Galaxy VL

200-500 kW UPS 380/400/415/440/480 V (IEC Certified and UL Listed)

Installation

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Find the UPS Manuals, Submittal Drawings, and Other Documentation for Your Specific UPS Here:

In your web browser, type in https://www.go2se.com/ref= and the commercial reference for your product.

Example: *https://www.go2se.com/ref=**GVL200K500DS***

Find the UPS Manuals, Relevant Auxiliary Product Manuals, and Option Manuals Here:

Scan the code to go to the Galaxy VL online manual portal:

IEC Certified UPS (380/400/415/440/480 V)

https://productinfo.se.com/galaxyvl_iec/

UL Listed UPS (380/400/415/440/480 V)

https://productinfo.se.com/galaxyvl_ul/

Here you can find your UPS installation manual, UPS operation manual, and UPS technical specifications, and you can also find 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 VL Here:

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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 This is a product category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures. **Failure to follow these instructions can result in equipment damage.**

Safety Precautions

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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:

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

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

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

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠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.

⚠CAUTION

RISK OF HOT SURFACE

The outer plates of the cabinet can exceed temperatures of 65 °C (149 °F) at 50 °C (122 °F) ambient room temperature, if the air filter(s) in the front door is clogged. Replace the air filter regularly as described in the UPS operation manual.

Failure to follow these instructions can result in 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.

Additional Safety Precautions for Tall, Thin, and Heavy Products



These symbols indicate a risk of tip-over and potential crushing injury. When displayed on a product or package, they warn that the item may become unstable due to a high center of gravity, uneven weight distribution, or overall heaviness. Exercise caution when handling or moving the product. Always read and follow any specific handling instructions provided, and consider using professional movers if necessary to ensure safe transport, installation, and decommissioning.

Additional Safety Precautions After Installation

⚠⚠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. If additional construction work is needed in the installation room after this product has been installed, turn off the product and cover the product with the protective packaging bag the product was delivered in.

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

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.

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 Backfeed Protection, page 111 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.

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

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

This product can cause a DC current in the PE conductor. If a residual current-operated protective device (RCD) is used for protection against electrical shock, only an RCD of Type B is allowed on the supply side of this product.

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

Battery Safety

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠CAUTION

RISK OF EQUIPMENT DAMAGE

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

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

NOTE: Always follow the documentation from the battery manufacturer concerning battery storage, battery installation, and battery maintenance.

ENERGY STAR Qualification



Select models are ENERGY STAR® qualified.
For more information on your specific model go to www.se.com.

Specifications

Specifications for 200 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	IEC certified UPS: Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)(1) Dual mains: 3-wire (L1, L2, L3, PE) UL listed UPS: Single mains: 4-wire(2) (L1, L2, L3, N, G) or 3-wire(2) (L1, L2, L3, G)(1) Dual mains: 3-wire(2) (L1, L2, L3, G)				
	Input voltage range (V)	331-437	340-460	353-477	374-506	408-552
	Frequency (Hz)	40-70				
	Nominal input current (A)	316	299	288	272	249
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(3) UL listed UPS (one cycle): 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(3)				
	Maximum input current (A)	371	365	352	332	303
	Input current limitation (A)	371	370	366	342	313
	Total harmonic distortion (THDI)	<3% at 100% load(4)				
	Input power factor	>0.99 at load >25%, 0.95 at >15% load				
	Protection	Built-in backfeed protection and fuses				
	Ramp-in	Adaptive 1-300 seconds				

(1) Note: Refer to the earthing diagrams for your specific earthing system requirements concerning the N connection.
(2) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
(3) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(4) THDI values are measured at the input busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Bypass	Connections	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G)				
	Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ±1, ±3, ±10. Default is ±3.				
	Nominal bypass current (A)	312	297	286	270	247
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(5) UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(5)				
	I^2t thyristor value (A^2s)	3.1 MA^2s				
	Bypass backfeed protection options	1: Upstream installation of circuit breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet (IEC certified UPS: GVLMBCA200K500H) (UL listed UPS: GVLMBCA200K500G), OR 3: Installation of backfeed disconnect device kit (IEC certified UPS: GVLOPT004) (UL listed UPS: GVLOPT003) in the UPS.				

(5) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.

	Voltage (V)	380	400	415	440	480
Output	Connections[6]	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC[7])				
	Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[8]) Battery operation: 125% for 1 minute Bypass operation: 110% continuous, 1600% for 100 milliseconds				Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[8]) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Output power factor	1				
	Nominal output current (A)	304	289	278	262	241
	Minimum short circuit rating[9]	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating[10]	IEC certified UPS: (three cycles) 65 kA Icw 25 kA Icw with maintenance bypass cabinet GVLMBCA200K500H 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[11] UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[11]				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 64.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz ±0.1% (free-running)				
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load[12]				
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-11				
	Load crest factor	3				
	Load power factor	0.5 leading to 0.5 lagging without derating				

(6) The number of output connections must match the number of input connections in a single mains system or the number of bypass connections in a dual mains system.
(7) Per NEC 250.30.
(8) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.
(9) Minimum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(10) Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(11) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(12) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Battery	Charging power in % of output power	0-40% load: 80% 100% load: 15%	0-40% load: 80% 100% load: 20%			
	Maximum charging power (kW)	0-40% load: 160 100% load: 30	0-40% load: 160 100% load: 40			
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks				
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks				
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks				
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C				
	End of discharge voltage (full load) (VDC)	384				
	End of discharge voltage (no load) (VDC)	420				
	Battery current at full load and nominal battery voltage (A)	434				
	Battery current at full load and minimum battery voltage (A)	543				
	Ripple current	< 5% C20 (5-minute runtime)				
	Battery test	Manual/automatic (selectable)				
	Maximum short circuit rating	30 kA				

NOTE: Battery specifications are based on VRLA batteries.

Specifications for 250 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	IEC certified UPS: Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)[13] Dual mains: 3-wire (L1, L2, L3, PE) UL listed UPS: Single mains: 4-wire[14] (L1, L2, L3, N, G) or 3-wire[14] (L1, L2, L3, G)[13] Dual mains: 3-wire[14] (L1, L2, L3, G)				
	Input voltage range (V)	331-437	340-460	353-477	374-506	408-552
	Frequency (Hz)	40-70				
	Nominal input current (A)	395	374	360	340	311
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[15] UL listed UPS (one cycle): 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[15]				
	Maximum input current (A)	463	457	440	415	379
	Input current limitation (A)	463	463	458	427	392
	Total harmonic distortion (THDI)	<3% at 100% load[16]				
	Input power factor	>0.99 at load >25%, 0.95 at >15% load				
	Protection	Built-in backfeed protection and fuses				
	Ramp-in	Adaptive 1-300 seconds				

(13) Note: Refer to the earthing diagrams for your specific earthing system requirements concerning the N connection.
(14) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
(15) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(16) THDI values are measured at the input busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Bypass	Connections	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G)				
	Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ±1, ±3, ±10. Default is ±3.				
	Nominal bypass current (A)	390	371	357	337	309
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(17) UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(17)				
	I^2t thyristor value (A^2s)	3.1 MA^2s				
	Bypass backfeed protection options	1: Upstream installation of circuit breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet (IEC certified UPS: GVLMBCA200K500H) (UL listed UPS: GVLMBCA200K500G), OR 3: Installation of backfeed disconnect device kit (IEC certified UPS: GVLOPT004) (UL listed UPS: GVLOPT003) in the UPS.				

(17) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.

	Voltage (V)	380	400	415	440	480
Output	Connections[18]	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC[19])				
	Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[20]) Battery operation: 125% for 1 minute Bypass operation: 110% continuous, 1600% for 100 milliseconds				Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[20]) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Output power factor	1				
	Nominal output current (A)	380	361	348	328	301
	Minimum short circuit rating[21]	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating[22]	IEC certified UPS: (three cycles) 65 kA Icw 25 kA Icw with maintenance bypass cabinet GVLMBCA200K500H 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[23] UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[23]				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 64.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz ±0.1% (free-running)				
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load[24]				
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-11				
	Load crest factor	3				
	Load power factor	0.5 leading to 0.5 lagging without derating				

(18) The number of output connections must match the number of input connections in a single mains system or the number of bypass connections in a dual mains system.
(19) Per NEC 250.30.
(20) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.
(21) Minimum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(22) Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(23) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(24) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Battery	Charging power in % of output power	0-40% load: 80% 100% load: 15%	0-40% load: 80% 100% load: 20%			
	Maximum charging power (kW)	0-40% load: 200 100% load: 37.5	0-40% load: 200 100% load: 50			
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks				
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks				
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks				
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C				
	End of discharge voltage (full load) (VDC)	384				
	End of discharge voltage (no load) (VDC)	420				
	Battery current at full load and nominal battery voltage (A)	543				
	Battery current at full load and minimum battery voltage (A)	678				
	Ripple current	< 5% C20 (5-minute runtime)				
	Battery test	Manual/automatic (selectable)				
	Maximum short circuit rating	30 kA				

NOTE: Battery specifications are based on VRLA batteries.

Specifications for 300 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	IEC certified UPS: Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)[25] Dual mains: 3-wire (L1, L2, L3, PE) UL listed UPS: Single mains: 4-wire[26] (L1, L2, L3, N, G) or 3-wire[26] (L1, L2, L3, G)[25] Dual mains: 3-wire[26] (L1, L2, L3, G)				
	Input voltage range (V)	331-437	340-460	353-477	374-506	408-552
	Frequency (Hz)	40-70				
	Nominal input current (A)	474	449	432	408	373
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[27] UL listed UPS (one cycle): 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[27]				
	Maximum input current (A)	555	548	528	498	455
	Input current limitation (A)	555	555	549	513	470
	Total harmonic distortion (THDI)	<3% at 100% load[28]				
	Input power factor	>0.99 at load >25%, 0.95 at >15% load				
	Protection	Built-in backfeed protection and fuses				
	Ramp-in	Adaptive 1-300 seconds				

(25) Note: Refer to the earthing diagrams for your specific earthing system requirements concerning the N connection.
(26) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
(27) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(28) THDI values are measured at the input busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Bypass	Connections	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G)				
	Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ±1, ±3, ±10. Default is ±3.				
	Nominal bypass current (A)	468	445	429	404	371
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(29) UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(29)				
	I^2t thyristor value (A^2s)	3.1 MA^2s				
	Bypass backfeed protection options	1: Upstream installation of circuit breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet (IEC certified UPS: GVLMBCA200K500H) (UL listed UPS: GVLMBCA200K500G), OR 3: Installation of backfeed disconnect device kit (IEC certified UPS: GVLOPT004) (UL listed UPS: GVLOPT003) in the UPS.				

(29) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.

	Voltage (V)	380	400	415	440	480
Output	Connections[30]	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC[31])				
	Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[32]) Battery operation: 125% for 1 minute Bypass operation: 110% continuous, 1600% for 100 milliseconds				Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[32]) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Output power factor	1				
	Nominal output current (A)	456	433	417	394	361
	Minimum short circuit rating[33]	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating[34]	IEC certified UPS: (three cycles) 65 kA Icw 25 kA Icw with maintenance bypass cabinet GVLMBCA200K500H 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[35] UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[35]				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 64.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz ±0.1% (free-running)				
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load[36]				
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-11				
	Load crest factor	3				
	Load power factor	0.5 leading to 0.5 lagging without derating				

(30) The number of output connections must match the number of input connections in a single mains system or the number of bypass connections in a dual mains system.
(31) Per NEC 250.30.
(32) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.
(33) Minimum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(34) Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(35) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(36) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Battery	Charging power in % of output power	0-40% load: 80% 100% load: 15%	0-40% load: 80% 100% load: 20%			
	Maximum charging power (kW)	0-40% load: 240 100% load: 45	0-40% load: 240 100% load: 60			
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks				
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks				
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks				
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C				
	End of discharge voltage (full load) (VDC)	384				
	End of discharge voltage (no load) (VDC)	420				
	Battery current at full load and nominal battery voltage (A)	651				
	Battery current at full load and minimum battery voltage (A)	814				
	Ripple current	< 5% C20 (5-minute runtime)				
	Battery test	Manual/automatic (selectable)				
	Maximum short circuit rating	30 kA				

NOTE: Battery specifications are based on VRLA batteries.

Specifications for 350 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	IEC certified UPS: Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)[37] Dual mains: 3-wire (L1, L2, L3, PE) UL listed UPS: Single mains: 4-wire[38] (L1, L2, L3, N, G) or 3-wire[38] (L1, L2, L3, G)[37] Dual mains: 3-wire[38] (L1, L2, L3, G)				
	Input voltage range (V)	331-437	340-460	353-477	374-506	408-552
	Frequency (Hz)	40-70				
	Nominal input current (A)	553	524	505	476	435
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[39] UL listed UPS (one cycle): 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[39]				
	Maximum input current (A)	648	640	616	581	531
	Input current limitation (A)	648	648	641	598	548
	Total harmonic distortion (THDI)	<3% at 100% load[40]				
	Input power factor	>0.99 at load >25%, 0.95 at >15% load				
	Protection	Built-in backfeed protection and fuses				
	Ramp-in	Adaptive 1-300 seconds				

(37) Note: Refer to the earthing diagrams for your specific earthing system requirements concerning the N connection.
(38) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
(39) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(40) THDI values are measured at the input busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Bypass	Connections	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G)				
	Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ±1, ±3, ±10. Default is ±3.				
	Nominal bypass current (A)	546	519	500	472	432
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(41) UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(41)				
	I^2t thyristor value (A^2s)	3.1 MA^2s				
	Bypass backfeed protection options	1: Upstream installation of circuit breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet (IEC certified UPS: GVLMBCA200K500H) (UL listed UPS: GVLMBCA200K500G), OR 3: Installation of backfeed disconnect device kit (IEC certified UPS: GVLOPT004) (UL listed UPS: GVLOPT003) in the UPS.				

(41) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.

	Voltage (V)	380	400	415	440	480
Output	Connections[42]	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC[43])				
	Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[44]) Battery operation: 125% for 1 minute Bypass operation: 110% continuous, 1600% for 100 milliseconds				Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[44]) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Output power factor	1				
	Nominal output current (A)	532	505	487	459	421
	Minimum short circuit rating[45]	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating[46]	IEC certified UPS: (three cycles) 65 kA Icw 25 kA Icw with maintenance bypass cabinet GVLMBCA200K500H 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[47] UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[47]				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 64.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz ±0.1% (free-running)				
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load[48]				
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-11				
	Load crest factor	3				
	Load power factor	0.5 leading to 0.5 lagging without derating				

(42) The number of output connections must match the number of input connections in a single mains system or the number of bypass connections in a dual mains system.
(43) Per NEC 250.30.
(44) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.
(45) Minimum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(46) Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(47) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(48) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Battery	Charging power in % of output power	0-40% load: 80% 100% load: 15%	0-40% load: 80% 100% load: 20%			
	Maximum charging power (kW)	0-40% load: 280 100% load: 52.5	0-40% load: 280 100% load: 70			
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks				
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks				
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks				
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C				
	End of discharge voltage (full load) (VDC)	384				
	End of discharge voltage (no load) (VDC)	420				
	Battery current at full load and nominal battery voltage (A)	760				
	Battery current at full load and minimum battery voltage (A)	949				
	Ripple current	< 5% C20 (5-minute runtime)				
	Battery test	Manual/automatic (selectable)				
	Maximum short circuit rating	30 kA				

NOTE: Battery specifications are based on VRLA batteries.

Specifications for 400 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	IEC certified UPS: Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)[49] Dual mains: 3-wire (L1, L2, L3, PE) UL listed UPS: Single mains: 4-wire[50] (L1, L2, L3, N, G) or 3-wire[50] (L1, L2, L3, G)[49] Dual mains: 3-wire[50] (L1, L2, L3, G)				
	Input voltage range (V)	331-437	340-460	353-477	374-506	408-552
	Frequency (Hz)	40-70				
	Nominal input current (A)	632	599	577	544	497
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[51] UL listed UPS (one cycle): 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[51]				
	Maximum input current (A)	740	731	704	664	607
	Input current limitation (A)	740	740	732	683	626
	Total harmonic distortion (THDI)	<3% at 100% load[52]				
	Input power factor	>0.99 at load >25%, 0.95 at >15% load				
	Protection	Built-in backfeed protection and fuses				
	Ramp-in	Adaptive 1-300 seconds				

(49) Note: Refer to the earthing diagrams for your specific earthing system requirements concerning the N connection.
(50) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
(51) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(52) THDI values are measured at the input busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Bypass	Connections	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G)				
	Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ±1, ±3, ±10. Default is ±3.				
	Nominal bypass current (A)	624	593	572	539	494
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(53) UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(53)				
	I^2t thyristor value (A^2s)	3.1 MA^2s				
	Bypass backfeed protection options	1: Upstream installation of circuit breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet (IEC certified UPS: GVLMBCA200K500H) (UL listed UPS: GVLMBCA200K500G), OR 3: Installation of backfeed disconnect device kit (IEC certified UPS: GVLOPT004) (UL listed UPS: GVLOPT003) in the UPS.				

(53) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.

	Voltage (V)	380	400	415	440	480
Output	Connections[54]	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC[55])				
	Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[56]) Battery operation: 125% for 1 minute Bypass operation: 110% continuous, 1600% for 100 milliseconds				Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[56]) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Output power factor	1				
	Nominal output current (A)	608	577	556	525	481
	Minimum short circuit rating[57]	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating[58]	IEC certified UPS: (three cycles) 65 kA Icw 25 kA Icw with maintenance bypass cabinet GVLMBCA200K500H 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[59] UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[59]				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 64.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz ±0.1% (free-running)				
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load[60]				
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-11				
	Load crest factor	3				
	Load power factor	0.5 leading to 0.5 lagging without derating				

(54) The number of output connections must match the number of input connections in a single mains system or the number of bypass connections in a dual mains system.
(55) Per NEC 250.30.
(56) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.
(57) Minimum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(58) Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(59) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(60) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Battery	Charging power in % of output power	0-40% load: 80% 100% load: 15%	0-40% load: 80% 100% load: 20%			
	Maximum charging power (kW)	0-40% load: 320 100% load: 60	0-40% load: 320 100% load: 80			
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks				
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks				
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks				
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C				
	End of discharge voltage (full load) (VDC)	384				
	End of discharge voltage (no load) (VDC)	420				
	Battery current at full load and nominal battery voltage (A)	868				
	Battery current at full load and minimum battery voltage (A)	1085				
	Ripple current	< 5% C20 (5-minute runtime)				
	Battery test	Manual/automatic (selectable)				
	Maximum short circuit rating	30 kA				

NOTE: Battery specifications are based on VRLA batteries.

Specifications for 450 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	IEC certified UPS: Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)[61] Dual mains: 3-wire (L1, L2, L3, PE) UL listed UPS: Single mains: 4-wire[62] (L1, L2, L3, N, G) or 3-wire[62] (L1, L2, L3, G)[61] Dual mains: 3-wire[62] (L1, L2, L3, G)				
	Input voltage range (V)	331-437	340-460	353-477	374-506	408-552
	Frequency (Hz)	40-70				
	Nominal input current (A)	711	674	649	612	559
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[63] UL listed UPS (one cycle): 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[63]				
	Maximum input current (A)	833	822	792	747	682
	Input current limitation (A)	833	833	824	769	705
	Total harmonic distortion (THDI)	<3% at 100% load[64]				
	Input power factor	>0.99 at load >25%, 0.95 at >15% load				
	Protection	Built-in backfeed protection and fuses				
	Ramp-in	Adaptive 1-300 seconds				

(61) Note: Refer to the earthing diagrams for your specific earthing system requirements concerning the N connection.
(62) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
(63) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(64) THDI values are measured at the input busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Bypass	Connections	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G)				
	Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ±1, ±3, ±10. Default is ±3.				
	Nominal bypass current (A)	702	667	643	607	556
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(65) UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(65)				
	I^2t thyristor value (A^2s)	3.1 MA^2s				
	Bypass backfeed protection options	1: Upstream installation of circuit breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet (IEC certified UPS: GVLMBCA200K500H) (UL listed UPS: GVLMBCA200K500G), OR 3: Installation of backfeed disconnect device kit (IEC certified UPS: GVLOPT004) (UL listed UPS: GVLOPT003) in the UPS.				

(65) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.

	Voltage (V)	380	400	415	440	480
Output	Connections[66]	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC[67])				
	Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[68]) Battery operation: 125% for 1 minute Bypass operation: 110% continuous, 1600% for 100 milliseconds				Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[68]) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Output power factor	1				
	Nominal output current (A)	684	650	626	590	541
	Minimum short circuit rating[69]	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating[70]	IEC certified UPS: (three cycles) 65 kA Icw 25 kA Icw with maintenance bypass cabinet GVLMBCA200K500H 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[71] UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[71]				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 64.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz ±0.1% (free-running)				
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load[72]				
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-11				
	Load crest factor	3				
	Load power factor	0.5 leading to 0.5 lagging without derating				

(66) The number of output connections must match the number of input connections in a single mains system or the number of bypass connections in a dual mains system.
(67) Per NEC 250.30.
(68) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.
(69) Minimum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(70) Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(71) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(72) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Battery	Charging power in % of output power	0-40% load: 80% 100% load: 15%	0-40% load: 80% 100% load: 20%			
	Maximum charging power (kW)	0-40% load: 360 100% load: 67.5	0-40% load: 360 100% load: 90			
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks				
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks				
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks				
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C				
	End of discharge voltage (full load) (VDC)	384				
	End of discharge voltage (no load) (VDC)	420				
	Battery current at full load and nominal battery voltage (A)	977				
	Battery current at full load and minimum battery voltage (A)	1221				
	Ripple current	< 5% C20 (5-minute runtime)				
	Battery test	Manual/automatic (selectable)				
	Maximum short circuit rating	30 kA				

NOTE: Battery specifications are based on VRLA batteries.

Specifications for 500 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	IEC certified UPS: Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)[73] Dual mains: 3-wire (L1, L2, L3, PE) UL listed UPS: Single mains: 4-wire[74] (L1, L2, L3, N, G) or 3-wire[74] (L1, L2, L3, G)[73] Dual mains: 3-wire[74] (L1, L2, L3, G)				
	Input voltage range (V)	331-437	340-460	353-477	374-506	408-552
	Frequency (Hz)	40-70				
	Nominal input current (A)	790	749	721	680	621
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[75] UL listed UPS (one cycle): 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[75]				
	Maximum input current (A)	925	914	880	830	758
	Input current limitation (A)	925	925	915	854	783
	Total harmonic distortion (THDI)	<3% at 100% load[76]				
	Input power factor	>0.99 at load >25%, 0.95 at >15% load				
	Protection	Built-in backfeed protection and fuses				
	Ramp-in	Adaptive 1-300 seconds				

(73) Note: Refer to the earthing diagrams for your specific earthing system requirements concerning the N connection.
(74) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.
(75) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(76) THDI values are measured at the input busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Bypass	Connections	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G)				
	Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
	Frequency (Hz)	50 or 60				
	Frequency range (Hz)	Programmable: ±1, ±3, ±10. Default is ±3.				
	Nominal bypass current (A)	780	741	715	674	618
	Minimum short circuit rating	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating	IEC certified UPS (three cycles): 65 kA Icw 25 kA Icw with maintenance bypass cabinet (GVLMBCA200K500H) 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS(77) UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS(77)				
	I^2t thyristor value (A^2s)	3.1 MA^2s				
	Bypass backfeed protection options	1: Upstream installation of circuit breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet (IEC certified UPS: GVLMBCA200K500H) (UL listed UPS: GVLMBCA200K500G), OR 3: Installation of backfeed disconnect device kit (IEC certified UPS: GVLOPT004) (UL listed UPS: GVLOPT003) in the UPS.				

(77) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.

	Voltage (V)	380	400	415	440	480
Output	Connections[78]	IEC certified UPS: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) UL listed UPS: 4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC[79])				
	Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[80]) Battery operation: 125% for 1 minute Bypass operation: 110% continuous, 1600% for 100 milliseconds				Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous[80]) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Output power factor	1				
	Nominal output current (A)	760	722	696	656	601
	Minimum short circuit rating[81]	IEC certified UPS: Dependent on upstream protection. See Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 for details. UL listed UPS: Not applicable				
	Maximum short circuit rating[82]	IEC certified UPS: (three cycles) 65 kA Icw 25 kA Icw with maintenance bypass cabinet GVLMBCA200K500H 45 kA Icw with bottom entry cabinet (GVBEC) 65 kA Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kA Icc with backfeed disconnect device kit (GVLOPT004) installed in the UPS[83] UL listed UPS: (one cycle) 65 kAIC Icw 65 kAIC Icw with maintenance bypass cabinet (GVLMBCA200K500G) 45 kAIC Icw with bottom entry cabinet (GVBEC) 65 kAIC Icw with bottom entry cabinet (GVBEC) and bottom entry cabinet 65 kAIC kit (GVLOPT012) installed 65 kAIC Icc with backfeed disconnect device kit (GVLOPT003) installed in the UPS[83]				
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 64.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz ±0.1% (free-running)				
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6				
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load[84]				
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-11				
	Load crest factor	3				
	Load power factor	0.5 leading to 0.5 lagging without derating				

(78) The number of output connections must match the number of input connections in a single mains system or the number of bypass connections in a dual mains system.
(79) Per NEC 250.30.
(80) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.
(81) Minimum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(82) Maximum short circuit rating for output takes backfeeding energy through the bypass of parallel UPSs into consideration.
(83) Refer to the physical short circuit rating label on the UPS for the exact short circuit rating options of the specific UPS.
(84) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	380	400	415	440	480
Battery	Charging power in % of output power	0-40% load: 80% 100% load: 15%	0-40% load: 80% 100% load: 20%			
	Maximum charging power (kW)	0-40% load: 400 100% load: 75	0-40% load: 400 100% load: 100			
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks				
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks				
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks				
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C				
	End of discharge voltage (full load) (VDC)	384				
	End of discharge voltage (no load) (VDC)	420				
	Battery current at full load and nominal battery voltage (A)	1085				
	Battery current at full load and minimum battery voltage (A)	1356				
	Ripple current	< 5% C20 (5-minute runtime)				
	Battery test	Manual/automatic (selectable)				
	Maximum short circuit rating	30 kA				

NOTE: Battery specifications are based on VRLA batteries.

Specifications for IEC Certified UPS

Surge Protection Device (SPD)

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

This UPS is OVCII (Over Voltage Category Class II) compliant. This UPS must only be installed in an OVCII compliant environment.

- If the UPS is installed in an environment with an OVC rating higher than II, an SPD (surge protection device) must be installed upstream of the UPS to reduce the overvoltage category to OVCII.
- The SPD must include a status indicator to show the user if the SPD is operational or is no longer functioning according to design. The status indicator may be visual and/or audible and/or may have remote signalling and/or output contact capability in accordance with IEC 62040-1.

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

Surge Protection Device Requirements

Select a surge protection device that complies with the following requirements:

Class	Type 2
Rated voltage (Ur)	230/400 V, 277/480 V
Voltage protection level (Up)	< 2.5 kV
Short circuit rating (Isccr)(85)	According to installation prospective short circuit level
Earthing system(86)	TN-S, TT, IT, TN-C
Poles	3P/4P depending on earthing configuration
Standards	IEC 61643-11 / UL 1449
Monitoring	Yes

Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V)

NOTE: For local directives which require 4-pole circuit breakers: If neutral conductor is expected to carry a high current, due to line-neutral non-linear load, the circuit breaker must be rated according to expected neutral current.

The bypass/output disconnect devices are sized based on the nominal current +10%. This is to accommodate either low grid voltage or deviation in length between parallel UPSs. The battery disconnect devices are sized based on end-of-discharge voltage which has been defined as 380 VDC.

Preconditions for Live Swap of Power Modules

Live Swap of power modules is only allowed under the following preconditions for the UPS installation; Follow either scenario 1 or scenario 2:

(85) Lower short circuit rating can be achieved with fuse protection.
(86) Corner grounding not permitted.

Preconditions for UPS installation – scenario 1 with instantaneous override values and trip times set according to the tables below in **Recommended Upstream Protection for IEC Certified UPS (380/400/415/440 V), page 45**	**Preconditions for UPS installation – scenario 2 with alternative disconnect device configurations supported with GVLOPT011 and disconnect device with ERMS mode(87)**
Circuit breakers must have instantaneous trip time of maximum 60 ms.	Circuit breakers must be installed for input (unit input disconnect device UIB) and bypass (static switch input disconnect device SSIB).
Circuit breakers must have instantaneous override values set according to the table below.	Circuit breakers (UIB, SSIB) must be equipped with NEC 240.87, NFPA70E, IEEE1584, or EN51110-1 compliant ERMS mode.
Circuit breakers must be installed for input (unit input disconnect device UIB) and bypass (static switch input disconnect device SSIB).	For parallel systems with three or more UPSs: Circuit breakers must be installed for the output (unit output disconnect device UOB) of each UPS. The unit output disconnect device (UOB) is sized as the static switch input disconnect device (SSIB).
For parallel system with three or more UPSs: Circuit breakers must be installed for the output (unit output disconnect device UOB) of each UPS. The unit output disconnect device (UOB) is sized as the static switch input disconnect device (SSIB).	Circuit breaker (UOB) must be equipped with NEC 240.87, NFPA70E, IEEE1584, or EN51110-1 compliant ERMS mode.
Live Swap is not supported for >65kA$_{bf}$ installations where current limiting disconnect devices are used to protect the UPS.	GVLOPT011 (Galaxy VL door switch kit) must be installed in the UPS and connected so ERMS mode is set to ON on UIB and SSIB and UOB when the front door of the UPS is opened.
	In ERMS mode, the instantaneous trip current shall be set to 5000 A or less. All time-delay settings shall be set to zero.

Schneider Electric reserves the right to remove the Live Swap label from the product front if the preconditions for scenario 1 or scenario 2 are not met.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Only perform Live Swap of the power modules in UPS installations that follow the preconditions for scenario 1 or scenario 2.

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

Upstream Protection and Minimum Prospective Phase-To-Earth Short Circuit at the UPS Input/Bypass Terminals for IEC Certified UPS (380/400/415/440/480 V)

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The upstream overcurrent protective device (and its settings) must be sized to ensure a disconnecting time within 0.2 seconds in case of a short circuit between the input/bypass phase and the UPS enclosure.

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

Compliance is assured with the recommended disconnect device (and its settings) from the table below.

(87) Energy Reduction Maintenance Settings (ERMS)

Recommended Upstream Protection for IEC Certified UPS (380/400/415/440 V)

NOTE: For 480 V installations for IEC certified UPS, please contact Schneider Electric for upstream protection recommendations.

Ik_{Ph-PE} is the minimum prospective phase-to-earth short circuit current required at the input/bypass terminals of the UPS. The Ik_{Ph-PE} in the table is based on the recommended protective device.

