

QTY	Type	MFG	Part
GEAR			
1		SEC-APC	GVL400K500DS Galaxy VL UPS 400 scalable to 500 kW, 400/480V, Start-up 5x8
1		SEC-APC	GVSOPT004 Kirk Key Kit for Maintenance Bypass Cabinet for Galaxy VS/VL
1		SEC-APC	GVLMBCA200K500G Galaxy VL Maintenance Bypass Cabinet with Backfeed, single unit, 200-500kW 400/415/480V
1		SEC-APC	EPW9 Emergency Power Off (EPO)
1		SEC-APC	QBATT-QASO85497-00 PRODUCT 3RD PARTY HARDWARE OTHER BMS FOR 3 STRINGS OF 40X 12V VRLA HARDWARE ONLY
1		SEC-APC	QBATGVL-QCBA37600-14 PRODUCT 3RD PARTY HARDWARE OTHER GVL BATTERY CABINET 10 MINUTE RUNTIME AT 400 KW
1		SEC-APC	QWINSTALL-QBED33819-00 PRODUCT PROFESSIONAL SERVICES OTHER BTECH SERVICES
1		SEC-APC	QWSRV-QMJE47044-00 PRODUCT GALAXY VL 400KVA 24 HOUR LOAD BANK WITH BURN IN AND BATTERY DISCHARGE
1		SEC-APC	WUPGEAA-UG-03 1 Yr EAA Prevent Svc Upgrade to FW or Existing Svc Plan for (1) 3P UPS 151 to 500kVA
1		SEC-APC	WAOT-VL-00 Advanced Operator Training for Galaxy VL
1		SEC-APC	WASSEM-VL-MBC Assembly Service 5X8 for (1) Galaxy VL Maintenance Bypass Cabinet
1		CPS	QWPRJ-QBED63957-00 PRODUCT PROFESSIONAL SERVICES OTHER THIRD PARTY PROJECT MANAGEMENT
FR			
1		CPS	FREIGHT TO ZIP 71110 Freight Estimate #98581842



Galaxy VL

First class power protection in your data center:
Superior availability, innovation, and sustainability
200-500 kW (400 V / 480 V)



se.com/ups

Life Is On

Schneider
Electric

Technical specifications

Galaxy VL	Features
Nominal power rating (kVA = kW)	200, 300, 400, 500
Scalability	From 200 kW to 500 kW with 50 kW power module increments
N+1 power ratings	Up to 450 kW N+1
Technical rating	500 kW
Topology	On-line double conversion, UL-verified eConversion
Key features	
Modular design	Power module, control module, power supply unit
Third-party verified Live Swap	Power Module
Display	7-inch color touch display, mimic diagram on display
Cabinet Type	Standalone, White (RAL9003)
Efficiency	
Double conversion mode	> 97%
eConversion mode	Up to 99%
ECO mode	Up to 99%
Input	
Rated voltage	380/400/415/440/480 VAC
Input voltage range (phase to phase)	331-552 V
Single mains/dual mains	Single mains as standard. Easily converted to dual mains.
Input current total harmonic distortion (THDI)	<3%
Input power factor	>0.99 at load >25%
Cable entry	Top as standard. Optionable bottom cable entry cabinet available.
Input backfeed protection	Input backfeed protection: Included. Bypass backfeed protection: External or internal with kit.
Maximum short-circuit rating	65 kA Icw
Output	
Nominal output voltages	380/400/415/440/480 VAC
Load power factor	PF=1 @ 40 °C (104 °F) without derating
Voltage regulation	+/- 1% (symmetrical load)
Frequency	50/60Hz +/-0.1% free running
Overload normal operation	1 min @ 150%; 10 min @ 125% (110% continuous at 30 °C (86°F))
Overload battery operation	1 min @ 125%
Output THDU on linear load	<1%
Output THDU on non-linear load	<3%
Output Voltage classification	VFI-SS-111

Preliminary specifications – can be subject to changes.

*Contact your local representative for availability

**Contact your sales representative for any custom-built requirements

Galaxy VL	Features
Paralleling	
Parallel capability	Parallelable for capacity (3 MW) or redundancy (2.5 MW N+1)
Batteries	
Battery type	VRLA/Lithium-Ion/NiCad
DC Bus/Number of VRLA battery blocks	480-576 V (40-48 blocks)
Float Voltage, 2.27 V/cell	545-654 V
Backup time	5 minutes to 1 hour (longer runtime available*)
Maximum charging power (0-40% load)	80%
Maximum charging power (100% load)	20%
Number of supported battery breakers	4
Breaker trip function	UV coil on the battery breaker
Temperature compensation	-3.3 mV/°C/cell, for T >= 25 °C 0 mV/°C/cell, for T < 25 °C
Maximum short-circuit level	30 kA
Battery test	Manual/automatic (selectable)
Battery runtime estimation	Yes
Battery deep discharge protection	Yes
Environment	
Operating temperature	0-40 °C without rating
Storage temperature	-25 ° to 55 °C (-13-131 °F)
Humidity	0% to 95%
Elevation/altitude	1000m 100% load up to 3000m with derating
Audible noise at 100% load	400 V: 69.5 dB; 480 V: 68 dB
IP level (Ingress Protection)	IP20
Dust	Supports harsh environments Pollution degree 2 (IEC 62040). Air filter included.
Conformance coating	On PCBA
Dimensions	
200-500kW UPS (HxWxD)	1970 x 850 x 925 mm (77.6 x 33.5 x 36.4 in)
Weight	200 kW UPS: 495 kg (1091 lb); 500 kW UPS: 720 kg (1587 lb)

Options and accessories	
Lithium-ion battery cabinet	Parallel communications kit
Maintenance bypass cabinet	Network management card
Bottom cable entry cabinet	Internal backfeed kit
Battery breaker kit	Kirk key kit (480 V)*
Air filter kit	600 V:480 V transformer cabinet (Canada)
Seismic kit	Classic battery cabinet (400 V)*
Common VRLA battery bank	Battery breaker box (400 V)*
Remote alarm panel	

Schneider Electric

Galaxy VL

Data Center Grade 3-Phase Uninterruptible Power Supply
3 × 480 V UPS - Guide Specifications
200 kW to 500 kW UPS

SECTION [26 33 63] [16611]

SOLID STATE UNINTERRUPTIBLE POWER SUPPLY

Part 1 GENERAL

1.1. Related documents

- A. Drawings and general provisions of the Contract, including General Conditions, [Division 01 GENERAL REQUIREMENTS] [Division 1 GENERAL REQUIREMENTS], and other applicable specification sections in the Project Manual apply to the work specified in this Section.

1.2. Summary

- A. **Scope:** Provide design and engineering, labor, material, equipment, related services, and supervision required, including, but not limited to, manufacturing, fabrication, erection, and installation for a solid state uninterruptible power supply (UPS) as required for the complete performance of the work, and as shown on the Drawings and as herein specified.
- B. **Section includes:** This specification describes a three-phase, on-line, continuous operation, solid state uninterruptible power supply (UPS). The UPS shall operate as an active power control system, working in conjunction with the building electrical system to provide power conditioning and on-line power protection for the critical loads.

1.3. References

- A. **General:** The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only. The edition/revision of the referenced publications shall be the latest date as of the date of the Contract Documents, unless otherwise specified.
- B. **International Organization for Standardization (ISO):**
 - 1. ISO 9001, "Quality Management Systems - Requirements."
 - 2. ISO 14001, "Environmental Management Systems - Requirements With Guidance for Use"
- C. **National Electrical Manufacturers Association (NEMA):**
 - 1. NEMA PE 1, " Uninterruptible Power Systems (UPS) - Specification and Performance Verification"
- D. **National Fire Protection Association (NFPA):**
 - 1. NFPA 70, "National Electrical Code" (copyrighted by NFPA, ANSI approved) - hereafter referred to as NEC
- E. **Underwriters Laboratories, Inc. (UL):**
 - 1. UL 1778, 5th edition, "Standard for Uninterruptible Power Supply Equipment" (copyrighted by UL, ANSI approved)
 - 2. UL 891, "Standard for Dead-Front Switchboards" (copyrighted by UL, ANSI approved)
 - 3. UL 1558, "Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear"
- F. **International Electrical Commission (IEC):**
 - 1. IEC 62040-1: 2008 (First Edition) + Am 1: 2013 "General and safety requirements for UPS"

2. IEC 62040-2: 2006 Category C2, "Electromagnetic compatibility (EMC) requirements"
 3. IEC 62040-3, "Uninterruptible Power Systems - Method of Specifying the Performance and Test Requirements"
- G. **FCC**
1. FCC part 15 Subpart B Class A.

1.4. Submittals

- A. **Proposal Submittals:**
1. System bill of materials (level one).
 2. Product technical specifications or equipment brochures.
 3. Product specifications.
 4. System operation diagram.
 5. Installation manual.
 6. Drawings for requested optional accessories.
- B. **Delivery Submittals:**
1. Installation manual, which includes unpacking and installation of all systems.
 2. Operation manual, which includes start-up and operating instructions.

1.5. Quality assurance

- A. **Qualifications**
1. **Manufacturer experience:** The manufacturer shall have a minimum of 20 years experience in the design, manufacture, and testing of UPS systems.
 2. **ISO 9001 Certification:** The manufacturer shall be ISO 9001 & 14001 certified. Certification assures that the vendor's quality control & environmental measures have been certified by an accredited registrar and meet internationally recognized standards.
 3. **Installer Qualifications:** Installer shall be a firm that shall have a minimum of five years of successful installation experience with projects utilizing solid state UPS similar in type and scope to that required for this Project.
- B. **Factory testing**
Prior to shipment the manufacturer shall complete a documented test procedure to test functions of the UPS module and batteries (via a discharge test), when supplied by the UPS manufacturer, and warrant compliance with this Section.
- C. **Pre-installation conference**
Conduct pre-installation conference in accordance with [Section 01 31 19 PROJECT MEETINGS] [Section 01200 PROJECT MEETINGS]. Prior to commencing the installation, meet at the Project site to review the material selections, installation procedures, and coordination with other trades. Pre-installation conference shall include, but shall not be limited to, the Contractor, the Installer, and any trade that requires coordination with the work. Date and time of the pre-installation conference shall be acceptable to the Owner and the Architect/Engineer.
- D. **Source responsibility**
Materials and parts comprising the UPS shall be new, of current manufacture, and shall not have been in prior service, except as required during factory testing. Active electronic devices shall be solid state and shall not exceed the manufacturer's recommended tolerances for temperature or current to ensure maximum reliability. Semiconductor devices shall be sealed. Relays shall be provided with dust covers. The manufacturer shall conduct inspections on incoming parts, modular assemblies, and final products.

1.6. Delivery, storage, and handling

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and lot number, if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

- C. Products shall be packaged in a manner to prevent penetration by debris and to allow safe delivery by modes of ground transportation and air transportation where specified.
- D. Prior to shipping, products shall be inspected at the factory for damage.
- E. Equipment shall be protected against extreme temperature and humidity and shall be stored in a conditioned or protected environment.
- F. Equipment containing batteries shall not be stored for a period exceeding three months without powering up the equipment for a period of eight hours to recharge the batteries.

1.7. **Project conditions**

Do not install the solid state UPS until space is enclosed and weatherproof, wet work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

A. **Environmental requirements**

1. Ambient temperature:
 - a. Storage ambient temperature: -25 °C to 55 °C (-13 °F to 131 °F).
 - b. Operating ambient temperature: 0 °C to 40 °C (32 °F to 104 °C) without load derating.
2. Relative humidity:
 - a. Storage relative humidity: 10 to 80% non-condensing.
 - b. Operating relative humidity: 0 to 95%, non-condensing.
3. Altitude:
 - a. Storage altitude: 0 to 15000 m above sea level.
 - b. Operation altitude - elevation derating according to ANSI C57.96-1999:
 - 1) Forced air cooling:
 - a) Up to 1000 m (3300 ft): 1.000
 - b) Up to 1500 m (5000 ft): 0.975
 - c) Up to 2000 m (6600 ft): 0.950
 - d) Up to 2500 m (8300 ft): 0.925
 - e) Up to 3000 m (10000 ft): 0.900
 - 2) Convection cooling:
 - a) Up to 1000 m (3300 ft): 1.000
 - b) Up to 1500 m (5000 ft): 0.985
 - c) Up to 2000 m (6600 ft): 0.970
 - d) Up to 2500 m (8300 ft): 0.955
 - e) Up to 3000 m (10000 ft): 0.940

1.8. **Warranty**

- A. **General:** See [Section 01 77 00 - CLOSEOUT PROCEDURES]
[Section 01770 - CLOSEOUT PROCEDURES].
- B. **Special Warranty:** The Contractor shall warrant the work of this Section to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for period indicated below. This special warranty shall extend the one-year period of limitations contained in the General Conditions. The special warranty shall be countersigned by the Installer and the manufacturer.
 1. **UPS:** The UPS shall be covered by a full parts and labor warranty from the manufacturer for a period of 12 months from date of installation or acceptance by the Owner or 18 months from date of shipment from the manufacturer, whichever occurs first.
 2. **Battery:** The battery manufacturer's warranty shall be passed through to the final Owner and shall have a minimum period of one year.
- C. **Additional Owner Rights:** The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

Part 2 PRODUCT

2.1. Manufacturer

A. **Schneider Electric:** Galaxy VL. No substitutes will be considered.

OR

B. **Schneider Electric:** Galaxy VL or approved equal. However, if a brand other than Schneider is proposed, the decision of the Engineer shall be final and a "differentiation report" must be submitted. This report shall address each paragraph of the specification individually and list any difference from what is specified. If there are no differences, a report stating so shall be provided. If, after installation, omitted differences are found, the Contractor shall correct differences to the satisfaction of the Owner and Engineer or unsatisfactory equipment shall be removed and equipment acceptable to the Owner and Engineer shall be installed at no additional cost to the project. Also, make modifications to the facilities infrastructure as needed to accommodate the substitute, at no additional cost to the project. Examples of modifications include, but are not limited to the following:

1. Structural reinforcement to accommodate heavier equipment.
2. Increased sizes of circuit breakers, raceways, and wiring.
3. Larger back-up generators (including upgraded accessories and wiring) to avoid instability caused by most double conversion UPS systems.
4. Larger HVAC equipment (including duct work and wiring) to accommodate increased heat dissipation of less efficient UPS systems.

2.2. System description

A. General

1. The UPS shall be housed in a freestanding cabinet with casters. Maintenance shall be possible from the front.
2. The UPS shall be in a self-contained cabinet and shall be available in the following models:
 - a. Galaxy VL UPS 200 kW scalable to 500 kW, 400/480 V
 - b. Galaxy VL UPS 300 kW scalable to 500 kW, 400/480 V
 - c. Galaxy VL UPS 400 kW scalable to 500 kW, 400/480 V
 - d. Galaxy VL UPS 500 kW, 400/480V
3. Output power factor: 1.0.
4. Backfeed contactor included for input. Mandatory bypass backfeed protection must be implemented by:
 - a. Installation of upstream circuit breaker with shunt-trip connected to the UPS, or
 - b. Installation of optional breaker kit GVLOPT003, or
 - c. Installation of maintenance bypass cabinet GVLMBCA200K500G.
5. The UPS shall support installation with either 3-wire (L1, L2, L3, G) or 4-wire (L1, L2, L3, N, G). The supply for input and bypass must be solid-grounded WYE transformers. Delta input supply for either input or bypass is not permitted.
6. The UPS shall contain a static bypass switch and a display. The UPS shall be of the double conversion on-line topology with power factor corrected inputs.
 - a. The UPS shall be sized for 400 kVA/kW load.
 - b. The UPS battery shall be sized for 400KW at a power factor of 1.0 for ten minutes.
7. The UPS shall be using a modular design in which power functions, static bypass, and system control are embedded in modules for optimal MTTR.
8. The UPS shall have a maximum input short-circuit level of 65 kAIC.
9. The UPS shall be tested against EMC (electromagnetic compatibility) according to FCC part 15 Subpart B Class A.
10. There shall be no fuses on the bypass and the bypass I²t rating should be not less than 3.11MA²s.

B. System input

1. Nominal input voltage rating: 480 V 3-phase.
2. Input voltage window: 408 V to 552 V.

3. Input frequency range: 40-70 Hz.
 4. Input power factor:
 - a. 0.99 at load >25%
 - b. 0.95 at load >15%
 5. Total harmonic distortion: < 5%
- C. **System output**
1. Nominal output voltage rating: 480 V 3-phase.
 2. Output voltage tolerance:
 - a. +/- 1% for symmetrical loads.
 - b. +/- 3% for asymmetrical loads.
 3. Dynamic load response:
 - a. +/- 5% after 2 ms
 - b. +/- 1% after 50 ms
 4. Output frequency: 50 or 60 Hz.
 5. Output voltage harmonic distortion:
 - a. <1% at 100% linear load
 - b. <5% at 100% non-linear load
 6. Overload capability:
 - a. 150% for 1 minute (normal operation)
 - b. 125% for 10 minutes (normal operation)
 - c. 125% for 1 minute (battery operation)
 - d. 125% continuous (bypass)
 - e. 1000% for 60 ms (bypass)
 7. Output power factor: 1.0
 8. Audible noise at full load:
 - a. 62 dBA at 70% load
 - b. 68 dBA at 100% load

2.3. Operation Modes

- A. **Normal:** In double conversion operation, the UPS supports the load with conditioned power.
- B. **Battery:** If the utility/mains supply fails, the UPS transfers to battery operation and supports the load with conditioned power from the DC source.
- C. **Requested static bypass:** The UPS can be transferred to requested static bypass following a command from the display. During static bypass operation, the load is supplied from the bypass source. If a fault is detected, the UPS will transfer to normal operation or forced static bypass operation. If there is an interruption to the utility/mains power supply during requested static bypass operation, the system will transfer to battery operation.
- D. **Forced static bypass:** The UPS is in forced static bypass following a command from the UPS system or because the user has pressed the inverter OFF button on the UPS. During forced static bypass operation, the load is supplied directly by the bypass source.
- E. **External maintenance bypass:** When the maintenance bypass breaker (MBB) is closed in the external maintenance bypass panel/cabinet, the UPS transfers to external maintenance bypass operation. The load is supplied with unconditioned power from the bypass source. Service can be performed on the entire UPS during external maintenance bypass.
- F. **Static bypass standby:** The UPS enters static bypass standby if the UPS is prevented from entering forced static bypass and the other UPS units of the parallel system can support the load. In static bypass standby, the output of the specific UPS is off. The UPS automatically changes to the preferred operation mode when possible. Note: If the other UPS units cannot support the load, the parallel system enters forced static bypass. The UPS in static bypass standby will then transfer to forced static bypass.
- G. **ECO mode:** ECO mode allows the UPS to be configured to use requested static bypass, with the load supplied through the bypass, as the preferred operation mode under predefined circumstances. If a fault is detected (bypass voltage out of tolerance, output voltage out of tolerance, etc.), the UPS will immediately transfer to double conversion operation or forced static bypass. The main advantage of ECO mode is a reduction in the consumption of electrical power. In case of interruption to

the utility/mains supply, the UPS transfers to inverter operation for a continuous supply of the load. The batteries are charged when the UPS is in ECO mode.

