Cables between the Battery Cabinets

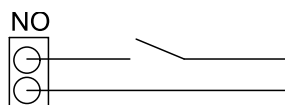
NOTE: In systems with more battery cabinets, remove the cables 0W76935 from CAN 1 in the rack BMS to the System BMS CAN I/O in battery cabinet 2 and battery cabinet 3.

1. Route signal cable 0W76928 from CAN 2 port of battery cabinet 1 to the CAN 1 port of battery cabinet 2. Repeat for the remaining battery cabinets. Do not connect the CAN cables, Schneider Electric service will complete the connections during start-up.



Overview of EPO Signal Cables

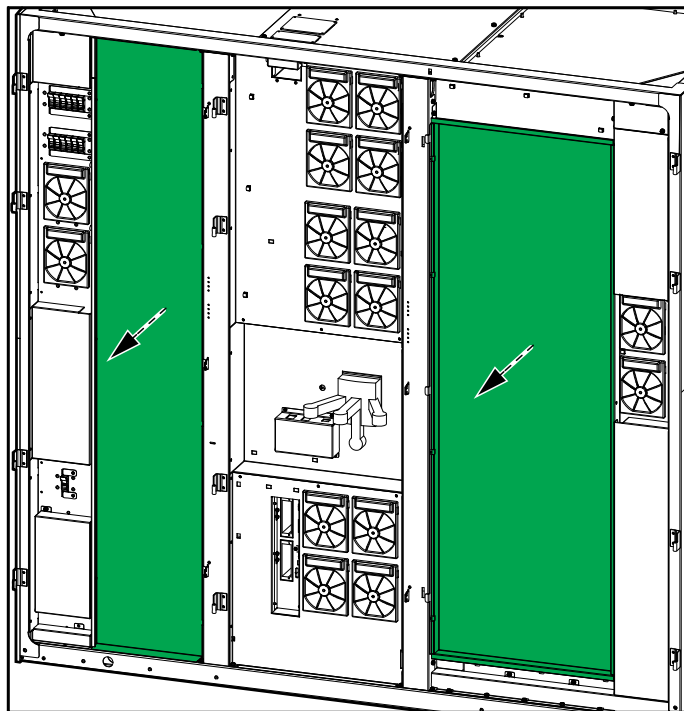
Connect the Class 2/SELV signal cables from the building EPO to the rack BMS. Class 2/SELV circuits must be isolated from the primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2/SELV.



Decommission or Move the UPS to a New Location

NOTE: Contact Schneider Electric for removal of the interconnection busbars between the cabinets.

1. Shut down the UPS completely – follow the instructions in the UPS operation manual.
2. Lockout/Tagout all breakers in the switchgear in the OFF (open) position.
3. Lockout/Tagout all battery breakers in the switchgear/battery solution in the OFF (open) position.
4. Open the front door of the UPS.
5. If present, Lockout/Tagout the backfeed breaker BF2 in the OFF (open) position.
6. Open the front door of the I/O cabinet and the power cabinets.
7. Remove the two metal plates from the I/O cabinet.



8. Measure for and verify ABSENCE of voltage on each input/bypass/output/DC busbar before continuing.

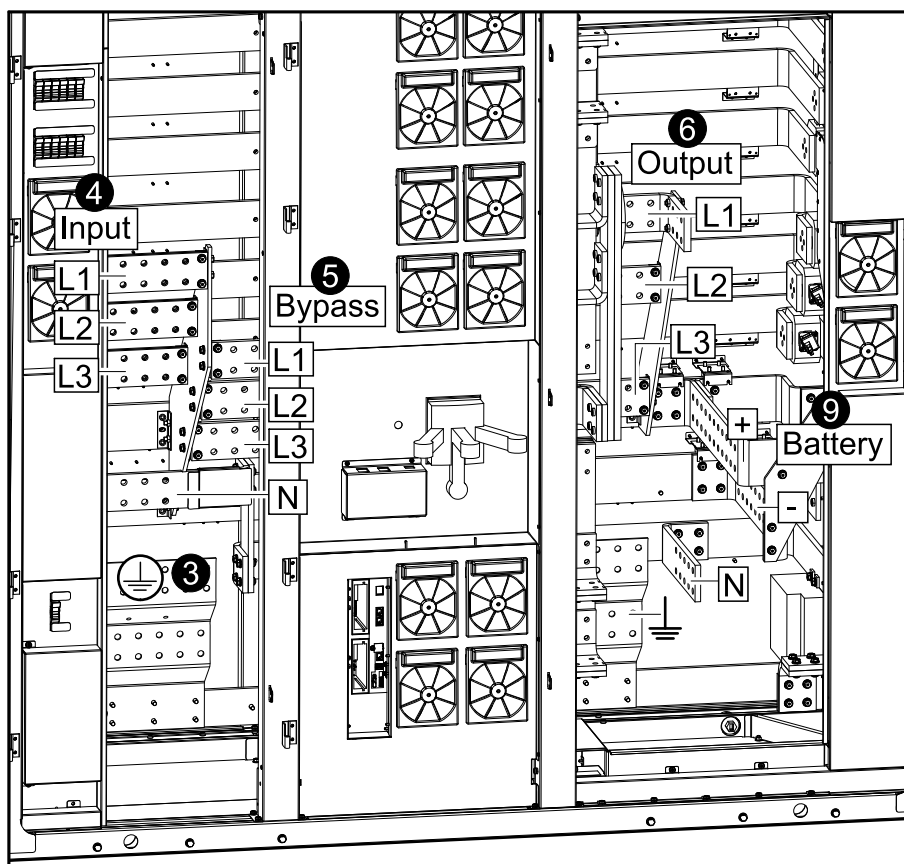
⚡ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Measure for and verify ABSENCE of voltage on each input/bypass/output/DC busbar before proceeding.