UPS rating	**200 kW**								
	Input				**Bypass/Output**				**Battery**
Ik_{Ph-PE} (kA)	**5**				**4.5**				**NA**
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380-440**
Disconnect device type	ComPacT NSX 400H MicroLogic 2.0 (3P: C4032D400, 4P: C4042D400)								ComPacT NS 630S DC TM-D (C634TM630D)
In/trip unit	400	400	400	400	400	400	400	400	360
Io	400	400	360	360	360	360	320	320	–
Ir setting	0.93	0.92	0.98	0.93	0.95	0.9	0.98	0.93	0.9
Ir	372	368	353	335	342	324	314	298	567
Isd	<10 x Ir	<10 x Ir	<10 x Ir	<10 x Ir	10 x Ir	10 x Ir	10 x Ir	10 x Ir	<10 x Ir

UPS rating	**250 kW**								
	Input				**Bypass/Output**				**Battery**
Ik_{Ph-PE} (kA)	**6**				**6**				**NA**
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380-440**
Disconnect device type	ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630, 4P: C6342D630)						ComPacT NSX 400H MicroLogic 2.0 (3P: C4032D400, 4P: C4042D400)		MasterPacT NW10HDC-D MicroLogic 1.0 DC (48649+65272)
In/trip unit	630	630	630	630	630	630	400	400	1000
Io	500	500	450	450	450	450	400	400	–
Ir setting	0.93	0.92	0.98	0.93	0.95	0.9	0.98	0.93	–
Ir	465	460	441	418	428	405	392	372	1000
Isd	<10 x Ir	<10 x Ir	<10 x Ir	<10 x Ir	10 x Ir	10 x Ir	10 x Ir	10 x Ir	1500

UPS rating	**300 kW**								
	Input				**Bypass/Output**				**Battery**
Ik_{Ph-PE} (kA)	**7.5**				**7**				**NA**
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380-440**
Disconnect device type	ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630, 4P: C6342D630)								MasterPacT NW10HDC-D MicroLogic 1.0 DC (48649+65272)
In/trip unit	630	630	630	630	630	630	630	630	1000
Io	570	570	570	500	570	500	500	450	–
Ir setting	0.98	0.97	0.93	1	0.9	0.98	0.94	1	–
Ir	559	553	530	500	513	490	470	450	1000
Isd	<10 x Ir	<10 x Ir	<10 x Ir	<10 x Ir	10 x Ir	10 x Ir	10 x Ir	10 x Ir	<10 x Ir

UPS rating	**350 kW**								
	Input				**Bypass/Output**				**Battery**
Ik_{Ph-PE} (kA)	**8.5**				**8**				**NA**
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380-440**
Disconnect device type	ComPacT NS800H MicroLogic 5.0 (3P: 33553, 4P: 33556)		ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630, 4P: C6342D630)						MasterPacT NW10HDC-D MicroLogic 1.0 DC (48649+65272)
In/trip unit	800	800	630	630	630	630	630	630	1000
Io	–	630	630	630	630	570	570	570	–
Ir setting	0.9	0.8	0.98	0.93	0.95	1	0.96	0.92	–
Ir	720	640	617	586	598	570	547	524	1000
Isd/ii(88)	<10 x Ir	<10 x Ir	<10 x Ir	<10 x Ir	10 x Ir	10 x Ir	10 x Ir	10 x Ir	<10 x Ir
tsd (s)	<0.2	NA							

UPS rating	**400 kW**								
	Input				**Bypass/Output**				**Battery**
Ik_{Ph-PE} (kA)	**10**				**9.5**				**NA**
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380-440**
Disconnect device type	ComPacT NS800H MicroLogic 5.0 (3P: 33553, 4P: 33556)						ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630, 4P: C6342D630)		MasterPacT NW20HDC-D MicroLogic 1.0 DC (48652+65273)
In/trip unit	800	800	800	800	800	800	630	630	2000
Io	–	–	–	–	–	–	630	630	–
Ir setting	0.95	0.95	0.9	0.9	0.9	0.9	1	0.94	–
Ir	760	760	720	720	720	720	630	592	2000
Isd/ii(88)	<10 x In	<10 x In	<10 x In	<10 x In	10 x In	10 x In	10 x Ir	10 x Ir	<10 x Ir
tsd (s)	<0.2						NA		

UPS rating	**450 kW**								
	Input				**Bypass/Output**				**Battery**
Ik_{Ph-PE} (kA)	**12**				**10.5**				**NA**
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380-440**
Disconnect device type	ComPacT NS1000H MicroLogic 5.0 (3P: 33559, 4P: 33562)		ComPacT NS800H MicroLogic 5.0 (3P: 33553, 4P: 33556)		ComPacT NS800H MicroLogic 5.0 (3P: 33553, 4P: 33556)				MasterPacT NW20HDC-D MicroLogic 1.0 DC (48652+65273)
In/trip unit	1000	1000	800	800	800	800	800	800	2000
Io	–	–	–	–	–	–	–	–	–
Ir setting	0.9	0.9	1	0.95	0.98	0.95	0.9	0.9	–
Ir	900	900	800	760	784	760	720	720	2000
Isd/ii(88)	<8 x In	<8 x In	<10 x In	<10 x In	10 x In	10 x In	10 x In	10 x In	2500
tsd (s)	<0.2								NA

(88) Only applicable for MicroLogic 5.0.

UPS rating	**500 kW**								
	Input				**Bypass/Output**				**Battery**
Ik_{Ph-PE} (kA)	**12.5**				**12**				**NA**
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380-440**
Disconnect device type	ComPacT NS1000H MicroLogic 5.0 (3P: 33559, 4P: 33562)						ComPacT NS800H MicroLogic 5.0 (3P: 33553, 4P: 33556)		MasterPacT NW20HDC-D MicroLogic 1.0 DC (48652+65273)
In/trip unit	1000	1000	1000	1000	1000	1000	800	800	2000
Io	–	–	–	–	–	–	–	–	–
Ir setting	0.95	0.95	0.9	0.9	0.9	0.9	0.98	0.95	–
Ir	950	950	900	900	900	900	784	760	2000
Isd/Ii(89)	<8 x In	<8 x In	<8 x In	<8 x In	8 x In	8 x In	10 x In	10 x In	2500
tsd (s)	<0.2								NA

Recommended Downstream Protection for Distribution Circuit Breakers for IEC Certified UPS (380/400/415/440/480 V)

NOTE: The recommended downstream protection for distribution circuit breakers is sized for protection of the SCRs in the static bypass switch and for coordination with the unit input disconnect device (UIB)/static switch input disconnect device (SSIB) when external backfeed protection is used.

UPS rating	**200 kW**	**250 kW**	**300 kW**	**350 kW**	**400 kW**	**450 kW**	**500 kW**
Disconnect device type	NSX160		NSX250			NSX400	
Trip module type	TM-D or Micrologic		TM-D or Micrologic			Micrologic	
In/trip module rating	≤160		≤250			≤400	

(89) Only applicable for MicroLogic 5.0.

Recommended Cable Sizes for IEC Certified UPS (380/400/415/440/480 V)

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- All wiring must comply with all applicable national and/or electrical codes.
- The maximum allowable cable size is 240 mm^2.
- Shrink sleeve must be fitted over cable lug crimped zone and must overlap with the cable insulation on all power cables.

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

The maximum number of cable connections per busbar:

- 4 on input/output/bypass busbars
- 4 x 240 mm^2 on input/output/bypass busbars
- 4 x 240 mm^2 or 8 x 150 mm^2 on DC+/DC- busbars
- 8 on N busbar
- 16 on PE busbar

NOTE: Overcurrent protection is to be provided by others.

Cable sizes in this manual are based on the minimum requirements in table B.52.3 and table B.52.5 of IEC 60364-5-52 with the following assertions(90):

- 90 °C conductors
- An ambient temperature of 30 °C
- Use of copper or aluminum conductors
- Installation method F
- Single layer on a perforated cable tray

PE cable size is based on table 54.2 of IEC 60364-5-54.

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

The bypass/output cables are sized based on the nominal current +10%. This is to accommodate either low grid voltage or deviation in cable length between parallel UPSs. The DC cables are sized based on end-of-discharge voltage which has been defined as 380 VDC per IEC 60364.3 Omission of devices for protection against overload.

Recommended Cable Sizes for IEC Certified UPS (380/400/415/440 V)

NOTE: For 480 V installations for IEC certified UPS, please contact Schneider Electric for cable size recommendations.

Copper

UPS rating	**200 kW**				**250 kW**			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Input phases (mm^2)	1 x 120	1 x 120	1 x 120	1 x 120	1 x 185	1 x 185	1 x 150	1 x 150
Input PE (mm^2)	1 x 70	1 x 70	1 x 70	1 x 70	1 x 95	1 x 95	1 x 95	1 x 95
Bypass/output phases (mm^2)	1 x 120	1 x 95	1 x 95	1 x 95	1 x 150	1 x 150	1 x 150	1 x 120
Bypass PE/output PE (mm^2)	1 x 70	1 x 50	1 x 50	1 x 50	1 x 95	1 x 95	1 x 95	1 x 70

(90) Using non-recommended cable sizes will affect the eConversion limits for parallel UPS systems. For this installation scenario, refer to the table: Standard eConversion Limits Based on Non-recommended Cable Sizes, page 52.

Copper (Continued)

UPS rating	200 kW				250 kW			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Neutral (mm^2)	1 x 120	1 x 95	1 x 95	1 x 95	1 x 150	1 x 150	1 x 150	1 x 120
DC+/DC- (mm^2)	1 x 185				1 x 240			
DC PE (mm^2)	1 x 95				1 x 120			
Inverter midpoint cable for 3-wire parallel (mm^2)	1 x 120	1 x 120	1 x 120	1 x 120	1 x 185	1 x 185	1 x 150	1 x 150

Copper

UPS rating	300 kW				350 kW			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Input phases (mm^2)	1 x 240	1 x 240	1 x 240	1 x 185	2 x 150	2 x 120	2 x 120	1 x 240
Input PE (mm^2)	1 x 120	1 x 120	1 x 120	1 x 95	1 x 150	1 x 120	1 x 120	1 x 120
Bypass/output phases (mm^2)	1 x 240	1 x 185	1 x 185	1 x 185	1 x 240	1 x 240	1 x 240	1 x 240
Bypass PE/output PE (mm^2)	1 x 120	1 x 95	1 x 95	1 x 95	1 x 120	1 x 120	1 x 120	1 x 120
Neutral (mm^2)	1 x 240	1 x 185	1 x 185	1 x 185	1 x 240	1 x 240	1 x 240	1 x 240
DC+/DC- (mm^2)	2 x 150				2 x 185			
DC PE (mm^2)	1 x 150				1 x 185			
Inverter midpoint cable for 3-wire parallel (mm^2)	1 x 240	1 x 240	1 x 240	1 x 240	2 x 120	2 x 120	2 x 120	1 x 240

Copper

UPS rating	400 kW				450 kW				500 kW			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Input phases (mm^2)	2 x 150	2 x 150	2 x 150	2 x 150	2 x 240	2 x 240	2 x 185	2 x 150	2 x 240	2 x 240	2 x 240	2 x 240
Input PE (mm^2)	1 x 150	1 x 150	1 x 150	1 x 150	1 x 240	1 x 240	1 x 185	1 x 150	1 x 240	1 x 240	1 x 240	1 x 240
Bypass/output phases (mm^2)	2 x 150	2 x 150	2 x 120	1 x 240	2 x 185	2 x 150	2 x 150	2 x 150	2 x 240	2 x 240	2 x 185	2 x 150
Bypass PE/output PE (mm^2)	1 x 150	1 x 150	1 x 120	1 x 120	1 x 185	1 x 150	1 x 150	1 x 150	1 x 240	1 x 240	1 x 185	1 x 150
Neutral (mm^2)	2 x 150	2 x 150	2 x 120	1 x 240	2 x 185	2 x 150	2 x 150	2 x 150	2 x 240	2 x 240	2 x 185	2 x 150
DC+/DC- (mm^2)	2 x 240				3 x 150				3 x 185			
DC PE (mm^2)	1 x 240				2 x 120				2 x 150			
Inverter midpoint cable for 3-wire parallel (mm^2)	2 x 150	2 x 150	2 x 150	2 x 150	2 x 240	2 x 240	2 x 185	2 x 150	2 x 240	2 x 240	2 x 240	2 x 240

Aluminum

UPS rating	200 kW				250 kW			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Input phases (mm^2)	1 x 185	1 x 185	1 x 185	1 x 150	1 x 240	1 x 240	1 x 240	1 x 240
Input PE (mm^2)	1 x 95	1 x 95	1 x 95	1 x 95	1 x 120	1 x 120	1 x 120	1 x 120

Aluminum (Continued)

UPS rating	200 kW				250 kW			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Bypass/output phases (mm^2)	1 x 150	1 x 150	1 x 150	1 x 150	1 x 240	1 x 240	1 x 185	1 x 185
Bypass PE/output PE (mm^2)	1 x 95	1 x 95	1 x 95	1 x 95	1 x 120	1 x 120	1 x 95	1 x 95
Neutral (mm^2)	1 x 150	1 x 150	1 x 150	1 x 150	1 x 240	1 x 240	1 x 185	1 x 185
DC+/DC- (mm^2)	2 x 120				2 x 150			
DC PE (mm^2)	1 x 120				1 x 150			
Inverter midpoint cable for 3-wire parallel (mm^2)	1 x 185	1 x 185	1 x 185	1 x 150	1 x 240	1 x 240	1 x 240	1 x 240

Aluminum

UPS rating	300 kW				350 kW			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Input phases (mm^2)	2 x 150	2 x 150	2 x 150	2 x 120	2 x 240	2 x 185	2 x 185	2 x 150
Input PE (mm^2)	1 x 150	1 x 150	1 x 150	1 x 120	1 x 240	1 x 185	1 x 185	1 x 150
Bypass/output phases (mm^2)	2 x 120	2 x 120	1 x 240	1 x 240	2 x 150	2 x 150	2 x 150	2 x 150
Bypass PE/output PE (mm^2)	1 x 120	1 x 120	1 x 120	1 x 120	1 x 150	1 x 150	1 x 150	1 x 150
Neutral (mm^2)	2 x 120	2 x 120	1 x 240	1 x 240	2 x 150	2 x 150	2 x 150	2 x 150
DC+/DC- (mm^2)	2 x 240				3 x 150			
DC PE (mm^2)	1 x 240				2 x 120			
Inverter midpoint cable for 3-wire parallel (mm^2)	2 x 150	2 x 150	2 x 150	2 x 120	2 x 185	2 x 185	2 x 185	2 x 150

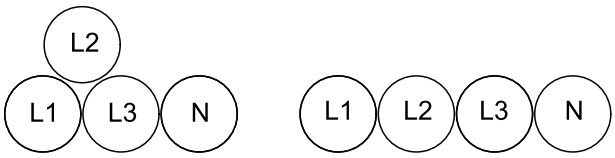
Aluminum

UPS rating	400 kW				450 kW				500 kW			
Voltage (V)	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**	**380**	**400**	**415**	**440**
Input phases (mm^2)	2 x 240	2 x 240	2 x 240	2 x 240	(3 x 185) (91)	(3 x 185) (91)	2 x 240	2 x 240	(3 x 185) (91)	(3 x 185) (91)	(3 x 185) (91)	(3 x 185) (91)
Input PE (mm^2)	1 x 240	1 x 240	1 x 240	1 x 240	2 x 150	2 x 150	1 x 240	1 x 240	2 x 150	2 x 150	2 x 150	2 x 150
Bypass/output phases (mm^2)	2 x 240	2 x 240	2 x 185	2 x 150	2 x 240	2 x 240	2 x 240	2 x 240	(3 x 185) (91)	(3 x 185) (91)	2 x 240	2 x 240
Bypass PE/output PE (mm^2)	1 x 240	1 x 240	1 x 185	1 x 150	1 x 240	1 x 240	1 x 240	1 x 240	2 x 150	2 x 150	1 x 240	1 x 240
Neutral (mm^2)	2 x 240	2 x 240	2 x 185	2 x 150	2 x 240	2 x 240	2 x 240	2 x 240	(3 x 185) (91)	(3 x 185) (91)	2 x 240	2 x 240
DC+/DC- (mm^2)	3 x 185				3 x 240				4x185			
DC PE (mm^2)	2 x 150				2 x 185				2 x 185			
Inverter midpoint cable for 3-wire parallel (mm^2)	2 x 240	2 x 240	2 x 240	2 x 240	(3 x 185)	(3 x 185)	2 x 240	2 x 240	(3 x 185)	(3 x 185)	(3 x 185)	(3 x 185)

(91) For parallel UPS systems, you must refer to this table: Standard eConversion Limits Based on Non-recommended Cable Sizes, page 52.

Guidance for Organizing Input, Bypass, And Output Cables

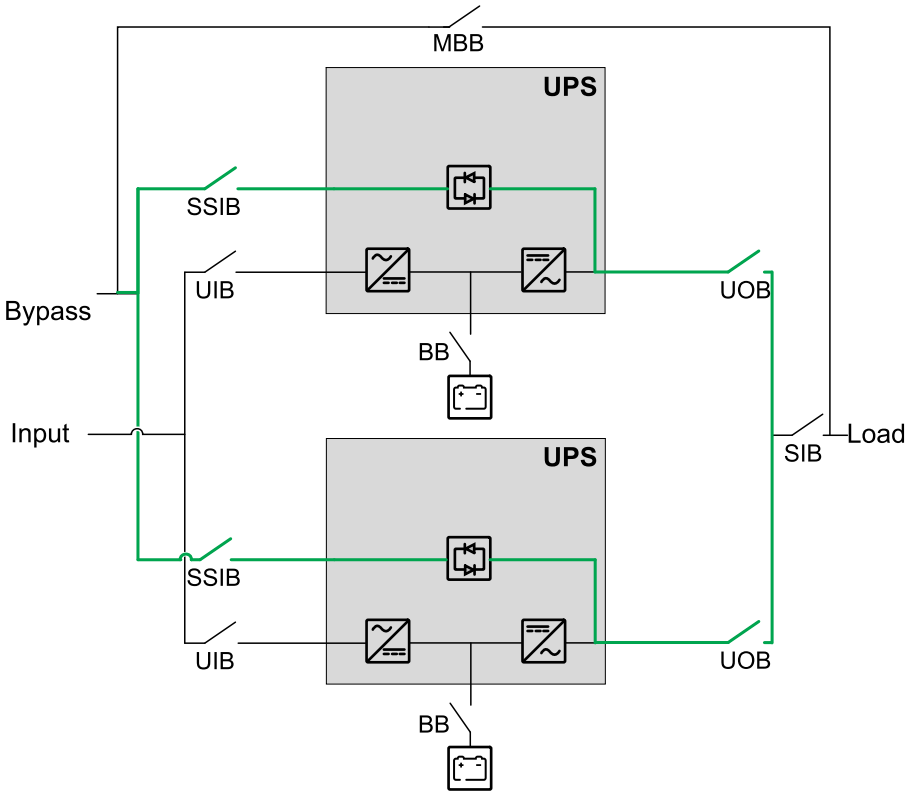
The input, bypass, and output cables must be grouped in circuits. On raceways, use one of the two shown cable formations.



Load Sharing in Bypass Operation in a Parallel System

The impedance of the bypass paths need to be controlled in a parallel UPS system. When operating in bypass mode, the parallel load sharing is determined by the total impedance of the bypass path comprising cables, switchgear, static bypass switch, and cable formation.

Parallel System – Dual Mains



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 the same length for all UPSs.
- The output cables must be the same length for all UPSs.
- The input cables must be 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.

eConversion Limits for Parallel UPS Systems

eConversion requires a minimum load percentage on the UPS for parallel UPS systems. The minimum required load percentages depend on the power cable sizes.

NOTE: For installations using the recommended cable sizes, refer to this table for the minimum load percentages: Standard eConversion Limits Based on Recommended Cable Sizes, page 52.

Standard eConversion Limits Based on Recommended Cable Sizes

UPS rating	Minimum load %
200 kW	34%
250 kW	27%
300 kW	23%
350 kW	19%
400 kW	17%
450 kW	15%
500 kW	14%

The other prerequisites to use this table include:

- The values are calculated based on the use of recommended cable sizes.
- Installations with maximum two cables on each phase are supported.
- The bypass and output cables must have equal length for all UPSs.

NOTE: For certain installations such as installations with 80% circuit breakers or where other installation methods have been applied to comply with the IEC standard, it is possible that non-recommended cable sizes will be used. For installations using non-recommended cable sizes, refer to this table for the voltage rating percentages: Standard eConversion Limits Based on Non-recommended Cable Sizes, page 52.

Standard eConversion Limits Based on Non-recommended Cable Sizes

UPS rating	Minimum load %
200 kW	50%
250 kW	40%

Standard eConversion Limits Based on Non-recommended Cable Sizes (Continued)

UPS rating	Minimum load %
300 kW	34%
350 kW	29%
400 kW	25%
450 kW	22%
500 kW	20%

The other prerequisites to use this table include:

- The values are calculated based on the scenario of using non-recommended cable sizes.
- Installations with three or four cables on each phase are supported.
- The bypass and output cables must have equal length for all UPSs.

Recommended Bolt and Lug Sizes for IEC Certified UPS

Cable size mm²	Bolt size	Cable lug type
16	M10 x 40 mm	TLK 16-10
25	M10 x 40 mm	TLK 25-10
35	M10 x 40 mm	TLK 35-10
50	M10 x 40 mm	TLK 50-10
70	M10 x 40 mm	TLK 70-10
95	M10 x 40 mm	TLK 95-10
120	M10 x 40 mm	TLK 120-10
150	M10 x 40 mm	TLK 150-10
185	M10 x 40 mm	TLK 185-10
240	M10 x 40 mm	TLK 240-10

Specifications for UL Listed UPS

Upstream Protection for UL Listed UPS (380/400/415/440/480 V)

Preconditions for Live Swap of Power Modules

Live Swap of power modules is only allowed under the following preconditions for the UPS installation; Follow either scenario 1 or scenario 2:

Preconditions for UPS installation — scenario 1 with instantaneous override values and trip times set according to the tables below in **Recommended Upstream Protection for UL Listed UPS (415/480 V) , page 55**	**Preconditions for UPS installation — scenario 2 with alternative disconnect device configurations supported with GVLOPT011 and disconnect device with ERMS mode(92)**
Circuit breakers must have instantaneous trip time of maximum 50 ms.	Circuit breakers must be installed for input (unit input disconnect device UIB) and bypass (static switch input disconnect device SSIB).
Circuit breakers must have instantaneous override values set according to the table below.	Circuit breakers (UIB, SSIB) must be equipped with NEC 240.87, NFPA70E, IEEE1584, or EN51110-1 compliant ERMS mode.
Circuit breakers must be installed for input (unit input disconnect device UIB) and bypass (static switch input disconnect device SSIB).	For parallel systems with three or more UPSs: Circuit breakers must be installed for the output (unit output disconnect device UOB) of each UPS. The unit output disconnect device (UOB) is sized as the static switch input disconnect device (SSIB).
For parallel system with three or more UPSs: Circuit breakers must be installed for the output (unit output disconnect device UOB) of each UPS. The unit output disconnect device (UOB) is sized as the static switch input disconnect device (SSIB).	Circuit breaker (UOB) must be equipped with NEC 240.87, NFPA70E, IEEE1584, or EN51110-1 compliant ERMS mode.
Live Swap is not supported for >65kA$_{bf}$ installations where current limiting disconnect devices are used to protect the UPS.	GVLOPT011 (Galaxy VL door switch kit) must be installed in the UPS and connected so ERMS mode is set to ON on UIB and SSIB and UOB when the front door of the UPS is opened.
	In ERMS mode, the instantaneous trip current shall be set to 5000 A or less. All time-delay settings shall be set to zero.

Schneider Electric reserves the right to remove the Live Swap label from the product front if the preconditions for scenario 1 or scenario 2 are not met.

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HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Only perform Live Swap of the power modules in UPS installations that follow the preconditions for scenario 1 or scenario 2.

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

Recommended Upstream Protection for UL Listed UPS (415/480 V)

NOTE: For 380/400/440 V installations for UL listed UPS, please contact Schneider Electric for upstream protection recommendations.

(92) Energy Reduction Maintenance Settings (ERMS)

The bypass/output disconnect devices are sized based on the nominal current +10%. This is to accommodate either low grid voltage or deviation in cable length between parallel UPSs. The battery disconnect devices are sized based on the end-of-discharge voltage which has been defined as 380 VDC.

NOTE: Overcurrent protection is to be provided by others and marked with its function.

UPS rating	**200 kW**				**250 kW**			
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**	**415**	**480**
	Input		**Bypass/Output**		**Input**		**Bypass/Output**	
Disconnect device type	LJF36400C-U31X	LJF36400C-U31X	LJF36400C-U31X	LJF36400C-U31X	PJF36060C-U31A	LJF36400C-U31X	LJF36400C-U31X	LJF36400C-U31X
Ir	400	320	350	280	480	400	400	360
tr	≥4	≥4	≥4	≥4	≥4	≥4	≥4	≥4
Ii (x In)	≤12	≤12	≤12	≤12	≤12	≤12	≤12	≤12

UPS rating	**300 kW**				**350 kW**			
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**	**415**	**480**
	Input		**Bypass/Output**		**Input**		**Bypass/Output**	
Disconnect device type	PJF36060-CU31A	PJF36060-CU31A	PJF36060C-U31A	PJF36060C-U31A	PJF36080C-U31A	PJF36060C-U31A	PJF36060C-U31A	PJF36060C-U31A
Ir	600	480	480	420	640	540	600	480
tr	≥4	≥4	≥4	≥4	≥4	≥4	≥4	≥4
Ii (x In)	≤12	≤12	≤12	≤12	≤10	≤10	≤10	≤12

UPS rating	**400 kW**				**450 kW**			
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**	**415**	**480**
	Input		**Bypass/Output**		**Input**		**Bypass/Output**	
Disconnect device type	PJF36080-CU31A	PJF36080-CU31A	PJF36080C-U31A	PJF36060C-U31A	PJF36100-CU31A	PJF36080-CU31A	PJF36080-CU31A	PJF36080-CU31A
Ir	800	640	640	540	900	720	720	640
tr	≥4	≥4	≥4	≥4	≥4	≥4	≥4	≥4
Ii (x In)	≤10	≤10	≤10	≤12	≤8	≤8	≤10	≤10

UPS rating	**500 kW**			
Voltage (V)	**415**	**480**	**415**	**480**
	Input		**Bypass/Output**	
Disconnect device type	PJF36100CU31A	PJF36080CU31A	PJF36080CU31A	PJF36080CU31A
Ir	900	800	800	720
tr	≥4	≥4	≥4	≥4
Ii (x In)	≤8	≤8	≤10	≤10

Recommended Cable Sizes for UL Listed UPS (380/400/415/440/480 V)

⚠ 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 600 kcmil for input/bypass/output/neutral/ground cables for the UPS.
- The maximum allowable cable size is 500 kcmil for DC cables for the UPS.
- The maximum allowable cable size is 500 kcmil for input/bypass/output/neutral/ground/DC cables for the maintenance bypass cabinet.
- Shrink sleeve must be fitted over cable lug crimped zone and must overlap with the cable insulation on all power cables.

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

The maximum number of cable connections per busbar:

- 4 on input/output/bypass busbars
- 4 x 600 kcmil on input/output/bypass busbars
- 5 x 500 kcmil or 8 x 300 kcmil on DC+/DC- busbars
- 8 on N busbar
- 16 on ground busbar

NOTE: When the UPS is installed with the maintenance bypass cabinet (GVLMBCA200K500G), the maximum allowed cables size is 500 kcmil.

NOTE: Overcurrent protection is to be provided by others.

Cable sizes in this manual are based on Table 310.15 (B)(16) of the National Electrical Code (NEC) with the following assertions(93):

- 90 °C (194 °F) conductors (75 °C (167 °F) termination)
- An ambient temperature of 30 °C (86 °F)
- Use of copper or aluminum conductors

If the ambient temperature is greater than 30 °C (86 °F), larger conductors are to be selected in accordance with the correction factors of the NEC.

Equipment grounding conductors (EGC) are sized in accordance with the minimum requirements in NEC Article 250.122 and Table 250.122.

NOTE: 100% rated circuit breakers for UIB, UOB, MBB, SSIB. 100% rated circuit breakers for battery disconnect devices.

The bypass/output cables are sized based on the nominal current +10%. This is to accommodate either low grid voltage or deviation in length between parallel UPSs. The battery cables are sized based on end-of-discharge voltage which has been defined as 380 VDC.

Recommended Cable Sizes for UL Listed UPS (415/480 V)

NOTE: For 380/400/440 V installations for UL listed UPS, please contact Schneider Electric for cable size recommendations.

(93) Using non-recommended cable sizes will affect the eConversion limits for parallel UPS systems. Be sure to check the Standard eConversion Limits Based on Non-recommended Cable Sizes, page 61 table in this installation scenario.

Copper

UPS rating	200 kW		250 kW		300 kW		350 kW	
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**	**415**	**480**
Input phases (AWG/kcmil)	1 x 500	1 x 350	2 x 250	1 x 500	2 x 300	2 x 4/0	2 x 350	2 x 300
Input EGC (AWG/kcmil)	1 x 3	1 x 3	2 x 2	1 x 3	2 x 1	2 x 2	2 x 1/0	2 x 1
Bypass/output phases (AWG/kcmil)	1 x 350	1 x 300	1 x 500	1 x 400	2 x 250	2 x 300	2 x 300	2 x 250
Bypass EGC/output EGC (AWG/kcmil)	1 x 3	1 x 4	1 x 2	1 x 3	2 x 2	1 x 2	2 x 1/0	2 x 2
DC+/DC- (AWG/kcmil) (mm^2)	2 x 350	2 x 300	2 x 400	2 x 400	3 x 400	3 x 350	4 x 350	3 x 400
DC EGC (AWG/kcmil)	2 x 1	2 x 1	2 x 1/0	2 x 1/0	3 x 2/0	3 x 2/0	4 x 3/0	3 x 2/0
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	1 x 500	1 x 350	2 x 250	1 x 500	2 x 300	2 x 4/0	2 x 350	2 x 300

Copper

UPS rating	400 kW		450 kW		500 kW	
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**
Input phases (AWG/kcmil)	2 x 400	2 x 350	2 x 500	2 x 400	3 x 400	2 x 500
Input EGC (AWG/kcmil)	2 x 1/0	2 x 1/0	2 x 1/0	2 x 1/0	2 x 2/0	2 x 1/0
Bypass/output phases (AWG/kcmil)	2 x 350	2 x 300	2 x 400	2 x 350	2 x 500	2 x 400
Bypass EGC/output EGC (AWG/kcmil)	2 x 1/0	2 x 1	2 x 1/0	2 x 1/0	2 x 1/0	2 x 1/0
DC+/DC- (AWG/kcmil) (mm^2)	4 x 400	4 x 350	4 x 400	4 x 400	4 x 400	4 x 500
DC EGC (AWG/kcmil)	4 x 4/0	4 x 3/0	4 x 4/0	4 x 4/0	4 x 4/0	4 x 4/0
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	2 x 400	2 x 350	2 x 500	2 x 400	3 x 400	2 x 500

Aluminum

UPS rating	200 kW		250 kW		300 kW		350 kW	
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**	**415**	**480**
Input phases (AWG/kcmil)	2 x 250	1 x 500	2 x 300	2 x 250	2 x 400	2 x 300	2 x 500	2 x 400
Input EGC (AWG/kcmil)	2 x 1	1 x 1	2 x 1/0	2 x 1	2 x 2/0	2 x 1/0	2 x 3/0	2 x 2/0
Bypass/output phases (AWG/kcmil)	1 x 500	1 x 400	2 x 250	2 x 300	2 x 350	2 x 250	2 x 400	2 x 350
Bypass EGC/output EGC (AWG/kcmil)	1 x 1	1 x 2	2 x 1/0	1 x 1	2 x 1/0	2 x 1/0	2 x 2/0	2 x 1/0
DC+/DC- (AWG/kcmil) (mm^2)	3 x 300	2 x 500	3 x 500	3 x 300	4 x 350	3 x 500	4 x 500	4 x 350

Aluminum (Continued)

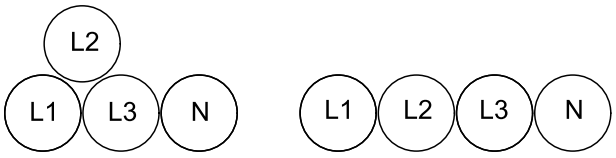
UPS rating	200 kW		250 kW		300 kW		350 kW	
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**	**415**	**480**
DC EGC (AWG/ kcmil)	1 x 2/0	1 x 2/0	2 x 3/0	3 x 3/0	3 x 4/0	3 x 4/0	4 x 250	4 x 4/0
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	2 x 250	1 x 500	2 x 300	2 x 250	2 x 400	2 x 300	2 x 500	2 x 400

Aluminum

UPS rating	400 kW		450 kW		500 kW	
Voltage (V)	**415**	**480**	**415**	**480**	**415**	**480**
Input phases (AWG/ kcmil)	3 x 300	2 x 500	3 x 400	(3 x 300)(94)	4 x 400	(3 x 400)(94)
Input EGC (AWG/ kcmil)	3 x 3/0	2 x 3/0	3 x 3/0	3 x 3/0	2 x 4/0	3 x 3/0
Bypass/output phases (AWG/kcmil)	2 x 500	2 x 400	3 x 500	2 x 500	3 x 400	3 x 500
Bypass EGC/output EGC (AWG/kcmil)	2 x 3/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 3/0
DC+/DC- (AWG/ kcmil) (mm^2)	4 x 500	4 x 500	5 x 400	5 x 400	4 x 500	5 x 500
DC EGC (AWG/ kcmil)	4 x 350	4 x 250	5 x 350	5 x 350	5 x 350	5 x 350
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	3 x 300	2 x 500	3 x 400	3 x 300	4 x 400	3 x 400

Guidance for Organizing Input, Bypass, And Output Cables

The input, bypass, and output cables must be grouped in circuits. On raceways, use one of the two shown cable formations.

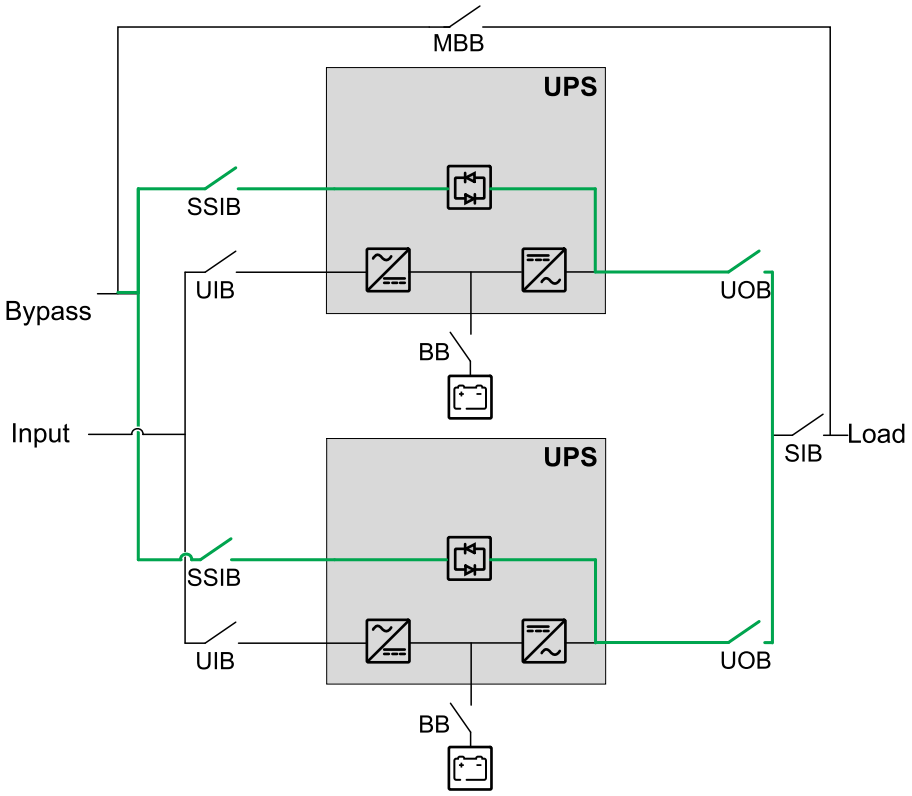


Load Sharing in Bypass Operation in a Parallel System

The impedance of the bypass paths need to be controlled in a parallel UPS system. When operating in bypass mode, the parallel load sharing is determined by the total impedance of the bypass path comprising cables, switchgear, static bypass switch, and cable formation.