- H. **ECONversion mode:** ECONversion allows the UPS system to supply the active part of the load through the static bypass. The inverter is kept running in parallel with the bypass source and supplies the reactive part of the load. The input power factor of the UPS is, regardless of the load power factor, maintained close to unity as the reactive part of the load is significantly reduced in the UPS input current. In case of an interruption to the utility/mains supply, the inverter immediately maintains the output voltage so that breaks or drops during the transfer from ECONversion mode are practically eliminated. The batteries are charged when the UPS is in ECONversion mode.

2.4. Components

A. Rectifier

1. The UPS shall include an active power factor corrected rectifier.
2. The input current limiter shall be designed to:
 - a. Fast battery recharge:
 - 1) 80% of the UPS output rating at <40% load
 - 2) 20% of the UPS output rating at 100% load
 - b. Provide regulation with input deviation of up/down to +/-15% of the nominal input voltage.
3. The battery charging shall keep the float voltage of:
 - a. 545 VDC for 40 blocks.
 - b. 654 VDC for 48 blocks.
4. The battery charging voltage shall be compensated against temperature variations (battery temperature compensation) to always maintain optimal battery float charging. Temperature compensation rate shall be 3.3 mV/degree/cell for ambient temperatures > 25 °C and 0mV/°C for ambient temperatures < 25 °C.
5. Input power factor shall be 0.98 lagging at 100% load without the use of passive filters. Rectifier shall employ electronic waveform control technology to maintain the current sinusoidal.
6. Pulse Width Modulation (PWM) current control shall be used. Digital Signal Processors (DSP) shall be used for all monitoring and control tasks. Analog control shall not be acceptable.

B. Inverter

1. The inverter shall consist of fast switching IGBTs.
2. The inverter shall be a 3-level hybrid inverter.
3. Inverter shall be PWM controlled using DSP logic. Analog control shall not be acceptable.
4. The inverter modules shall be rated for an output power factor at 1.0.
5. Nominal output voltage shall be 480 V 3-phase.

C. Static bypass switch

1. The static bypass switch shall consist of fully rated Silicon Controlled Rectifiers (SCRs). Partly rated SCRs with a wraparound contactor shall not be acceptable.
2. The static bypass switch shall automatically transfer the load to bypass supply without interruption after the logic senses one of the following conditions:
 - a. Inverter overload beyond rating.
 - b. Battery runtime expired and bypass available.
 - c. Inverter inoperable.
 - d. Control system inoperable.
3. The static bypass switch shall automatically retransfer from bypass to the inverter.
4. The inverter shall be active (on).
5. The static bypass switch shall be equipped with a manual means of transferring the load to bypass and back to inverter.

D. **Battery**

1. **General:** The UPS shall use an open cell, a valve-regulated sealed lead-acid heavy duty industrial battery or Lithium-ion battery, designed for auxiliary power service in a UPS application.
 - a. End of discharge voltage:
 - 1) 384 VDC for 40 blocks (full load).
 - 2) 420 VDC for 40 blocks (no load).
 - b. Battery charge current limit: The selection shall be made from the display. The battery charge current limit should be software and hardware current limit.
 - c. The battery charging circuit shall remain active when the PFC operates normally.
2. **Lithium-ion battery solution:**
 - a. The battery cabinet shall feature lightweight, compact, long-life Lithium-ion batteries which provide energy to support the load during a momentary loss of input power to the rectifier.
 - b. Each battery cabinet shall require front access only for installation, service, and maintenance.
 - c. Each battery cabinet shall feature a DC rated circuit breaker. The circuit breaker within the battery cabinet shall only provide protection to the battery string within that battery cabinet.
3. **Battery monitoring:**
 - a. Battery monitoring shall be provided at system level.
 - b. The UPS shall incorporate a battery capacity test that will determine the available runtimes.
 - c. The Lithium-ion battery solution shall communicate with the UPS via dry contacts.

2.5. **Mechanical**

- A. The UPS shall be housed in a freestanding cabinet with casters.
- B. Dust filter shall be available in two versions for different dust protection capabilities.
- C. The cable entry shall be from the top of the UPS. A bottom entry cabinet is available as an option.
- D. The cabling section shall be large enough to accept copper, copper-clad aluminum, and aluminum cables.
- E. The UPS shall have the following dimensions: 1970x850x925 mm (77.56x33.46x36.42 in) and shall meet an ingress level of minimum IP20.
- F. The UPS shall have a seismic kit option.

2.6. **Display, controls, and alarms**

- A. A color touch screen display shall be located on the front of the UPS.
- B. The following metered data shall be available on the display:
 1. Year, month, day, hour, minute, second of occurring events.
 2. Input voltage.
 3. Input current.
 4. Input frequency.
 5. Output voltage.
 6. Output current.
 7. Output frequency.
 8. Battery voltage.
 9. Battery current.
 10. Battery temperature.
 11. Energy monitoring.
- C. The display shall allow the user to display active alarms.
- D. The following controls or programming functions shall be accomplished by use of the display unit.
 1. Silence audible alarm.
 2. Set the alphanumeric display language.
 3. Display and set the date and time.
 4. Enable or disable the automatic restart feature.
 5. Transfer load to and from static bypass.

- 6. Test battery condition on demand.
- E. LEDs for indication of operation mode.
- F. Push button user controls:
 - 1. Inverter ON.
 - 2. Inverter OFF.
- G. For purposes of remote communications with the UPS, a network management card shall be integrated.

2.7. Accessibility

A. **Software and connectivity**

- 1. The Ethernet Web/SNMP Adaptor shall allow one or more network management systems (NMS) to monitor and manage the UPS in TCP/IP network environments. The management information base (MIB) shall be provided in MIB formats. The SNMP interface adaptor shall be connected to the UPS via the RJ45 serial port on the standard communication interface board.
- 2. The UPS shall offer a Modbus interface.
- 3. The UPS shall be equipped with eight dry contacts (four inputs, four outputs) for user-assignable alarms or remote monitoring.

B. **Remote UPS monitoring**

Three methods of remote UPS monitoring shall be available:

- 1. Smartphone application: With remote monitoring and live system status and remote alarms.
- 2. Web monitoring: Remote monitoring shall be available via a web browser such as Internet Explorer.
- 3. Simple Network Management Protocol (SNMP): Remote UPS monitoring shall be possible through a standard MIB II compliant platform.

C. **Software compatibility**

The UPS manufacturer shall have available software to support shutdown and or remote monitoring for the following systems.

Part 3 EXECUTION

3.1. Examination

- A. **Verification of conditions:** Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the Owner and the Architect/Engineer, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
 - 1. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

3.2. Installation

Preparation and installation shall be in accordance with reviewed product data, final shop drawings, manufacturer's written recommendations, and as indicated on the Drawings.

3.3. Manufacturer assisted start-up

A manufacturer assisted UPS start-up shall be available, manufacturer trained service personnel shall perform the following inspections, test procedures, and on-site training:

- A. **Visual Inspection:**
 - 1. Inspect equipment for signs of damage.
 - 2. Verify installation per manufacturer's instructions.
 - 3. Inspect cabinets for foreign objects.
 - 4. Inspect batteries.
- B. **Mechanical Inspection:**
 - 1. Check all UPS, external battery cabinets internal power wiring connections.
 - 2. Check all UPS, external battery cabinets terminal screws, nuts, and/or spade lugs for tightness.
- C. **Electrical Inspection:**
 - 1. Verify correct input and bypass voltage.
 - 2. Verify correct phase rotation of all mains connections.
 - 3. Verify correct UPS control wiring and terminations.
 - 4. Verify voltage of batteries.
 - 5. Verify neutral and ground conductors are properly landed.
- D. **Site Testing:**
 - 1. Ensure proper system start-up.
 - 2. Verify proper firmware control functions.
 - 3. Verify proper firmware bypass operation.
 - 4. Verify proper maintenance bypass switch operation.
 - 5. Verify system set points.
 - 6. Verify proper inverter operation and regulation circuits.
 - 7. Simulate input power failure.
 - 8. Verify proper charger operation.
 - 9. Document, sign, and date all test results.
- E. **On-Site Operational Training:** During the manufacturer assisted start-up, operational training for site personnel shall include LED indicators, start-up and shutdown procedures, maintenance bypass and AC disconnect operation, and alarm information.

3.4. Manufacturer field service

- A. **Worldwide service:** The UPS manufacturer shall have a worldwide service organization available, consisting of factory trained field service personnel to perform start-up, preventative maintenance, and service of the UPS system and power equipment. The service organization shall offer 24 hours a day, 7 days a week, 365 days a year service support.

3.5. Demonstration

Provide the services of a manufacturer-authorized service representative of the manufacturer to provide start-up service and to demonstrate and train the Owner's personnel.

- A. Test and adjust controls and safety. Replace damaged or inoperable controls and equipment.
- B. Train the Owner's maintenance personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing, and preventive maintenance.
- C. Review data in operation manual with the Owner's personnel.

3.6. Maintenance

- A. **Maintenance contracts:** A complete offering of preventative and full-service maintenance contracts for the UPS system and the battery system shall be available. All contract work shall be performed by Schneider Electric trained service personnel.
- B. The manufacturer shall, upon request, provide spare parts kits for the UPS module in a timely manner as well as provide access to qualified and trained service personnel to provide preventative maintenance and service on the UPS module when required.
- C. The UPS shall be repairable by replacing standard subassemblies requiring no adjustments.
- D. The UPS shall be designed to support power module insertion and removal in any mode of operation when performed by a qualified person following safety related work practices. A recognized accreditation laboratory shall certify basic touch compliance to IEC62040 & IEC60950 through all stages of the swap. A recognized accreditation laboratory shall witness arc flash incident energy exposure testing in compliance with UL RP 2986 and verify that the qualified person is not exposed to incident energies exceeding 1.2cal/cm² through all stages of the swap.
- E. UPS subassemblies shall be accessible from the front. UPS design shall provide maximum reliability and minimum MTTR (mean time to repair). To that end, the UPS shall be equipped with a self-test function to verify correct system operation. The self-test function shall identify the subassembly requiring repair in the event of an alarm condition. The electronic UPS control and monitoring assembly shall therefore be fully microprocessor-based, thus doing away with potentiometer settings. This shall allow:
 - 1. Auto-compensation of component drift.
 - 2. Self-adjustment of replaced subassemblies.
 - 3. Extensive acquisition of information vital for computer-aided diagnostics (local or remote).
 - 4. Socket connection to interface with computer-aided diagnostics system.

3.7. Training

UPS service training workshop: A UPS service training workshop shall be available from the UPS manufacturer. The service training workshop shall include a combination of lecture and practical instruction with hands-on laboratory sessions. The service training workshop shall include instruction about safety procedures, UPS operational theory, sub-assembly identification and operation, system controls and adjustment, preventative maintenance, and troubleshooting.

END OF SECTION

Galaxy VL

For UL

Technical Specifications

Latest updates are available on the Schneider Electric website
6/2023



Model List

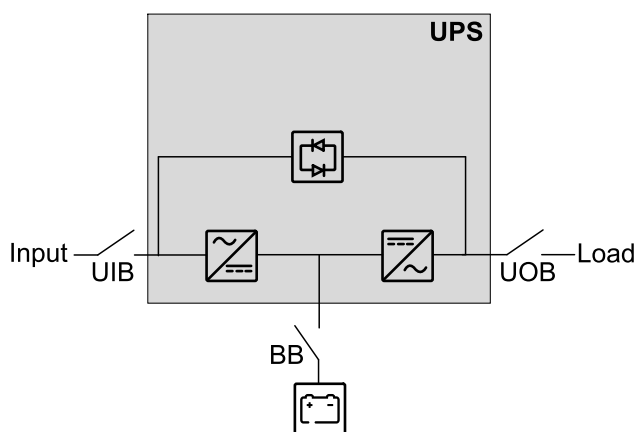


- Galaxy VL UPS 200 kW scalable to 500 kW, 400/480V, start-up 5x8 (GVL200K500DS)
- Galaxy VL UPS 300 kW scalable to 500 kW, 400/480V, start-up 5x8 (GVL300K500DS)
- Galaxy VL UPS 400 kW scalable to 500 kW, 400/480V, start-up 5x8 (GVL400K500DS)
- Galaxy VL UPS 500 kW, 400/480V, start-up 5x8 (GVL500KDS)

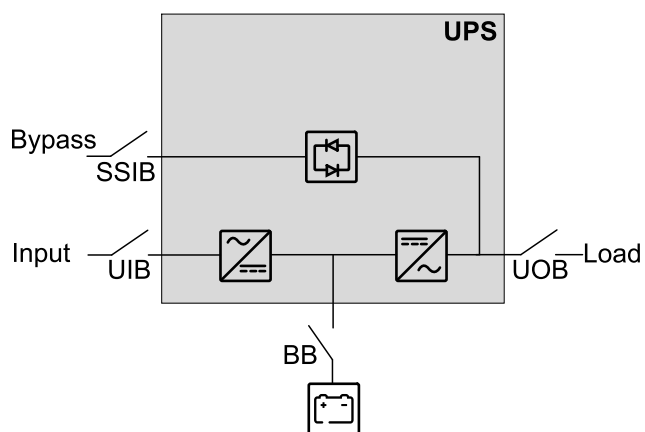
Single System Overview

UIB	Unit input breaker
SSIB	Static switch input breaker
UOB	Unit output breaker
BB	Battery breaker

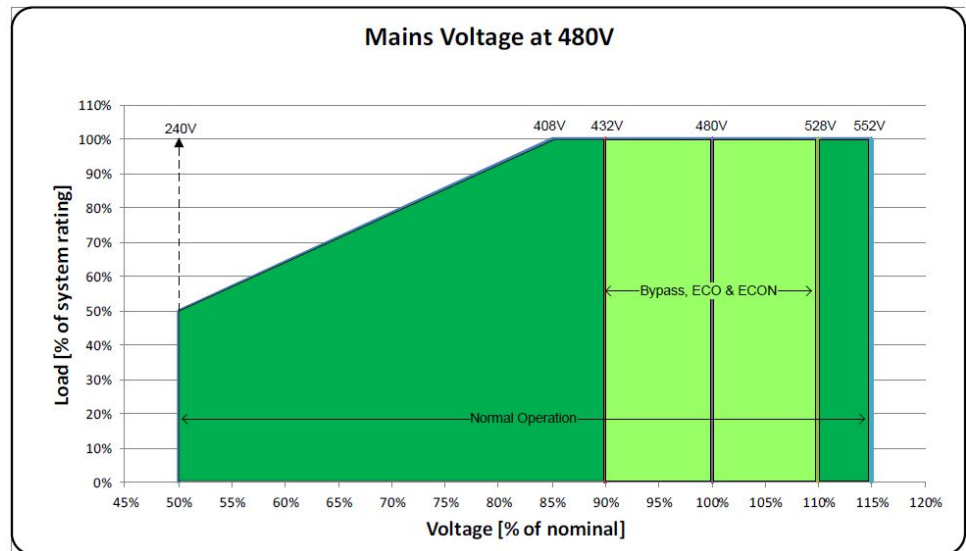
Single System – Single Mains



Single System – Dual Mains

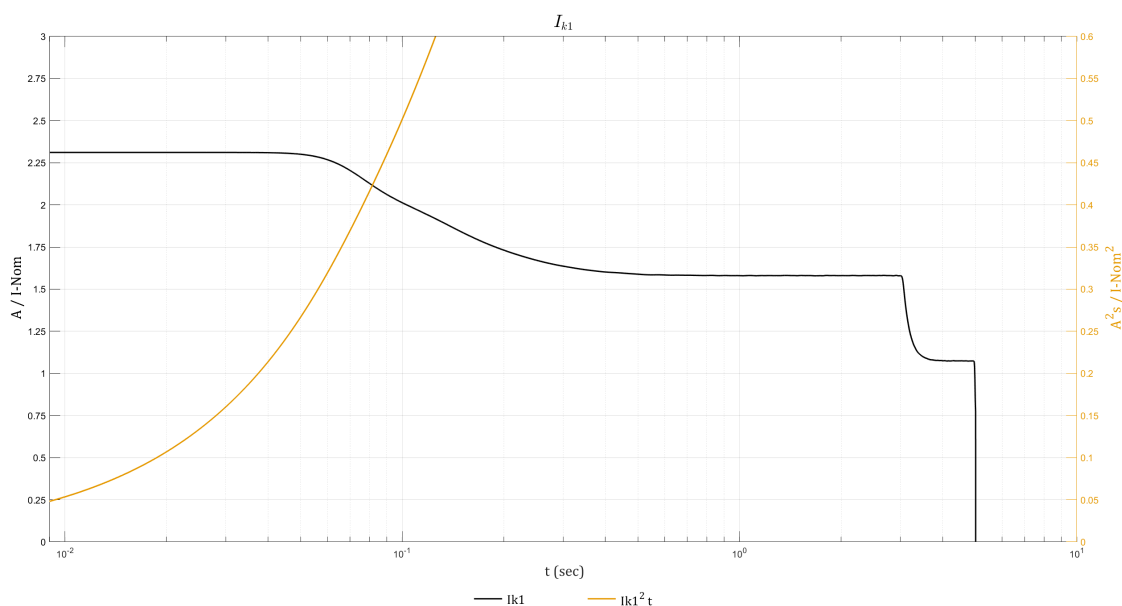


Input Voltage Window



Inverter Short Circuit Capabilities (Bypass not Available)

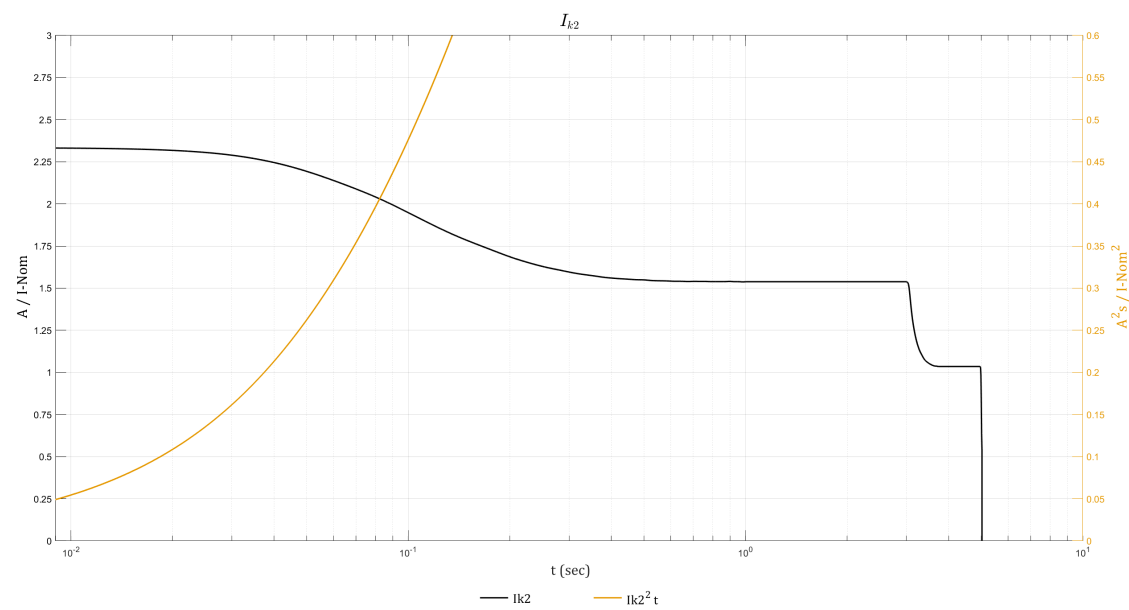
IK1 – Short Circuit between a Phase and Neutral