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

Front View of the I/O Cabinet



9. Disconnect and remove all power cables from the I/O cabinet. See [Connect the Power Cables in a 480 V System](#), page 67 for details.
10. Disconnect and remove all signal cables from the I/O cabinet. See [Signal Cables](#), page 70 for details.
11. Contact Schneider Electric for removal of the interconnection busbars between the cabinets. The interconnections busbars must only be removed by a Schneider Electric-certified field service representative or service partner.
12. Remove the seismic front anchoring brackets from the cabinets. Save for reinstallation. See [Mount the Front Anchoring Brackets](#), page 69 for details.
13. Remove the top baying brackets and interconnection screws from the cabinets. Release the cabinets from the rear anchoring brackets by loosening the bolts on the front of the cabinets. See [Position the Cabinets](#), page 50 for details.
14. Reinstall all removed plates and covers in the cabinets. See [Final Mechanical Assembly of the I/O Cabinet](#), page 91 and [Final Mechanical Assembly of the Power Cabinets](#), page 95 for details.
15. Close and lock the front door of the cabinets.

16. Raise the feet of the cabinets until the casters have full contact with the floor.
17. You can now move each cabinet individually by rolling it over the floor on the casters.

⚠ WARNING

TIPPING HAZARD

- The casters of the cabinet are exclusively for transport on flat, even, hard, and horizontal surfaces.
- The casters of the cabinet are intended for transport over short distances (i.e. inside the same building).
- Move at a slow pace and pay close attention on the floor conditions and the balance of the cabinet.

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

18. Remove the rear anchoring brackets from the floor. Save for reinstallation. See *Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet (s)*, page 47 for details.

19. **For transport over longer distances or in conditions that are not suitable for the casters of the cabinet:**

⚠ WARNING

TIPPING HAZARD

For transport over longer distances or in conditions that are not suitable for the casters of the UPS, ensure:

- that personnel performing the transport have necessary skills and have received adequate training;
- to use appropriate tools to safely lift and transport the cabinet;
- to protect the product against damage by using appropriate protection (like wrapping or packaging).

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

⚠ WARNING

TOP-HEAVY CABINET

The power cabinet is top-heavy. Take appropriate precautions during handling and preparation for transport/shipment.

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

Transportation requirements:

- Mount the cabinet in a vertical position in the center of a suitable pallet. The pallet must be suitable for the weight of the cabinet. The I/O cabinet weighs 876 kg (1931 lbs). The power cabinet weighs 540 kg (1190 lbs).
- Use appropriate means of fixation to mount the cabinet to the pallet.

⚠ DANGER

TIPPING HAZARD

- The cabinet must be appropriately fixed to the pallet immediately after being placed on the pallet.
- The fixation hardware must be strong enough to withstand vibrations and shocks during loading, transport, and unloading.

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

⚠ WARNING

UNEXPECTED EQUIPMENT BEHAVIOR

Do not lift the cabinet with a forklift/pallet truck directly on the frame as it may bend or damage the frame.

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

20. Perform one of the following:

- Decommission the cabinets, OR
- Move the the I/O cabinet/power cabinet to a new location to install it.

21. **Only for installing the UPS in a new location:** Follow the installation manual to install the I/O cabinet and power cabinets in the new location. See section for installation procedure for installation overview. Startup must only be performed by Schneider Electric.