(94) For parallel UPS systems, the Standard eConversion Limits Based on Non-recommended Cable Sizes, page 61 table shall be used.

Parallel System – Dual Mains



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 the same length for all UPSs.
- The output cables must be the same length for all UPSs.
- The input cables must be 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.

eConversion Limits for Parallel UPS Systems

eConversion requires a minimum load percentage on the UPS for parallel UPS systems. The minimum required load percentages depend on the power cable sizes.

NOTE: For installations using the recommended cable sizes, refer to the Standard eConversion Limits Based on Recommended Cable Sizes, page 61 table for the minimum load percentages.

Standard eConversion Limits Based on Recommended Cable Sizes

UPS rating	Minimum load %
200 kW	34%
250 kW	27%
300 kW	23%
350 kW	19%
400 kW	17%
450 kW	15%
500 kW	14%

The other prerequisites to use this table include:

- The values are calculated based on the use of recommended cable sizes.
- Installations with maximum two cables on each phase are supported.
- The bypass and output cables must have equal length for all UPSs.

  NOTE: For certain installations such as installations with 80% circuit breakers or where other installation methods have been applied to comply with the IEC standard, it is possible that non-recommended cable sizes will be used. For installations using non-recommended cable sizes, refer to the Standard eConversion Limits Based on Non-recommended Cable Sizes, page 61 table for the voltage ratings percentages.

Standard eConversion Limits Based on Non-recommended Cable Sizes

UPS rating	Minimum load %
200 kW	50%
250 kW	40%
300 kW	34%
350 kW	29%
400 kW	25%
450 kW	22%
500 kW	20%

The other prerequisites to use this table include:

- The values are calculated based on the scenario of using non-recommended cable sizes.
- Installations with three or four cables on each phase are supported.
- The bypass and output cables must have equal length for all UPSs.

Recommended Bolt and Lug Sizes for UL Listed UPS

NOTICE

RISK OF EQUIPMENT DAMAGE

Use only UL approved compression cable lugs.

Failure to follow these instructions can result in equipment damage.

Copper

Cable size	Bolt size	Cable lug type (one hole)	Cable lug type (two hole NEMA)	Crimping tool	Die
4 AWG	M10x35mm	LCA4-12-L	LCC4-12-L	CT-930	CD-920-4 4 AWG Gray P29
2 AWG	M10x35mm	LCAF2-12-E	LCC2-12-Q	CT-930	CD-920-2 2 AWG Brown P33
1 AWG	M10x35mm	LCA1-12-E	LCC1-12-E	CT-930	CD-920-1 1 AWG Green P37
1/0 AWG	M10x35mm	LCB1/0-12-X	LCC1/0-12-X	CT-930	CD-920-1/0 Pink P42
2/0 AWG	M10x35mm	LCB2/0-12-X	LCC2/0-12-X	CT-930	CD-920-2/0 Black P45
3/0 AWG	M10x35mm	LCB3/0-12-X	LCC3/0-12-X	CT-930	CD-920-3/0 Orange P50
4/0 AWG	M10x35mm	LCB4/0-12-X	LCC4/0-12-X	CT-930	CD-920-4/0 Purple P54
250 kcmil	M10x35mm	LCB250-12-X	LCC250-12-X	CT-930	CD-920-250 Yellow P62
300 kcmil	M10x35mm	LCB300-12-X	LCC300-12-X	CT-930	CD-920-300 Red P66
350 kcmil	M10x35mm	LCB350-12-X	LCC350-12-X	CT-930	CD-920-350 Red P71
400 kcmil	M10x35mm	LCB400-12-X	LCC400-12-6	CT-930	CD-920-400 Blue P76
450 kcmil	M10x35mm	—	LCC450-12-6	CT-930	—
500 kcmil	M10x35mm	LCB500-12-X	LCC500-12-6	CT-930	CD-920-500 Blue P87
600 kcmil	M10x35mm	LCB600-12-6	LCC600-12-6	CT-930	CD-920-600 Green P94

Aluminum

Cable size	Bolt size	Cable lug type (one hole)	Cable lug type (two hole NEMA)	Crimping tool	Die
1/0 AWG	M10x35mm	LAA1/0-12-5	LAB1/0-12-X	CT-930	CD-920-1/0 Pink P42
2/0 AWG	M10x35mm	LAA2/0-12-5	LAB2/0-12-5	CT-930	CD-920-2/0 Black P45
3/0 AWG	M10x35mm	LAA3/0-12-5	LAB3/0-12-5	CT-930	CD-920-3/0 Orange P50
4/0 AWG	M10x35mm	LAA4/0-12-5	LAB4/0-12-5R	CT-930	CD-920-4/0 Purple P54
250 kcmil	M10x35mm	LAA250-12-5	LAB250-12-5	CT-930	CD-920-250 Yellow P62
300 kcmil	M10x35mm	LAA300-12-2	LAB300-12-2	CT-930	CD-920-300 Red P66
350 kcmil	M10x35mm	LAA350-12-2	LAB350-12-2R	CT-930	CD-920-350 Red P71
400 kcmil	M10x35mm	—	LAB400-12-2	CT-930	CD-920-400 Blue P76
500 kcmil	M10x35mm	LAA500-12-2	LAB500-12-2R	CT-930	CD-920-500 Blue P87
600 kcmil	M10x35mm	—	LAB600-12-2	CT-930	CD-920-600 Green P94

Notes on Interconnected Inverter Midpoint in Existing 3-Wire Parallel Systems

Some existing 3-wire parallel systems have the inverter midpoint of each UPS interconnected by cable in a daisy chain configuration. This is not relevant for new installations. It is possible to remove the daisy chained inverter midpoint from existing installations. Removal requires a full shutdown of the UPS system and **mandatory** recommissioning and start-up by Schneider Electric. Contact Schneider Electric for details.

⚠⚠DANGER

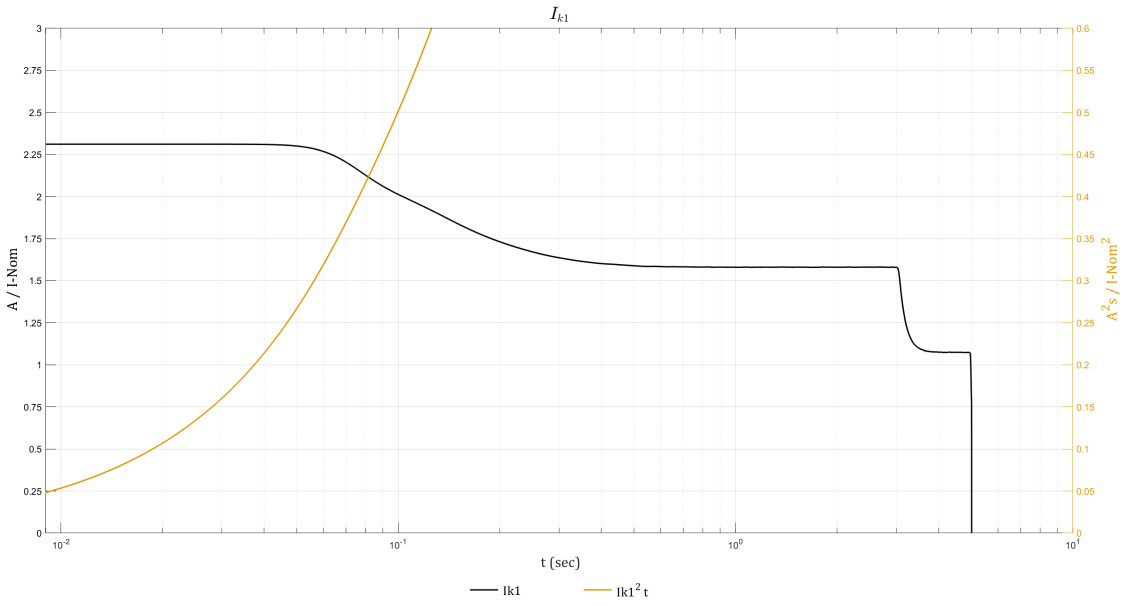
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Hard-wired inverter midpoint between the UPS systems is energized even when the UPS is isolated from the parallel system and completely shut down.
- Even if absence of voltage is measured, there can still be dangerous voltage transients on the neutral busbar.
- Entering the I/O terminal area requires full shutdown of the entire parallel system and transfer to maintenance bypass.

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

Inverter Short Circuit Capabilities (Bypass not Available)

IK1 – Short Circuit between a Phase and Neutral



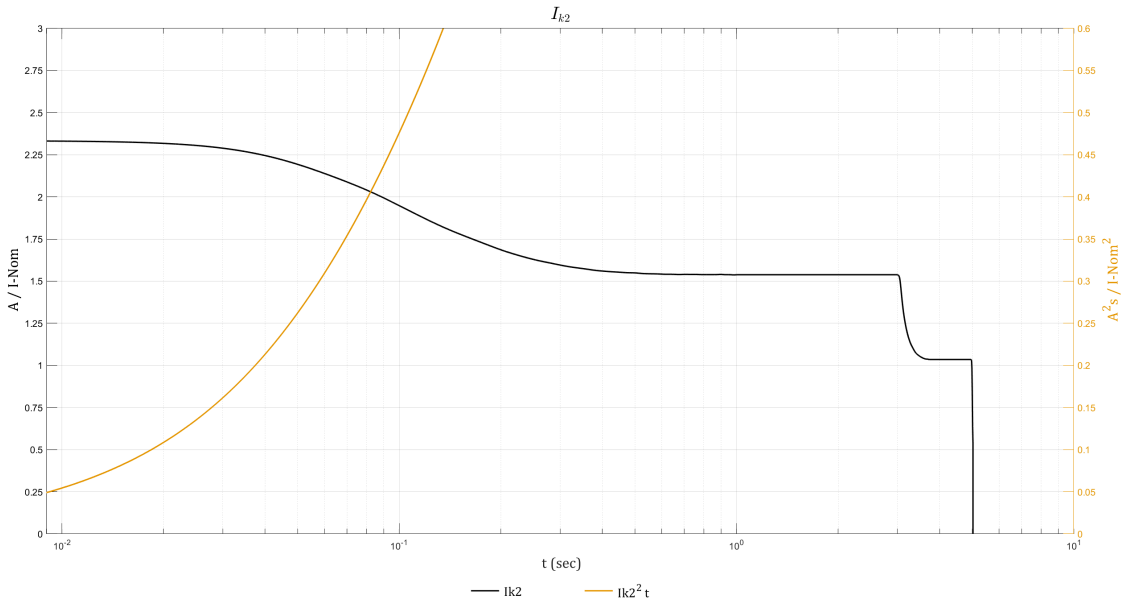
IK1 400 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
200	670 /4450	670 /8910	670 /13360	580 /41790	460 /241100
250	830 /6960	830 /13910	830 /20870	730 /65300	570 /376720
300	1000 /10020	1000 /20040	1000 /30050	870 /94030	680 /542470
350	1170 /13640	1170 /27270	1170 /40910	1020 /127990	800 /738360
400	1330 /17810	1330 /35620	1330 /53430	1160 /167170	910 /964390
450	1500 /22540	1500 /45080	1500 /67620	1310 /211580	1030 /1220560
500	1670 /27830	1670 /55660	1670 /83480	1450 /261210	1140 /1506870

IK1 480 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
200	560 /3090	560 /6180	560 /9280	480 /29020	380 /167430
250	700 /4830	700 /9660	700 /14490	610 /45350	480 /261610
300	830 /6960	830 /13910	830 /20870	730 /65300	570 /376720
350	970 /9470	970 /18940	970 /28410	850 /88880	670 /512750
400	1110 /12370	1110 /24740	1110 /37100	970 /116090	760 /669720
450	1250 /15650	1250 /31310	1250 /46960	1090 /146930	860 /847610
500	1390 /19330	1390 /38650	1390 /57970	1210 /181390	950 /1046430

IK2 – Short Circuit between Two Phases



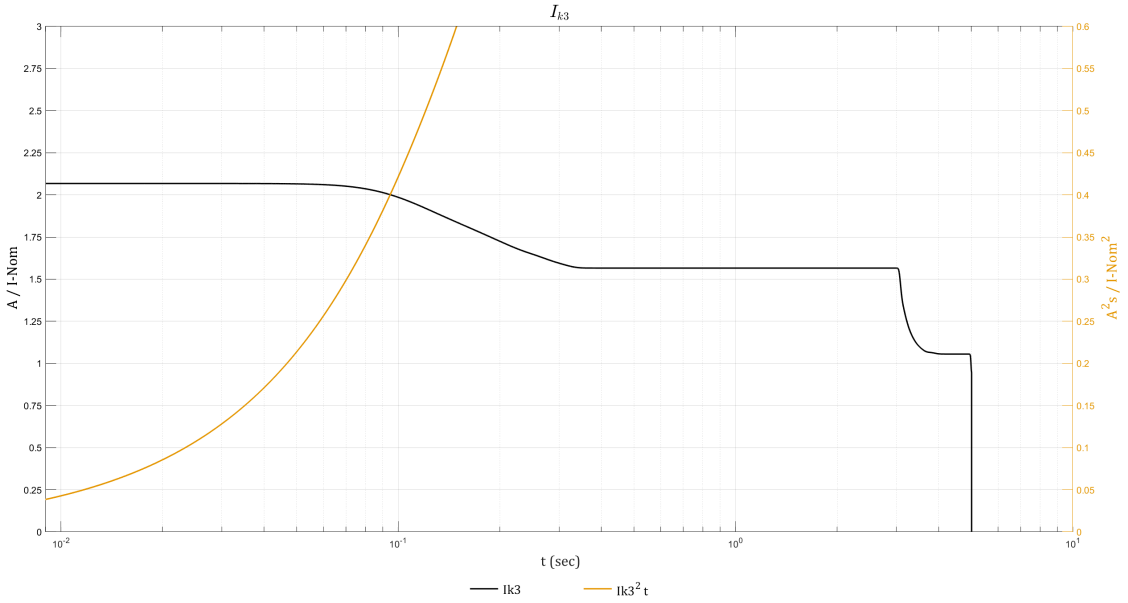
IK2 400 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
200	670 /4530	670 /9040	670 /13470	560 /39680	440 /228420
250	840 /7090	840 /14130	840 /21040	700 /61990	550 /356910
300	1010 /10200	1000 /20340	1000 /30300	840 /89270	670 /513950
350	1180 /13890	1170 /27690	1170 /41250	980 /121510	780 /699540
400	1350 /18140	1340 /36160	1340 /53870	1120 /158700	890 /913680
450	1510 /22960	1510 /45770	1510 /68180	1270 /200860	1000 /1156380
500	1680 /28340	1670 /56510	1670 /84170	1410 /247970	1110 /1427630

IK2 480 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
200	560 /3150	560 /6280	560 /9350	470 /27550	370 /158630
250	700 /4920	700 /9810	700 /14610	590 /43050	460 /247850
300	840 /7090	840 /14130	840 /21040	700 /61990	550 /356910
350	980 /9640	980 /19230	980 /28640	820 /84380	650 /485790
400	1120 /12600	1120 /25110	1120 /37410	940 /110210	740 /634500
450	1260 /15940	1250 /31790	1250 /47350	1050 /139480	830 /803040
500	1400 /19680	1390 /39240	1390 /58450	1170 /172200	920 /991410

IK3 – Short Circuit between Three Phases



IK3 400 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
200	600 /3560	600 /7130	600 /10690	570 /35120	450 /229410
250	750 /5570	750 /11140	750 /16700	720 /54880	570 /358450
300	900 /8020	900 /16040	900 /24050	860 /79020	680 /516170
350	1040 /10910	1040 /21830	1040 /32740	1000 /107560	790 /702560
400	1190 /14250	1190 /28510	1190 /42760	1150 /140490	900 /917630
450	1340 /18040	1340 /36080	1340 /54120	1290 /177800	1020 /1161370
500	1490 /22270	1490 /44540	1490 /66810	1430 /219510	1130 /1433790

IK3 480 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
200	500 /2470	500 /4950	500 /7420	480 /24390	380 /159310
250	620 /3870	620 /7730	620 /11600	600 /38110	470 /248920
300	750 /5570	750 /11140	750 /16700	720 /54880	570 /358450
350	870 /7580	870 /15160	870 /22740	840 /74690	660 /487890
400	990 /9900	990 /19800	990 /29700	960 /97560	750 /637240
450	1120 /12530	1120 /25060	1120 /37580	1070 /123470	850 /806510
500	1240 /15470	1240 /30930	1240 /46400	1190 /152440	940 /995690

Leakage Current

380/400/415 V UPS System 4-wire Installation at 100% Load

UPS rating	Leakage current
200 kW-500 kW	700 mA

Torque Specifications

Bolt size	Torque
M6	5 Nm (3.69 lb-ft / 44.3 lb-in)
M8	17.5 Nm (12.91 lb-ft / 154.9 lb-in)
M10	30 Nm (22 lb-ft / 194.7 lb-in)
M12	50 Nm (36.87 lb-ft / 442.5 lb-in)

Requirements for a Third Party Battery Solution

Battery circuit breaker boxes from Schneider Electric are recommended for the battery interface. Please contact Schneider Electric for more information.

Third Party Battery Circuit Breaker Requirements

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- All selected battery circuit breakers must be equipped with instantaneous trip functionality with an undervoltage release coil or a shunt trip release coil.
- Trip delay must be set to zero on all battery circuit breakers.

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

NOTE: There are more factors to consider when selecting a battery circuit breaker than the requirements listed below. Please contact Schneider Electric for more information.

Design Requirements for a Battery Circuit Breaker

Battery circuit breaker rated DC voltage > Normal battery voltage	The normal voltage of the battery configuration is defined as the highest nominal occurring battery voltage. This can be equivalent to the float voltage which may be defined as **number of battery blocks x number of cells x cell float voltage**.
Battery circuit breaker rated DC current > Rated discharge battery current	This current is controlled by the UPS and must include maximum discharge current. This will typically be the current at the end of discharge (minimum operation DC voltage or in overload condition or a combination).
DC landings	Two DC landings for DC cables (DC+ and DC-) are required.
AUX switches for monitoring	One AUX switch must be installed in each battery circuit breaker and connected to the UPS. The UPS can monitor up to four battery circuit breakers.
Short-circuit breaking capability	The short-circuit breaking capability must be higher than the short-circuit DC current of the (largest) battery configuration.

Design Requirements for a Battery Circuit Breaker (Continued)

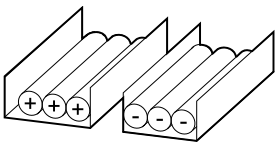
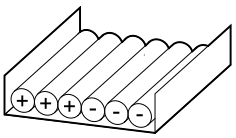
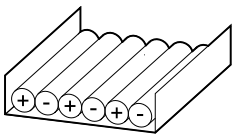
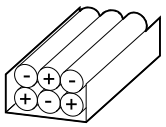
Minimum trip current	The minimum short-circuit current to trip the battery circuit breaker must match the (smallest) battery configuration, to make the circuit breaker trip in case of a short circuit, up to the end of its life time.
Common battery solution	Individual battery circuit breaker for each UPS in the parallel system.

Guidance for Organizing Battery Cables

NOTE: For third party batteries, use only high rate batteries for UPS applications.

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 feet). 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 (<98 feet)	Not recommended	Acceptable	Recommended	Recommended
31-75 m (99-246 feet)	Not recommended	Not recommended	Acceptable	Recommended
76-150 m (247-492 feet)	Not recommended	Not recommended	Acceptable	Recommended
151-200 m (493-656 feet)	Not recommended	Not recommended	Not recommended	Recommended

Environment

	Operating	Storage
Temperature	0 °C to 40 °C (32 °F to 104 °F) without load derating. 40 °C to 50 °C (104 °F to 122 °F) when derated to 70% power.	-25 °C to 55 °C (-13 °F to 131 °F) for systems without batteries.
Relative humidity	5-95% non-condensing	10-80% non-condensing
Elevation	Designed for operation in 0-3000 m (0-10000 feet) elevation. Derating required from 1000-3000 m (3300-10000 feet) with forced air cooling: Up to 1000 m (3300 feet): 1.000 Up to 1500 m (5000 feet): 1.000 conditioned by 2 x 300 mm^2 input cables at 500 kW Up to 1500 m (5000 feet) : 0.975 Up to 2000 m (6600 feet): 1.000 conditioned by 2 x 300 mm^2 input cables at 500 kW Up to 2000 m (6600 feet): 0.950 Up to 2500 m (8300 feet): 0.975 conditioned by 2 x 300 mm^2 input cables at 500 kW Up to 2500 m (8300 feet): 0.925 Up to 3000 m (10000 feet): 0.950 conditioned by 2 x 300 mm^2 input cables at 500 kW Up to 3000 m (10000 feet): 0.900 Derating required from 1000-3000 m (3300-10000 feet) with convection cooling: Up to 1000 m (3300 feet): 1.000 Up to 1500 m (5000 feet) : 0.985 Up to 2000 m (6600 feet): 0.970 Up to 2500 m (8300 feet): 0.955 Up to 3000 m (10000 feet): 0.940	0-10000 m (0-32000 ft)
Audible noise one meter (three feet) from unit	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%	

NOTE: If the equipment is expected to remain in storage for more than 18 months from the date of receipt, please consult your Schneider Electric customer services representative for additional storage related requirements that will help to ensure the long-term reliability and performance of the equipment.

Compliance

Safety	IEC 62040-1: 2017, Edition 2.0, Uninterruptible Power Systems (UPS) - Part 1: Safety requirements UL 1778 5th edition
EMC/EMI/RFI	IEC 62040-2: 2016-11, 3rd edition Uninterruptible Power Systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements C2 FCC Part 15 Subpart B, Class A
Performance	Performance in accordance with: IEC 62040-3: 2021-04, 3rd edition Uninterruptible Power Systems (UPS) - Part 3: Method of specifying the performance and test requirements. Output performance classification (according to IEC 62040-3, Clause 5.3.4): VFI-SS-11
Transportation	IEC 60721-4-2 Level 2M2
Seismic	ICC-ES AC 156 (2015); OSHPD Pre-approved; Sds=1.45 g for z/h=1 and Sds=2.00 g for z/h=0; Ip=1.5
Earthing system(95)	TN, TT, TNC, IT, TN-S, TNC-S Solid-grounded, HRG
Overvoltage category	This UPS is OVCII compliant. If the UPS is installed in an environment with an OVC rating higher than II, an SPD (surge protection device) must be installed upstream of the UPS to reduce the overvoltage category to OVCII.
Protective class	I
Pollution degree	2

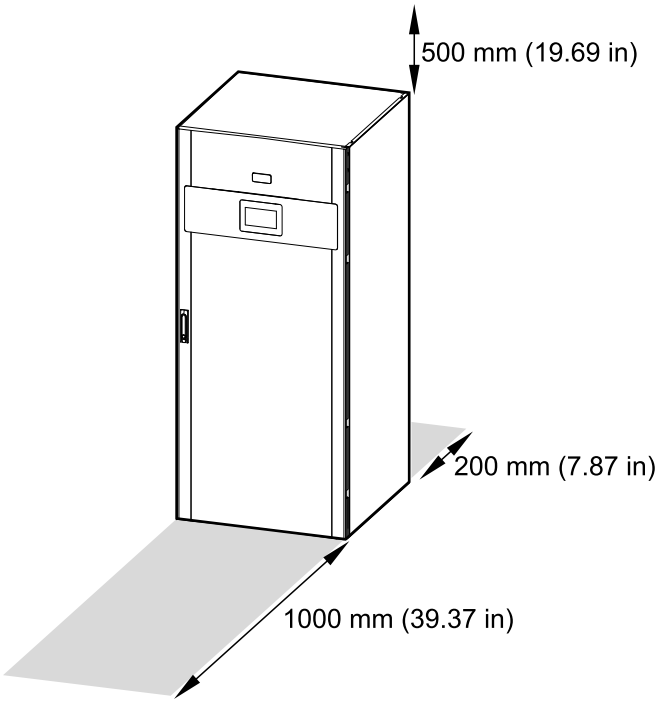
(95) Corner grounding not permitted.

UPS Weights and Dimensions

UPS rating	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
200 kW	550 (1212)	1970 (78)	850 (33)	925 (36)
250 kW	588 (1296)	1970 (78)	850 (33)	925 (36)
300 kW	626 (1380)	1970 (78)	850 (33)	925 (36)
350 kW	664 (1463)	1970 (78)	850 (33)	925 (36)
400 kW	702 (1547)	1970 (78)	850 (33)	925 (36)
450 kW	740 (1631)	1970 (78)	850 (33)	925 (36)
500 kW	778 (1715)	1970 (78)	850 (33)	925 (36)

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.

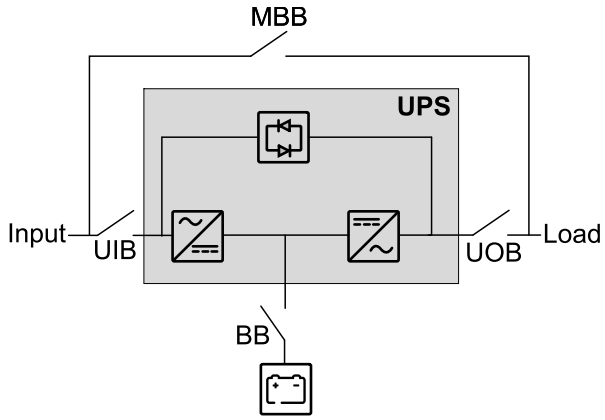


Single System Overview

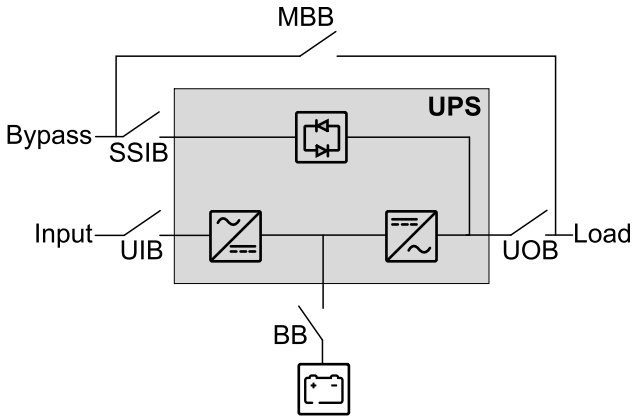
UIB	Unit input disconnect device
SSIB	Static switch input disconnect device
UOB	Unit output disconnect device
BB	Battery disconnect device
MBB	Maintenance bypass disconnect device

NOTE: In Schneider Electric literature, 'disconnect device' is used as a generic term covering circuit breakers or switches as their position may vary depending on configuration. Details about the individual configuration are found in the electrical diagram and/or by reading the symbol on the front of each disconnect device.

Single System – Single Mains



Single System – Dual Mains



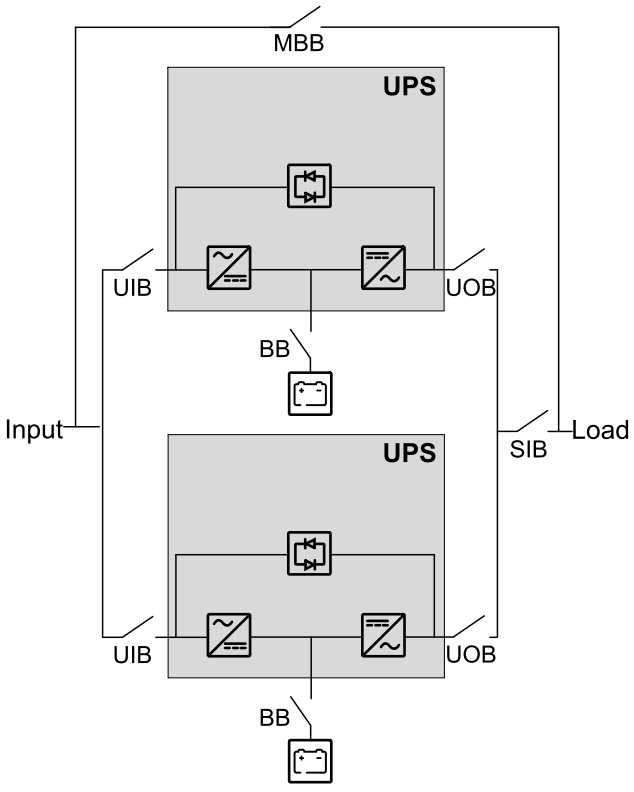
Parallel System Overview

UIB	Unit input disconnect device
SSIB	Static switch input disconnect device
UOB	Unit output disconnect device
SIB	System isolation disconnect device
BB	Battery disconnect device
MBB	Maintenance bypass disconnect device

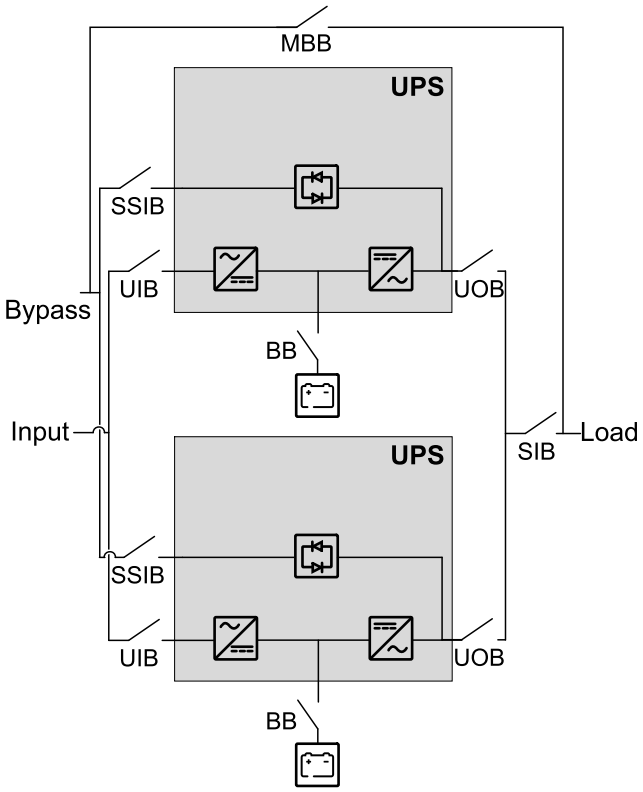
NOTE: In Schneider Electric literature, 'disconnect device' is used as a generic term covering circuit breakers or switches as their position may vary depending on configuration. Details about the individual configuration are found in the electrical diagram and/or by reading the symbol on the front of each disconnect device.

Galaxy VL can support up to 6 UPSs in parallel for capacity and up to 5+1 UPSs in parallel for redundancy with individual UIB and SSIB.

Parallel System – Single Mains



Parallel System – Dual Mains



Installation Procedure for UPS

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS must be secured against movement. Perform one of the following once the UPS is in its final position:

- Lower the leveling feet until the casters no longer have contact with the floor, OR
- Reinstall the front transportation bracket (870-32577) on the UPS and mount it to the floor, OR
- Install the seismic anchoring kit.

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

1. Perform one of the following procedures:
   - Without seismic anchoring: Position the UPS, page 76.
   - With seismic anchoring: Install the Seismic Anchoring and Position the UPS, page 77.
2. Perform one of the following procedures:
   - Top cable entry: Prepare the UPS for Top Cable Entry, page 79.
   - Bottom cable entry: Follow in the installation manual provided with the bottom entry cabinet.
3. Only for TNC or HRG earthing system:
   - Prepare for TNC Earthing System, page 81.
   - Prepare for HRG Earthing System, page 82.
4. Perform one of the following procedures:
   - Connect Power Cables in the UPS in System over 45 kAIC/kA Icw, page 83, or
   - Connect Power Cables in the UPS in System up to 45 kAIC/kA Icw, page 88.
5. Connect the Signal Cables, page 92.
6. Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products, page 95.
7. Connect the External Communication Cables, page 99.
8. Connect the Modbus Cables, page 100.
9. Only for parallel system: Connect the PBUS Cables, page 102.
10. Only for external synchronization: Connect the Signal Cables for External Synchronization, page 103.
11. Option: Install the ERMS Door Switch Kit GVLOPT011 (Option), page 107.
12. Install the Power Module(s), page 108.
13. Add Translated Safety Labels to Your Product, page 110.
14. Final installation, page 114.

For moving or decommissioning the UPS after installation has been completed, please see Decommission or Move the UPS to a New Location, page 117.