IK1 480 V

S [kVA]	10ms; $I[A]/I^2t [A^2t]$	20ms; $I[A]/I^2t [A^2t]$	30ms; $I[A]/I^2t [A^2t]$	100ms; $I[A]/I^2t [A^2t]$	1s; $I[A]/I^2t [A^2t]$
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

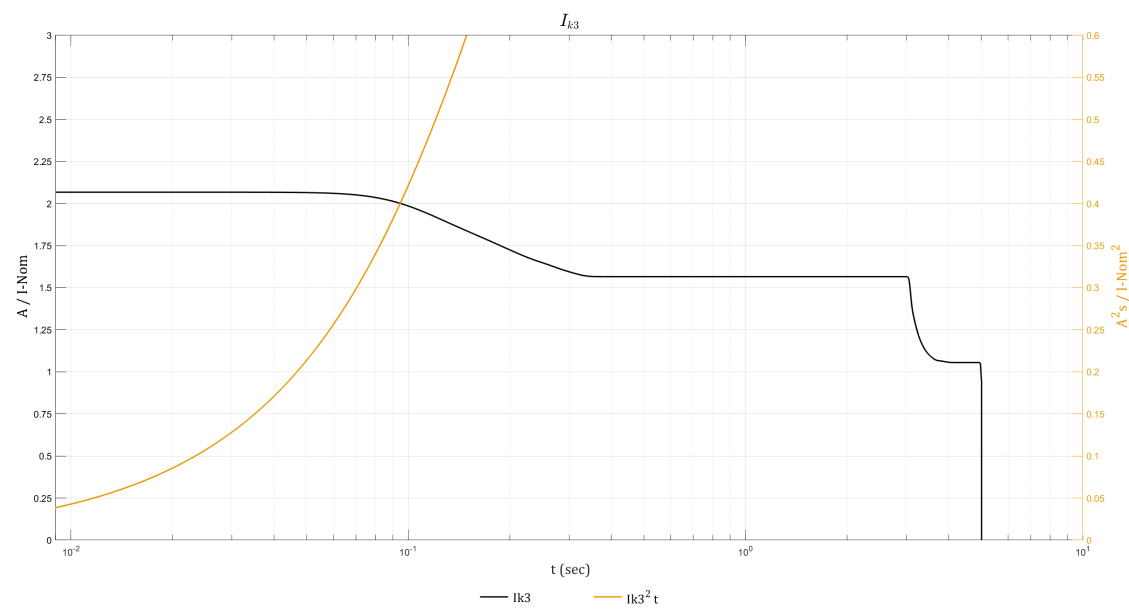
IK2 – Short Circuit between Two Phases



IK2 480 V

S [kVA]	10ms; I[A]/I ² t [A ² t]	20ms; I[A]/I ² t [A ² t]	30ms; I[A]/I ² t [A ² t]	100ms; I[A]/I ² t [A ² t]	1s; I[A]/I ² t [A ² t]
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 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

Efficiency for 480 V

200 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	96.3%	98.9%	98.1%	95.5%
50% load	97.2%	99.3%	98.9%	96.3%
75% load	97.3%	99.4%	99.2%	96.5%
100% load	97.2%	99.5%	99.3%	96.4%

250 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	96.4%	99.0%	98.1%	95.7%
50% load	97.2%	99.3%	98.9%	96.4%
75% load	97.3%	99.4%	99.2%	96.5%
100% load	97.2%	99.5%	99.3%	96.4%

300 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	96.4%	99.0%	98.1%	95.8%
50% load	97.2%	99.3%	98.9%	96.4%
75% load	97.3%	99.4%	99.2%	96.5%
100% load	97.2%	99.5%	99.3%	96.4%

350 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	96.4%	99.1%	98.2%	95.9%
50% load	97.1%	99.4%	98.9%	96.5%
75% load	97.3%	99.5%	99.2%	96.5%
100% load	97.2%	99.5%	99.3%	96.4%

400 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	96.4%	99.1%	98.2%	95.9%
50% load	97.1%	99.4%	98.9%	96.5%
75% load	97.3%	99.5%	99.2%	96.5%
100% load	97.2%	99.5%	99.3%	96.4%

450 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	96.4%	99.1%	98.2%	96.0%
50% load	97.1%	99.4%	99.0%	96.5%
75% load	97.2%	99.4%	99.2%	96.5%
100% load	97.1%	99.5%	99.3%	96.4%

Derating Due to Load Power Factor

0.5 leading to 0.5 lagging without derating.

UPS rating	UPS output									
	Lagging					Leading				
PF=1	PF=0.5	PF=0.6	PF=0.7	PF=0.8	PF=0.9	PF=0.9	PF=0.8	PF=0.7	PF=0.6	PF=0.5
200 kW/ kVA	200 kVA / 100 kW	200 kVA / 120 kW	200 kVA / 140 kW	200 kVA / 160 kW	200 kVA / 180 kW	200 kVA / 180 kW	200 kVA / 160 kW	200 kVA / 140 kW	200 kVA / 120 kW	200 kVA / 100 kW
250 kW/ kVA	250 kVA / 125 kW	250 kVA / 150 kW	250 kVA / 175 kW	250 kVA / 200 kW	250 kVA / 225 kW	250 kVA / 225 kW	250 kVA / 200 kW	250 kVA / 175 kW	250 kVA / 150 kW	250 kVA / 125 kW
300 kW/ kVA	300 kVA / 150 kW	300 kVA / 180 kW	300 kVA / 210 kW	300 kVA / 240 kW	300 kVA / 270 kW	300 kVA / 270 kW	300 kVA / 240 kW	300 kVA / 210 kW	300 kVA / 180 kW	300 kVA / 150 kW
350 kW/ kVA	350 kVA / 175 kW	350 kVA / 210 kW	350 kVA / 245 kW	350 kVA / 280 kW	350 kVA / 315 kW	350 kVA / 315 kW	350 kVA / 280 kW	350 kVA / 245 kW	350 kVA / 210 kW	350 kVA / 175 kW
400 kW/ kVA	400 kVA / 200 kW	400 kVA / 240 kW	400 kVA / 280 kW	400 kVA / 320 kW	400 kVA / 360 kW	400 kVA / 360 kW	400 kVA / 320 kW	400 kVA / 280 kW	400 kVA / 240 kW	400 kVA / 200 kW
450 kW/ kVA	450 kVA / 225 kW	450 kVA / 270 kW	450 kVA / 315 kW	450 kVA / 360 kW	450 kVA / 405 kW	450 kVA / 405 kW	450 kVA / 360 kW	450 kVA / 315 kW	450 kVA / 270 kW	450 kVA / 225 kW
500 kW/ kVA	500 kVA / 250 kW	500 kVA / 300 kW	500 kVA / 350 kW	500 kVA / 400 kW	500 kVA / 450 kW	500 kVA / 450 kW	500 kVA / 400 kW	500 kVA / 350 kW	500 kVA / 300 kW	500 kVA / 250 kW

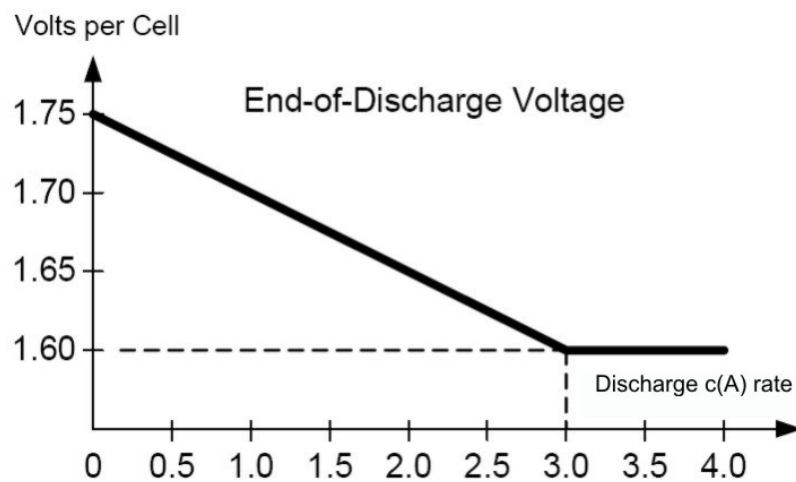
Batteries

Common Battery

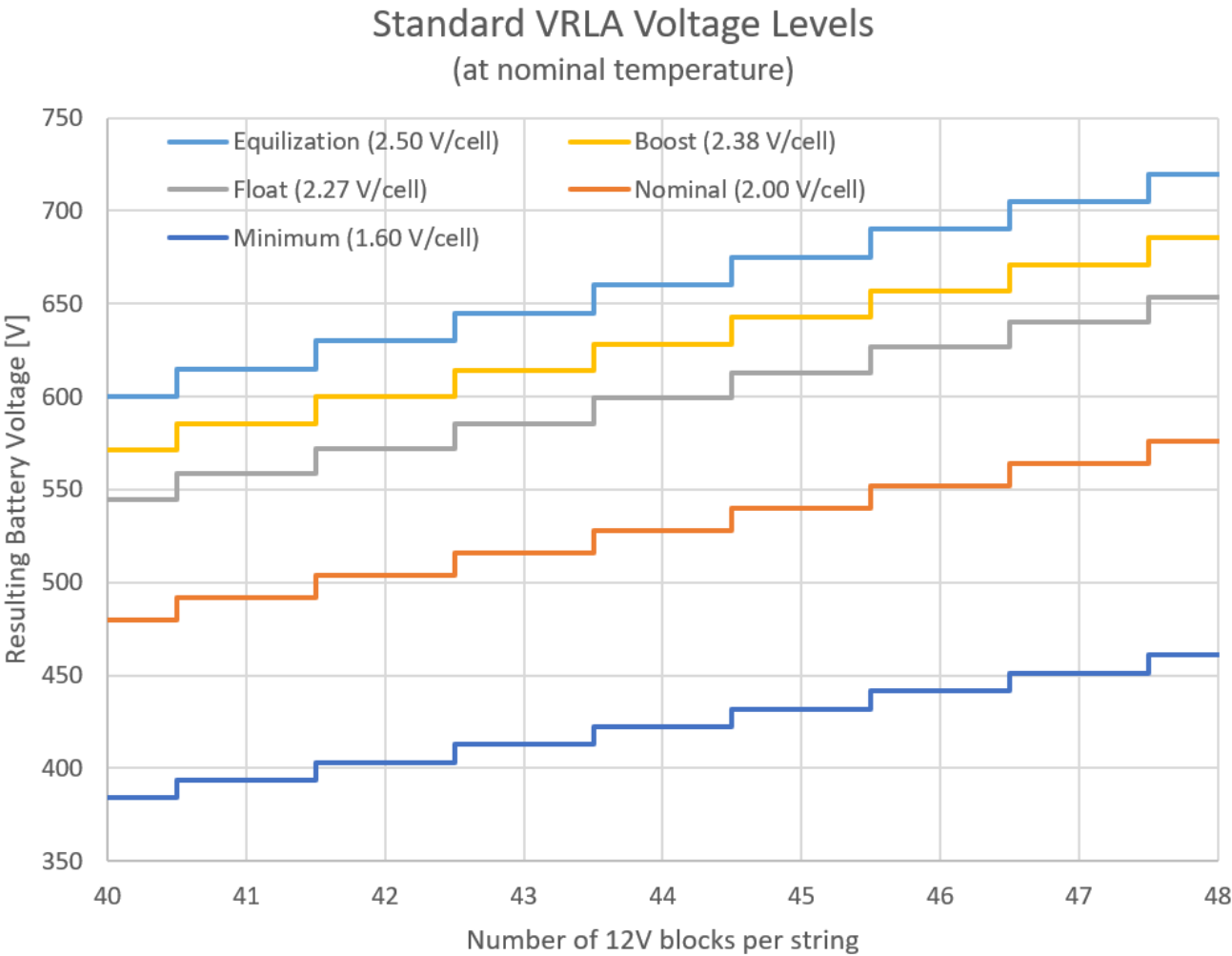
For parallel UPS systems, simplified common battery configuration (VRLA/Lithium-ion) is supported.

End of Discharge Voltage

The voltage is 1.6 to 1.75 per cell depending on discharge ratio.



Standard VRLA Voltage Levels



NOTE: Specific configurations may differ from the general constraint shown above.

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.
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 ¹	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

Regional Seismic Compliance

Certificate available upon request.

Country/Region	Code ID	Hazard level ground	Hazard level roof
Argentina	INPRES-CIRSOC103	Zone 4	Zone 4
Australia	AS 1170.4-2007	Z = 0.22	Z = 0.22
Canada ²	2020 NBCC	S _a = 1.95	S _a = 1.44
Chile	NCh 433.Of1996	Zone 3	Zone 2
China	GB 50011-2010 (2016)	α _{Max} = 1.4	α _{Max} = 0.9
Europe	Eurocode 8 EN1998-1	α _{gR} = 0.375	α _{gR} = 0.25
India	IS 1893 (Part 1) : 2016	Z = 0.36	Z = 0.36
Japan	Building Standard Law	Zone A	Zone A
New Zealand	NZS 1170.5:2004+A1	Z = 0.54	Z = 0.37
Peru	N.T.E. - E.030	Zone 4	Zone 4
Russia	SNIP II-7-81 (SP 14.13330.2014)	MSK 9	MSK 9
Taiwan	CPA 2011 Seismic Design Code	S _S ^D = 0.8	S _S ^D = 0.8
U.S.A. ²	ASCE 7-16 / IBC 2018	S _{DS} = 1.98	S _{DS} = 1.45

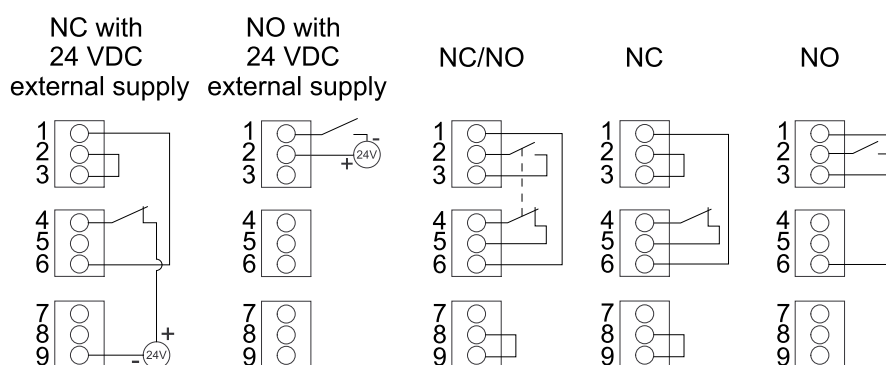
1. Corner grounding not permitted.
2. OSHPD Pre-approved in accordance with AC156 test protocol.

Communication and Management

Local area network	1 Gbps – 1 port as default
Modbus	Modbus (SCADA)
Output relays	4 x SELV configurable
Input contacts	4 x SELV configurable
Standard control panel	7 inch touchscreen display
Audible alarm	Yes
Emergency Power Off (EPO)	Options: • Normally Open (NO) • Normally Closed (NC) • External 24 VDC SELV
External switchgear	UIB UOB SSIB MBB SIB
External synchronization	Yes
Battery monitoring	Available for external battery solutions

EPO

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.

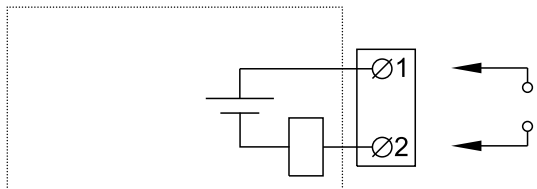
If you want the EPO activation to transfer the UPS into forced static bypass operation instead, please contact Schneider Electric.

Configurable Input Contacts and Output Relays

Input Contacts

Four input contacts are available and can be configured to indicate a given event via the display.

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

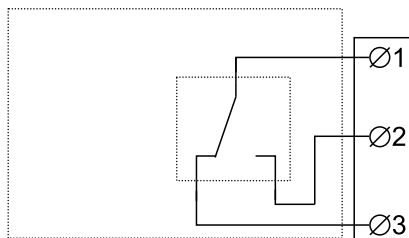


Name	Description	Location
IN_1 (input contact 1)	Configurable input contact	Terminal J6616, 1-2
IN_2 (input contact 2)		Terminal J6616, 3-4
IN_3 (input contact 3)		Terminal J6616, 5-6
IN_4 (input contact 4)		Terminal J6616, 7-8

Output Relays

Four output relays are available and can be configured to activate on one or more events via the display.

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
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

When **Energized check mode** is enabled, the output relay is activated, and will deactivate when the events assigned to the output relay occurs (normally activated).

Energized check mode must be individually enabled for each output relay and makes it possible to detect if the output relay is inoperable:

- If the power supply to the output relays is lost, the events assigned to all the output relays will be indicated as present.
- If a single output relay has become inoperable, the events assigned to the single output relay will be indicated as present.

Requirements for a Third Party Battery Solution

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

Third Party Battery Breaker Requirements

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- All selected battery 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 breakers.

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

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

Design Requirements for Battery Breaker

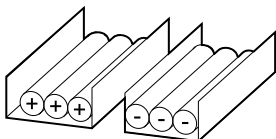
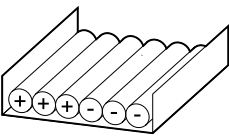
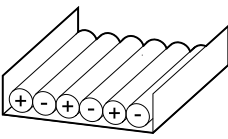
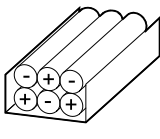
Battery breaker rated DC voltage > Normal battery voltage	The normal voltage of the battery configuration is defined as the highest nominal occurring battery voltage. This can be equivalent to the float voltage which may be defined as number of battery blocks x number of cells x cell float voltage .
Battery 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 breaker and connected to the UPS. The UPS can monitor up to four battery breakers.
Short-circuit breaking capability	The short-circuit breaking capability must be higher than the short-circuit DC current of the (largest) battery configuration.
Minimum trip current	The minimum short-circuit current to trip the battery breaker must match the (smallest) battery configuration, to make the breaker trip in case of a short circuit, up to the end of its life time.
Common battery solution	Individual battery breaker for each UPS in the parallel system.