 DANGER

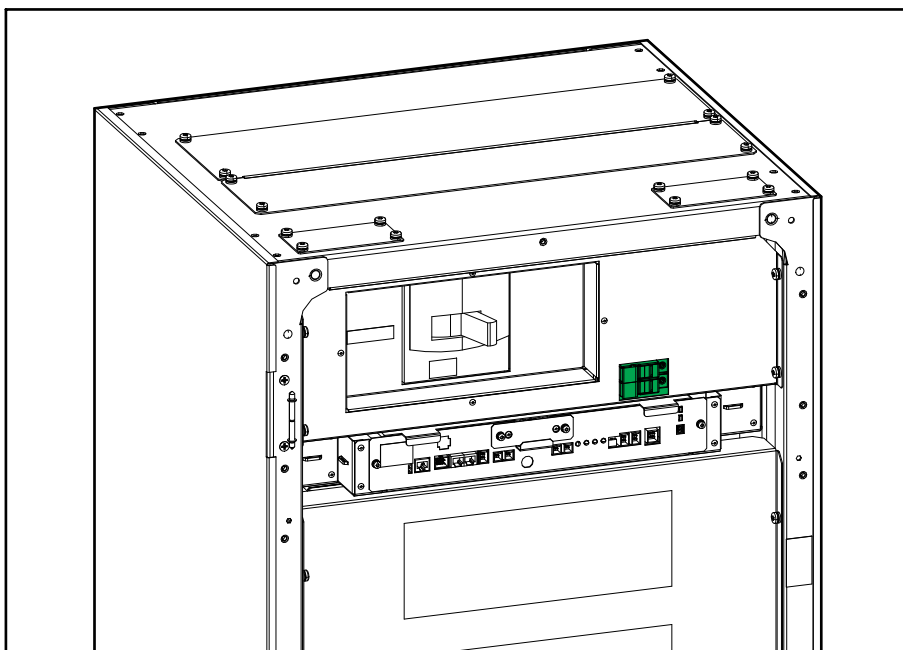
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Startup must only be performed by Schneider Electric.

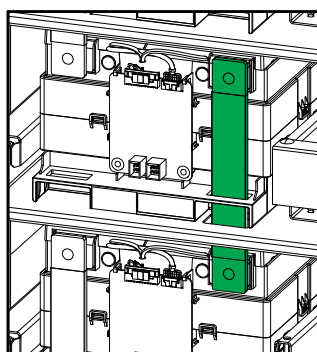
Failure to follow these instructions will result in death or serious injury.

Decommission or Move the Battery Cabinet to a New Location

1. Lockout/Tagout the battery breaker in the OFF (open) position and open the two fuse holders in the battery cabinet.



2. Lockout/Tagout the power to the SMPS AC/DC converter upstream (if applicable).
3. Disconnect and remove all power cables from the battery cabinet. See [Connect the Power Cables](#), page 98 for details.



4. Disconnect and remove all signal cables from the battery cabinet. See [Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports](#), page 102 for details.
5. Disconnect and remove power cables to the SMPS AC/DC converter (if applicable). Refer to the SMPS AC/DC converter installation manual for details.
6. Contact Schneider Electric for removal of the battery busbars and fuse kits. The battery busbars and fuse kits must only be removed by a Schneider Electric-certified field service representative or service partner.

7. Remove the batteries from the shelves. Recycle or reuse the batteries as appropriate.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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.

- Recycle lead-acid batteries correctly. Batteries contain lead and dilute sulfuric acid.
- Dispose of the batteries in accordance with country and local regulations.

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

8. Contact Schneider Electric for removal of the interconnection busbars between the cabinets. The interconnections busbars must only be removed by a Schneider Electric-certified field service representative or service partner.
9. Remove the seismic front and rear anchoring brackets from the cabinets. Save for reinstallation. See *Install the Front Seismic Anchoring*, page 63 and *Install the Rear Seismic Anchoring for the UPS and the Battery Cabinet(s)*, page 47 for details.
10. Close and lock the front door of the cabinets.
11. Raise the feet of the cabinets until the casters have full contact with the floor.
12. You can now move each cabinet individually by rolling it over the floor on the casters.

WARNING

TIPPING HAZARD

- The casters of the cabinet are exclusively for transport on flat, even, hard, and horizontal surfaces.
- The casters of the cabinet are intended for transport over short distances (i.e. inside the same building).
- Move at a slow pace and pay close attention on the floor conditions and the balance of the cabinet.

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

13. **For transport over longer distances or in conditions that are not suitable for the casters of the cabinet:**

⚠ WARNING

TIPPING HAZARD

For transport over longer distances or in conditions that are not suitable for the casters of the battery cabinet, ensure:

- that personnel performing the transport have necessary skills and have received adequate training;
- to use appropriate tools to safely lift and transport the cabinet;
- to protect the product against damage by using appropriate protection (like wrapping or packaging).

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

⚠ WARNING

TOP-HEAVY CABINET

The battery cabinet is top-heavy. Take appropriate precautions during handling and preparation for transport/shipment.

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

Transportation requirements:

- Mount the cabinet in a vertical position in the center of a suitable pallet. The pallet must be suitable for the weight of the cabinet.
- Use appropriate means of fixation to mount the cabinet to the pallet.

⚠ DANGER

TIPPING HAZARD

- The cabinet must be appropriately fixed to the pallet immediately after being placed on the pallet.
- The fixation hardware must be strong enough to withstand vibrations and shocks during loading, transport, and unloading.

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

⚠ WARNING

UNEXPECTED EQUIPMENT BEHAVIOR

Do not lift the cabinet with a forklift/pallet truck directly on the frame as it may bend or damage the frame.

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

14. Perform one of the following:

- Decommission the battery cabinet, OR
- Move the battery cabinet to a new location to install it.

15. **Only for installing the battery cabinet in a new location:** Follow the installation manual to install the battery cabinet in the new location. See section of installation procedure for installation overview. Startup must only be performed by Schneider Electric.

 DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Startup must only be performed by Schneider Electric.

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

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