Installation Procedure for UPS with Maintenance Bypass Cabinet

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS must be secured against movement. Perform one of the following once the UPS is in its final position:

- Lower the leveling feet until the casters no longer have contact with the floor, OR
- Reinstall the front transportation bracket (870-32577) on the UPS and mount it to the floor, OR
- Install the seismic anchoring kit.

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

1. Follow the maintenance bypass cabinet installation manual for seismic anchoring, mechanical installation, interconnection, power cabling, and signal cable routing for the UPS and the maintenance bypass cabinet. Specifications for the UPS system are listed in the UPS installation manual.
2. Connect the Signal Cables, page 92.
3. Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products, page 95.
4. Connect the External Communication Cables, page 99.
5. Connect the Modbus Cables, page 100.
6. Only for external synchronization: Connect the Signal Cables for External Synchronization, page 103.
7. Install the Power Module(s), page 108.
8. Add Translated Safety Labels to Your Product, page 110.
9. Final installation, page 114.

For moving or decommissioning the UPS after installation has been completed, please see Decommission or Move the UPS to a New Location, page 117.

Position the UPS

⚠⚠DANGER

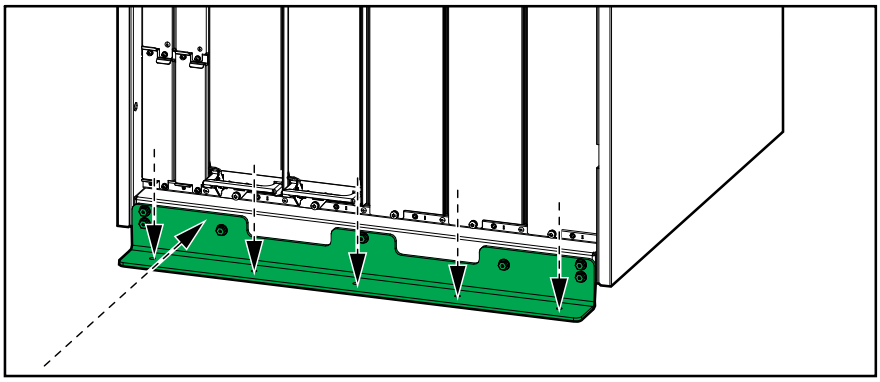
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS must be secured against movement. Perform one of the following once the UPS is in its final position:

- Lower the leveling feet until the casters no longer have contact with the floor, OR
- Mount the front transportation bracket (870-32577) on the UPS to the floor.

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

1. Push the UPS into final position.
2. Reinstall the front transportation bracket (870-32577) on the UPS.
3. Perform one of the following:
   – Mount the front transportation bracket to the floor. Use appropriate hardware for the floor type.



   – Lower the front and rear leveling feet on the UPS with a wrench until they connect with the floor. The casters must not have contact with the floor. Use a bubble-leveler to check that the UPS is level.

NOTICE

RISK OF EQUIPMENT DAMAGE

Do not move the cabinet after the leveling feet have been lowered.

Failure to follow these instructions can result in equipment damage.

NOTICE

RISK OF EQUIPMENT DAMAGE

Install the front transportation bracket to avoid the UPS overheating from circulating hot air from the rear outlets. The front transportation bracket blocks the hot air backflow.

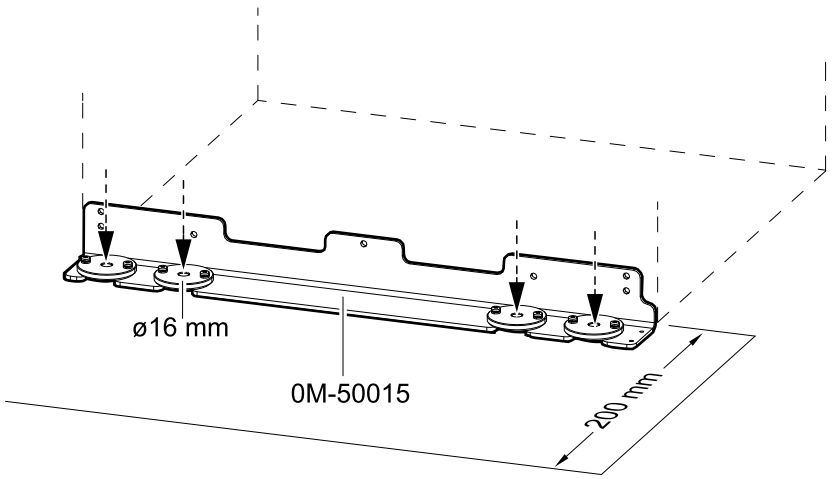
Failure to follow these instructions can result in equipment damage.

Install the Seismic Anchoring and Position the UPS

Use the optional seismic kit GVLOPT002 for this procedure.

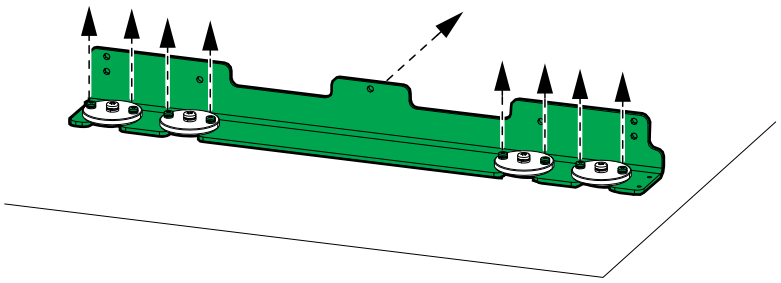
1. Mount the rear anchoring assembly to the floor. Use appropriate hardware for the floor type – the hole diameter in the rear anchors is ø16 mm. Minimum requirement is M12 strength grade 8.8 hardware.

Rear View



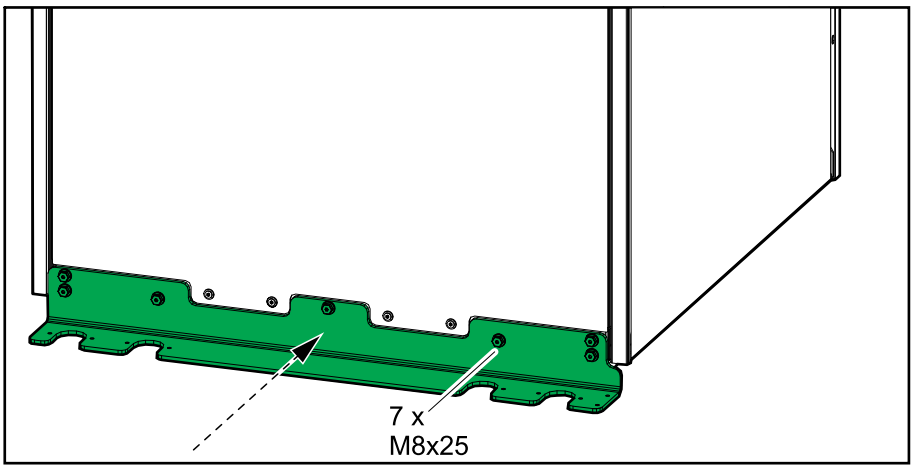
2. Remove all the screws and remove the anchoring bracket.

Rear View



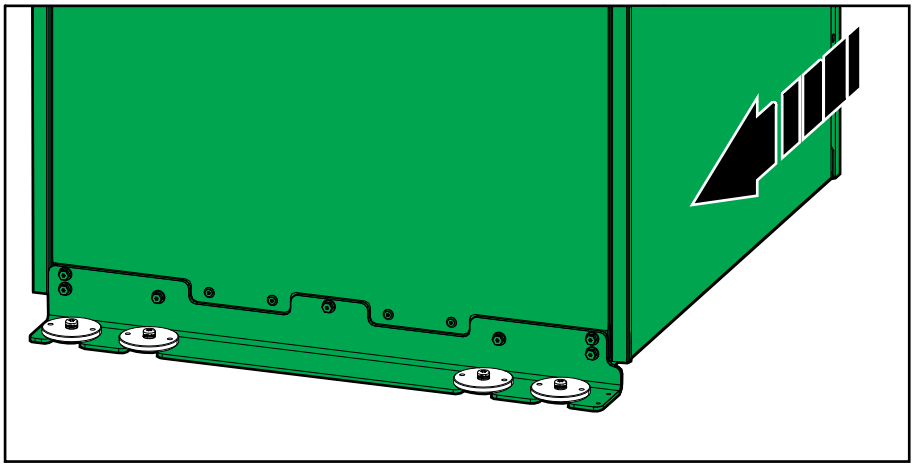
3. Install the rear anchoring brackets on the UPS with the provided M8x25 bolts.

Rear View

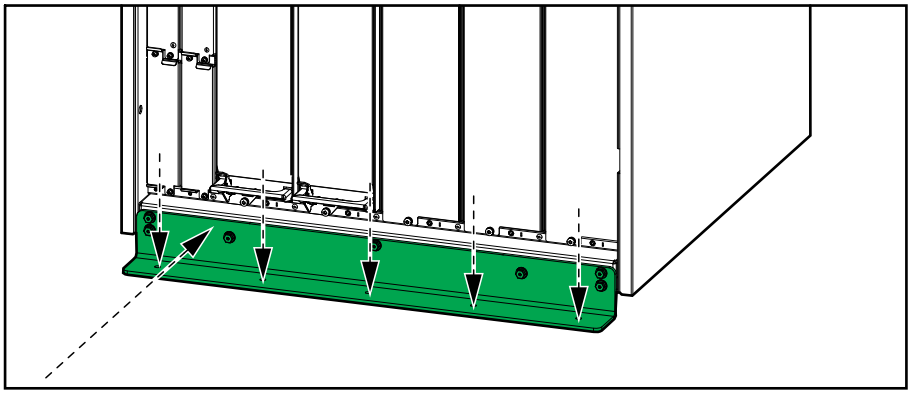


4. Push the UPS into final position. Align with the seismic anchoring.

Rear View



5. Install the seismic front anchoring bracket on the UPS and mount it to the floor. Use appropriate hardware for the floor type – the hole diameter in the bracket is ø9 mm. Minimum requirement is M8 strength grade 8.8 hardware.



Prepare the UPS for Top Cable Entry

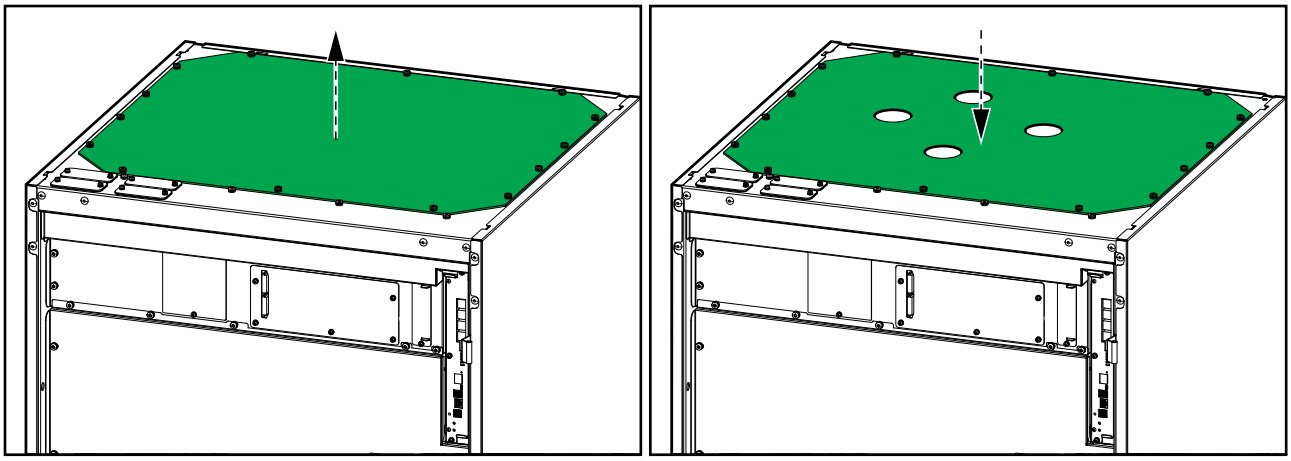
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

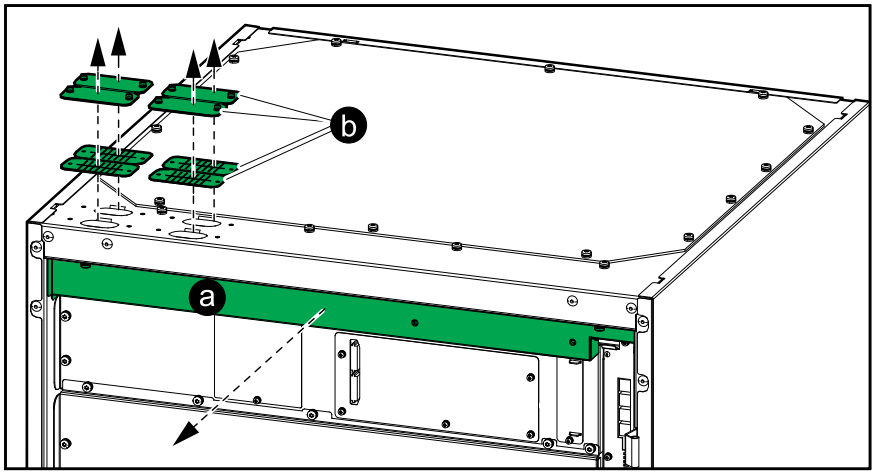
Do not drill or punch holes with the gland plates installed and do not drill or punch holes in close proximity to the cabinet.

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

1. Prepare for power cables:
   a. Remove the gland plate from the top of the UPS.
   b. Drill/punch holes for power cables or conduits/grommets in the gland plate. Install conduits/grommets (not provided), if applicable.
   c. Reinstall the gland plate.

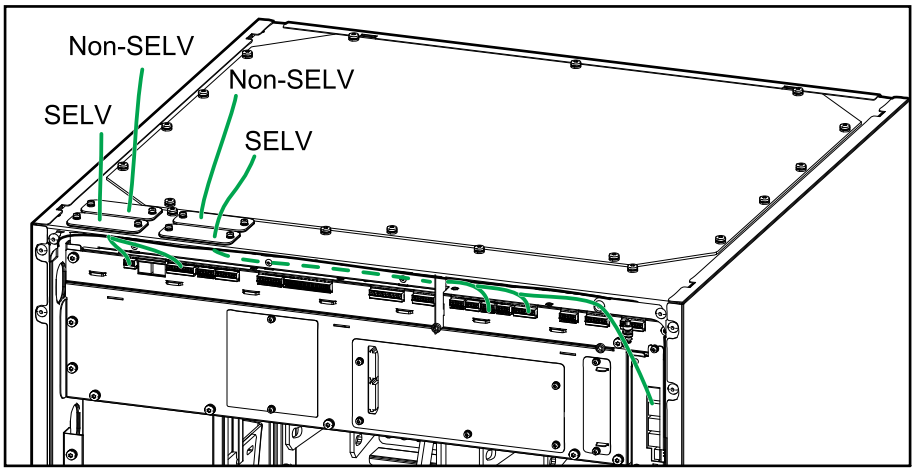


2. Prepare for signal cables:
   a. Remove the cover in front of the signal connections. Save for final installation steps.
   b. Remove the gland plates and brush plates from the top of the UPS.



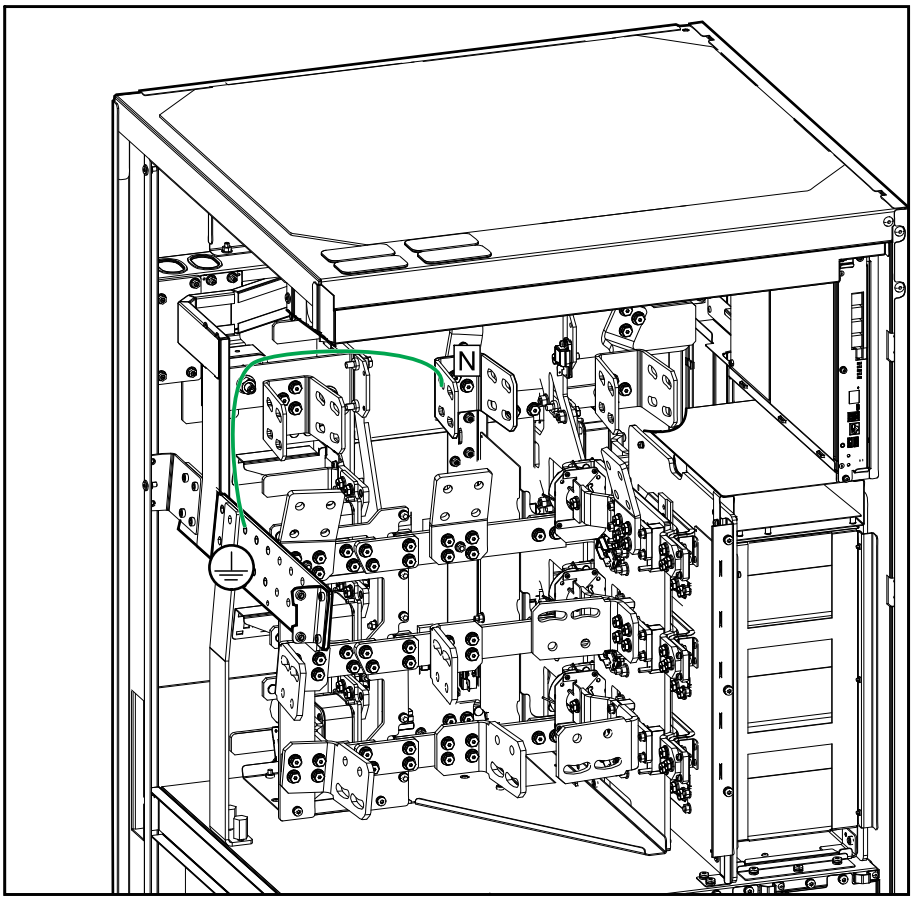
   c. **For installation without conduits/grommets**: Reinstall the brush plates.
   d. **For installation with conduits/grommets**: Drill holes in the gland plates for conduits/grommets, install conduits/grommets, and reinstall the gland plates.

3. Route the signal cables as shown to separate the Class 2/SELV cables from the non-Class 2/non-SELV cables.



Prepare for TNC Earthing System

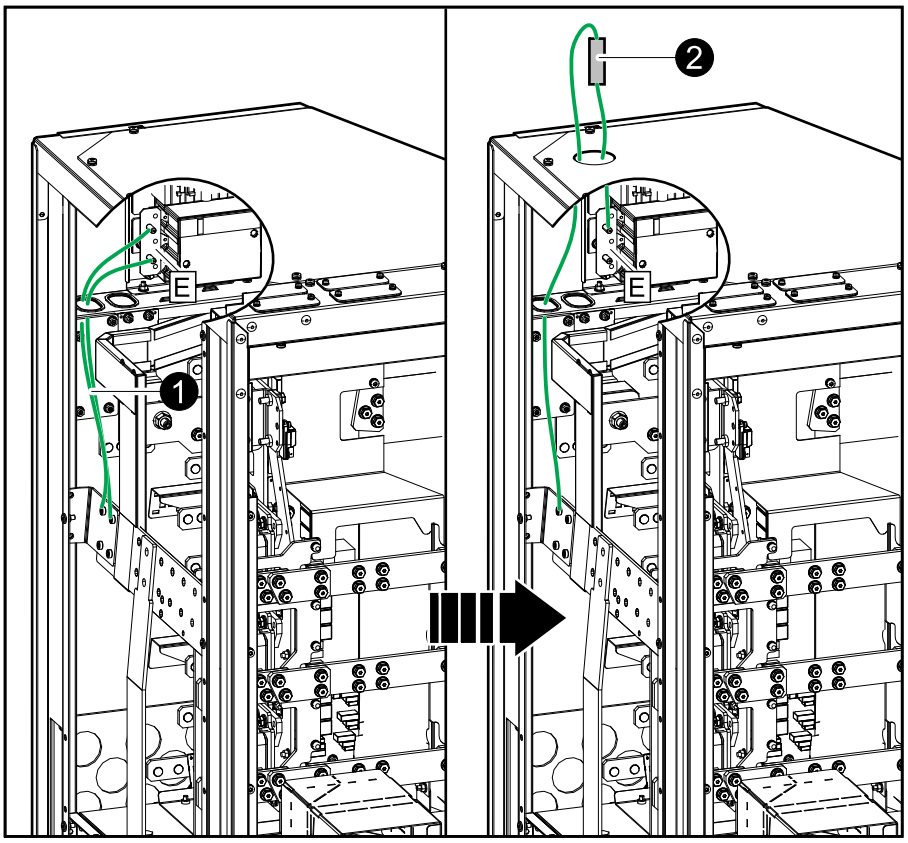
1. Connect power cable(s) (not provided) from the PE busbar to the N busbar. Use the same number of cables and cable size as the output N cables.



Prepare for HRG Earthing System

NOTE: The external impedance for an HRG earthing system is not included with the UPS. The external impedance for an HRG earthing system must be provided externally to the UPS by others.

1. Remove the two preconnected cables that connect the E terminal on the bonding contactor to the ground busbar. Discard the cables.
2. Connect an external impedance (not provided) between the E terminal on the bonding contactor and the ground busbar according to NEC article 250.36.



Connect Power Cables in the UPS in System over 45 kAIC/kA Icw

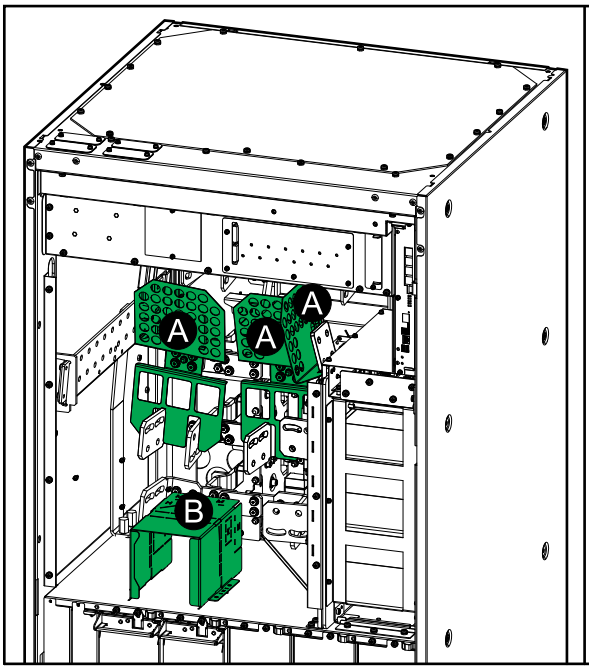
Use kit 0H-1816 for this procedure.

NOTE: If a Lithium-ion battery control disconnect device kit (GVLOPT005) is part of your installation, the Lithium-ion battery control disconnect device kit must be installed **before** the power cables are connected in the UPS. Follow the installation manual provided with the Lithium-ion battery control disconnect device kit.

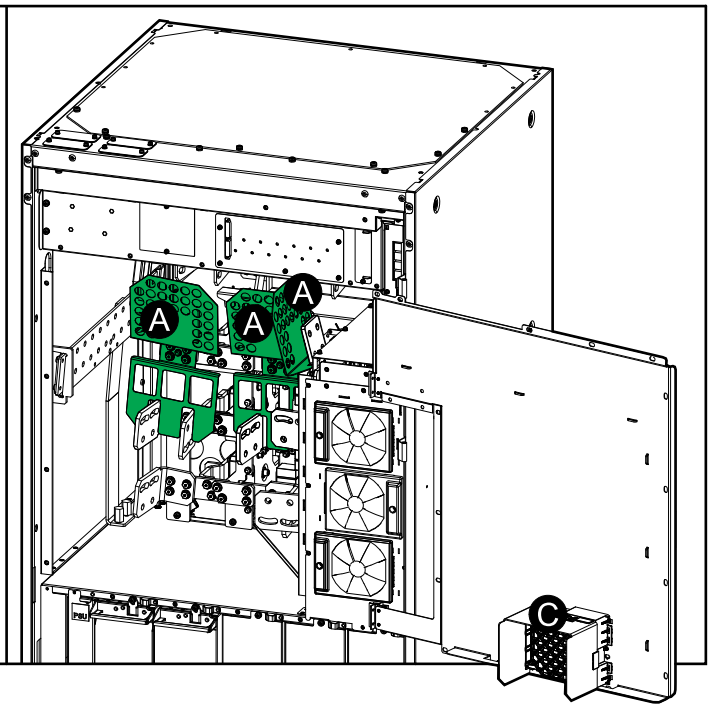
1. Remove the transparent plastic protectors (marked (A) on the illustration) from the busbars. If present, remove the plastic box (marked (B) on the illustration) from the cabling field for easier access. Save all parts for reinstallation after cable connection.

   NOTE: On newer UPS models, the box (marked (C) on the illustration) is integrated in the inner door of the UPS instead of being a separate part. The integrated box must not be removed from the inner door.

Front View of the UPS Model with Separate Plastic Box



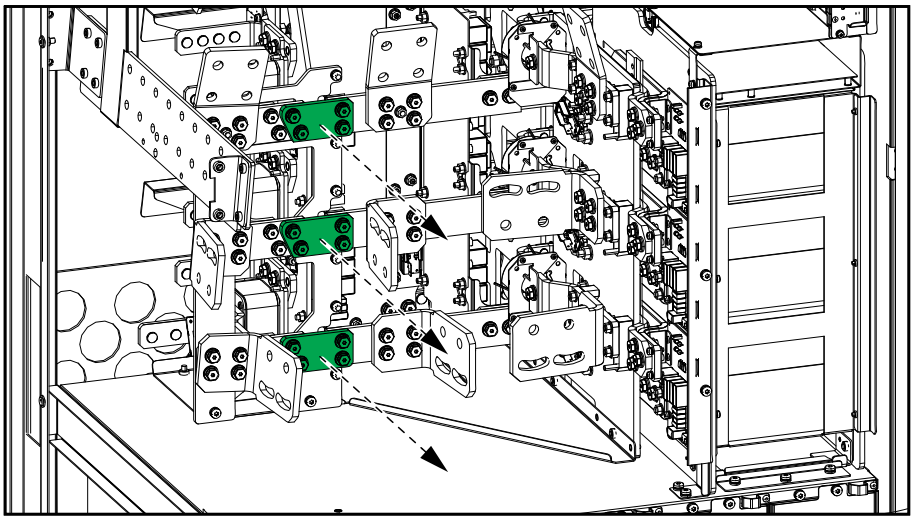
Front View of the UPS Model with the Box Integrated in the Inner Door



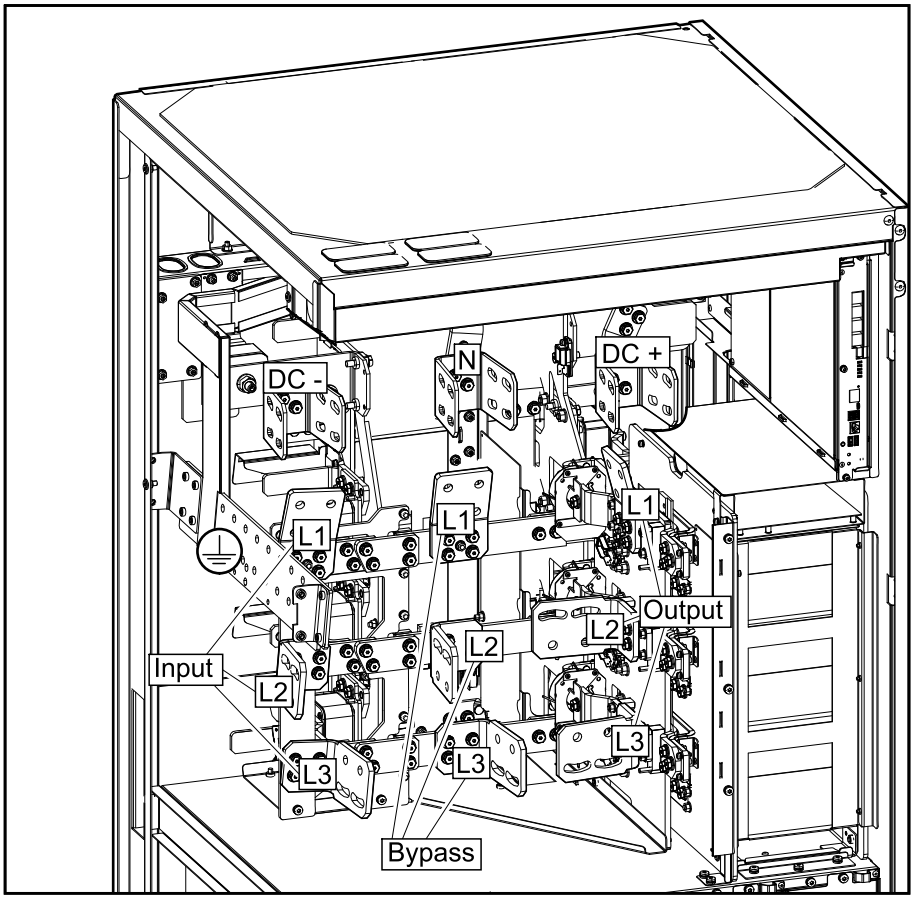
2. **Only for dual mains**: Remove the single mains busbars.

   NOTE: Save the three single mains busbars. They are needed for testing during start-up of the UPS.

Front View of the UPS



3. Connect the power cables in the described order. Assemble the cable lugs to the busbars as shown.



   a. Connect the PE cables/equipment grounding conductor (EGC).

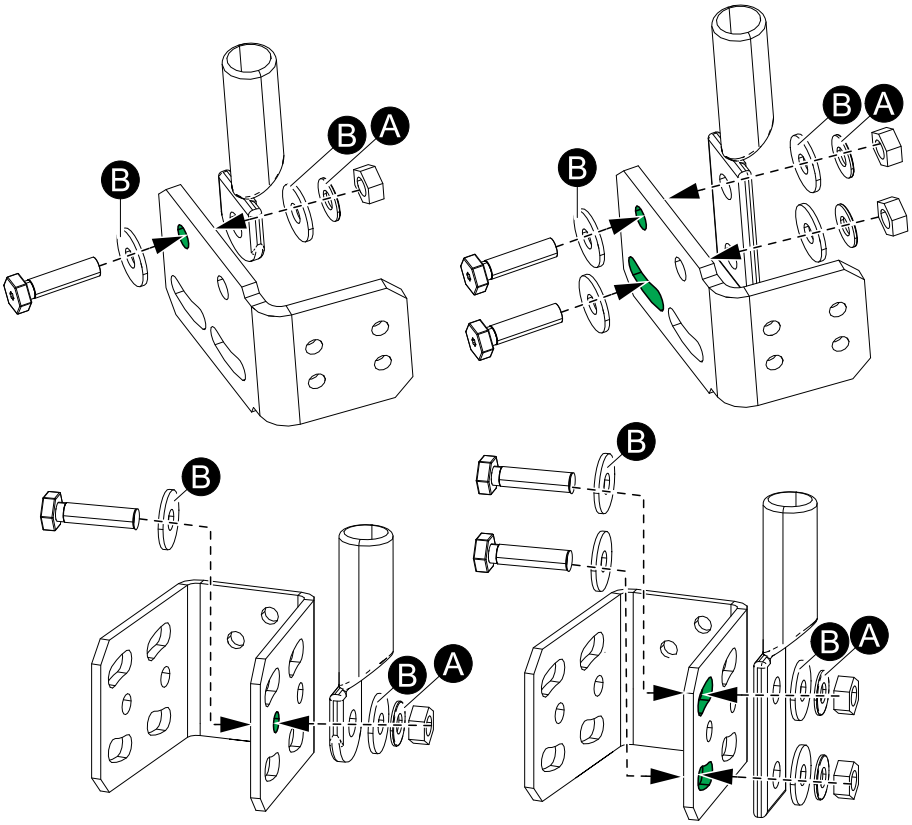
   b. Connect the DC cables (DC+, DC-).

   c. Connect the input cables. Ensure to install the L2 and L3 power cable through both the busbar and the bracket.

   d. **Only for dual mains**: Connect the bypass cables. Ensure to install the L2 and L3 power cable through both the busbar and the bracket.

e. Connect the output cables. Ensure to install the L2 and L3 power cable through both the busbar and the bracket.

Cable Lug to Busbar Assembly



A. Spring washer – provided in kit

B. Flat washer (not provided)

⚠CAUTION

RISK OF CABLE LUG DISCONNECTION

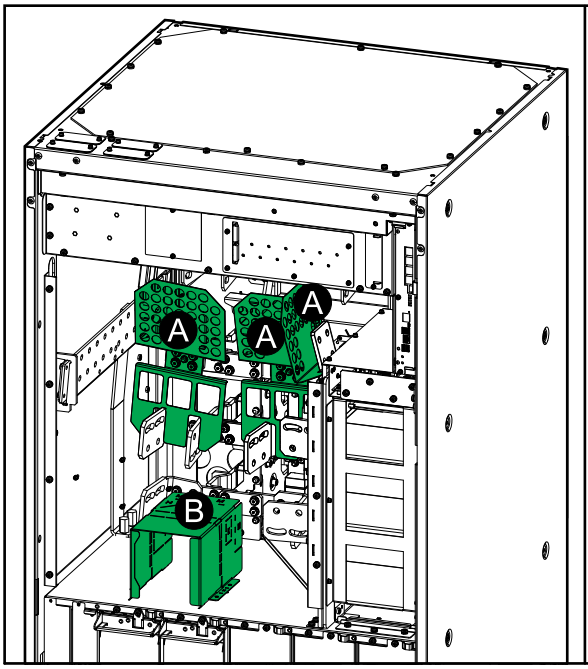
- Use the provided spring washers when connecting the cable lugs to the busbars as shown in the illustration.
- Connect one hole cable lugs and two hole cable lugs to the busbars as shown in the illustration.