Guidance for Organizing Battery Cables

NOTE: For 3rd 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 ft). Contact Schneider Electric for installations with a longer distance.

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

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

Specifications for 400 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ²⁷ (L1, L2, L3, N, G) or 3-wire ²⁷ (L1, L2, L3, G) Dual mains: 3-wire ²⁷ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A ² s)	3.1 MA ² s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

27. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ²⁸	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ²⁹)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ³⁰) 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 ³⁰) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	608	577	556	525	481
	Minimum short circuit rating ³¹	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				—
	Maximum short circuit rating ³²	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				—
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 13.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

28. 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.

29. Per NEC 250.30.

30. 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.

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

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

	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.

Upstream and Downstream Protection for UL

⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Circuit breakers must have instantaneous trip time of maximum 50 ms.
- Circuit breakers must have instantaneous override values set according to the table below.
- Circuit breakers must be installed for input (unit input breaker UIB) and bypass (static switch input breaker SSIB).
- For parallel system with three or more UPSs: Circuit breakers must be installed for the output (unit output breaker UOB) of each UPS. The unit output breaker (UOB) is sized as the static switch input breaker (SSIB).
- Live Swap is not supported for >65kA_{bf} installations where current limiting disconnect devices are used to protect the UPS.

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

Schneider Electric reserves the right to remove the Live Swap label from the product front if the conditions are not met.

⚠ CAUTION

HAZARD OF FIRE

- Connect only to a circuit with the below specifications.
- Connect to a circuit provided with a maximum 1000 A branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA70, and the Canadian Electrical Code, Part I, C22.1.

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

Recommended Upstream Protection for UL

The bypass/output breakers 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 breakers 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	
	Input	Bypass	Input	Bypass
Breaker type	LJF36400CU31X	LJF36400CU31X	LJF36400CU31X	LJF36400CU31X
I _r	320	280	400	360
t _r	≥4	≥4	≥4	≥4
I _i (x I _n)	≤12	≤12	≤12	≤12

UPS rating	300 kW		350 kW		400 kW	
	Input	Bypass	Input	Bypass	Input	Bypass
Breaker type	PJF36060CU31-A	PJF36060CU31A	PJF36060CU31A	PJF36060CU31A	PJF36080CU31A	PJF36060CU31A
I _r	480	420	540	480	640	540

UPS rating	300 kW		350 kW		400 kW	
	Input	Bypass	Input	Bypass	Input	Bypass
tr	≥4	≥4	≥4	≥4	≥4	≥4
li (x ln)	≤12	≤12	≤10	≤12	≤10	≤12

UPS rating	450 kW		500 kW	
	Input	Bypass	Input	Bypass
Breaker type	PJF36080CU31A	PJF36080CU31A	PJF36080CU31A	PJF36080CU31A
I _r	720	640	800	720
tr	≥4	≥4	≥4	≥4
li (x ln)	≤8	≤10	≤8	≤10

Recommended Cable Sizes for UL

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

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 assertions⁴⁵:

- 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 breakers for battery breakers.

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.

Copper

UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
Voltage (V)	480	480	480	480	480	480	480
Input phases (AWG/kcmil)	1 x 350	1 x 500	2 x 4/0	2 x 300	2 x 350	2 x 400	2 x 500
Input EGC (AWG/kcmil)	1 x 3	1 x 3	2 x 2	2 x 1	2 x 1/0	2 x 1/0	2 x 1/0
Bypass/output phases (AWG/kcmil)	1 x 300	1 x 400	1 x 600	2 x 250	2 x 300	2 x 350	2 x 400
Bypass EGC/output EGC (AWG/kcmil)	1 x 4	1 x 3	1 x 2	2 x 2	2 x 1	2 x 1/0	2 x 1/0
DC+/DC- (AWG/kcmil)	2 x 300	2 x 400	3 x 350	3 x 400	4 x 350	4 x 400	4 x 500

45. 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 52 table in this installation scenario.

Copper (Continued)

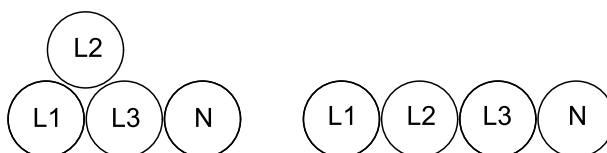
UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
Voltage (V)	480	480	480	480	480	480	480
DC EGC (AWG/kcmil)	2 x 1	2 x 1/0	3 x 2/0	3 x 2/0	4 x 3/0	4 x 4/0	4 x 4/0
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	1 x 350	1 x 500	2 x 4/0	2 x 300	2 x 350	2 x 400	2 x 500

Aluminum

UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
Voltage (V)	480	480	480	480	480	480	480
Input phases (AWG/kcmil)	1 x 500	2 x 250	2 x 300	2 x 400	2 x 500	(3 x 300) ⁴⁶	(3 x 400) ⁴⁶
Input EGC (AWG/kcmil)	1 x 1	2 x 1	2 x 1/0	2 x 2/0	2 x 3/0	3 x 3/0	3 x 3/0
Bypass/output phases (AWG/kcmil)	1 x 400	1 x 600	2 x 250	2 x 350	2 x 400	2 x 500	2 x 600
Bypass EGC/output EGC (AWG/kcmil)	1 x 2	1 x 1	2 x 1/0	2 x 1/0	2 x 2/0	2 x 3/0	2 x 3/0
DC+/DC- (AWG/kcmil)	2 x 500	3 x 300	3 x 500	4 x 350	4 x 500	5 x 400	5 x 500
DC EGC (AWG/kcmil)	1 x 2/0	3 x 3/0	3 x 4/0	4 x 4/0	4 x 250	5 x 350	5 x 350
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	1 x 500	2 x 250	2 x 300	2 x 400	2 x 500	3 x 300	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.

46. For parallel UPS systems, the Standard eConversion Limits Based on Non-recommended Cable Sizes, page 52 table shall be used.

Recommended Bolt and Lug Sizes for UL

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
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

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

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)

Physical

UPS Shipping Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)	Number of preinstalled power modules in the UPS	Number of power modules shipped separately ⁴⁷	Number of extra power modules that can be ordered ⁴⁸
GVL200K500DS	620 (1367)	2145 (84.4)	950 (37.4)	1100 (43.3)	4	0	6
GVL300K500DS	620 (1367)	2145 (84.4)	950 (37.4)	1100 (43.3)	4	2	4
GVL400K500DS	620 (1367)	2145 (84.4)	950 (37.4)	1100 (43.3)	4	4	2
GVL500KDS	620 (1367)	2145 (84.4)	950 (37.4)	1100 (43.3)	4	6	0

Power Module Shipping Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVPM50KD	62 (137)	330 (13)	580 (22.8)	780 (30.7)

UPS Weights and Dimensions

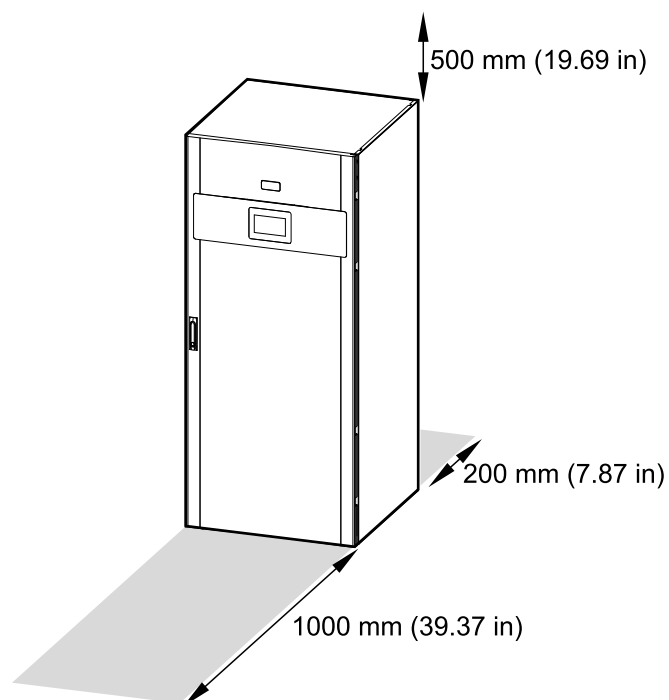
UPS rating	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
200 kW	550 (1212)	1970 (78)	850 (33)	925 (36)
250 kW	588 (1296)	1970 (78)	850 (33)	925 (36)
300 kW	626 (1380)	1970 (78)	850 (33)	925 (36)
350 kW	664 (1463)	1970 (78)	850 (33)	925 (36)
400 kW	702 (1547)	1970 (78)	850 (33)	925 (36)
450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

47. See Power Module Shipping Weights and Dimensions, page 56 for shipping weight and dimensions for the separately shipped power module.

48. See Power Module Shipping Weights and Dimensions, page 56 for shipping weight and dimensions for the extra power modules which are shipped separately.

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.



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	
Audible noise one meter (three feet) from unit	62 dB at 70% load 68 dB at 100% load for 480 V systems	
Protection class	IP20	
Color	RAL 9003, gloss level 85%	

Heat Dissipation for 480 V in BTU/hr

200 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	6555	1897	3304	8039
50% load	9829	2405	3795	13109
75% load	14202	3089	4127	18563
100% load	19658	3429	4810	25484

250 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	7964	2154	4130	9582
50% load	12286	3007	4744	15927
75% load	17753	3862	5159	23203
100% load	24572	4286	6013	31855

300 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	9556	2585	4956	11219
50% load	14743	3608	5692	19113
75% load	21303	4634	6191	27844
100% load	29486	5144	7216	38226

350 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	11149	2711	5472	12764
50% load	17833	3604	6641	21656
75% load	24854	4501	7223	32485
100% load	34401	6001	8418	44597

400 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	12742	3099	6254	14587
50% load	20381	4119	7590	24750
75% load	28404	5144	8255	37125
100% load	39315	6858	9621	50968

450 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	14335	3486	7036	15994
50% load	22928	4634	7755	27844
75% load	33172	6951	9287	41766
100% load	45856	7716	10824	57339

500 kW	Normal operation	ECO mode	eConversion	Battery operation
Voltage (V)	480			
25% load	15927	3873	7818	17771
50% load	25476	5149	8616	30938
75% load	36858	7723	10319	46407
100% load	50952	8573	12026	63710

Airflow Values

Indicative Airflow Values in m³/Hour Based on a 30 °C (86 °F) Environment

UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
50% load	1617	1920	2223	2526	2829	3132	3435
75% load	2102	2526	2950	3375	3799	4223	4749
90% load	2344	2829	3314	3799	4365	4911	5436
100% load	2405	2905	3405	3905	4547	5087	5709

Indicative Airflow Values in m³/Hour Based on a 40 °C (104 °F) Environment

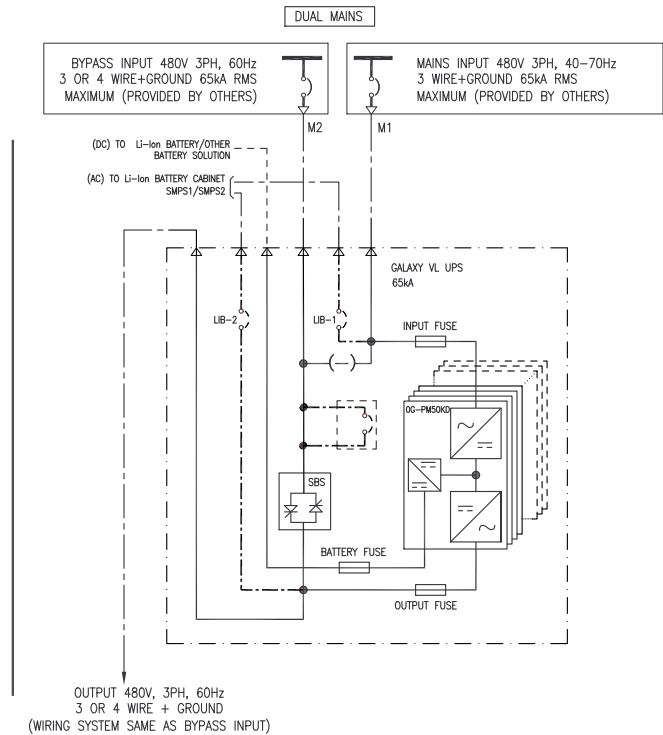
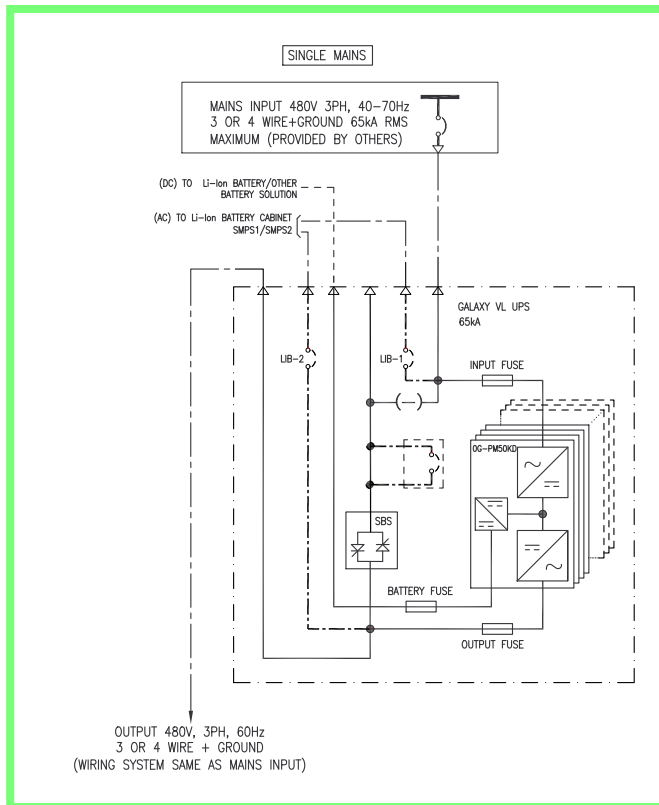
UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
50% load	1920	2299	2678	3056	3435	3814	4193
75% load	2284	2753	3223	3693	4163	4774	5284
90% load	2465	2981	3496	4112	4668	5224	5860
100% load	2647	3208	3769	4471	5072	5754	6416

Drawings

NOTE: A comprehensive set of drawings is available on www.se.com.

NOTE: These drawings are for reference ONLY – subject to change without notice.

Galaxy VL 200-500 kW 480 V UPS



Limited Factory Warranty

One-Year Factory Warranty

The limited warranty provided by Schneider Electric in this Statement of Limited Factory Warranty applies only to products you purchase for your commercial or industrial use in the ordinary course of your business.

Terms of Warranty

Schneider Electric warrants that the product shall be free from defects in materials and workmanship for a period of one year from the date of product start-up when start-up is performed by Schneider Electric-authorized service personnel and occurs within six months of the Schneider Electric shipment date. This warranty covers repairing or replacing any defective parts including on-site labor and travel. In the event that the product fails to meet the foregoing warranty criteria, the warranty covers repairing or replacing defective parts at the sole discretion of Schneider Electric for a period of one year from the shipment date. For Schneider Electric cooling solutions, this warranty does not cover circuit breaker resetting, loss of refrigerant, consumables, or preventive maintenance items. Repair or replacement of a defective product or part thereof does not extend the original warranty period. Any parts furnished under this warranty may be new or factory-remanufactured.

Non-transferable Warranty

This warranty is extended to the first person, firm, association or corporation (herein referred to by "You" or "Your") for whom the Schneider Electric product specified herein has been purchased. This warranty is not transferable or assignable without the prior written permission of Schneider Electric.

Assignment of Warranties

Schneider Electric will assign you any warranties which are made by manufacturers and suppliers of components of the Schneider Electric product and which are assignable. Any such warranties are assigned "AS IS" and Schneider Electric makes no representation as to the effectiveness or extent of such warranties, assumes no responsibility for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components.

Drawings, Descriptions

Schneider Electric warrants for the warranty period and on the terms of the warranty set forth herein that the Schneider Electric product will substantially conform to the descriptions contained in the Schneider Electric Official Published Specifications or any of the drawings certified and agreed to by contract with Schneider Electric if applicable thereto ("Specifications"). It is understood that the Specifications are not warranties of performance and not warranties of fitness for a particular purpose.

Exclusions

Schneider Electric shall not be liable under the warranty if its testing and examination disclose that the alleged defect in the product does not exist or was caused by end user or any third person misuse, negligence, improper installation or testing. Further, Schneider Electric shall not be liable under the warranty for unauthorized attempts to repair or modify wrong or inadequate electrical voltage

or connection, inappropriate on-site operation conditions, corrosive atmosphere, repair, installation, start-up by non-Schneider Electric designated personnel, a change in location or operating use, exposure to the elements, Acts of God, fire, theft, or installation contrary to Schneider Electric recommendations or specifications or in any event if the Schneider Electric serial number has been altered, defaced, or removed, or any other cause beyond the range of the intended use.