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

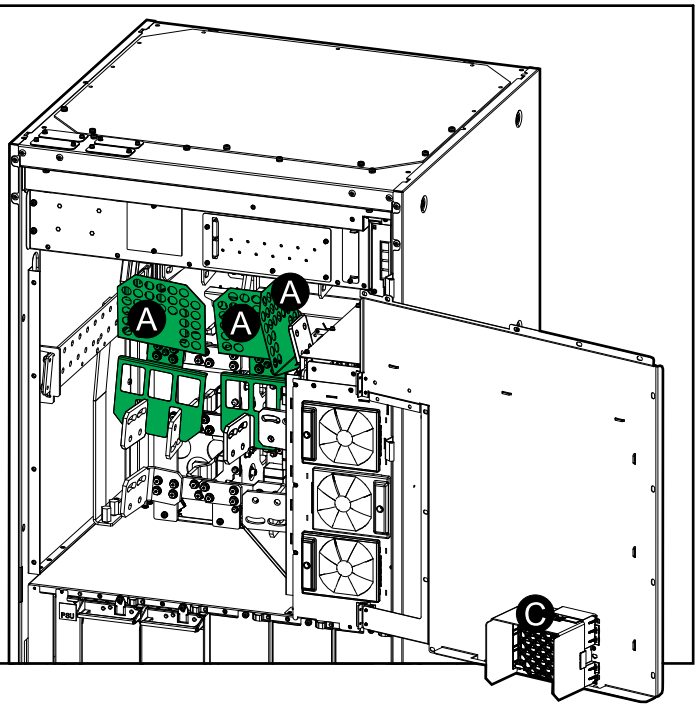
4. Reinstall the transparent plastic protectors (marked (A) on the illustration) and the plastic box (marked (B) on the illustration) in the original position.

   NOTE: On newer UPS models, the box (marked (C) on the illustration) is integrated in the inner door of the UPS instead of being a separate part.

Front View of the UPS Model with Separate Plastic Box



Front View of the UPS Model with the Box Integrated in the Inner Door



⚠CAUTION

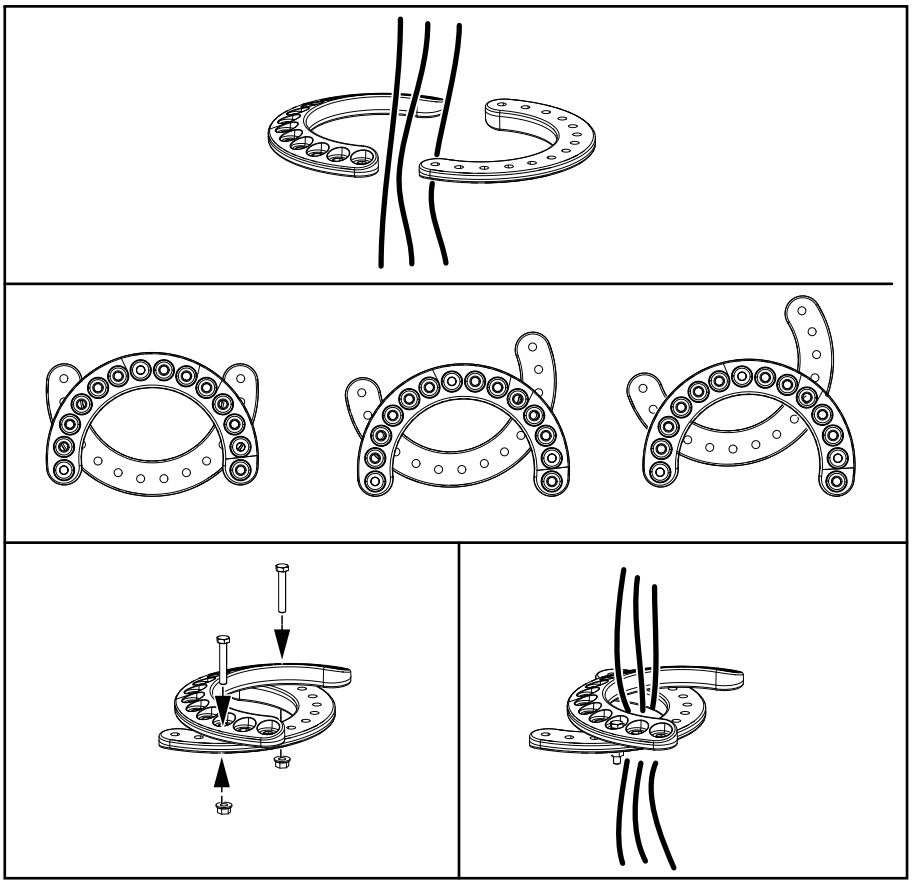
RISK OF ARC FLASH AND OVERHEATING

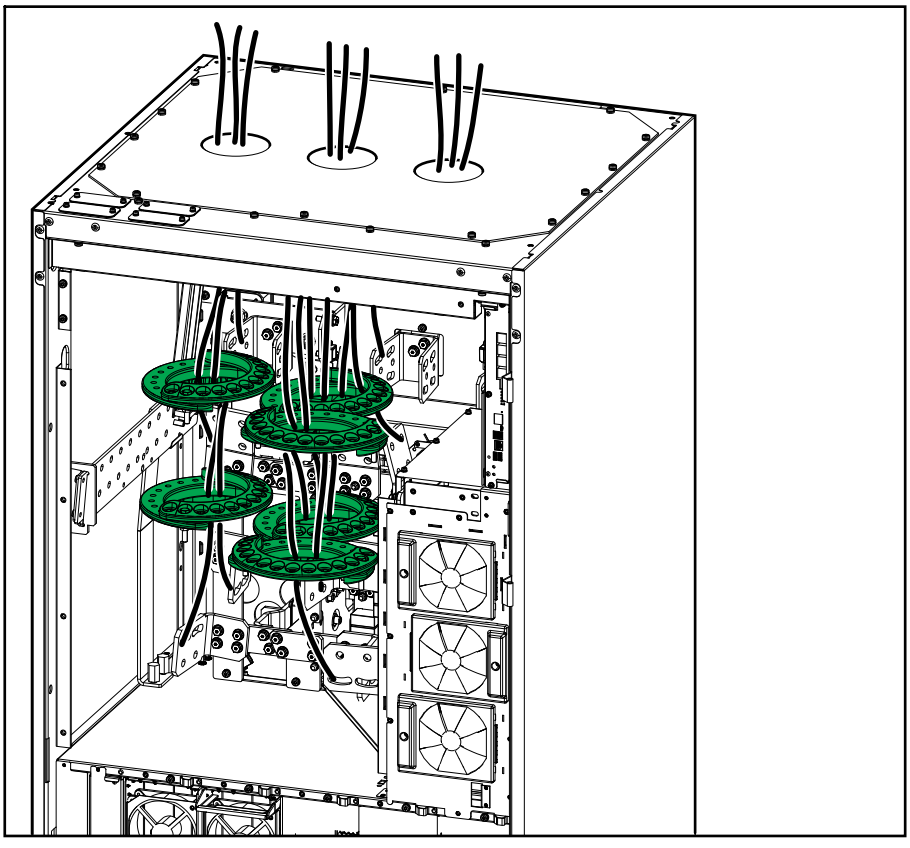
The transparent plastic protectors and the plastic box must be reinstalled in the original position after power cabling is completed. **Note:** On newer UPS models, the box is integrated in the inner door of the UPS instead of being a separate part.

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

5. Fasten the power cables with the provided plastic fasteners in the shown positions. Adjust the plastic fastener sets to the power cables so they are fitted as tightly together as possible.

Assembly of a Plastic Fastener Set





Connect Power Cables in the UPS in System up to 45 kAIC/kA Icw

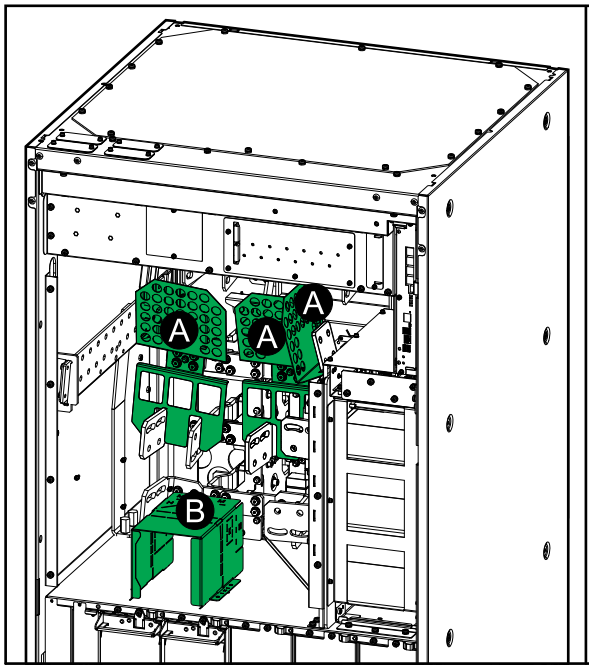
NOTE: If a backfeed kit (GVLOPT003 or GVLOPT004) is part of your installation, the backfeed kit must be installed **before** the power cables are connected in the UPS. Follow the installation manual provided with the backfeed kit.

NOTE: If a Lithium-ion battery control disconnect device kit (GVLOPT005) is part of your installation, the Lithium-ion battery control disconnect device kit must be installed **before** the power cables are connected in the UPS. Follow the installation manual provided with the Lithium-ion battery control disconnect device kit.

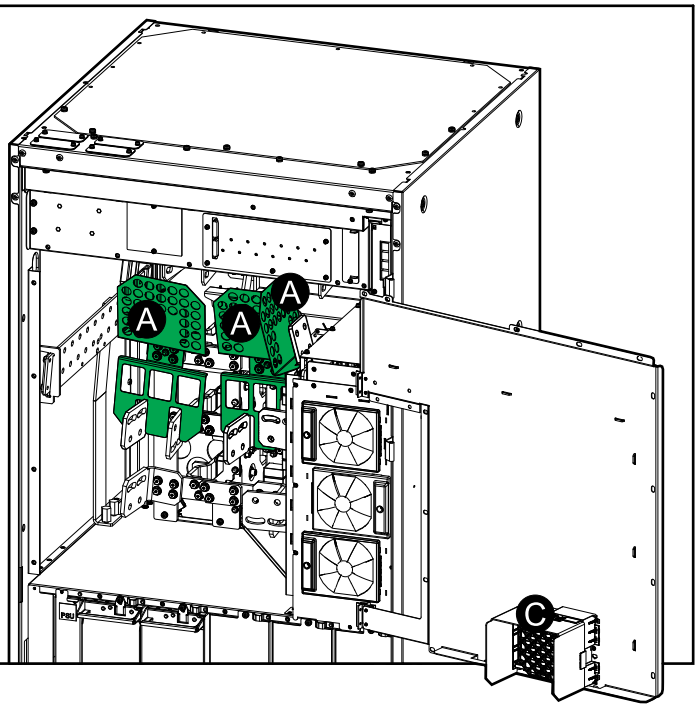
1. Remove the transparent plastic protectors (marked (A) on the illustration) from the busbars. If present, remove the plastic box (marked (B) on the illustration) from the cabling field for easier access. Save all parts for reinstallation after cable connection.

   NOTE: On newer UPS models, the box (marked (C) on the illustration) is integrated in the inner door of the UPS instead of being a separate part. The integrated box must not be removed from the inner door.

Front View of the UPS Model with Separate Plastic Box



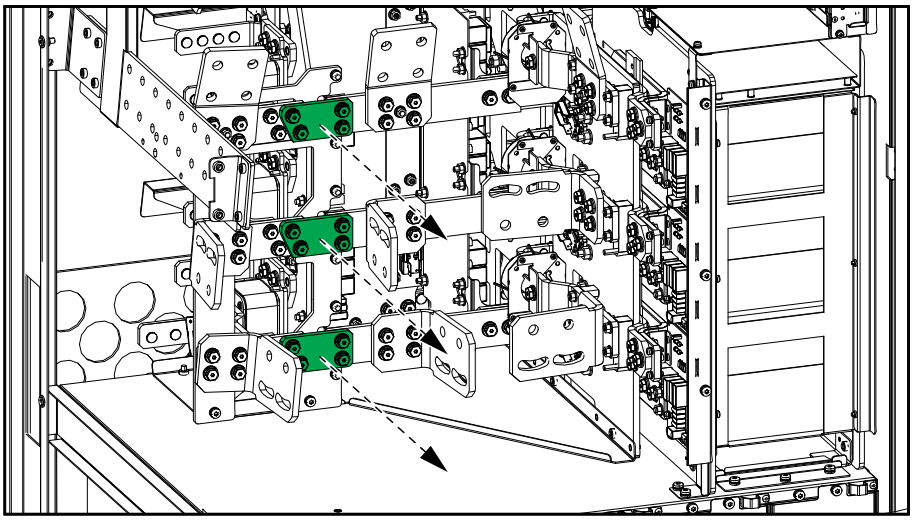
Front View of the UPS Model with the Box Integrated in the Inner Door



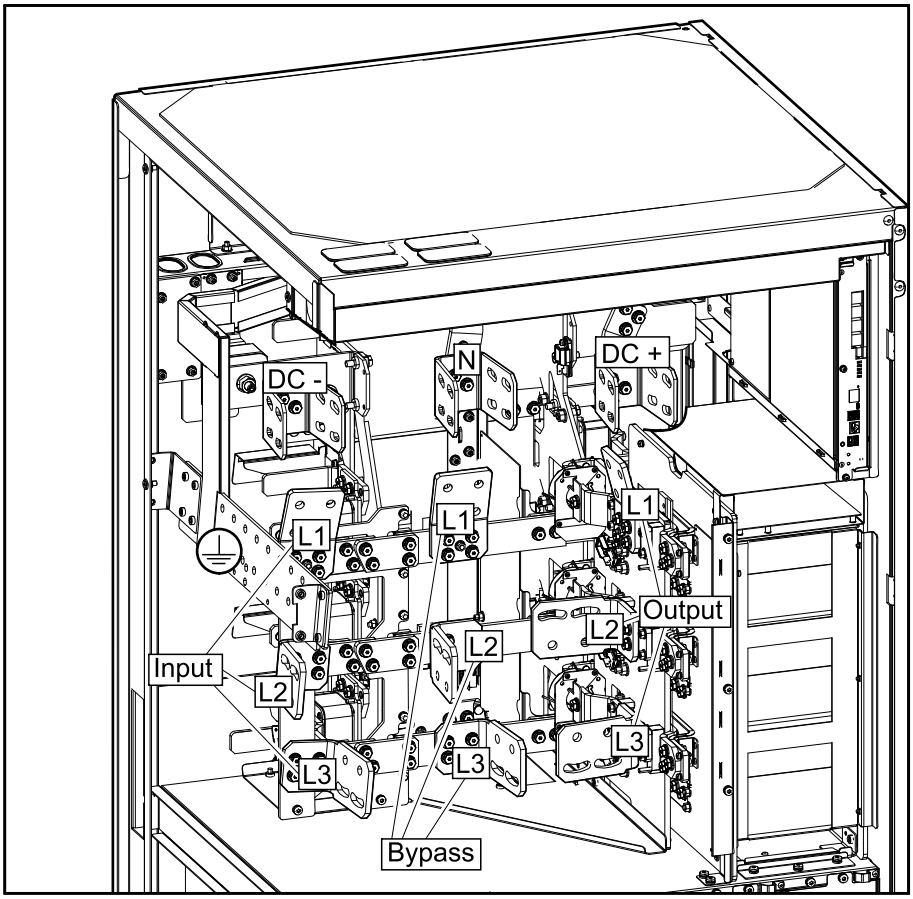
2. **Only for dual mains**: Remove the single mains busbars.

   NOTE: Save the three single mains busbars. They are needed for testing during start-up of the UPS.

Front View of the UPS

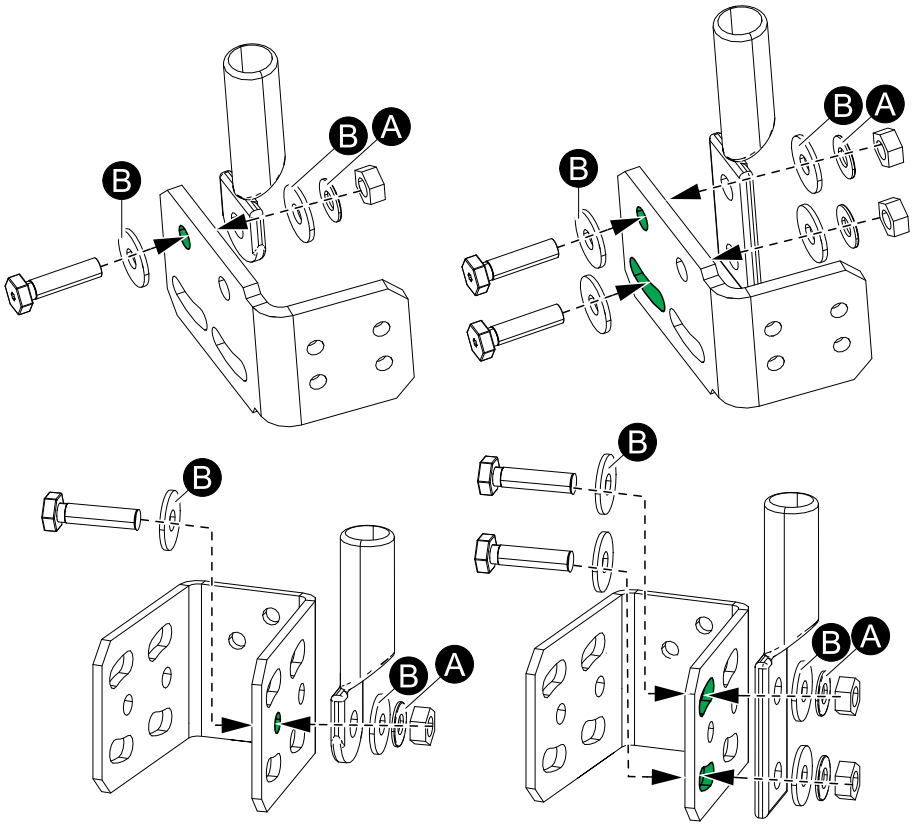


3. Connect the power cables in the described order. Assemble the cable lugs to the busbars as shown.



   a. Connect the PE cables/equipment grounding conductor (EGC).
   b. Connect the DC cables (DC+, DC-).
   c. Connect the input cables.
   d. **Only for dual mains**: Connect the bypass cables.
   e. Connect the output cables.

Cable Lug to Busbar Assembly



A. Spring washer – provided in kit

B. Flat washer (not provided)

⚠CAUTION

RISK OF CABLE LUG DISCONNECTION

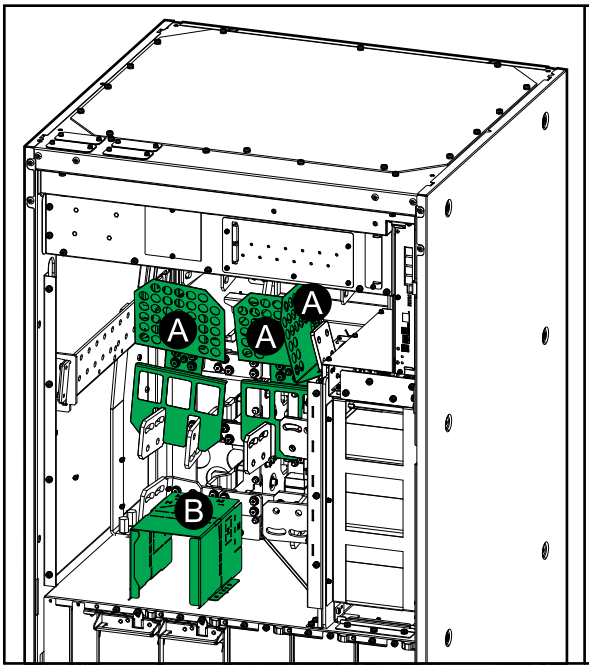
- Use the provided spring washers when connecting the cable lugs to the busbars as shown in the illustration.
- Connect one hole cable lugs and two hole cable lugs to the busbars as shown in the illustration.

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

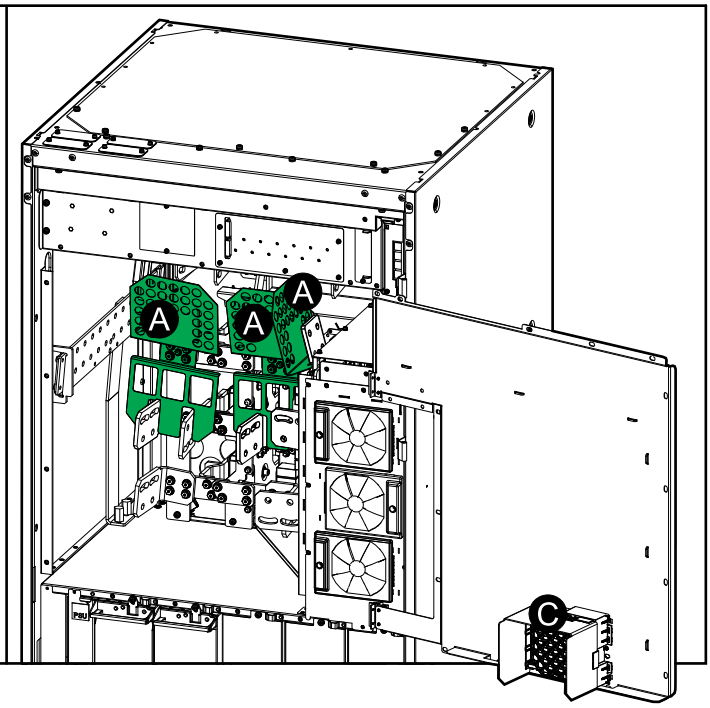
4. Reinstall the transparent plastic protectors (marked (A) on the illustration) and the plastic box (marked (B) on the illustration) in the original position.

   NOTE: On newer UPS models, the box (marked (C) on the illustration) is integrated in the inner door of the UPS instead of being a separate part.

Front View of the UPS Model with Separate Plastic Box



Front View of the UPS Model with the Box Integrated in the Inner Door



⚠CAUTION

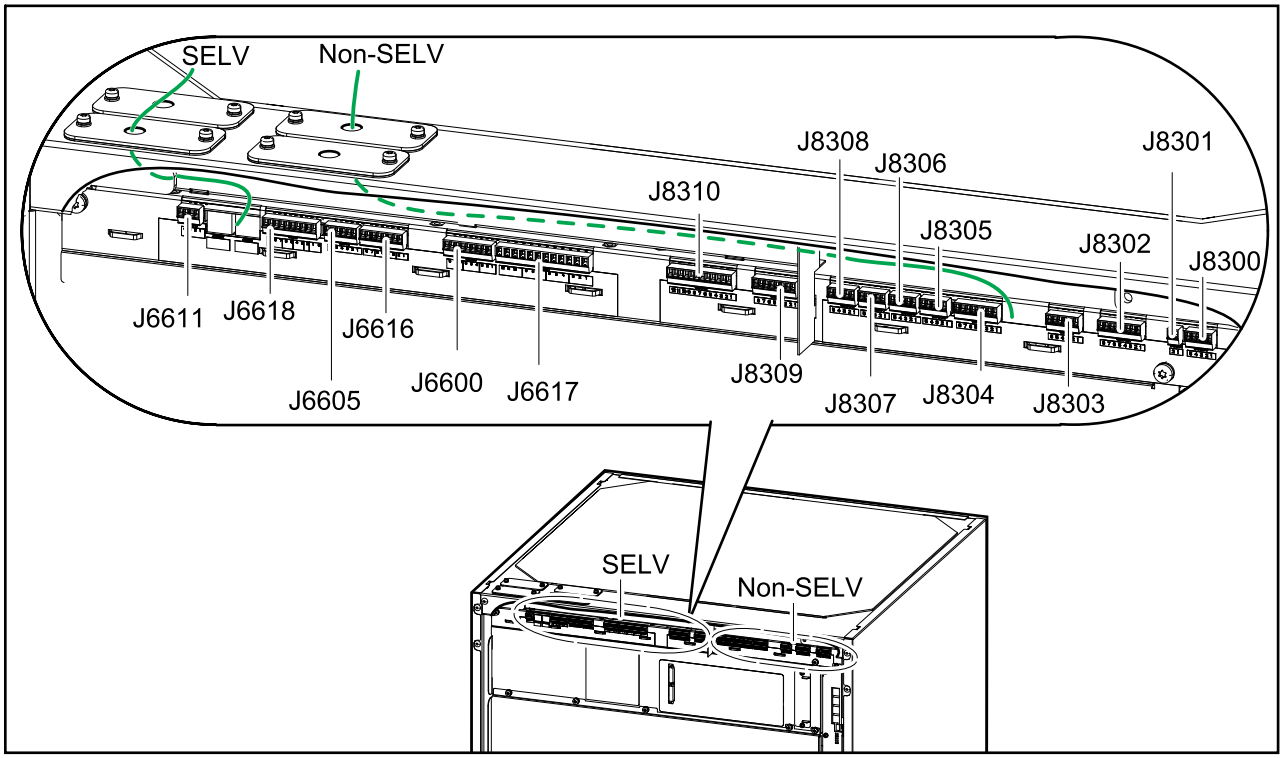
RISK OF ARC FLASH AND OVERHEATING

The transparent plastic protectors and the plastic box must be reinstalled in the original position after power cabling is completed. **Note:** On newer UPS models, the box is integrated in the inner door of the UPS instead of being a separate part.

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

Connect the Signal Cables

Overview of Signal Connection Terminals in the UPS



NOTE: Route the signal cables separately from the power cables and route the Class 2/SELV cables separately from the non-Class 2/non-SELV cables. A divider inside the cable channel separates the cables.

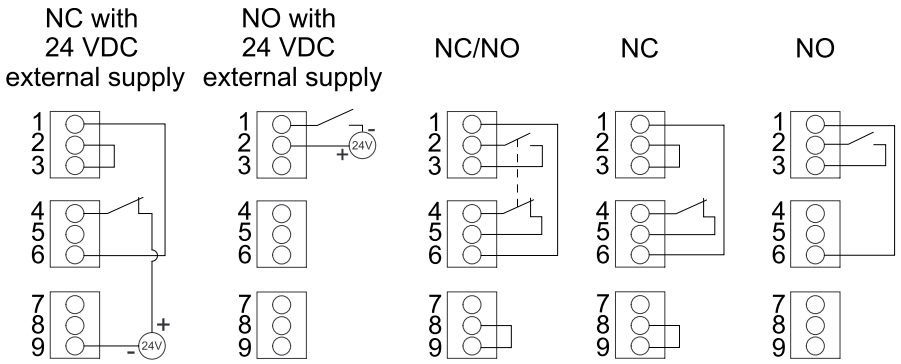
All Class 2/SELV signal cables shall be double insulated/jacket cable and minimum rated for 30 VDC. All non-Class 2/non-SELV signal cables shall be double insulated/jacket cable and minimum rated for 600 VAC.

Distance from UPS to equipment	Recommended signal cable size	
50 m (164 feet)	0.5 mm^2	20 AWG
100 m (328 feet)	0.75 mm^2	18 AWG
200 m (656 feet)	1 mm^2	17 AWG

1. Connect the Class 2/SELV signal cables from the building EPO to terminal J6600 in the UPS according to one of the options below.

   The EPO circuit is considered Class 2/SELV. 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.

   EPO Configurations (Terminal J6600, 1-9)



   The EPO input supports 24 VDC.

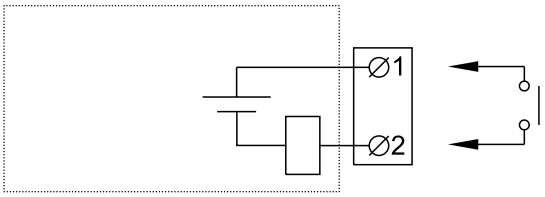
   NOTE: The default setting for the EPO activation is to turn off the inverter.

   If you want the EPO activation to transfer the UPS into forced static bypass operation instead, please contact Schneider Electric.

2. Connect the Class 2/SELV signal cables to the input contacts and output relays in the UPS.

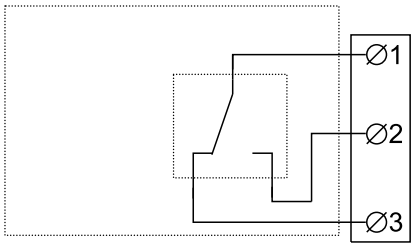
   Do not connect any circuit to the input contacts unless it can be confirmed that the circuit is Class 2/SELV.

   The input contacts support 24 VDC 10 mA. All circuits connected must have the same 0 V reference.



Name	Description	Location
IN _1 (input contact 1)	Configurable input contact	Terminal J6616, 1-2
IN _2 (input contact 2)		Terminal J6616, 3-4
IN _3 (input contact 3)		Terminal J6616, 5-6
IN _4 (input contact 4)		Terminal J6616, 7-8

   The output relays support 24 VAC/VDC 1 A. All external circuitry must be fused with maximum 1 A fast acting fuses.



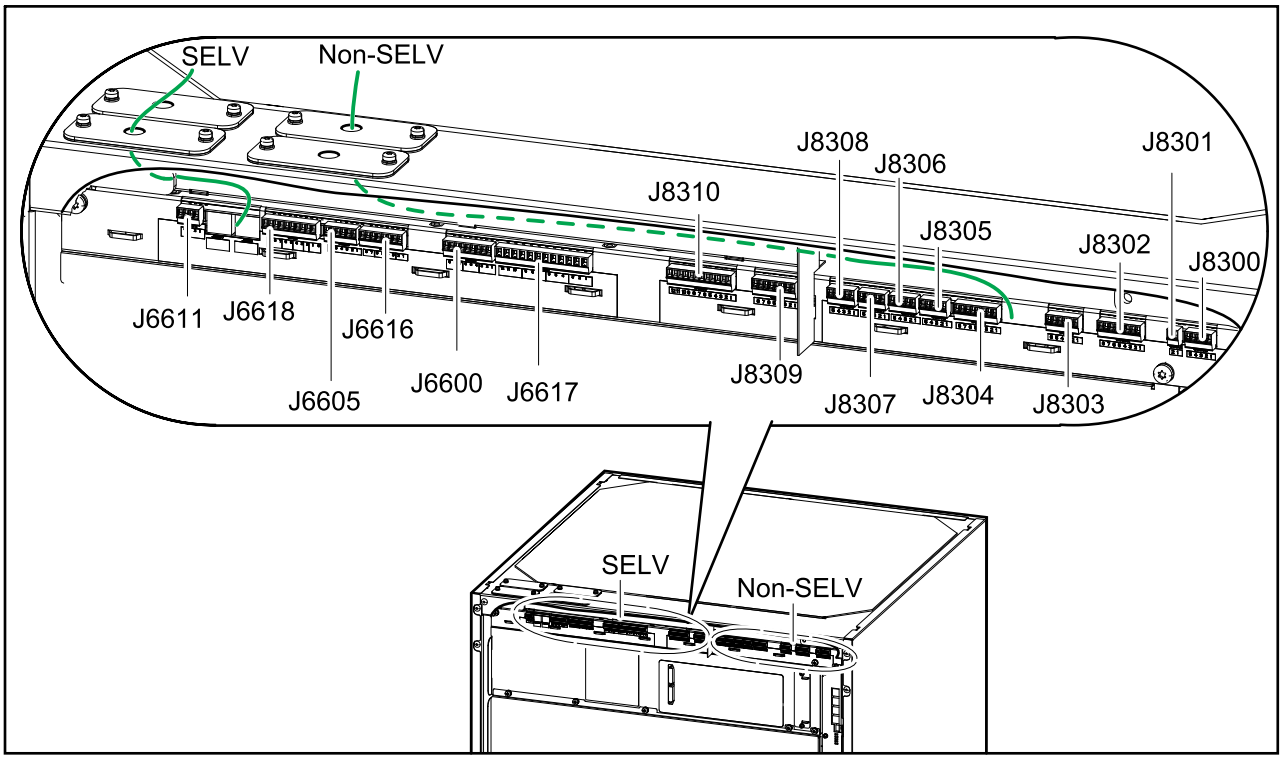
Name	Description	Location
OUT _1 (output relay 1)	Configurable output relay	Terminal J6617, 1-3

Name	Description	Location
OUT _2 (output relay 2)		Terminal J6617, 4-6
OUT _3 (output relay 3)		Terminal J6617, 7-9
OUT _4 (output relay 4)		Terminal J6617, 10-12

3. Connect the signal cables from the auxiliary products to the UPS. Follow the instructions in the auxiliary product manuals.

Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products

Overview of Signal Connection Terminals in the UPS



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

1. Install the temperature sensor provided with the UPS in the battery solution. In battery cabinets, install the temperature sensor in the top corner of the battery cabinet.

⚠WARNING

HAZARD OF FIRE

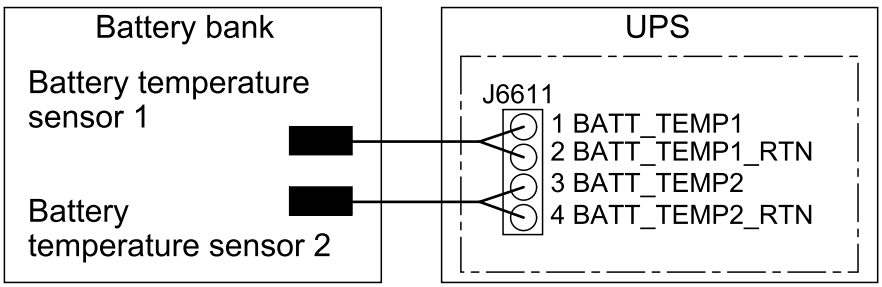
Position the temperature sensor as described to ensure correct temperature measurements.

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

2. Route the battery temperature sensor cables from the battery solution to the UPS and connect as shown.

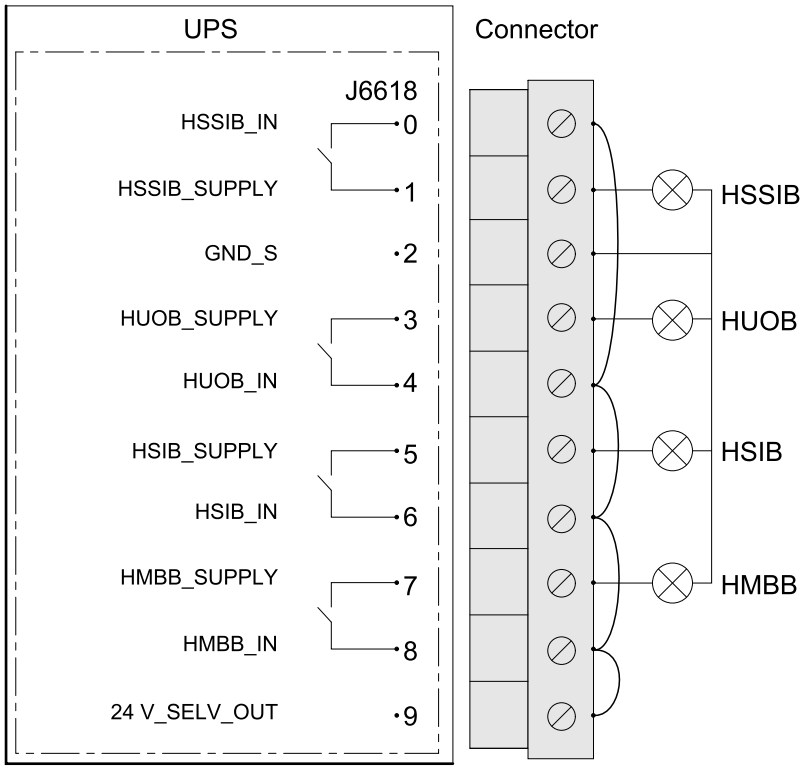
   NOTE: Two temperature sensors are provided with the UPS.

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



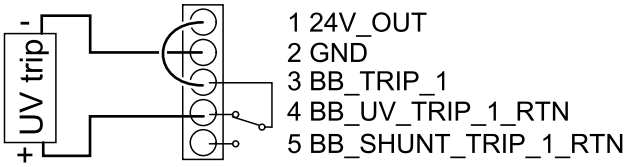
3. Connect signal cables from the disconnect device indicator lights in your switchgear to terminal J6618 in the top of the UPS. If an external supply is used, remove jumper from J6618 pin 8 and 9.

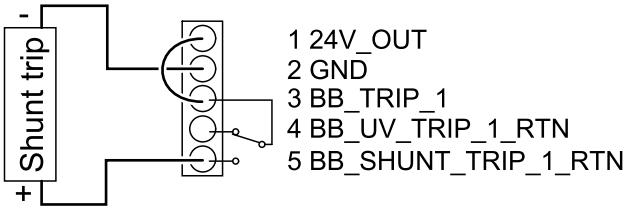
   NOTE: The disconnect device indicator light circuit is considered Class 2/ SELV. Class 2/SELV circuits must be isolated from the primary circuitry. Do not connect any circuit to the disconnect device indicator light terminals unless it can be confirmed that the circuit is Class 2/SELV.



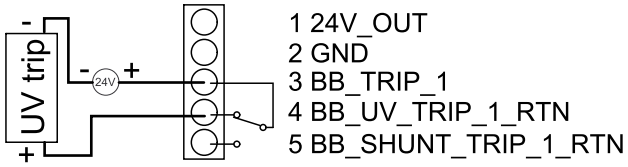
4. Connect the signal cables from the battery disconnect device(s) in your battery solution for shunt trip or undervoltage (UV) trip connection to the UPS. Follow the illustration for connection with internal or external 24 VDC supply. The UPS can connect to and monitor up to four battery disconnect devices.
   a. Connect battery disconnect device 1 to terminal J8305 in the UPS.
   b. Connect battery disconnect device 2 to terminal J8306 in the UPS.
   c. Connect battery disconnect device 3 to terminal J8307 in the UPS.
   d. Connect battery disconnect device 4 to terminal J8308 in the UPS.

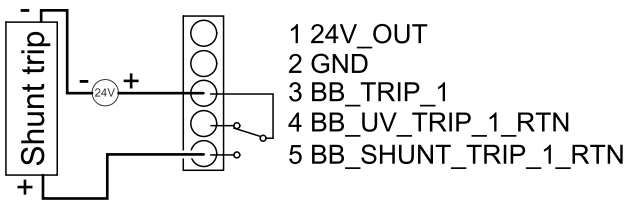
Battery Disconnect Device Trip Connection with Internal 24 VDC Supply





Battery Disconnect Device Trip Connection with External 24 VDC Supply





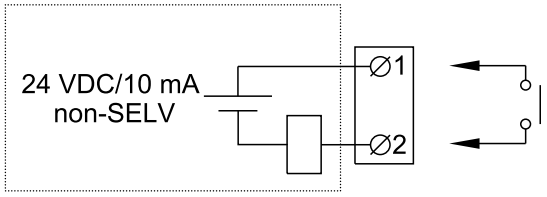
Supported Shunt

Voltage (V)	Current (A)	Time (ms)	Temperature	Recommended cable size(96)	
				IEC	UL/NEC
24	1.6	Continuous	20 °C (68 °F)	0.5 mm^2 copper	20 AWG copper
24	10	1300	20 °C (68 °F)	1.5 mm^2 copper	16 AWG copper
24	20	200	20 °C (68 °F)	2.5 mm^2 copper	13 AWG copper
24	30	60	20 °C (68 °F)	4 mm^2 copper	11 AWG copper

The cable supplying the shunt trip shall be a jacket cable and rated for 600 VAC. The specifications and recommendations of the shunt trip manufacturer must always be considered when selecting the cable.

(96) The recommended cable size is based on a voltage drop of maximum 0.8x24 VDC for 30 meter cables.

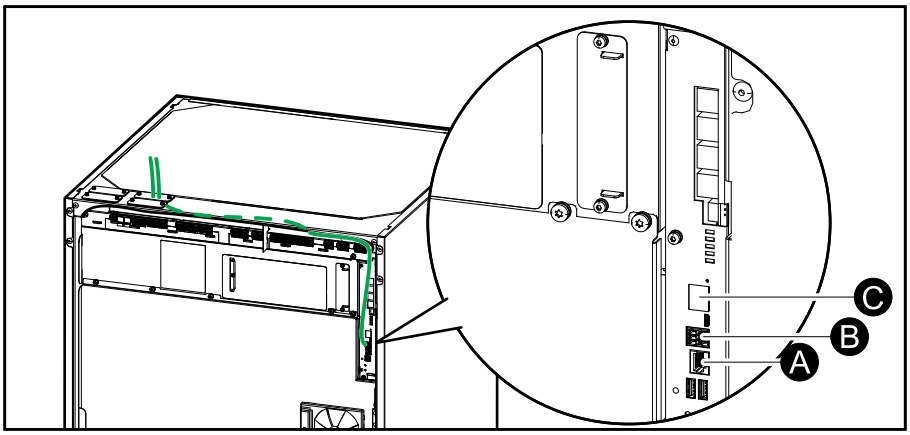
5. Connect signal cables from AUX switches in your switchgear to the UPS.



Terminal number	Function	Connection
J8303, 1-2	UOB_RED (redundant AUX switch in unit output disconnect device)	Connect to redundant AUX switch in unit output disconnect device UOB.
J8303, 3-4	Grid interactive UPS feature: Force UPS into battery operation	Connect to normally open (NO) input contact used for grid interactive UPS feature (fast frequency response). Contact Schneider Electric for details and setup of this feature.
J8303, 5-6	SIB (system isolation disconnect device)	Connect to normally open (NO) AUX switch in system isolation disconnect device SIB for parallel system. SIB must contain an AUX switch for each connected UPS.
J8304, 1-2	BB1 (battery disconnect device 1)	Connect to normally open (NO) AUX switch in battery disconnect device number 1.
J8304, 3-4	BB2 (battery disconnect device 2)	Connect to normally open (NO) AUX switch in battery disconnect device number 2.
J8304, 5-6	BB3 (battery disconnect device 3)	Connect to normally open (NO) AUX switch in battery disconnect device number 3.
J8304, 7-8	BB4 (battery disconnect device 4)	Connect to normally open (NO) AUX switch in battery disconnect device number 4.
J8302, 7-8	UOB (unit output disconnect device)	Connect to normally open (NO) AUX switch in unit output disconnect device UOB.
J8302, 3-4	SSIB (static switch input disconnect device)	Connect to normally open (NO) AUX switch in static switch input disconnect device SSIB. SSIB must contain an AUX switch for each connected UPS.
J8302, 1-2	UIB (unit input disconnect device)	Connect to normally open (NO) AUX switch in unit input disconnect device UIB. UIB must contain an AUX switch for each connected UPS.
J8302, 5-6	MBB (maintenance bypass disconnect device)	Connect to normally closed (NC) AUX switch in maintenance bypass disconnect device MBB. MBB must contain an AUX switch for each connected UPS.
J8300, 1-5	EXT BF (external backfeed disconnect device)	See Backfeed Protection, page 111.
J8301, 1-2	EXT BF RED (redundant power supply for external backfeed disconnect device)	See Backfeed Protection, page 111.

Connect the External Communication Cables

1. Connect the external communication cables to the ports in the system level controller.



A. Universal I/O port for built-in network management card.

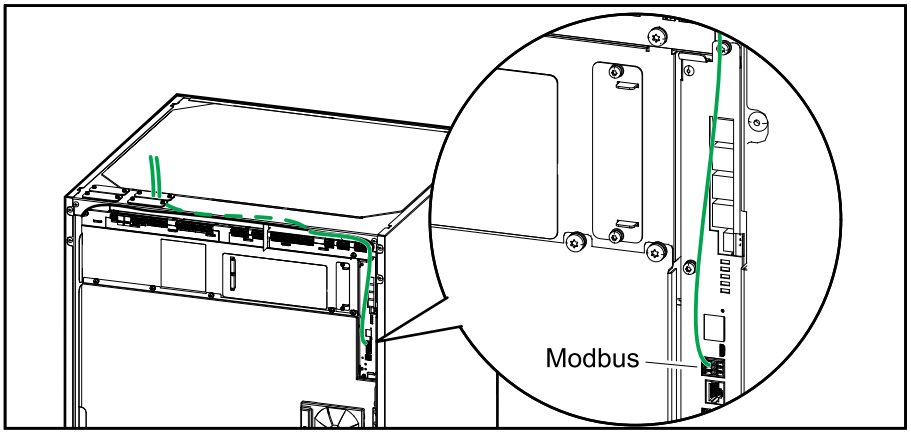
B. Modbus port for built-in network management card.

C. Network port for built-in network management card. Use a shielded network cable.

NOTE: Check that you are connecting to the correct port to avoid network communication conflicts.

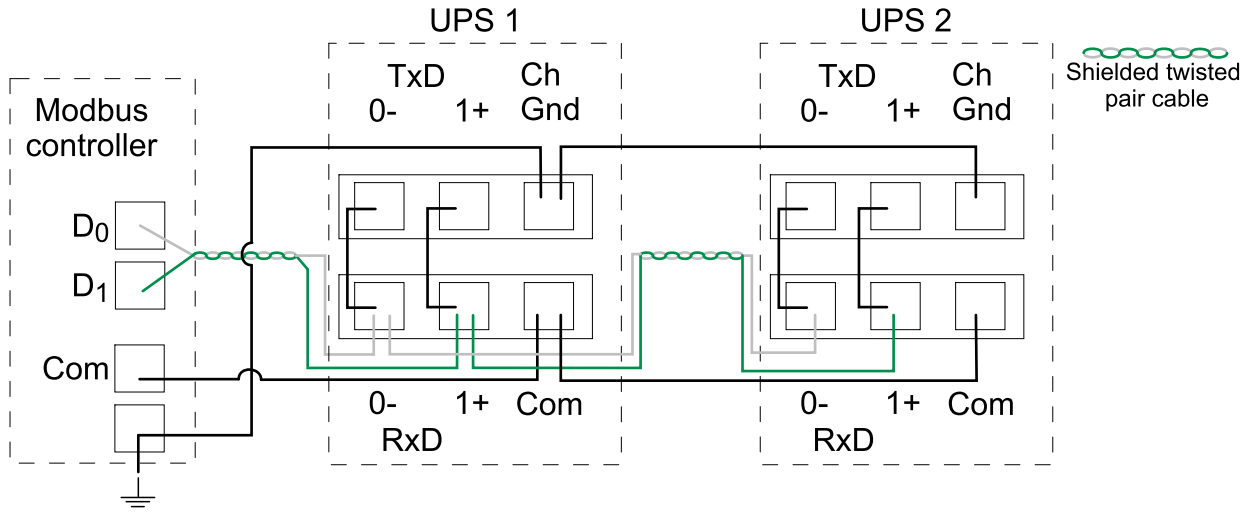
Connect the Modbus Cables

1. Connect the Modbus cables to the UPS(s). Use either 2-wire or 4-wire connection.

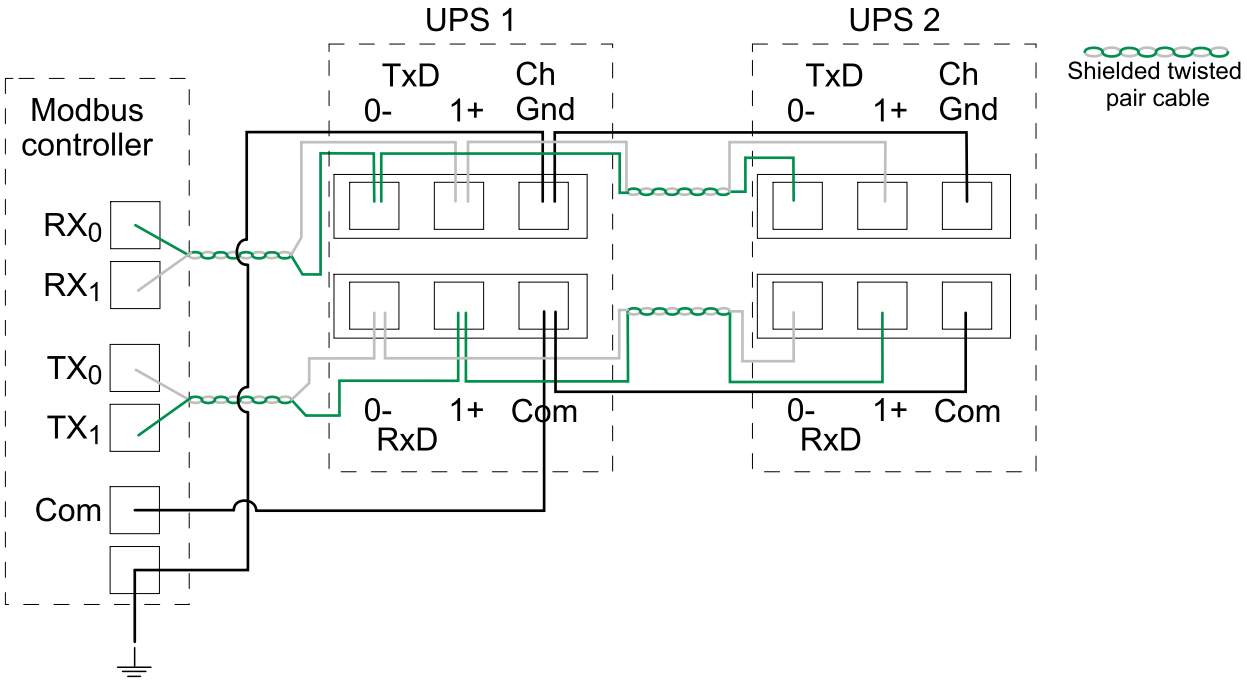


- All Modbus signal cables shall be double insulated/jacket cable and minimum rated for 30 VDC.
- Shielded twisted pair cables must be used for Modbus connections. The shield connection to the ground must be as short as possible (ideally below 1 cm). The cable shield must be connected to the Ch Gnd pin on each device.
- Wiring should be done in accordance with local wiring codes.
- Route signal cables separately from power cables to ensure sufficient isolation.
- The Modbus port is galvanically isolated with the Com pin as ground reference.

Example: 2-Wire Connection with Two UPSs



Example: 4-Wire Connection with Two UPSs



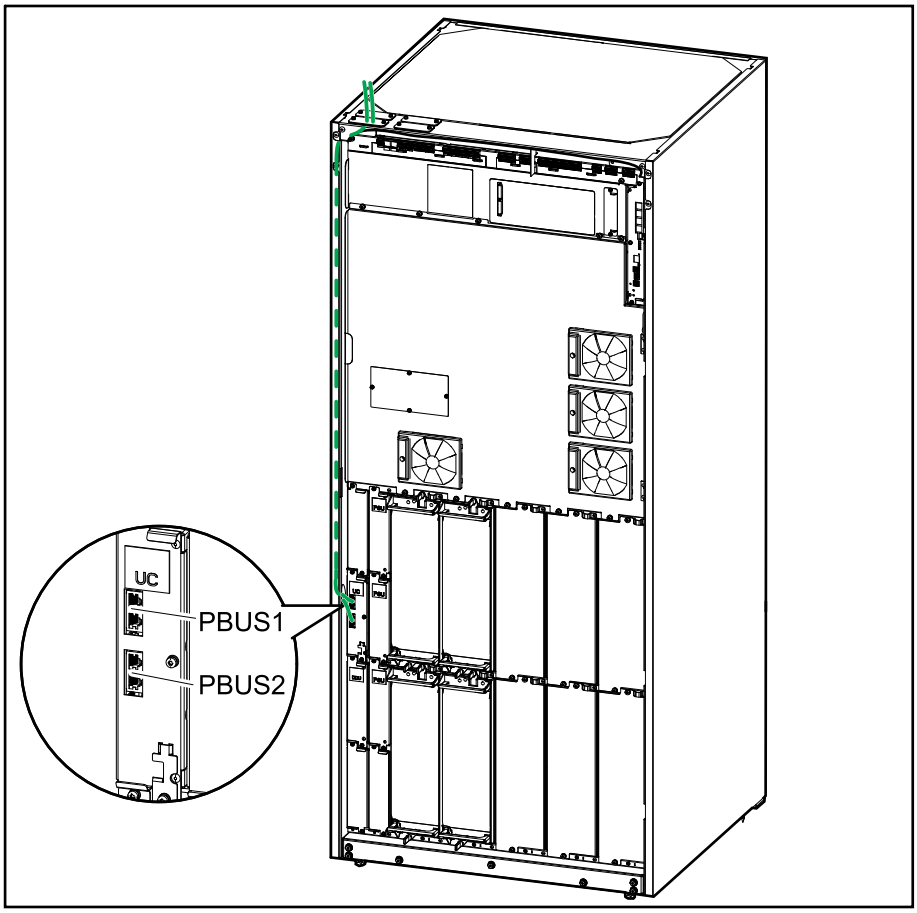
2. Install 150 Ohm termination resistors at each end of each bus if the buses are very long and operate at high data rates. Busses under 610 meters (2000 feet) at 9600 baud or under 305 meters (1000 feet) at 19200 baud should not require termination resistors.

Connect the PBUS Cables

All PBUS cables shall be double insulated/jacket cable and minimum rated for 30 VDC.

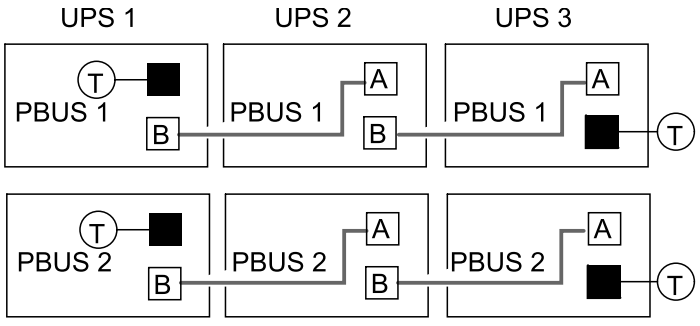
It is recommended to use the PBUS cables provided by Schneider Electric (0W7995 or 0W7996).

1. Connect the provided PBUS 1 (white) and PBUS 2 (red) cables to the PBUS ports on the UPSs.



2. Mount termination plugs (T) in the unused connectors.

Example of System with Three UPSs in Parallel



NOTE: The maximum acceptable length of PBUS cable between two parallel UPSs is 75 meter (246 feet). In case of configurations with up to six GVL UPSs in parallel, the combined length of all the PBUS cables from UPS 1 to UPS 6 must not exceed 75 meter (246 feet). Cable specifications: Patch cable SSTP CAT6: 22-26 AWG stranded bare copper, 4 twisted pairs, shielded cable with copper foil. Contact Schneider Electric for more information.

Connect the Signal Cables for External Synchronization

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Check for absence of voltage for all three signal terminals on the external synchronization board 0P4809. When the external synchronization cables are installed, the terminals on the external synchronization board 0P4809 may be energized. Disconnect the fuse disconnector device at the source before removing the transparent protection cover.

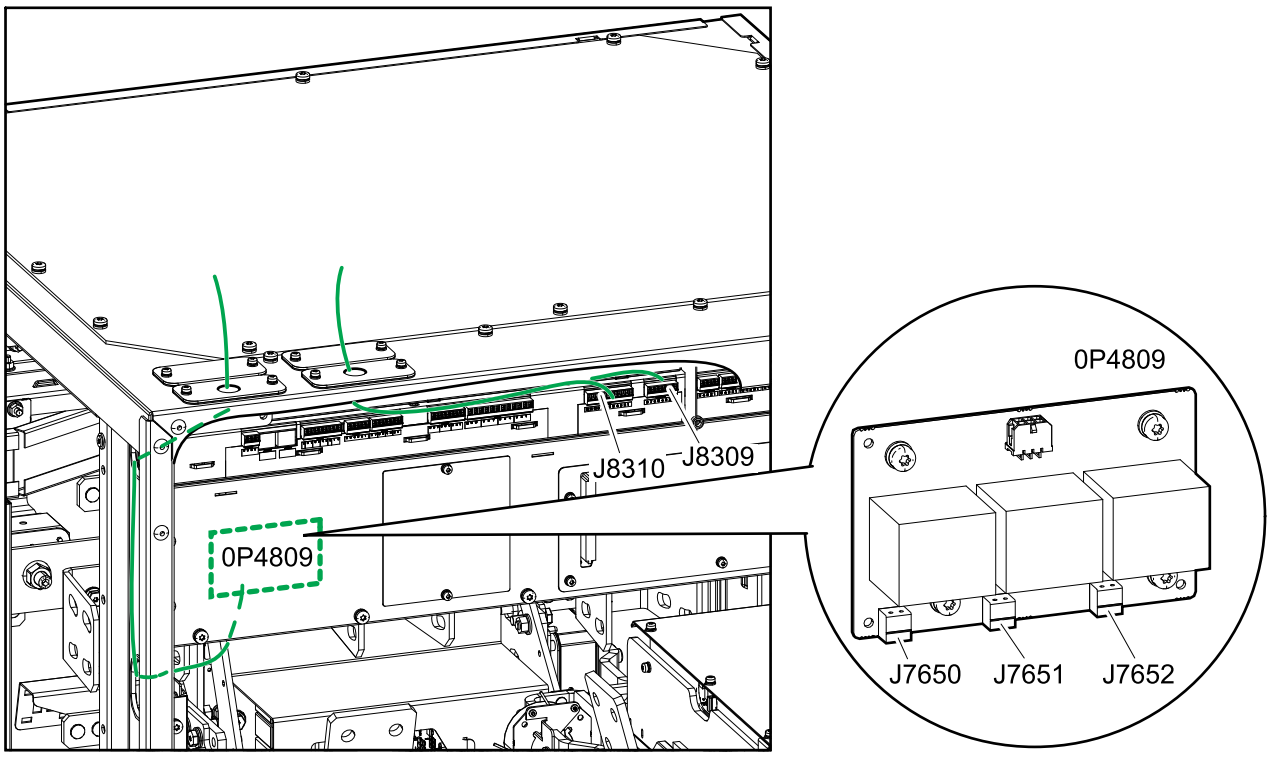
Failure to follow these instructions will result in death or serious injury.

Cable Size and Fuse Disconnector Device for External Synchronization

	Fuse and disconnector at source	Fuse disconnector marking	Cable size	Conduits
IEC	In = 2A, I.R=65 kAiC	Fuse disconnector identification number and external synchronization UPS number.	2 x 1.5 mm²	–
UL/NEC			2 x 16 AWG	0.5 inch

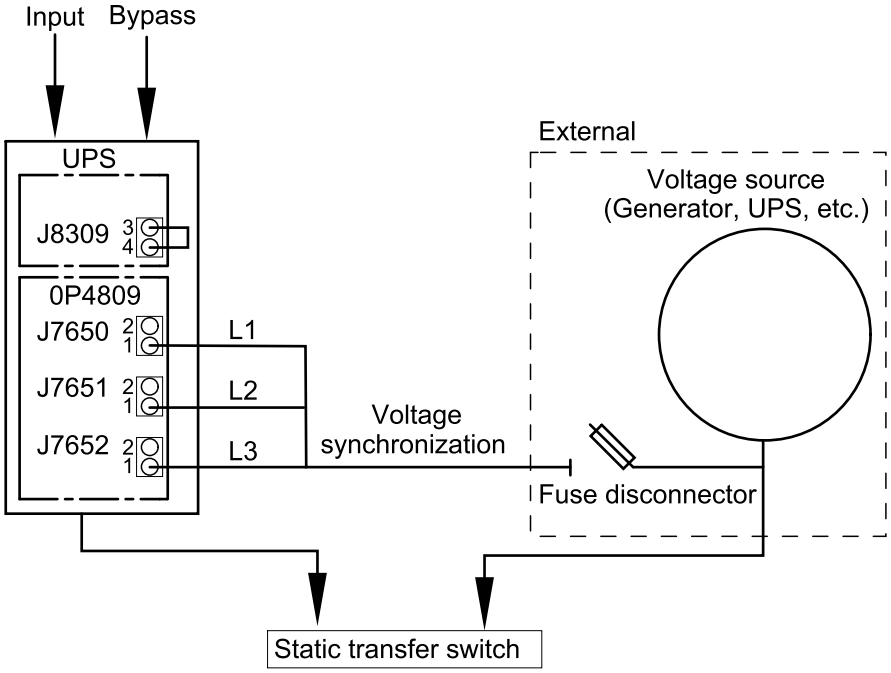
The maximum voltage for external synchronization is equal to the input voltage range given in the specifications. The non-Class 2/non-SELV cables for external synchronization shall be a jacket cable and rated for 600 VAC.

1. Remove the transparent protection cover from the external synchronization board 0P4809. The external synchronization board 0P4809 is located on the rear of the front plate.
2. Connect the cables for external synchronization to the external synchronization board 0P4809 and to terminals J8309 and J8310. See cable routing on the illustration. Connect the external synchronization per your configuration according to one of the diagrams below. Ensure that fuse disconnector devices are installed at the source as shown in the diagrams.

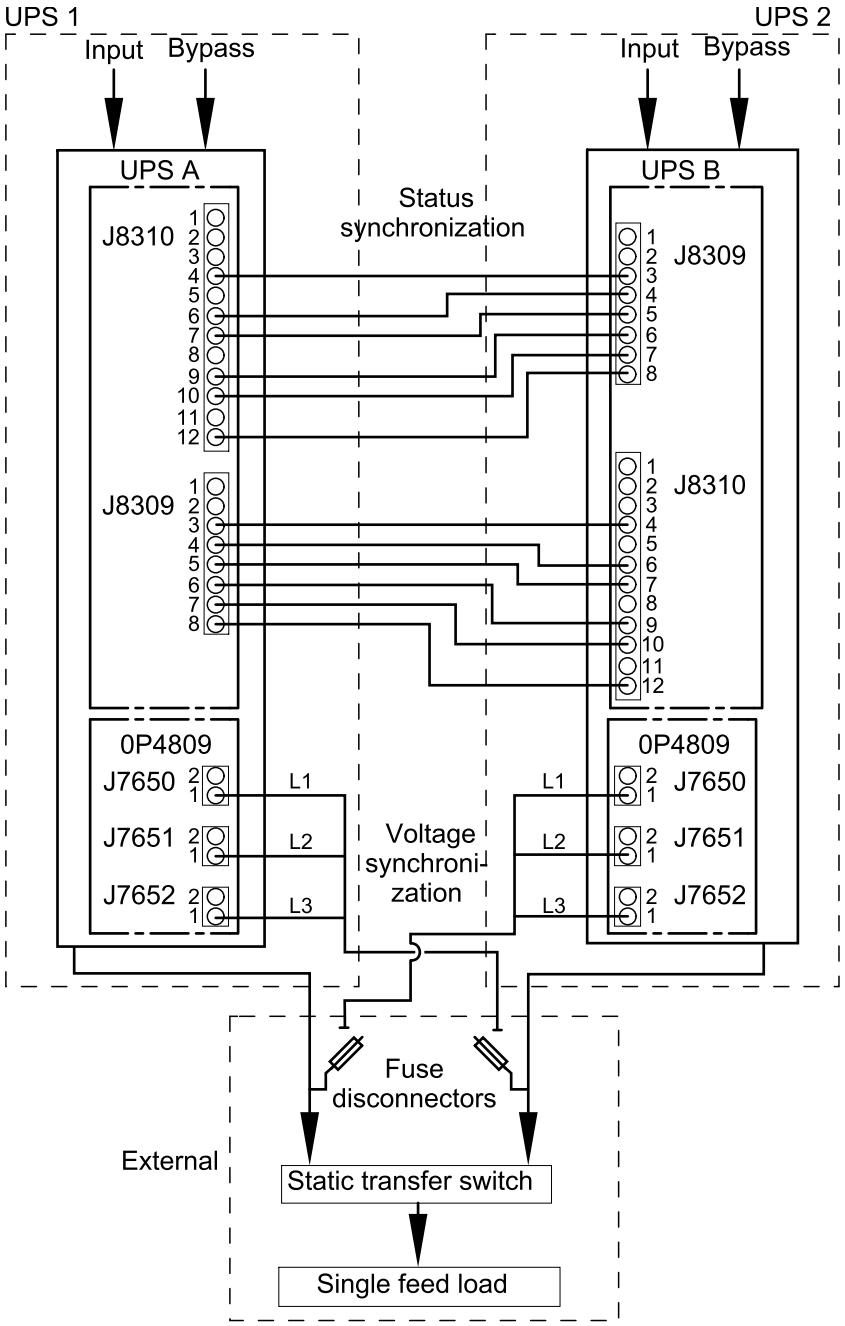


Signal Cable Connections for UPS Synchronization to a Fixed Voltage Source

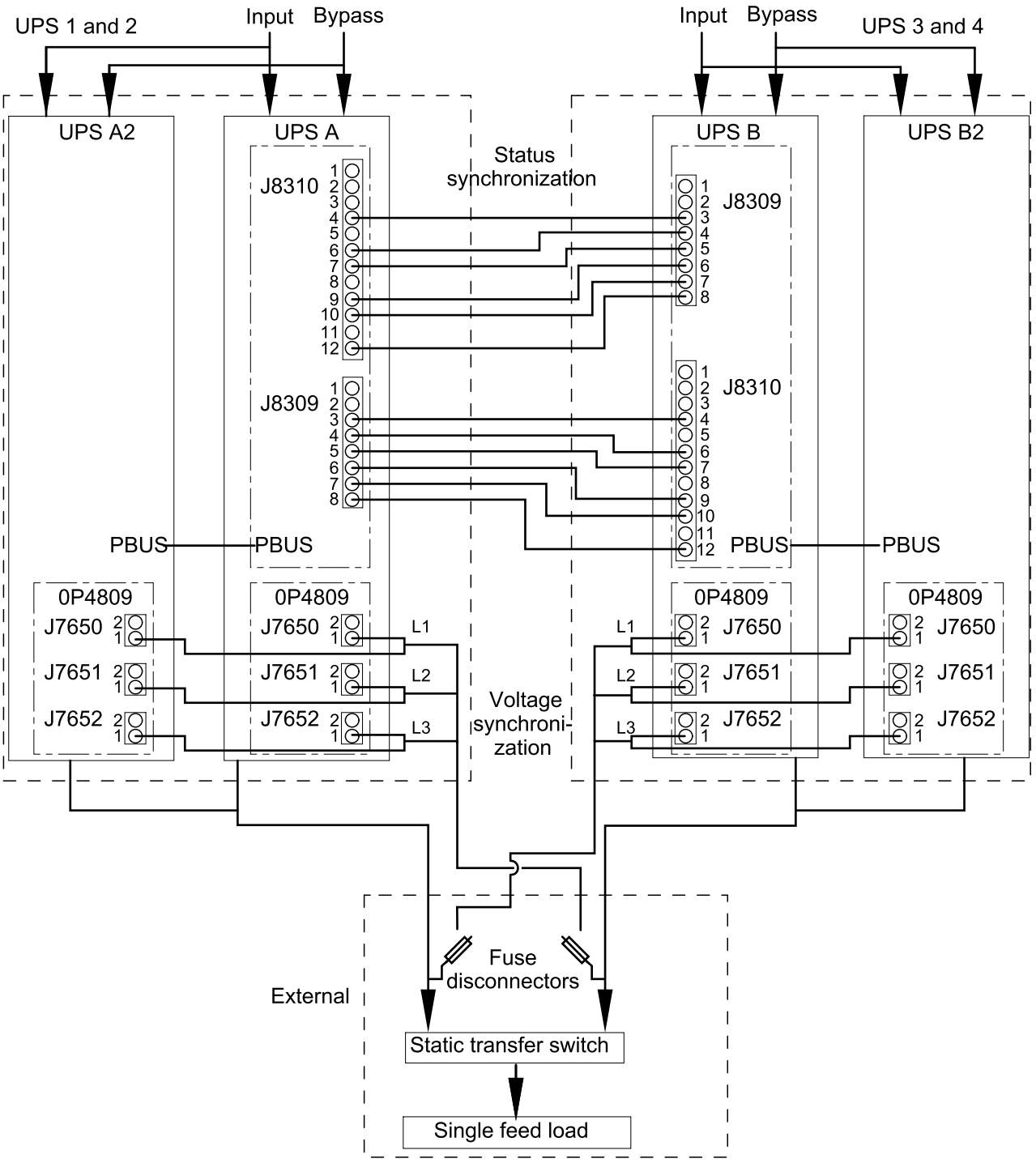
NOTE: The connection on J8309 pin 3 and 4 can be with a jumper or can be controlled externally from a PLC or another external system.