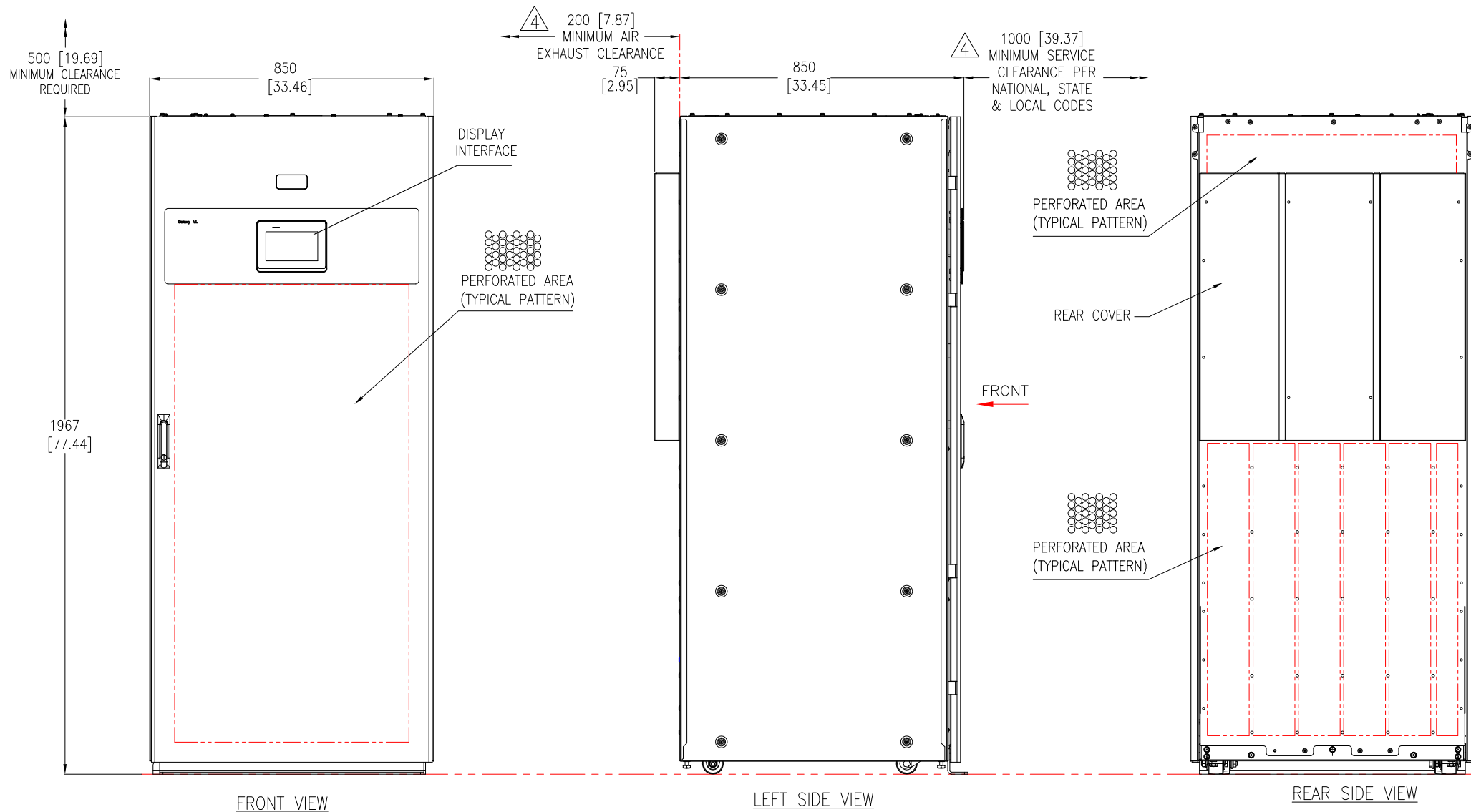
THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE, OF PRODUCTS SOLD, SERVICED OR FURNISHED UNDER THIS AGREEMENT OR IN CONNECTION HERewith. SCHNEIDER ELECTRIC DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, SATISFACTION AND FITNESS FOR A PARTICULAR PURPOSE. SCHNEIDER ELECTRIC EXPRESS WARRANTIES WILL NOT BE ENLARGED, DIMINISHED, OR AFFECTED BY AND NO OBLIGATION OR LIABILITY WILL ARISE OUT OF, SCHNEIDER ELECTRIC RENDERING OF TECHNICAL OR OTHER ADVICE OR SERVICE IN CONNECTION WITH THE PRODUCTS. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES. THE WARRANTIES SET FORTH ABOVE CONSTITUTE SCHNEIDER ELECTRIC SOLE LIABILITY AND PURCHASER'S EXCLUSIVE REMEDY FOR ANY BREACH OF SUCH WARRANTIES. SCHNEIDER ELECTRIC WARRANTIES RUN ONLY TO PURCHASER AND ARE NOT EXTENDED TO ANY THIRD PARTIES.

IN NO EVENT SHALL SCHNEIDER ELECTRIC, ITS OFFICERS, DIRECTORS, AFFILIATES OR EMPLOYEES BE LIABLE FOR ANY FORM OF INDIRECT, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, ARISING OUT OF THE USE, SERVICE OR INSTALLATION, OF THE PRODUCTS, WHETHER SUCH DAMAGES ARISE IN CONTRACT OR TORT, IRRESPECTIVE OF FAULT, NEGLIGENCE OR STRICT LIABILITY OR WHETHER SCHNEIDER ELECTRIC HAS BEEN ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES, SPECIFICALLY, SCHNEIDER ELECTRIC IS NOT LIABLE FOR ANY COSTS, SUCH AS LOST PROFITS OR REVENUE, LOSS OF EQUIPMENT, LOSS OF USE OF EQUIPMENT, LOSS OF SOFTWARE, LOSS OF DATA, COSTS OF SUBSTITUANTS, CLAIMS BY THIRD PARTIES, OR OTHERWISE.

NO SALESMAN, EMPLOYEE OR AGENT OF SCHNEIDER ELECTRIC IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. WARRANTY TERMS MAY BE MODIFIED, IF AT ALL, ONLY IN WRITING SIGNED BY AN SCHNEIDER ELECTRIC OFFICER AND LEGAL DEPARTMENT.

Warranty Claims

Customers with warranty claims issues may access the SCHNEIDER ELECTRIC worldwide customer support network through the SCHNEIDER ELECTRIC web site: <http://www.schneider-electric.com>. Select your country from the country selection pull-down menu. Open the Support tab at the top of the web page to obtain contact information for customer support in your region.



NOTES:

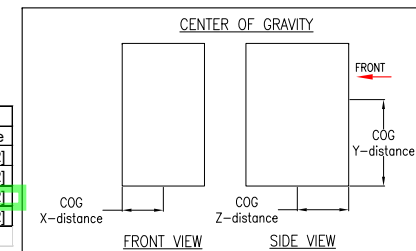
1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL ELECTRICAL REGULATIONS.
2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
3. ALL DIMENSIONS ARE IN MILLIMETERS [INCHES].
4. CLEARANCE DIMENSIONS ARE MEANT FOR AIRFLOW AND SERVICE ACCESS ONLY. CONSULT WITH THE LOCAL SAFETY CODES AND STANDARDS FOR ADDITIONAL REQUIREMENTS IN YOUR LOCAL AREA.
5. CABLE ENTRY IS FROM TOP OR BOTTOM ENTRY THROUGH LEFT SIDE MOUNTED SIDECAR.
6. FOR WEIGHT OF THE UNIT REFER TO THE TABLE-1.
7. OPERATING TEMPERATURE: 0°C TO 40°C [32°F TO 104°F].
8. DOOR SWING-ROTATES FREELY 150°.
9. COLOR: RAL 9003, GLOSS LEVEL 85%.
10. THIS INFORMATION PROVIDES APPROXIMATE CENTER OF GRAVITY CALCULATION.
11. APPLY 500kW WEIGHT AND 500kW CENTER OF GRAVITY DATA FOR STRUCTURAL CALCULATIONS.
12. PROTECTION CLASS IP20.

TABLE-1

Rating	WEIGHT
	kg [lbs]
200kW	494.5 [1090]
250kW	532 [1173]
300kW	570 [1256]
350kW	607.3 [1339]
400kW	645 [1422]
450kW	682.5 [1505]
500kW	720 [1588]

UPS SKU	Rating	CENTER OF GRAVITY		
		X-Distance	Y-Distance	Z-Distance
GVL200KDS	200kW	N/A*	1000 [39.37]	440 [17.32]
GVL300KDS	300kW	N/A*	900 [35.43]	440 [17.32]
GVL400KDS	400kW	N/A*	850 [33.46]	440 [17.32]
GVL500KDS	500kW	500 [19.69]	800 [31.50]	440 [17.32]

(*) depend on position of power modules



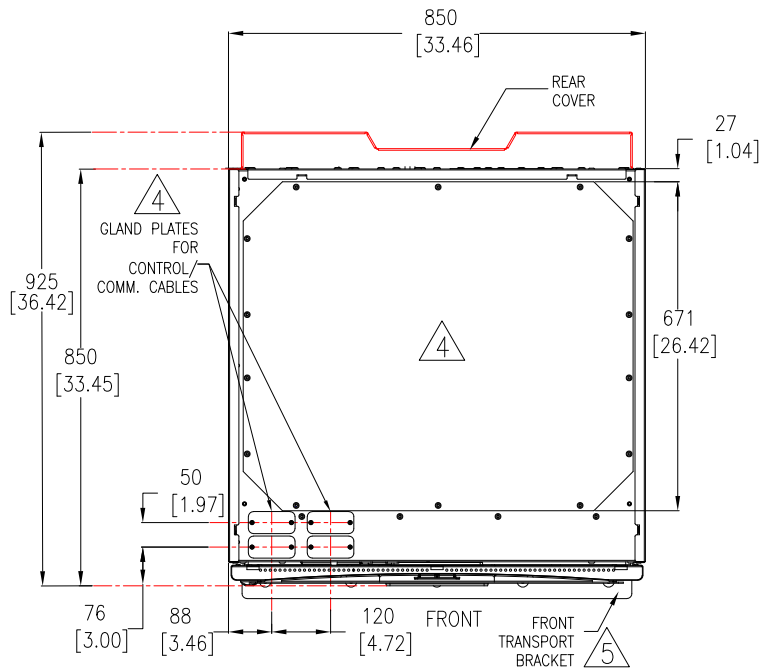
THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

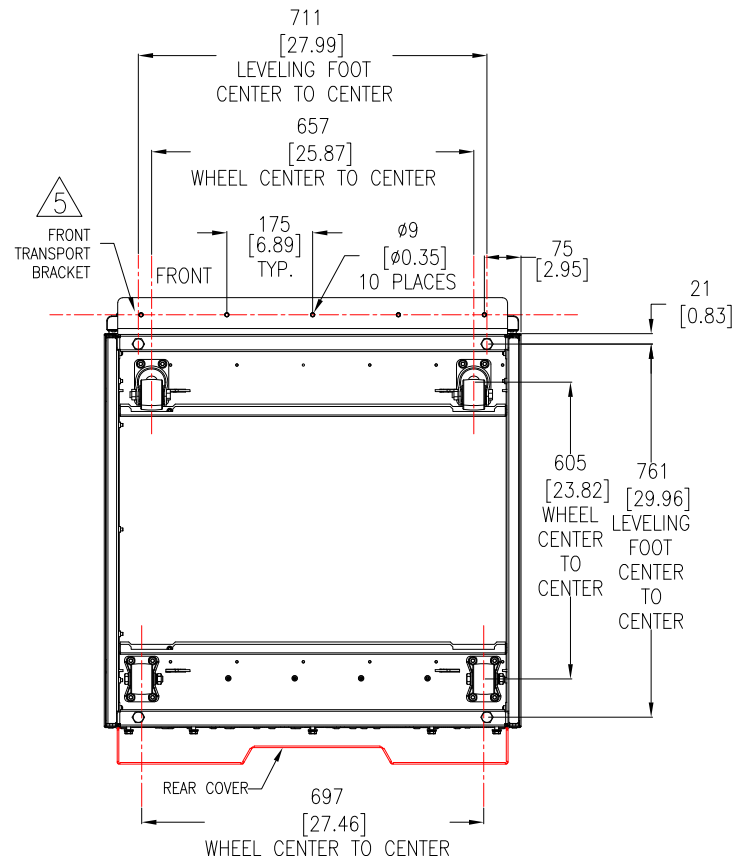
TITLE: Galaxy VL SINGLE/PARALLEL
UPS 200kW-500kW
Input: 400V/480V, 3PH, 50/60Hz, Single/Dual Mains
Output: 480V/400V, 3PH, 50/60Hz
GENERAL ARRANGEMENT

PROJECT: SUBMITTAL DRAWINGS SHEET 1 OF 5

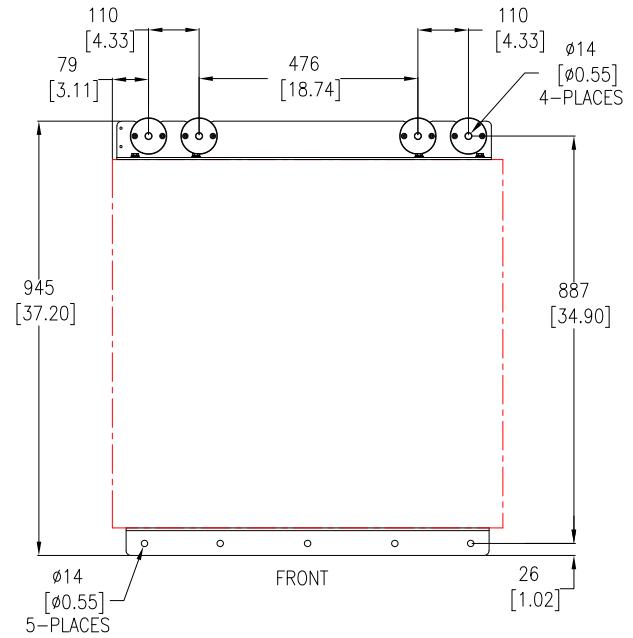
DWG NO: GVL200K500DS
DRAWN: JAYAPRAKASH 05-SEP-23
ENGINEER: VLAD MURESAN 05-SEP-23
APPROVED: VLAD MURESAN 05-SEP-23
REV. 3
FIRST ANGLE PROJECTION



TOP VIEW
(REAR BRACKET NOT SHOWN FOR CLARITY)



BOTTOM VIEW
(REAR BRACKET NOT SHOWN FOR CLARITY)



SEISMIC ANCHORING DETAILS
(REAR COVER NOT SHOWN FOR CLARITY)

NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL ELECTRICAL REGULATIONS.
2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
3. ALL DIMENSIONS ARE IN MILLIMETERS [INCHES].
- △4. DRILL/PUNCH HOLES IN PLATE AS PER DESCRIPTION GUIDELINES SHOWN.
REMOVE PLATE FROM CABINET BEFORE DRILLING/PUNCHING.
- △5. IT IS RECOMMENDED TO BOLT CABINET TO FLOOR-USE THE FRONT TRANSPORT BRACKET.
- △6. USE SEISMIC KIT TO ANCHOR IN SEISMIC LOCATIONS.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

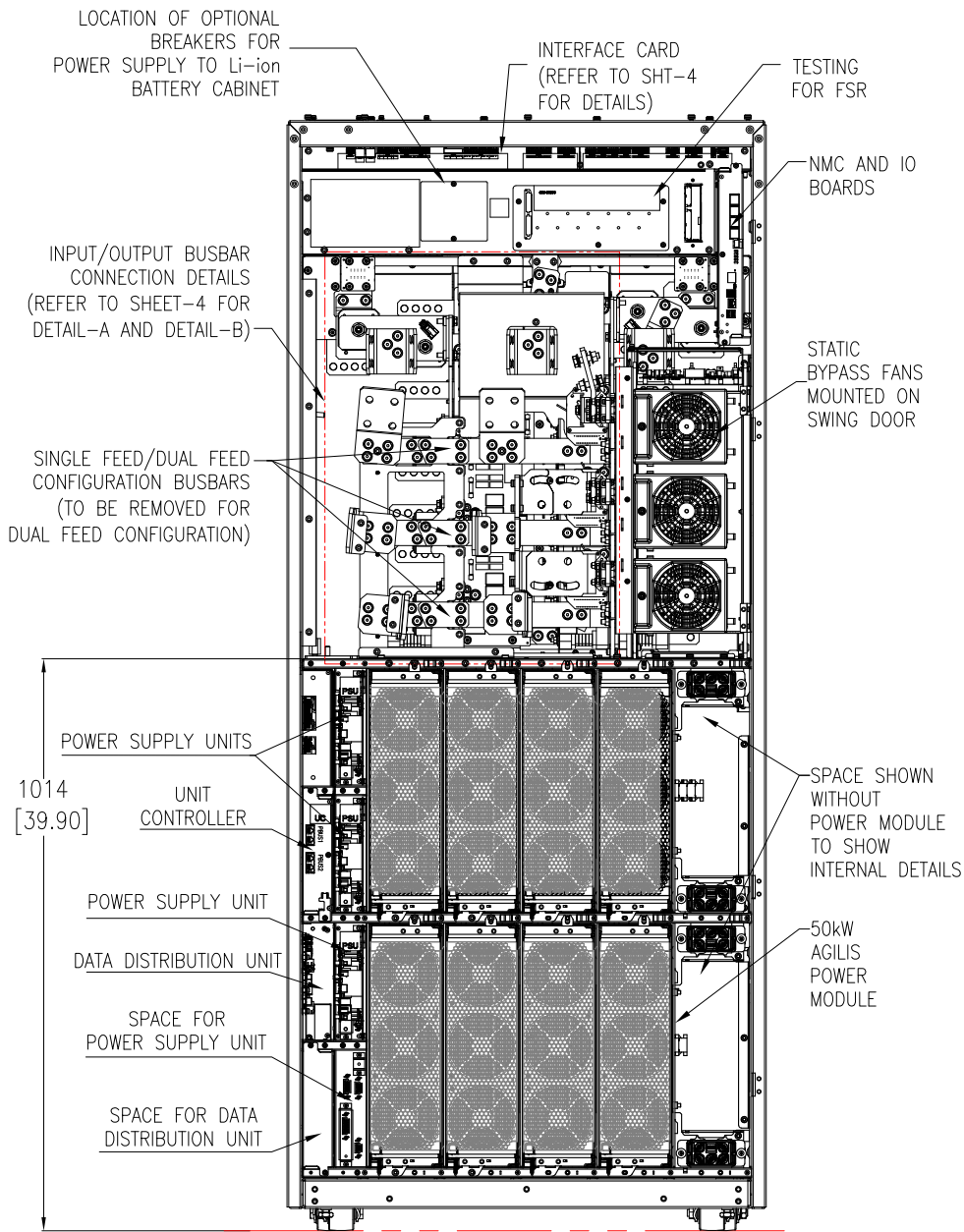
Schneider Electric

TITLE: Galaxy VL SINGLE/PARALLEL UPS 200kW-500kW
Input: 400V/480V, 3PH, 50/60Hz, Single/Dual Mains
Output: 480V/400V, 3PH, 50/60Hz
TOP-BOTTOM VIEWS & ANCHORING

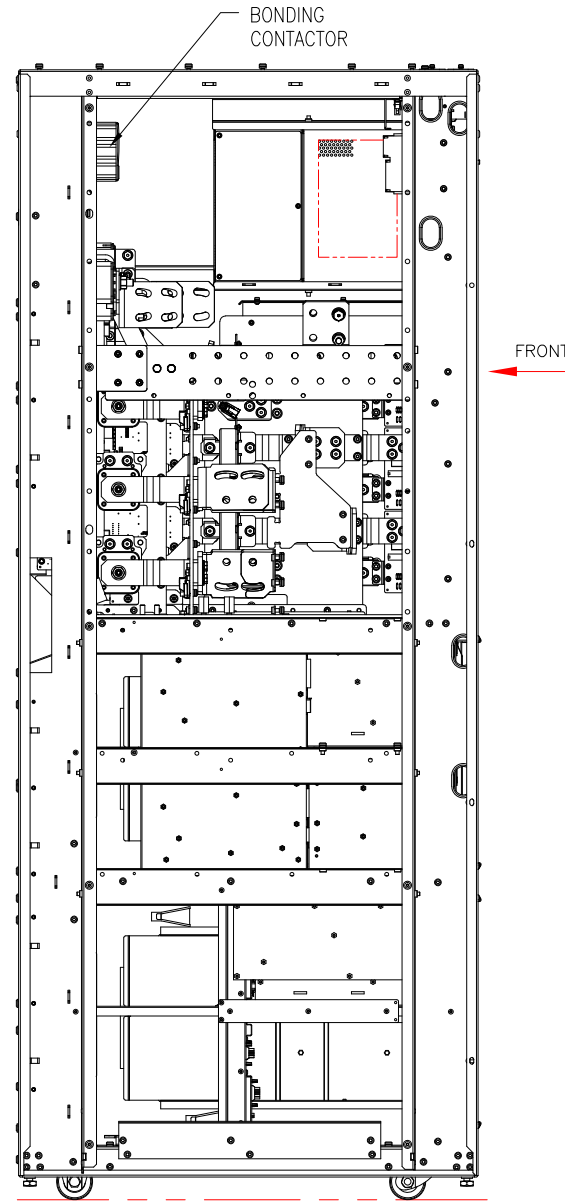
PROJECT: SUBMITTAL DRAWINGS SHEET 2 OF 5