Signal Cable Connections for Advanced Dual UPS Synchronization



Signal Cable Connections for Advanced Dual UPS Synchronization in a Parallel UPS System with Fixed Sync Master



3. Reinstall the transparent protection cover on the external synchronization board 0P4809 after signal cabling is completed.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The transparent protection cover must be installed over the external synchronization board 0P4809.

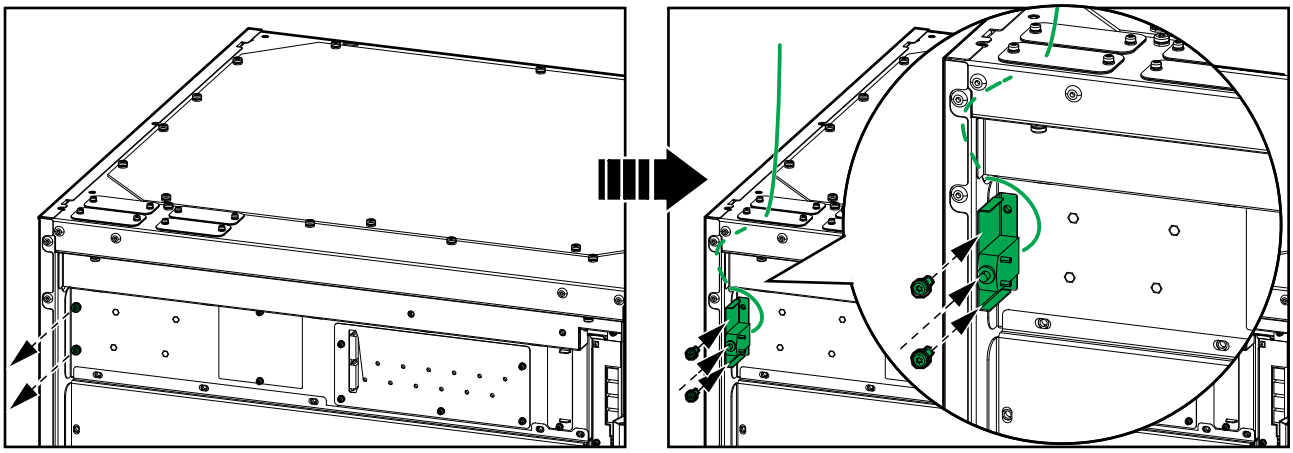
Failure to follow these instructions will result in death or serious injury.

4. Mark the transparent protection cover with the external synchronization fuse disconnector identification number.

Install the ERMS Door Switch Kit GVLOPT011 (Option)

The ERMS (Energy Reduction Maintenance Settings) door switch kit GVLOPT011 is prescribed in installations where the upstream/downstream circuit breakers' trip settings exceed the recommended values specified in this manual. Refer to details for 'scenario 2' on page Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 or Upstream Protection for UL Listed UPS (380/400/415/440/480 V), page 55.

1. Remove the two screws from the UPS.
2. Install the ERMS door switch with the two screws.



3. Route the signal cables from the ERMS door switch up and out through the top of the UPS.
4. Connect the signal cables from the ERMS door switch to the upstream circuit breakers UIB and SSIB and to the downstream circuit breaker UOB. Follow the documentation provided with the ERMS door switch and the upstream and downstream circuit breakers for connection details.

Install the Power Module(s)

The UPS can arrive with or without preinstalled power modules. Additional power modules are shipped separately and must be installed to reach the correct UPS kW rating.

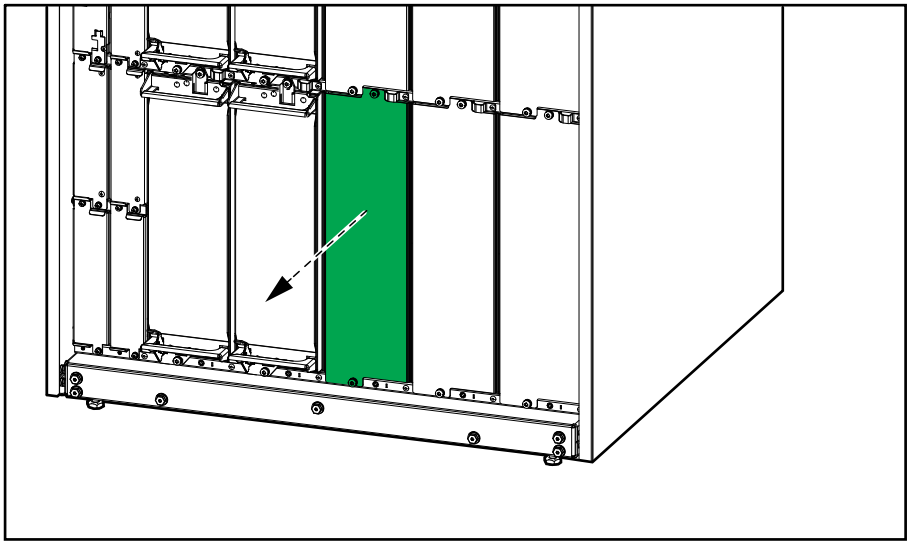
⚠CAUTION

HEAVY LOAD

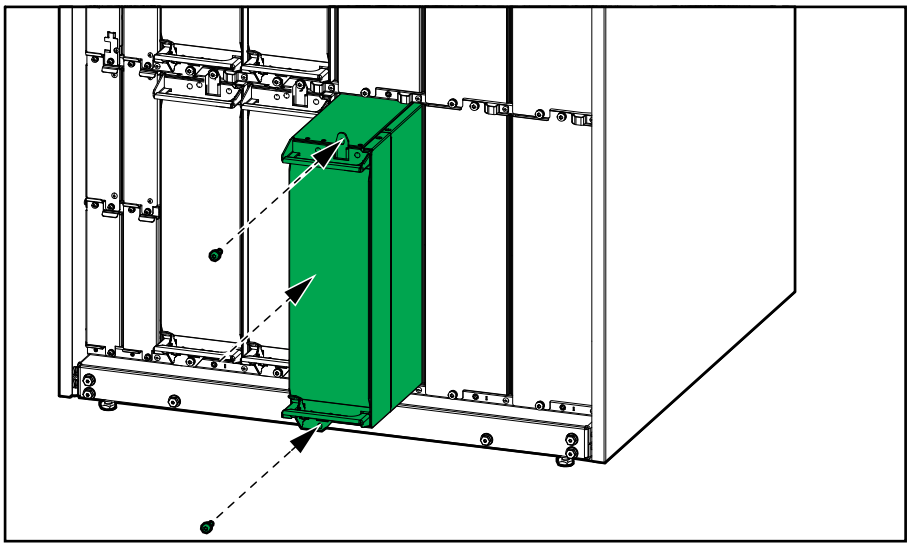
Power modules are heavy (38 kg (83.77 lbs)) and require two persons to lift.

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

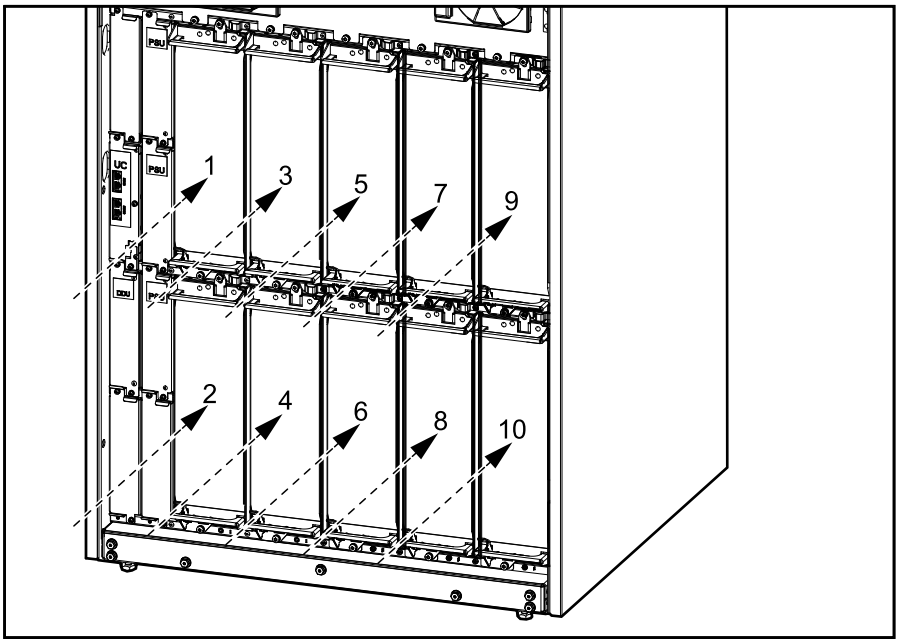
1. Remove the filler plate from the empty power module slot. Save the filler plate for future use.



2. Push the power module into the slot. The enable mechanism will latch when the power module is correctly inserted.
3. Install the provided screws in the top and the bottom of the power module.



Post-requisite: Install the power modules in the shown order from 1-10.


1
3
5
7
9
2
4
6
8
10

Add Translated Safety Labels to Your Product

The safety labels on your product are in English and French. Sheets with translated safety labels are provided with your product.

1. Find the sheets with translated safety labels provided with your product.
2. Check which identification numbers are on the sheet with translated safety labels.
3. Locate the safety labels on your product that match the translated safety labels on the sheet – look for the identification numbers.
4. Add the replacement safety label in your preferred language to your product on top of the existing French safety label.

Backfeed Protection

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Mandatory backfeed protection on bypass must be implemented by one of the following methods:

- Installation of upstream disconnect device with shunt trip connected to the UPS. See diagrams and instructions in Installation of Third Party Backfeed Protection, page 111.
- Installation of internal backfeed kit (GVLOPT003 or GVLOPT004) in the UPS. The internal backfeed kit must be installed **before** the power cables are connected in the UPS. Follow the installation manual provided with the internal backfeed kit.
- Installation of maintenance bypass cabinet (GVLMBCA200K500H or GVLMBCA200K500G) where the disconnect device is included. Follow the installation manual provided with the maintenance bypass cabinet. Label 885-91965 (provided with the UPS) must be placed visible on the maintenance bypass cabinet.

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

Installation of Third Party Backfeed Protection

Connect the disconnect device shunt trip and AUX switch to the UPS as shown below. Use double insulated cables. Disconnect device shunt trip must be rated for 24 VDC nominal, inrush max 100 W. 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.

Label 885-91965 (provided with the UPS) must be placed visible at the bypass upstream disconnect device.

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

In systems where backfeed protection is not a part of the standard design, an automatic isolation device (Schneider Electric backfeed protection option or other device, such as a circuit breaker, switch, or contactor with trip function, meeting the requirements of IEC62040-1 or UL1778 5th edition – depending on which standard apply to your local area), is required to be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must be rated and controlled according to the specifications in this manual.

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

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

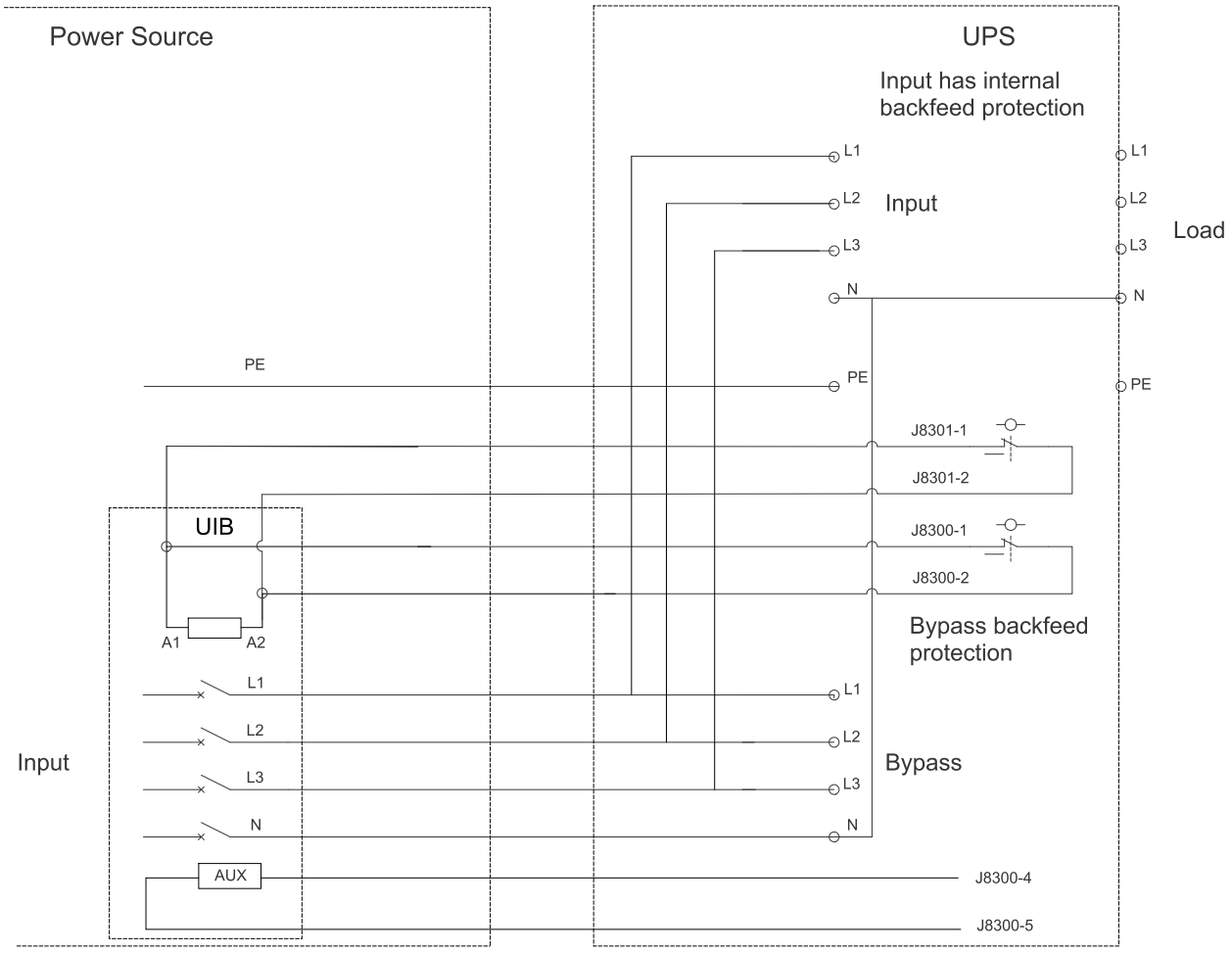
⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

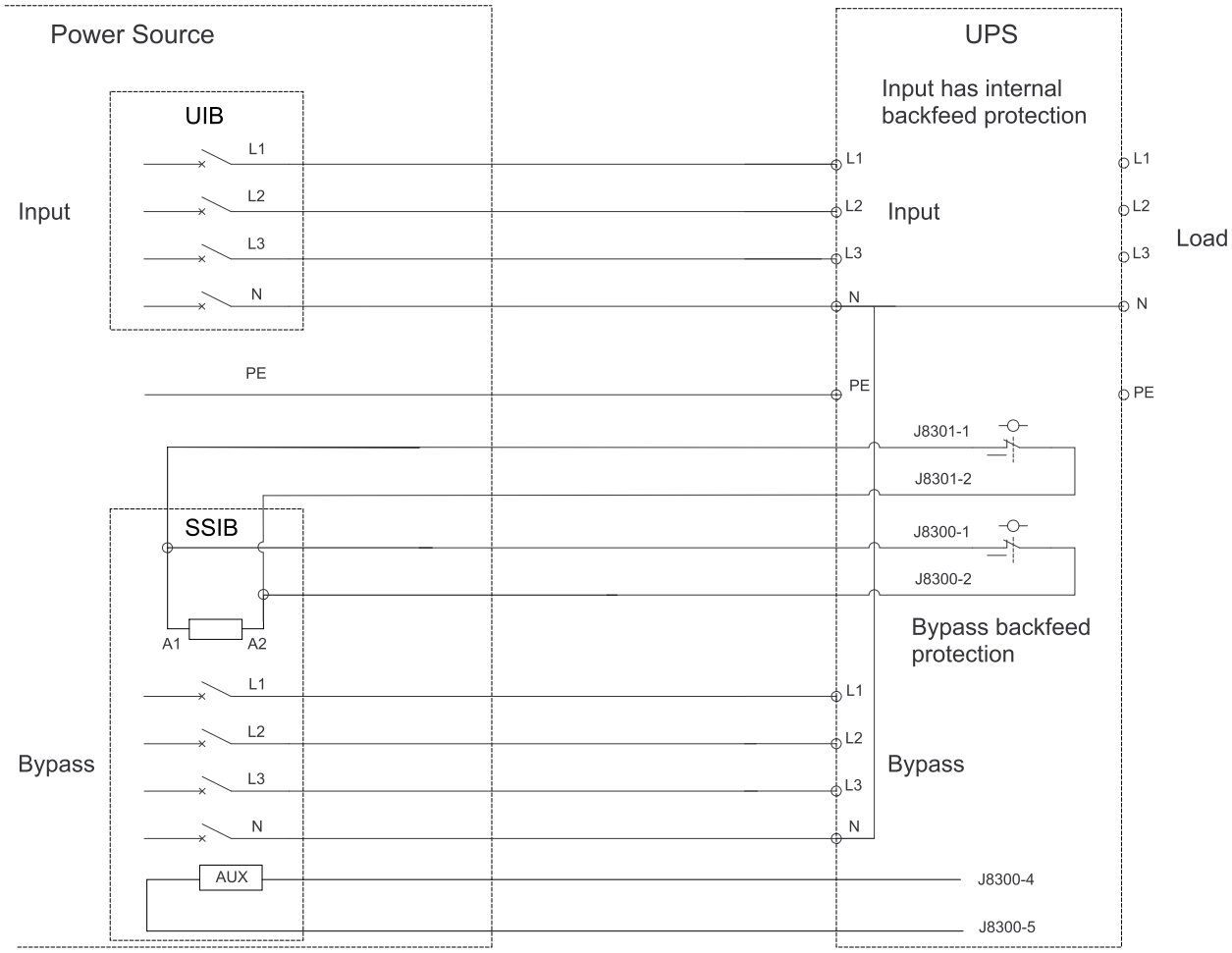
Risk of voltage backfeed. Before working on this circuit: Isolate the UPS and check for hazardous voltage between all terminals including the protective earth.

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

UPS and Third Party Backfeed Protection – Single Mains



UPS and Third Party Backfeed Protection – Dual Mains

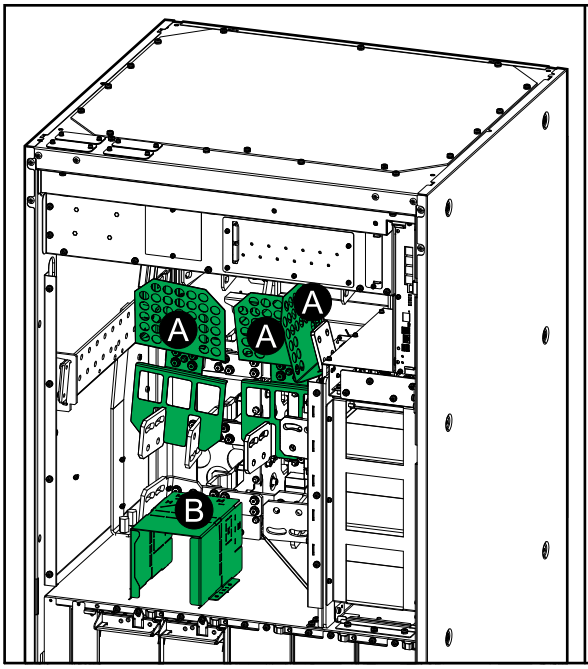


Final installation

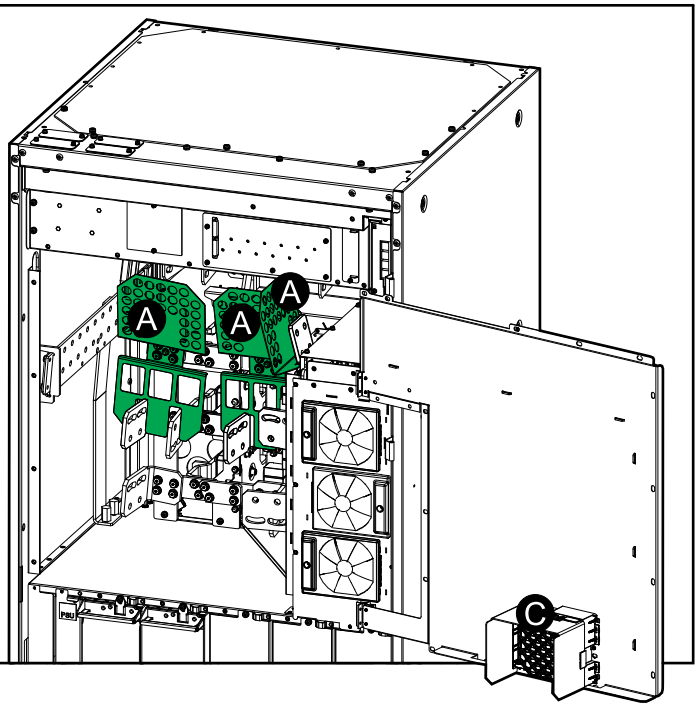
1. Verify that the transparent plastic protectors (marked (A) on the illustration) and the plastic box (marked (B) on the illustration) removed in Connect Power Cables in the UPS in System up to 45 kAIC/kA Icw, page 88 or Connect Power Cables in the UPS in System over 45 kAIC/kA Icw, page 83 have been reinstalled in the original position.

   NOTE: On newer UPS models, the box (marked (C) on the illustration) is integrated in the inner door of the UPS instead of being a separate part.

Front View of the UPS Model with Separate Plastic Box



Front View of the UPS Model with the Box Integrated in the Inner Door



⚠CAUTION

RISK OF ARC FLASH AND OVERHEATING

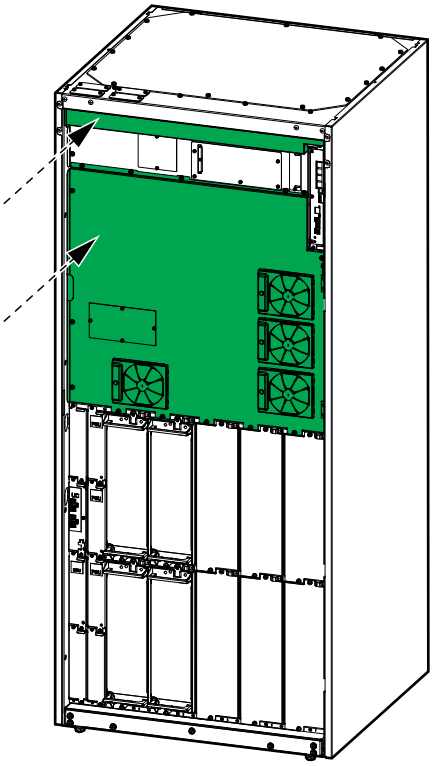
The transparent plastic protectors and the plastic box must be reinstalled in the original position after power cabling is completed. **Note:** On newer UPS models, the box is integrated in the inner door of the UPS instead of being a separate part.

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

2. Verify that the transparent protection cover on the external sync board 0P4809 (removed in Connect the Signal Cables for External Synchronization, page 103) has been reinstalled in its original position.
3. Clean/vacuum the UPS of any debris and foreign objects.
4. Close the inner door and fasten with screws.

5. Reinstall the cover over the signal connections.

Front View of the UPS



6. On the label 885-91896 on the front of the UPS, mark the short circuit rating relevant for this UPS system depending on installed auxiliaries and options.

   NOTE: The physical short circuit rating label on the UPS shows the exact short circuit rating options of the specific UPS. Values may vary for older UPS models.

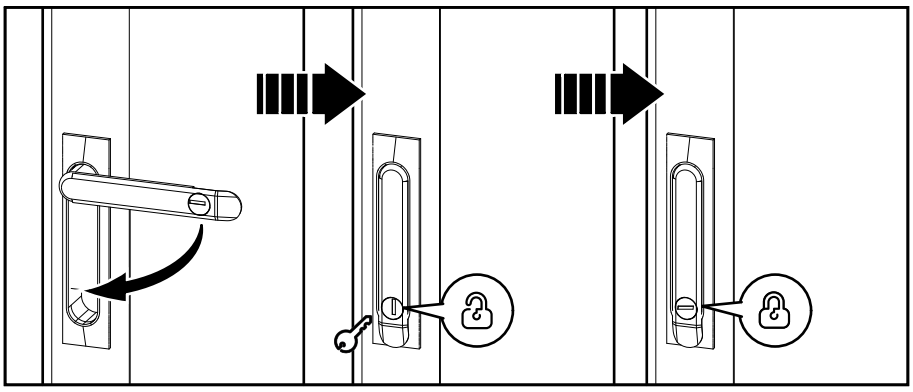
	65 kAIC/kA Icw (UPS alone)
	65 kAIC with GVLMBCA200K500G (UPS with maintenance bypass cabinet for UL)
	45 kAIC/kA Icw with GVBEC (UPS with bottom entry cabinet)
	65 kAIC/kA Icw with GVBEC (UPS with bottom entry cabinet and GVLOPT012)
	65 kAIC/kA Icc with GVLOPT003/GVLOPT004 installed (UPS with backfeed kit for UL/ backfeed kit for IEC installed)
	25 kA Icw with GVLMBCA200K500H (UPS with maintenance bypass cabinet for IEC)

7. **Only with GVLOPT011 ERMS door switch kit installed**:

   a. Verify that the upstream/downstream disconnect devices change to ERMS mode when the front door is opened and exit ERMS mode when the front door is closed.

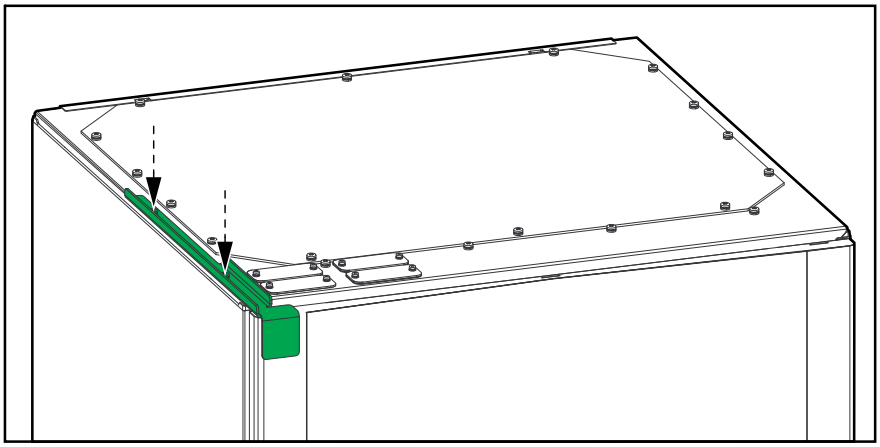
   b. Verify that the upstream/downstream disconnect devices' ERMS mode settings follow the instructions given for 'scenario 2' in Upstream and Downstream Protection for IEC Certified UPS (380/400/415/440/480 V), page 43 or Upstream Protection for UL Listed UPS (380/400/415/440/480 V), page 55.

8. Close the front door(s) and lock the handle with the provided key.



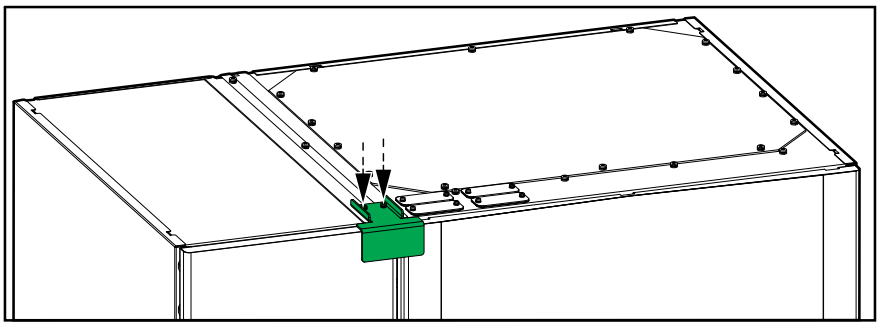
9. **Only for seismic anchoring**: Perform one of the following:
   – For UPS alone, install the provided seismic top bracket 870-18110 in the top left side of the UPS.

The UPS



   – For UPS with maintenance bypass cabinet or bottom entry cabinet, install the provided seismic top bracket 870-51238 between the two cabinets.

The Bottom Entry Cabinet/Maintenance Bypass Cabinet and the UPS



Decommission or Move the UPS to a New Location

⚠WARNING

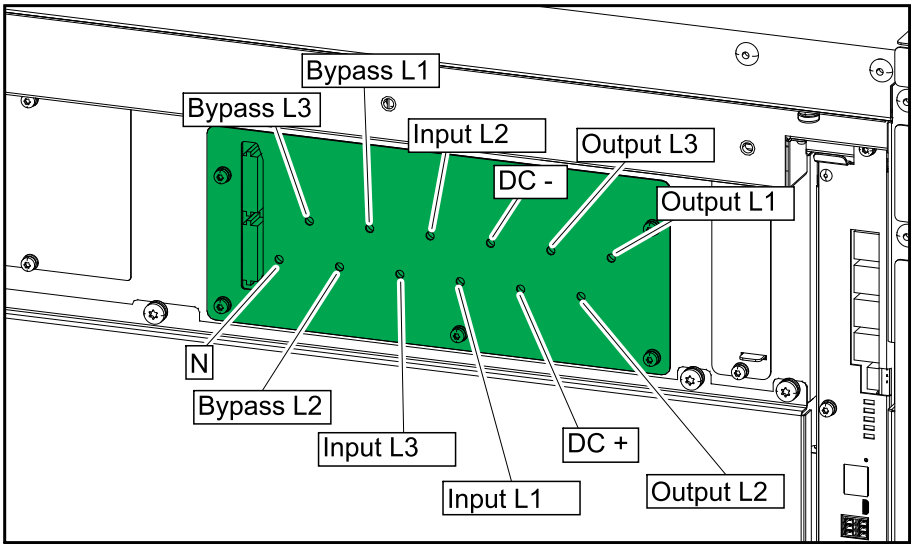
TIP-OVER HAZARD

- Read and apply user instructions before work.
- Secure the product in place.
- Secure the product if removing the securing bolts or moving the product.
- Use appropriate lifting equipment.
- Use trained personnel only who know and understand the user instructions.