DWG NO: GVL200K500DS
DRAWN: K NAGENDRA/BALA
ENGINEER: C N / C A
APPROVED: C N / C A

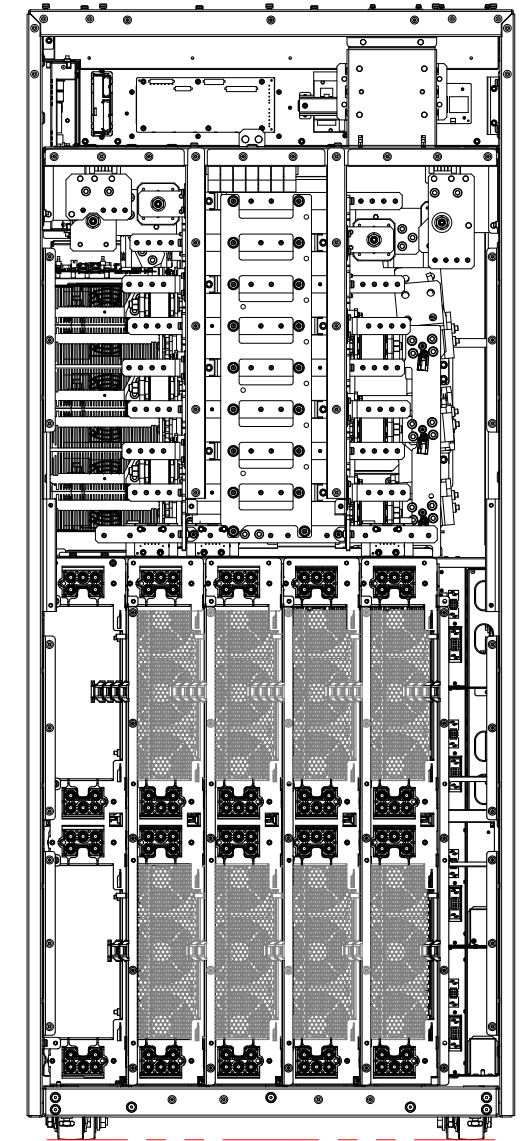
REV. 2
18-MAR-21
19-MAR-21
19-MAR-21
FIRST ANGLE PROJECTION



INTERNAL FRONT VIEW



INTERNAL LEFT SIDE VIEW



INTERNAL REAR VIEW

- NOTES:
1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL ELECTRICAL REGULATIONS.
 2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
 3. ALL DIMENSIONS ARE IN MILLIMETERS [INCHES].

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

TITLE: Galaxy VL SINGLE/PARALLEL
UPS 200kW-500kW
Input: 400V/480V, 3PH, 50/60Hz, Single/Dual Mains
Output: 480V/400V, 3PH, 50/60Hz
INTERNAL VIEW-1

PROJECT: SUBMITTAL DRAWINGS SHEET 3 OF 5

DWG NO: GVL200K500DS

DRAWN: JAYAPRAKASH 05-SEP-23

ENGINEER: VLAD MURESAN 05-SEP-23

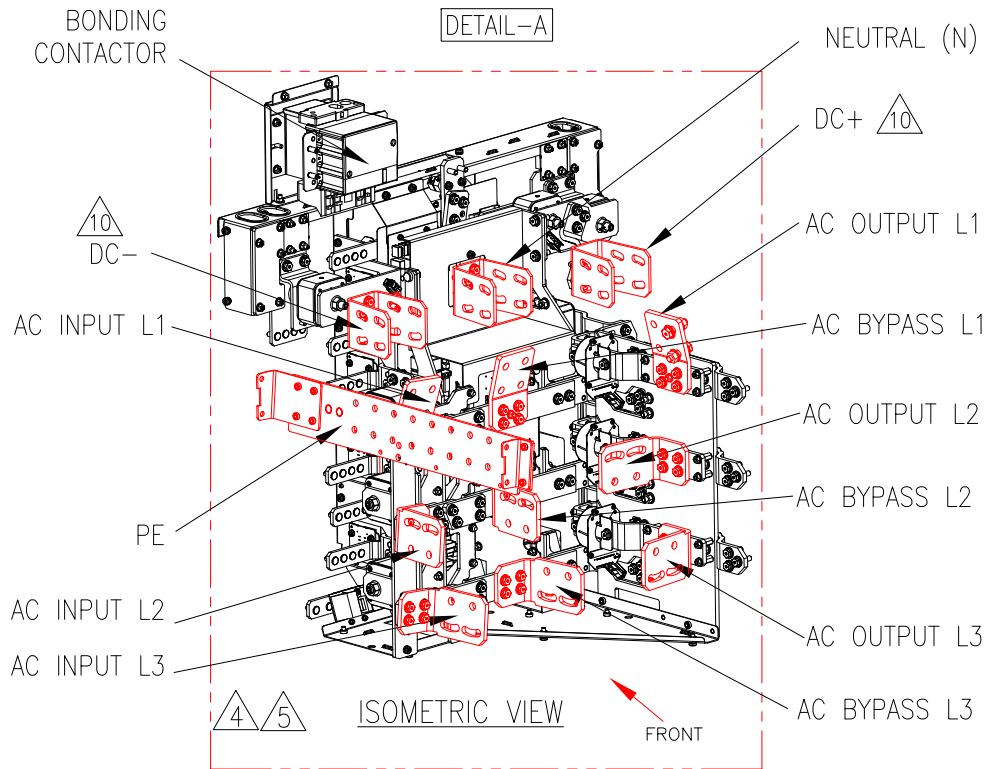
APPROVED: VLAD MURESAN 05-SEP-23

REV. 1

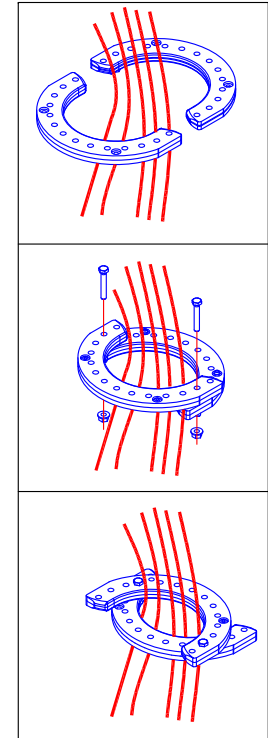
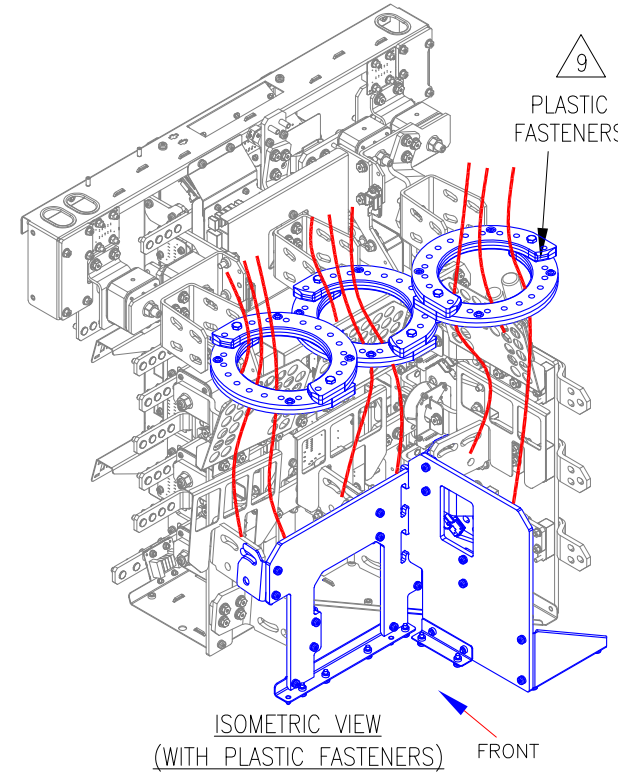
FIRST ANGLE PROJECTION

INPUT/OUTPUT BUSBAR CONNECTION DETAILS

DETAIL-A



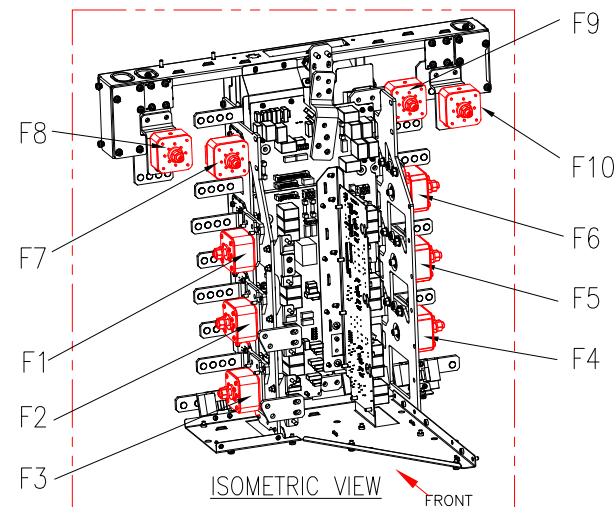
TOP CABLE ENTRY FOR ABOVE 45kAIC WITH PLASTIC FASTENERS



- NOTES:**
1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL ELECTRICAL REGULATIONS.
 2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
 3. ALL DIMENSIONS ARE IN MILLIMETERS [INCHES].
 - △ 4. MANDATORY BACKFEED PROTECTION ON BYPASS MUST BE IMPLEMENTED BY:
 - A) UPSTREAM INSTALLATION OF CIRCUIT BREAKER WITH SHUNT TRIP CONNECTED TO UPS - REFER TO INSTALLATION MANUAL FOR CONNECTION DETAILS.
 - B) INSTALLING BREAKER KIT(OJ-GVLOPTBFK) IN THE PRODUCT. CONTACT SCHNEIDER ELECTRIC FOR DETAILS.
 - C) INSTALLING MAINTENANCE BYPASS SKU GVLMBCA250K500G OR GVLMBCA250K500H WHERE THE BREAKER IS INCLUDED.
 - △ 5. PRODUCT IS TESTED TO 45kA_{rms} IN 60ms AS SHOWN.
FOR SHORT CIRCUIT LEVELS HIGHER THAN 45kA_{rms} AND max. 65kA_{rms}, THE KIT 0H-1816 MUST BE INSTALLED.
REFER TO INSTALLATION MANUAL FOR CONNECTION DETAILS.
 6. USE 90° CONDUCTORS. USE COPPER, COPPER-CLAD ALUMINUM OR ALUMINUM CONDUCTORS. RECOMMENDED BOLT SIZE IS M10 OR 3/8 INCH. APPLY 1x SPRING WASHER HUA12590 FROM SHIPMENT KIT TO EACH JOINT.
 7. MAXIMUM CABLE SIZE SUPPORTED IN ALL AC AND DC LOCATIONS IS 240Sq.mm/500kCMIL.
 8. TIGHTENING TORQUE ARE:
 - * M8: 17.5Nm (12.91 lb-ft)
 - * M10: 30Nm (22.0 lb-ft)
 - △ 9. FOR TOP CABLE ENTRY SYSTEMS OVER 45kAIC: FASTEN THE POWER CABLES TO EACH OTHER WITH THE PROVIDED PLASTIC FASTENERS. ADJUST THE FASTENERS TO THE POWER CABLES SO THEY ARE FITTED TIGHTLY TOGETHER.
 - △ 10. MAXIMUM QUANTITY/SIZE OF CABLES SUPPORT FOR BATTERIES ARE: 4x240Sqmm(4x500 kcmil) OR 8x150Sqmm(8x300kcmil).

INPUT/OUTPUT, DC FUSE DETAILS

DETAIL-B



INPUT FUSES:
F1,F2 AND F3 : 1250A, Min.600VAC

OUTPUT FUSES:
F4,F5 AND F6 : 1250A, Min.600VAC

DC FUSES:
F7,F8,F9 AND F10 : 900A, Min.600VAC

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

TITLE: Galaxy VL SINGLE/PARALLEL UPS 200kW-500kW
Input: 400V/480V, 3PH, 50/60Hz, Single/Dual Mains
Output: 480V/400V, 3PH, 50/60Hz
INTERNAL VIEW-2

PROJECT: SUBMITTAL DRAWINGS **SHEET 4 OF 5**

DWG NO: GVL200K500DS

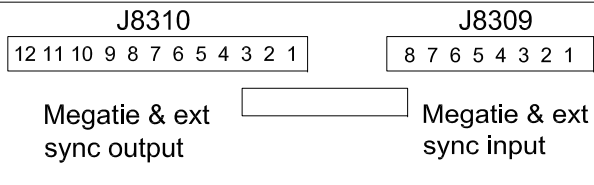
DRAWN: RANJITHA **10-JUL-23**

ENGINEER: VLAD MURESAN **10-JUL-23**

APPROVED: VLAD MURESAN **10-JUL-23**

REV. 3
FIRST ANGLE PROJECTION

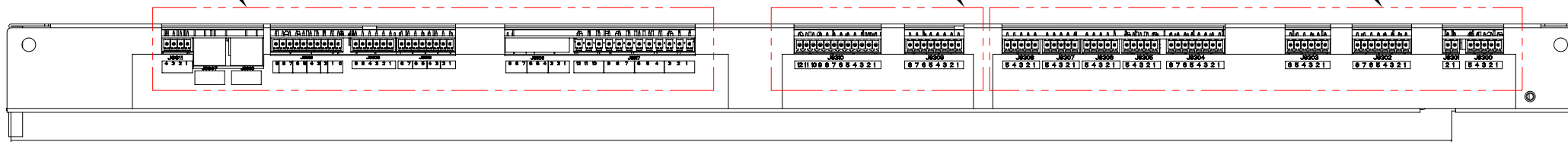
DETAIL-D
(ENLARGED VIEW)



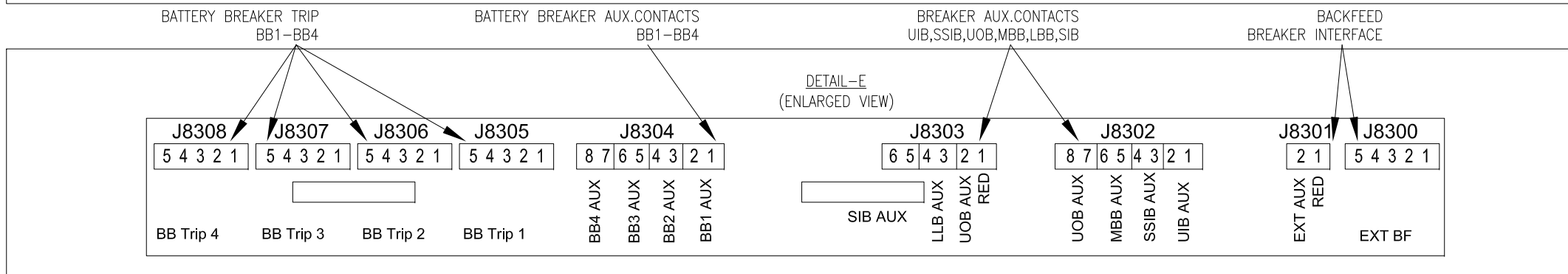
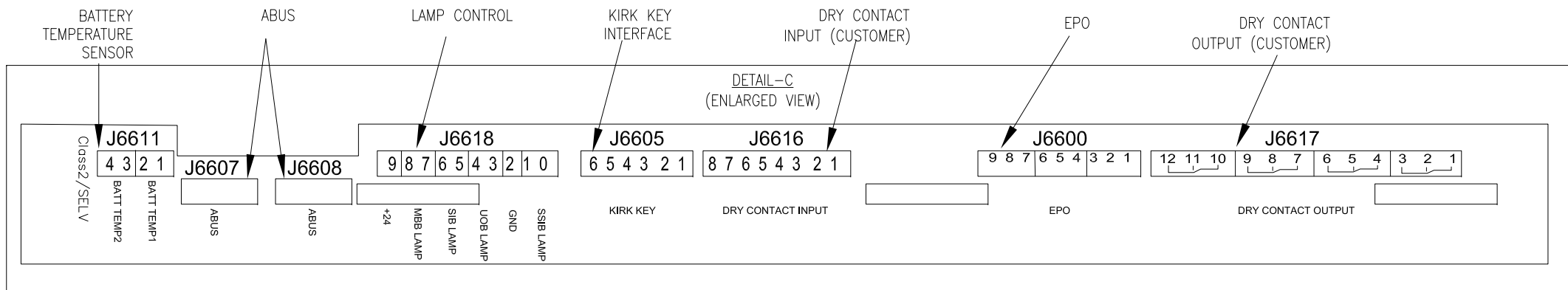
DETAIL-C

DETAIL-D

DETAIL-E



INTERFACE CARD DETAILS



- NOTES:**
1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL ELECTRICAL REGULATIONS.
 2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
 3. ALL DIMENSIONS ARE IN MILLIMETERS [INCHES].
 - 4.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

TITLE: Galaxy VL SINGLE/PARALLEL UPS 200kW-500kW
Input: 400V/480V, 3PH, 50/60Hz, Single/Dual Mains
Output: 480V/400V, 3PH, 50/60Hz
INTERFACE CARD DETAILS

DWG NO: GVL200K500DS
ENGINEER: K NAGENDRA
APPROVED: C N / C A
REV. 0
15-JUL-20
16-JUL-20
16-JUL-20
FIRST ANGLE PROJECTION

PROJECT: SUBMITTAL DRAWINGS **SHEET 5 OF 5**

Overview

Emergency Power Off System

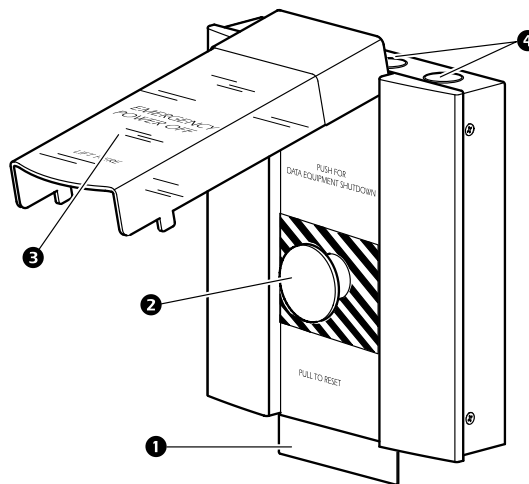
The Emergency Power Off (EPO) System consists of one or more wall-mounted, push-button EPO boxes. Each EPO box provides a single point of equipment shutdown for up to eight APC devices and one third-party device (such as an upstream breaker), using Normally Open (NO) contact closure connections. An EPO box can be cascaded with other EPO boxes to support multiple points of equipment shutdown.