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

1. Shut down the UPS completely – follow the instructions in the UPS operation manual.
2. Lockout/Tagout all disconnect devices in the maintenance bypass cabinet/the switchgear in the OFF (open) position.
3. Lockout/Tagout all battery disconnect devices 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 disconnect device BF2 in the OFF (open) position.
6. Measure for and verify ABSENCE of voltage with a multimeter probe through the holes in the transparent plate for input, bypass, output, neutral, and DC.

Front View of the UPS



7. Remove all power modules from the top row of the UPS:

⚠WARNING

TIP-OVER HAZARD

Do not remove any power modules from the bottom row of the UPS. This will make the UPS top-heavy and make it tilt more easily.

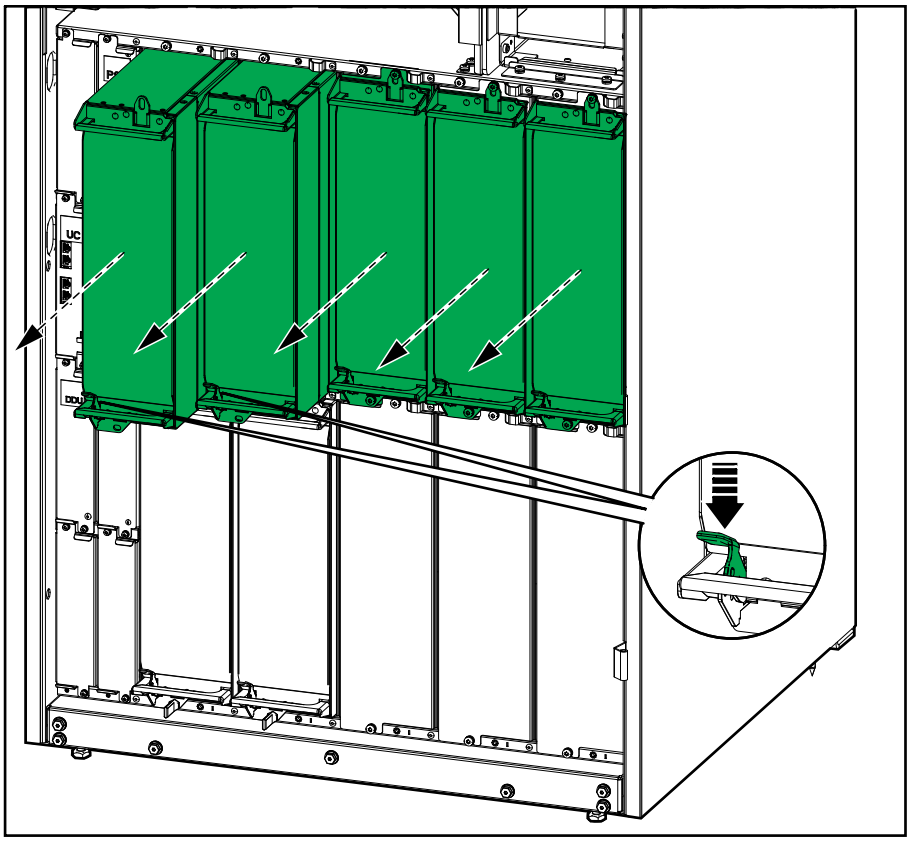
Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠CAUTION

HEAVY LOAD

Power modules are heavy (38 kg (83.77 lbs)) and require two persons to lift.

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



a. Remove the screws in the top and bottom of the power module and push the unlock switch.

b. Pull the power module halfway out. A locking mechanism prevents the power module from being pulled all the way out.

c. Release the lock by pressing the release button on the top of the power module and remove the power module.

d. Install a filler plate (if available) in front of the empty power module slot.

e. Store the power modules correctly until reinstallation.

⚠WARNING

RISK OF EQUIPMENT DAMAGE

- Store the power modules at an ambient temperature of -15 to 40 °C (5 to 104 °F), 10-80% non-condensing humidity.
- Store the power modules in their original protective packaging.

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

8. Open the inner door of the UPS.

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

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

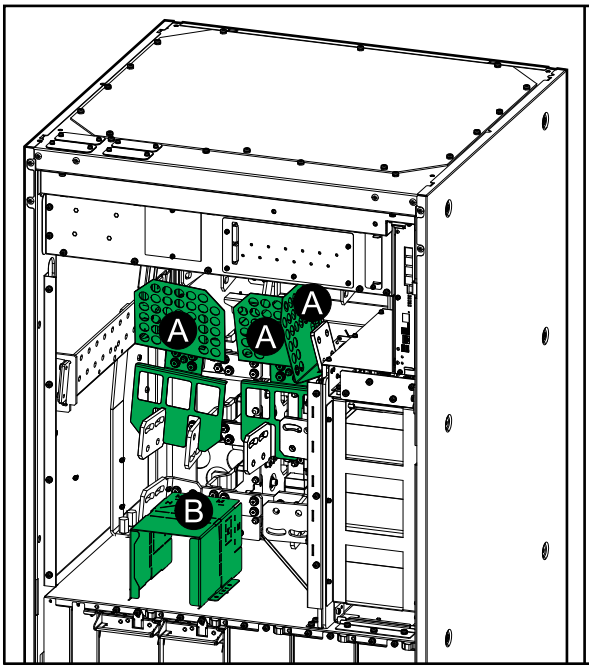
Measure for and verify ABSENCE of voltage on each input/bypass/output/neutral/DC busbar before continuing.

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

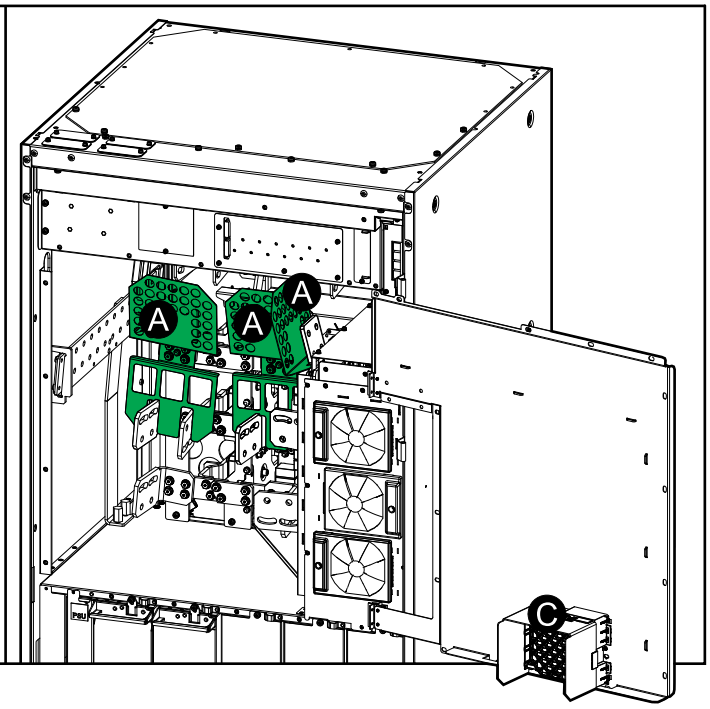
10. **For UPS system without maintenance bypass cabinet**: Perform the following steps.
    a. Remove the transparent plastic protectors from the busbars. Remove the plastic box for easier access. Save all parts for reinstallation after cable disconnection.

       NOTE: On newer UPS models, the box (marked (C) on the illustration) is integrated in the inner door of the UPS instead of being a separate part. The integrated box must not be removed from the inner door.

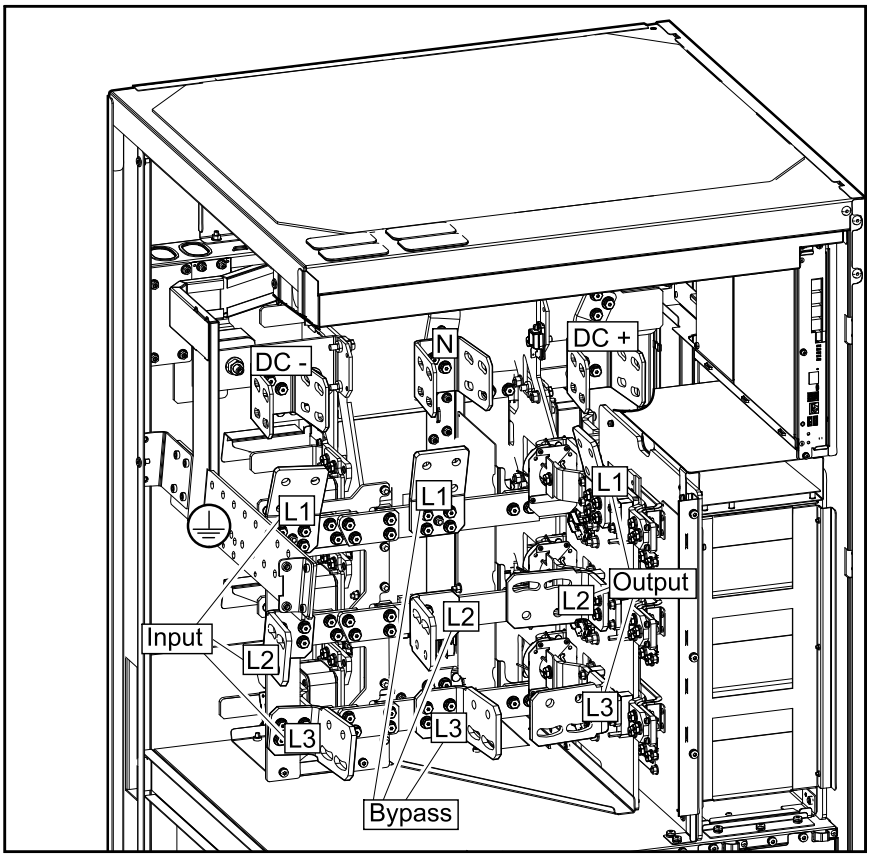
Front View of the UPS Model with Separate Plastic Box



Front View of the UPS Model with the Box Integrated in the Inner Door



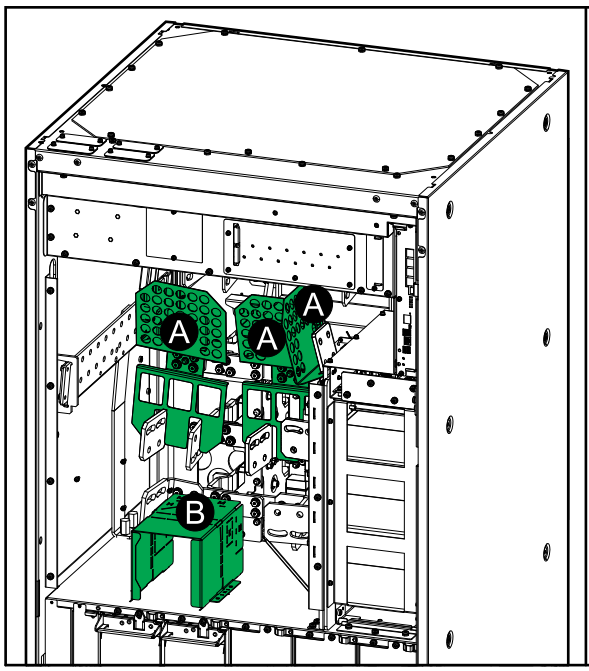
    b. Disconnect all power cables from the UPS.



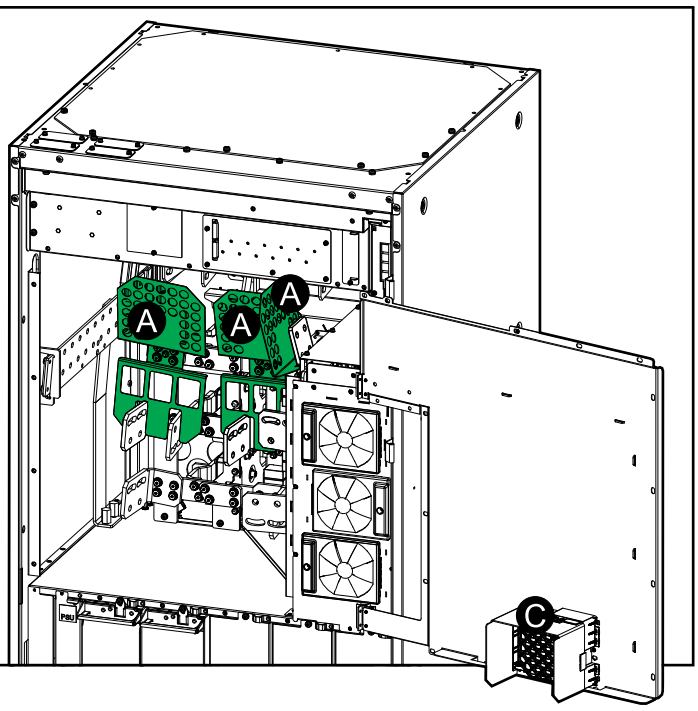
c. Reinstall the transparent plastic protectors (marked (A) on the illustration) and the plastic box (marked (B) on the illustration) in the original position.

NOTE: On newer UPS models, the box (marked (C) on the illustration) is integrated in the inner door of the UPS instead of being a separate part.

Front View of the UPS Model with Separate Plastic Box



Front View of the UPS Model with the Box Integrated in the Inner Door



⚠CAUTION

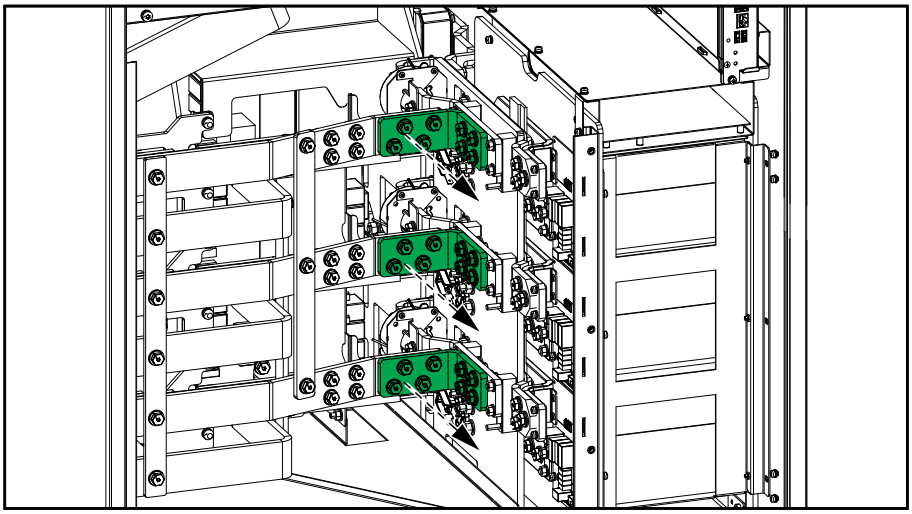
RISK OF ARC FLASH AND OVERHEATING

The transparent plastic protectors and the plastic box must be reinstalled in the original position after power cabling is completed. **Note:** On newer UPS models, the box is integrated in the inner door of the UPS instead of being a separate part.

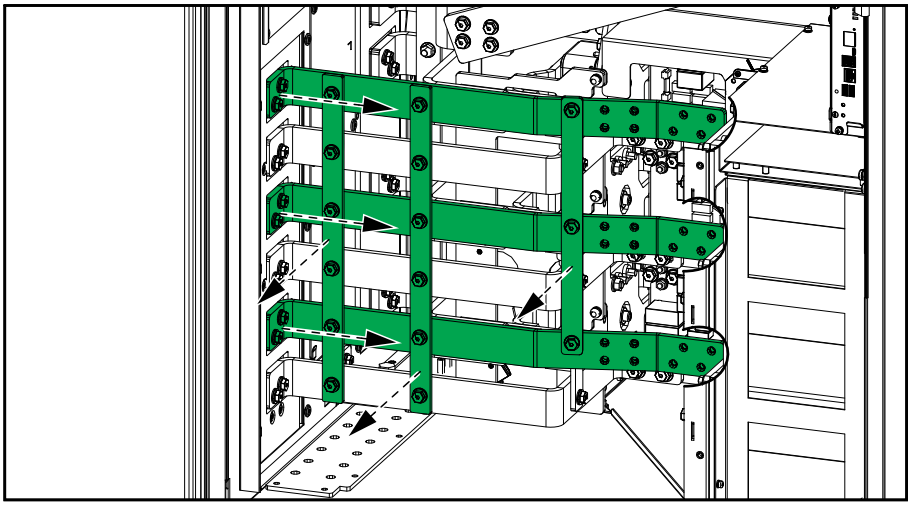
Failure to follow these instructions can result in injury or equipment damage.

11. **For UPS system with maintenance bypass cabinet**: Remove the busbars and insulator parts that connect the UPS to the maintenance bypass cabinet. Refer to the maintenance bypass cabinet installation manual for details. Save all parts for reinstallation.

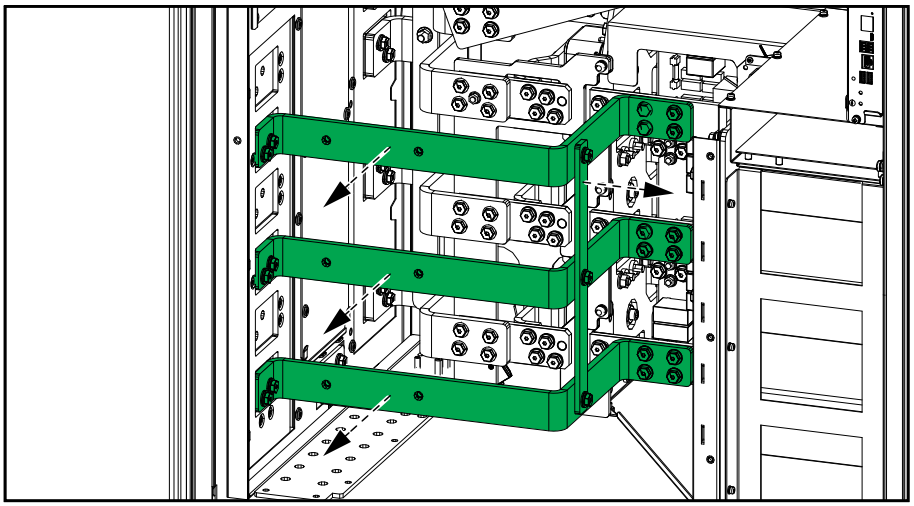
Front View of the UPS



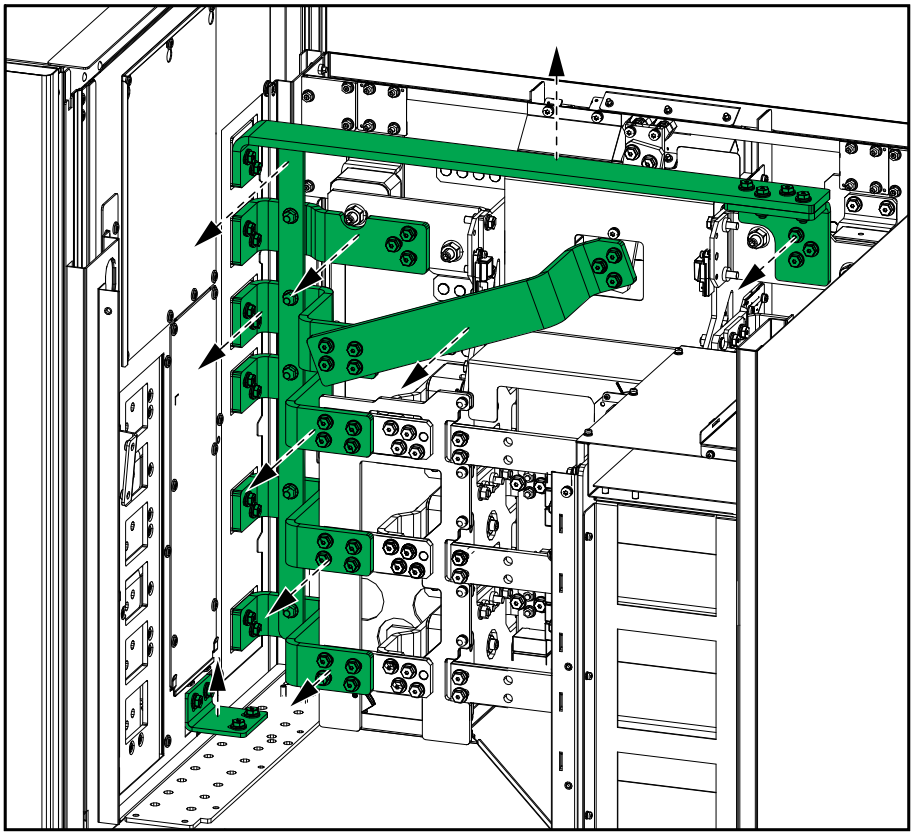
Front View of the UPS



Front View of the UPS

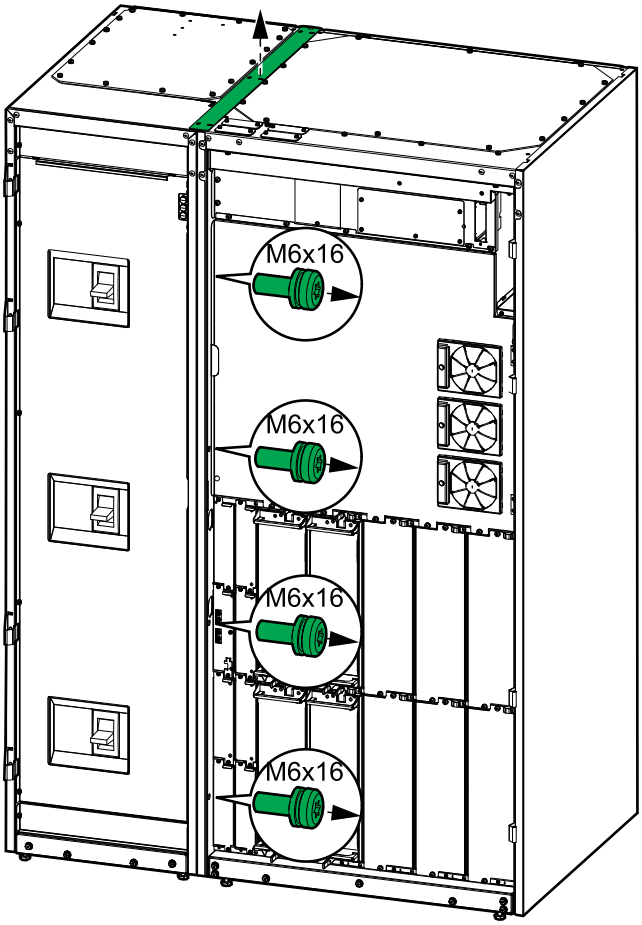


Front View of the UPS

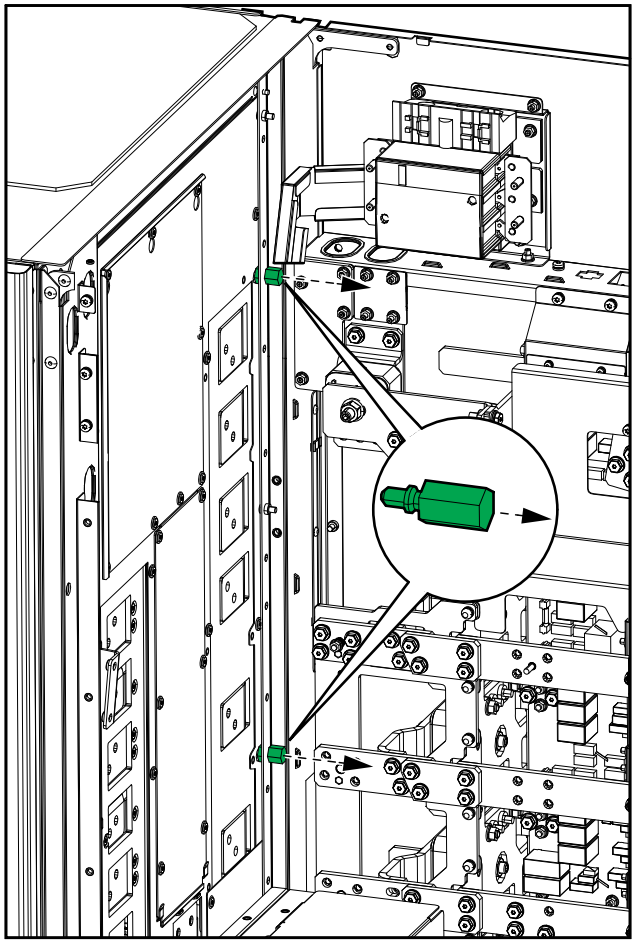


12. **For UPS system with maintenance bypass cabinet**: Remove the top bracket and the screws in the front that interconnect the UPS and the maintenance bypass cabinet externally. Remove the two special screws that interconnect the UPS and the maintenance bypass cabinet internally. Refer to the maintenance bypass cabinet installation manual for details. Save all parts for reinstallation.

Front View of the Maintenance Bypass Cabinet and the UPS



Inside View of the Maintenance Bypass Cabinet and the UPS



13. **If external sync is present**: Remove the transparent protection cover from the external synchronization board 0P4809. The external synchronization board 0P4809 is located on the rear of the front plate. Disconnect the signal cables from the external synchronization board 0P4809.

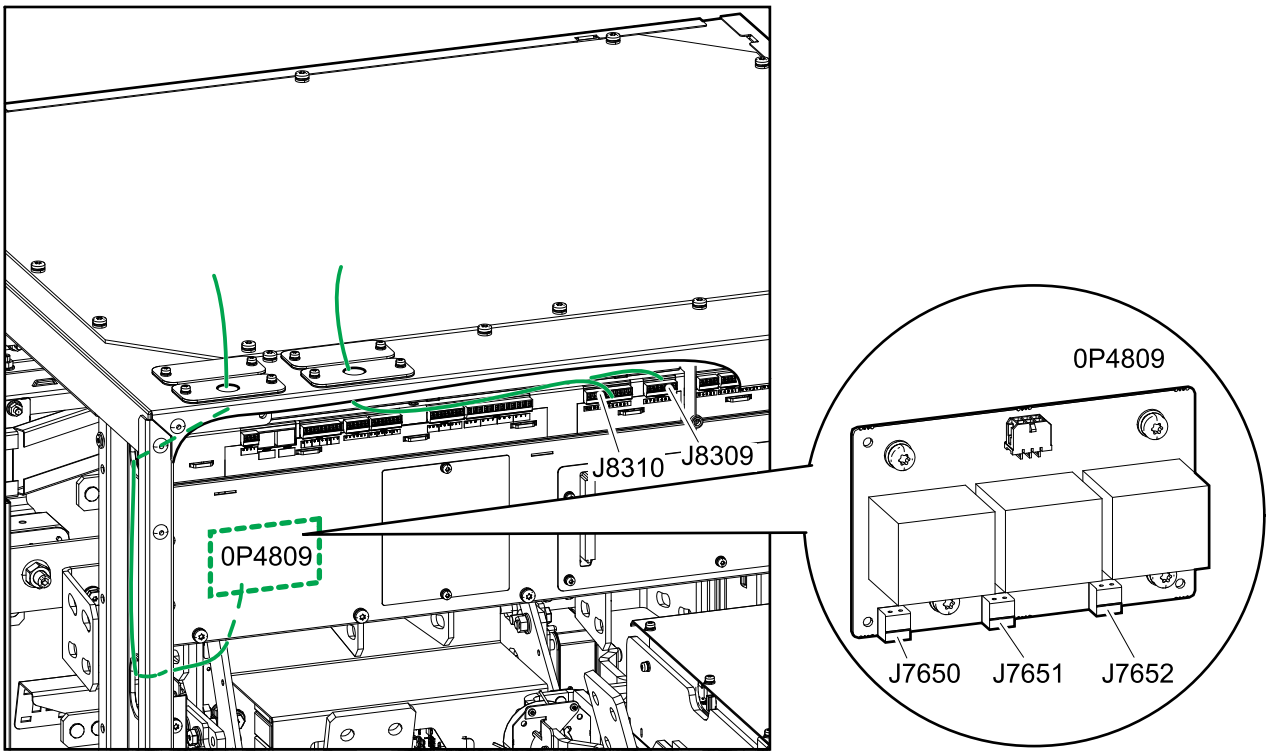
⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

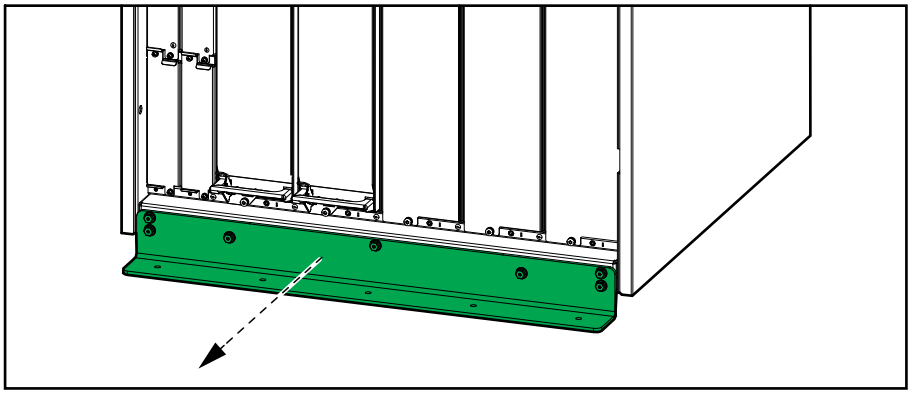
Check for absence of voltage for all three signal terminals on the external synchronization board 0P4809. When the external synchronization cables are installed, the terminals on the external synchronization board 0P4809 may be energized. Disconnect the fuse disconnector device at the source before removing the transparent protection cover.

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

Front View of the UPS



14. Close the inner door and reinstall the screws.
15. Disconnect and remove any signal cables from the UPS.
16. Remove the seismic front anchoring bracket/front transportation bracket from the UPS. Save for reinstallation.



17. Close and lock the front door.

18. Raise the feet of the UPS until the casters have full contact with the floor.
19. You can now move the UPS by rolling it over the floor on the casters.

⚠WARNING

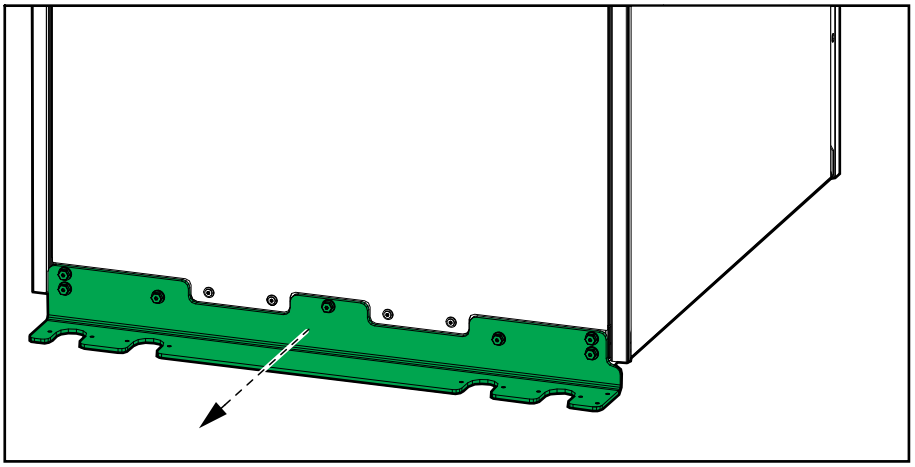
TIP-OVER HAZARD

- The casters of the UPS are exclusively for transport on flat, even, hard, and horizontal surfaces.
- The casters of the UPS 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 UPS.

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

20. If present, remove the rear seismic anchoring bracket from the UPS and remove the seismic anchors from the floor. Save for reinstallation.

Rear View



21. **For transport over longer distances or in conditions that are not suitable for the casters of the UPS**: Open the front door, remove all power modules from the bottom row of the UPS, close and lock the front door.

⚠WARNING

TOP-HEAVY CABINET

The UPS will be top-heavy with no power modules installed. Take appropriate precautions during handling and preparation for transport/ shipment.

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

⚠CAUTION

HEAVY LOAD

Power modules are heavy (38 kg (83.77 lbs)) and require two persons to lift.

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

⚠WARNING

RISK OF EQUIPMENT DAMAGE

- Store the power modules at an ambient temperature of -15 to 40 °C (5 to 104 °F), 10-80% non-condensing humidity.
- Store the power modules in their original protective packaging.

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

⚠WARNING

TIP-OVER 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 skill and have received adequate training;
- to use appropriate tools to safely lift and transport the UPS;
- 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.

Transportation requirements:

- Mount the UPS in a vertical position in the center of a suitable pallet with minimum pallet dimensions: 1000 mm x 1150 mm (39.4 in x 45.3 in)). The pallet must be suitable for the weight of the UPS (400 kg (882 lbs) with no power modules installed).
- Use appropriate means of fixation to mount the UPS to the pallet.
- The original shipping pallet in combination with the original transportation brackets can be reused, if in undamaged condition.

⚠DANGER

TIP-OVER HAZARD

- The UPS 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 UPS 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.

22. Perform one of the following:
    – Decommission the UPS, OR
    – Move the UPS to a new location to install it.

23. **Only for installing the UPS in a new location**: Follow the installation manual to install the UPS in the new location. See Installation Procedure for UPS, page 74 or Installation Procedure for UPS with Maintenance Bypass Cabinet, page 75 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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