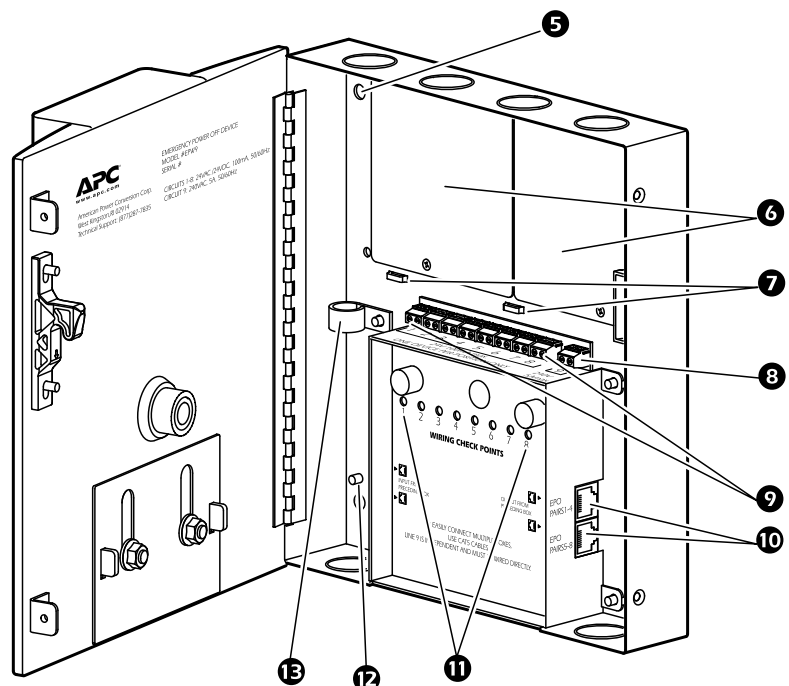
Note: Although the EPO is designed specifically for APC products, the system can be used for tripping any devices that fall within its parameters. See **“Specifications”** to confirm proper application. Install the EPO according to the instructions in this manual.

EPO Box Components

- 1 Flag
- 2 Button
- 3 Shield
- 4 Knockouts



- 5 Mounting holes
- 6 Blanking panels
- 7 Wire anchors
- 8 Auxiliary device terminal
- 9 Device terminal block
- 10 Cascading jacks
- 11 Wiring check points
- 12 Ground stud
- 13 Cable clamps



Specifications

Electrical

Input/Output	
Voltage	24 VDC 48 VDC/240 VAC (External circuit)
Current	1 A at 24 VDC 1 A at 48 VDC (External circuit)
Frequency	50/60 Hz
Circuits (qty)	9
Contact state	Normally Open (NO)

Physical

Dimensions (W×L×D)	
EPO box	226 × 251×66 mm (8.9×9.9×2.6 in)
Shipping	305 × 305×140 mm (12×12×5.5 in)
Weight	
EPO box	2.9 kg (6.4 lb)
Shipping	3.1 kg (6.9 lb)
Mounting	Surface mount
Connection	Removable panels in rear, 13 mm (½ in) and 6 mm (¾ in) knockouts on top and bottom
Push button	Standard, 22 mm metallic body; 40 mm mushroom head; Push/pull
Wire connections	0.10 to 0.75 mm² (24 to 18 AWG) wire ground stud for #8 ring lug

Environmental

Temperature	–5 to 45 °C (23 to 113 °F)
Humidity	5 to 95%, non-condensing
Elevation	3000 m (10000 ft)

Compliance

Standards	NFPA 70, NFPA 75, NEC Article 645, 29 CFR 1910.36, 29 CFR 1910.306
Approvals	UL, C-UL, CE

Galaxy VL

Maintenance Bypass Cabinet for UL

Installation

GVLMBCA200K500G

Latest updates are available on the Schneider Electric website
11/2022



Specifications

Maximum Short Circuit Rating

The maximum short circuit rating for the maintenance bypass cabinet is 65 kA RMS symmetrical Icc.

⚠ CAUTION
HAZARD OF CABLE MOVEMENT IN SHORT CIRCUIT CONDITIONS In systems over 35 kAIC it is mandatory to restrain the power cables: • Use 10 mm nylon rope or rope with a minimum tensile strength of 1000 kg (2204.62 lbs). Failure to follow these instructions can result in injury or equipment damage.

Trip Settings

NOTE: The power cables for 200-300 kW must be sized for 350 kW for SSIB/UOB because the minimum Ir setting for PJF36120CU33A is 0.4. This is only excepted if the power cables for SSIB/UOB are projected upstream.

UPS rating	Breaker type	UIB					SSIB/MBB/UOB				
		Ir	tr	Isd	tsd	li	Ir	tr	Isd	tsd	li
200 kW	PJF36120CU33A	0.4	1	1.5	Off	6	0.4	0.5	1.5	Off	6
250 kW	PJF36120CU33A	0.4	1	1.5	Off	6	0.4	0.5	1.5	Off	6
300 kW	PJF36120CU33A	0.4	1	1.5	Off	6	0.4	0.5	1.5	Off	6
350 kW	PJF36120CU33A	0.5	1	1.5	Off	6	0.4	0.5	1.5	Off	6
400 kW	PJF36120CU33A	0.5	1	1.5	Off	6	0.4	0.5	1.5	Off	6
450 kW	PJF36120CU33A	0.6	1	1.5	Off	6	0.5	0.5	1.5	Off	6
500 kW	PJF36120CU33A	0.7	1	1.5	Off	6	0.5	0.5	1.5	Off	6

Recommended Upstream Protection

Refer to the UPS installation manual for recommended upstream protection.

Recommended Cable Sizes

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

Refer to the UPS installation manual for recommended cable sizes.

Recommended Bolt and Lug Sizes

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
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

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

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)

Bolt size	Torque
M10	30 Nm (22 lb-ft / 194.7 lb-in)
M12	50 Nm (36.87 lb-ft / 442.5 lb-in)

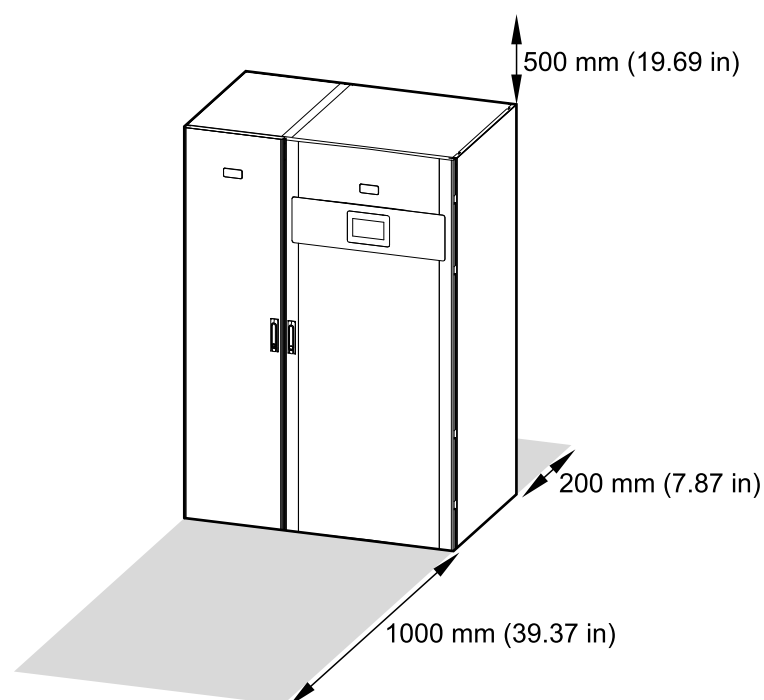
Maintenance Bypass Cabinet Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVLMBCA200K500G	158 (348)	1970 (77.55)	500 (19.68)	847 (33.34)

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.

Front View of the Maintenance Bypass Cabinet and the UPS



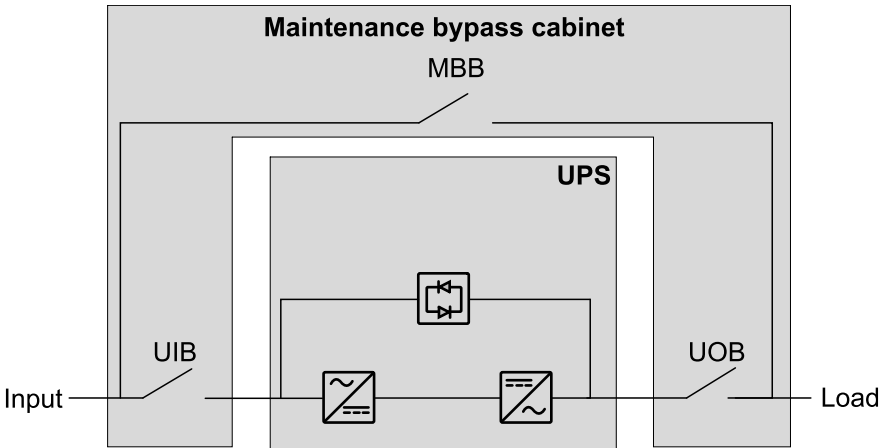
Environment

	Operating	Storage
Temperature	0 °C to 40 °C (32 °F to 104 °F)	-25 °C to 55 °C (-13 °F to 131 °F)
Relative humidity	0-95% non-condensing	0-95% non-condensing
Protection class	IP20	
Color	RAL 9003, gloss level 85%	

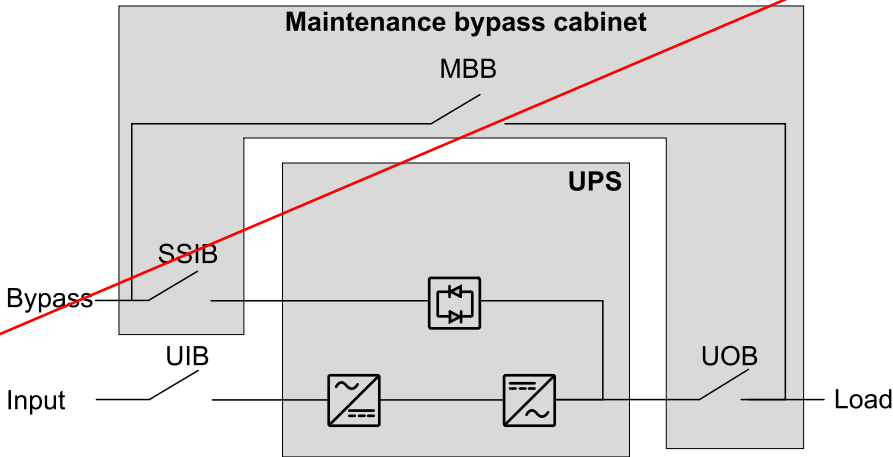
System Overview

UIB	Unit input breaker
SSIB	Static switch input breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker

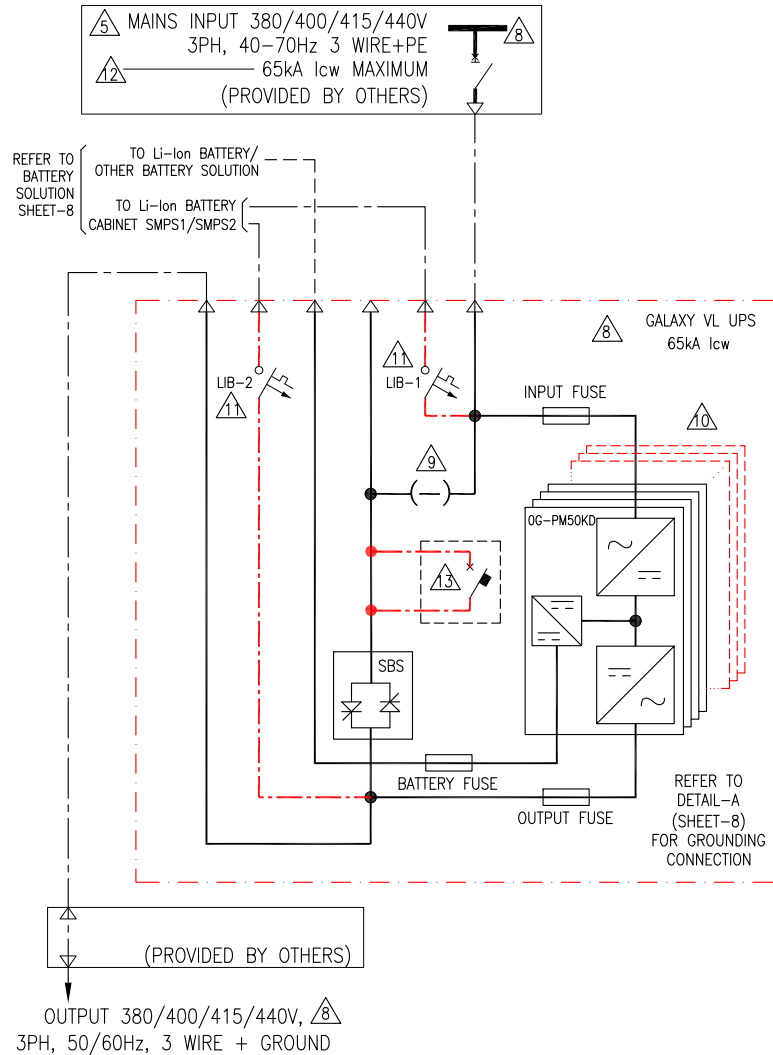
Single Mains UPS System



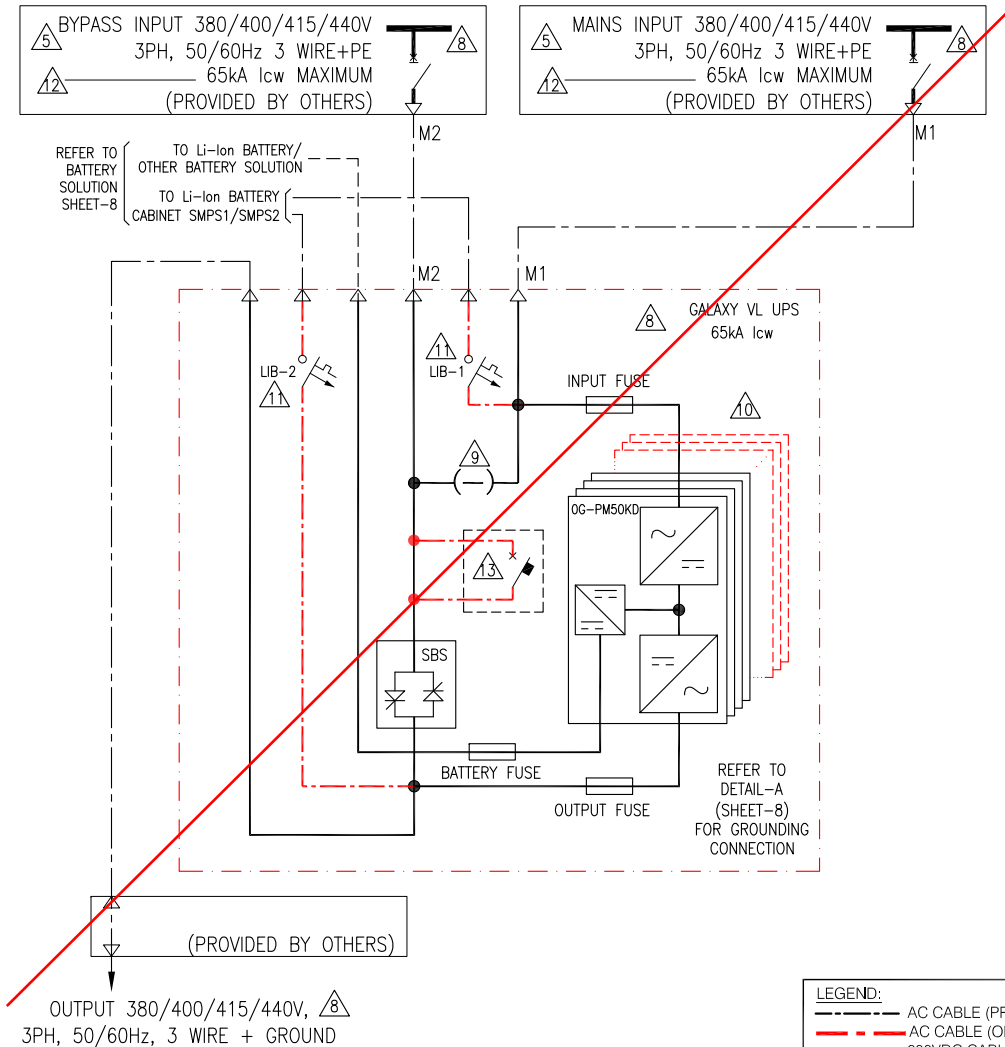
Dual Mains UPS System



1 UPS – SINGLE MAINS TOP ENTRY



1 UPS – DUAL MAINS TOP ENTRY



NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES.
2. REFER TO PRODUCT INSTALLATION DOCUMENTATION FOR SITE PREPARATIONS.
3. DRAWING DEPICTS POWER SYSTEM CONNECTIONS AND IS NOT REPRESENTATIVE OF PHYSICAL LAYOUT.
4. FINAL SELECTIONS ARE RESPONSIBILITY OF ENGINEER OF RECORDS BASED ON INSTALLED CONDITIONS AND SCC/SELECTIVE CO-ORDINATION/ARC-FLASH ANALYSIS.
5. FOR POWER DISTRIBUTION SYSTEMS TN-S, TN-C, TT AND IT ARE SUPPORTED. CORNER GROUNDING IS NOT SUPPORTED.
6. DC CABLE RATINGS ARE SUPPLIED AS GUIDELINE RECOMMENDATION ONLY AND SHOULD NOT BE CONSIDERED SUBSTITUTED FOR REVIEW. COMPLIANCE WITH NATIONAL OR LOCAL ELECTRICAL CODES. CONSULT YOUR LICENSED ENGINEER OF RECORDS FOR SITE-SPECIFIC "10MS L/R TIME CONSTANT CALCULATIONS (V_{DROP} 1VMIN)" FOR OVER-CURRENT PROTECTION AND RUNTIMES.
7. CABLE LUGS ARE PROVIDED BY OTHERS.
8. FOR SKU#, SPECIFICATIONS AND RATINGS REFER TO SHEET-9 & 10.
9. APPLICABLE FOR SINGLE MAINS ONLY, TO BE REMOVED FOR DUAL MAINS.
10. EACH POWER MODULE IS 50kW RATED. REFER TO SHEET-9 & 10 FOR APPLICABLE NUMBER OF POWER MODULES FOR VARIOUS UPS RATINGS.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

- LIB-1, LIB-2 ARE OPTIONAL (SKU#GVLOPT005).
 MAXIMUM RMS KA RATING :- WITHOUT BACKFEED KIT IS 65KA l_{cw}, WITH BACKFEED KIT INSTALLED IS 45KA l_{cc}.
 IT IS MANDATORY TO USE BACKFEED PROTECTION FROM ONE OF THE BELOW
 A) THE UPSTREAM BREAKER (WITH SHUNT TRIP) TO STATIC SWITCH.
 B) OPTIONAL BACKFEED KIT(GVLOPT004)-FIELD INSTALLABLE.

TITLE: Galaxy VL UPS
 Input: 380/400/415/440V AC 40-70Hz 3PH SINGLE/DUAL MAINS
 Output: 380/400/415/440V AC 50/60Hz 3PH 200-500kW
 1 UPS WITH BATTERY FOR 3WIRE SYSTEM
 SYSTEM ONE LINE DIAGRAM (TOP ENTRY)

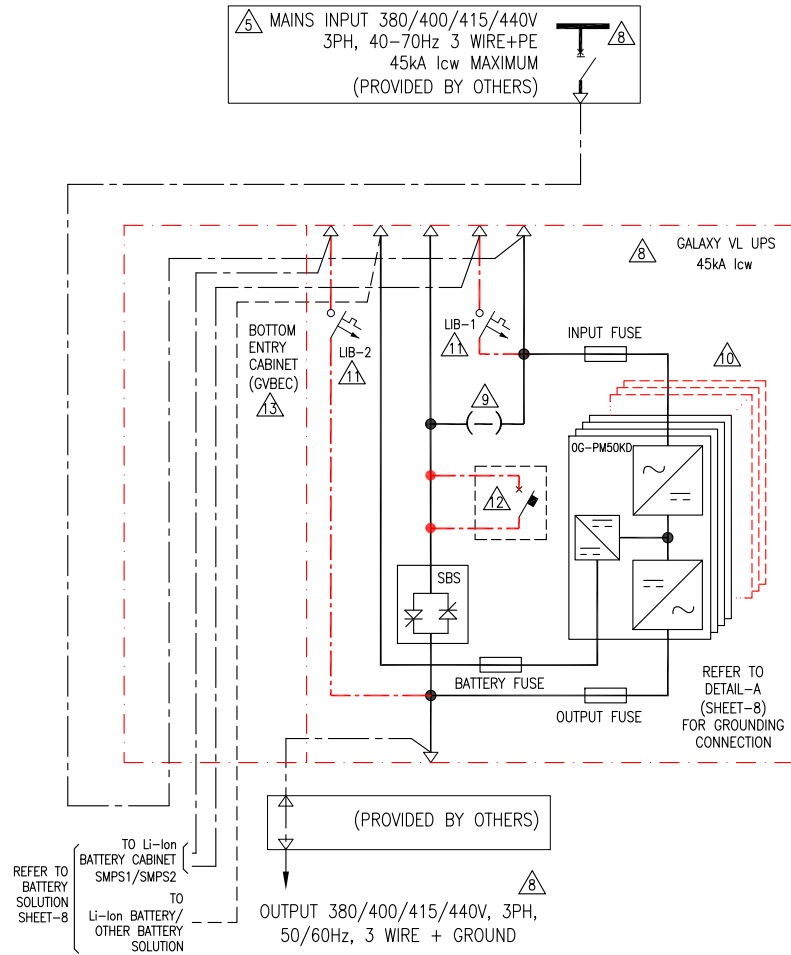
PROJECT: DRAWINGS **SHEET** 1 OF 10

LEGEND:
 --- AC CABLE (PROVIDED BY OTHERS)
 --- AC CABLE (OPTIONAL)
 --- 600VDC CABLE (PROVIDED BY OTHERS)

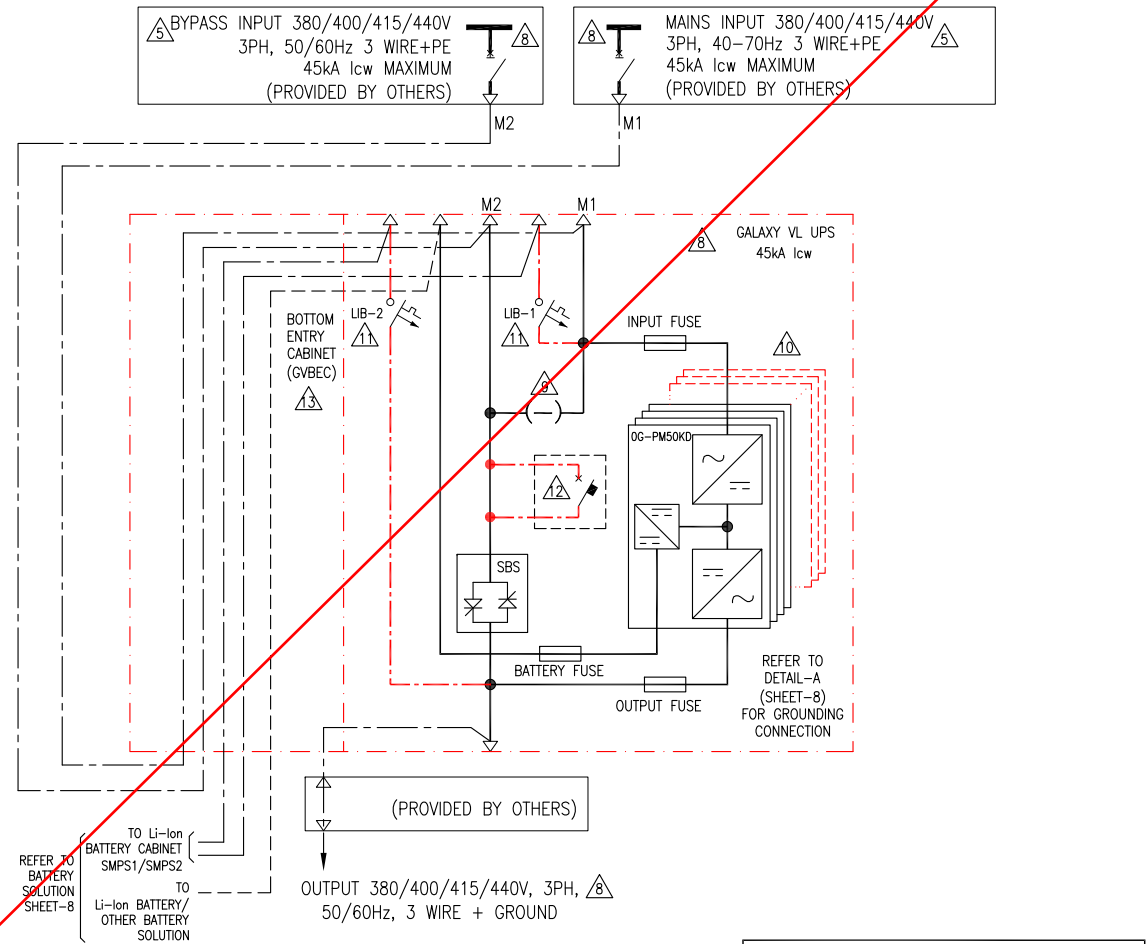
DWG NO: GVL200K500DHS-SD
DRAWN: RANJITHA 07-FEB-23
ENGINEER: VLAD MURESAN 08-FEB-23
APPROVED: VLAD MURESAN 08-FEB-23

REV: 0
ANGLE PROJECTION: N/A

1 UPS – SINGLE MAINS WITH BOTTOM ENTRY CABINET



1 UPS – DUAL MAINS WITH BOTTOM ENTRY CABINET



LEGEND:	
	AC CABLE (PROVIDED BY OTHERS)
	AC CABLE (OPTIONAL)
	600VDC CABLE (PROVIDED BY OTHERS)

NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES.
2. REFER TO PRODUCT INSTALLATION DOCUMENTATION FOR SITE PREPARATIONS.
3. DRAWING DEPICTS POWER SYSTEM CONNECTIONS AND IS NOT REPRESENTATIVE OF PHYSICAL LAYOUT.
4. FINAL SELECTIONS ARE RESPONSIBILITY OF ENGINEER OF RECORDS BASED ON INSTALLED CONDITIONS AND SCC/SELECTIVE CO-ORDINATION/ARC-FLASH ANALYSIS.
5. FOR POWER DISTRIBUTION SYSTEMS TN-S, TN-C, TT AND IT ARE SUPPORTED. CORNER GROUNDING IS NOT SUPPORTED.
6. DC CABLE RATINGS ARE SUPPLIED AS GUIDELINE RECOMMENDATION ONLY AND SHOULD NOT BE CONSIDERED SUBSTITUTED FOR REVIEW. COMPLIANCE WITH NATIONAL OR LOCAL ELECTRICAL CODES. CONSULT YOUR LICENSED ENGINEER OF RECORDS FOR SITE-SPECIFIC "10MS L/R TIME CONSTANT CALCULATIONS (V_DROP 1VMIN)" FOR OVER-CURRENT PROTECTION AND RUNTIMES.
7. CABLE LUGS ARE PROVIDED BY OTHERS.
8. FOR SKU#, SPECIFICATIONS AND RATINGS REFER TO SHEET-9 & 10.
9. APPLICABLE FOR SINGLE MAINS ONLY, TO BE REMOVED FOR DUAL MAINS.
10. EACH POWER MODULE (OG-PM50KD) IS 50kW RATED. REFER TO SHEET-9 & 10 FOR APPLICABLE NUMBER OF POWER MODULES FOR VARIOUS UPS RATINGS.
11. LIB-1, LIB-2 ARE OPTIONAL (SKU#GVLOPT005).

11. IT IS MANDATORY TO USE BACKFEED PROTECTION FROM ONE OF THE BELOW
- A) THE UPSTREAM BREAKER (WITH SHUNT TRIP) TO STATIC SWITCH.
 - B) OPTIONAL BACKFEED KIT(GVLOPT004)-FIELD INSTALLABLE.
12. THE UPS IS RATED FOR 65kA lcv, HOWEVER WHEN USED WITH BOTTOM ENTRY CABINET THE SOLUTION IS RATED FOR 45kA lcv.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

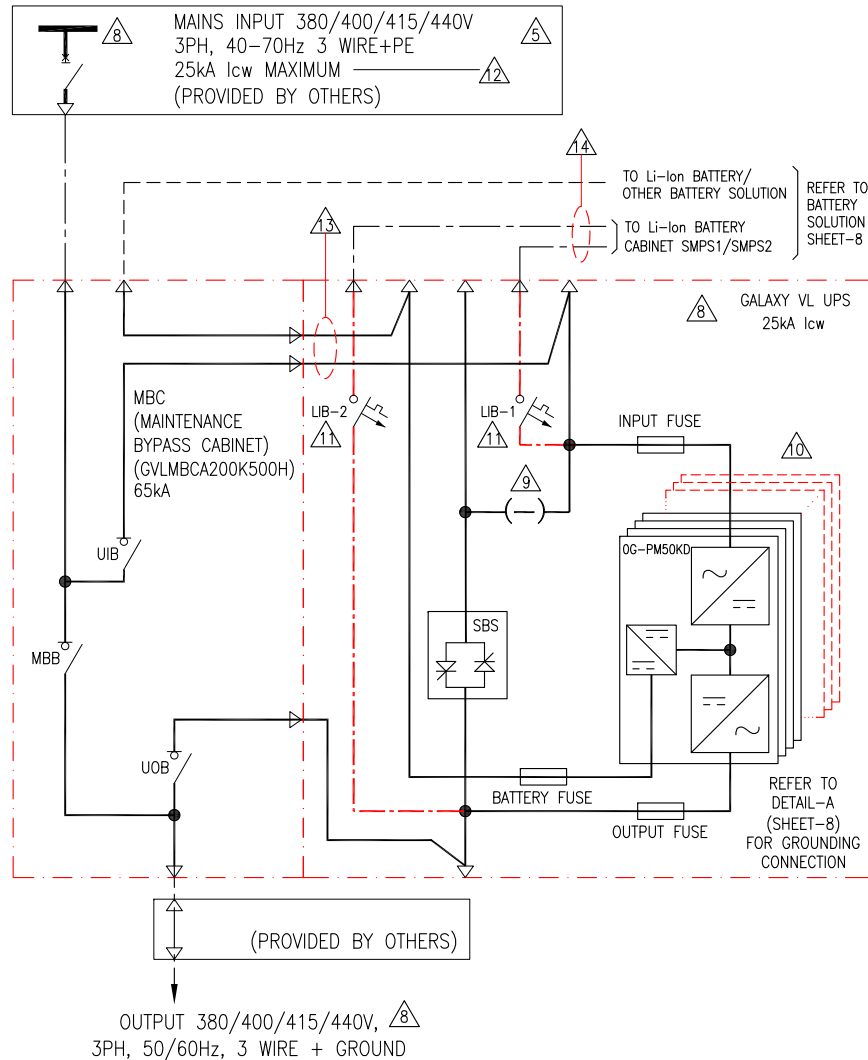
TITLE: Galaxy VL UPS
Input: 380/400/415/440V AC 40-70Hz 3PH SINGLE/DUAL MAINS
Output: 380/400/415/440V AC 50/60Hz 3PH 200-500kW
1 UPS WITH BATTERY FOR 3WIRE SYSTEM
SYSTEM ONE LINE DIAGRAM (BOTTOM ENTRY)

PROJECT: DRAWINGS SHEET 2 OF 10

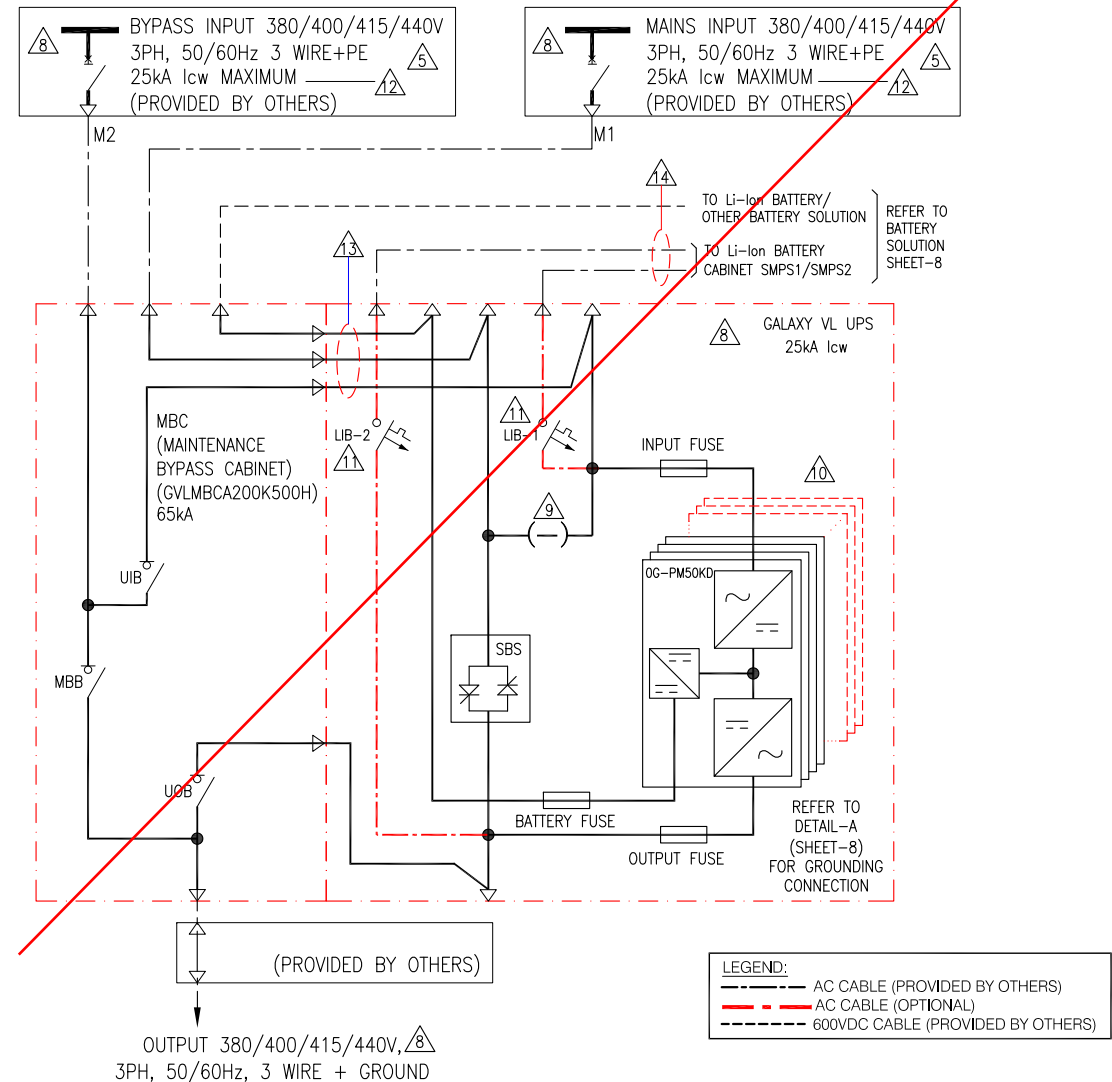
DWG NO: GVL200K500DHS-SD
DRAWN: RANJITHA 07-FEB-23
ENGINEER: VLAD MURESAN 08-FEB-23
APPROVED: VLAD MURESAN 08-FEB-23

REV. 0
ANGLE PROJECTION N/A

1 UPS – SINGLE MAINS WITH ADJACENT MBC (TOP/BOTTOM ENTRY)



1 UPS – DUAL MAINS WITH ADJACENT MBC (TOP/BOTTOM ENTRY)



NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES.
2. REFER TO PRODUCT INSTALLATION DOCUMENTATION FOR SITE PREPARATIONS.
3. DRAWING DEPICTS POWER SYSTEM CONNECTIONS AND IS NOT REPRESENTATIVE OF PHYSICAL LAYOUT.
4. FINAL SELECTIONS ARE RESPONSIBILITY OF ENGINEER OF RECORDS BASED ON INSTALLED CONDITIONS AND SCC/SELECTIVE CO-ORDINATION/ARC-FLASH ANALYSIS.
5. FOR POWER DISTRIBUTION SYSTEMS TN-S, TN-C, TT AND IT ARE SUPPORTED. CORNER GROUNDING IS NOT SUPPORTED.
6. DC CABLE RATINGS ARE SUPPLIED AS GUIDELINE RECOMMENDATION ONLY AND SHOULD NOT BE CONSIDERED SUBSTITUTED FOR REVIEW.
COMPLIANCE WITH NATIONAL OR LOCAL ELECTRICAL CODES. CONSULT YOUR LICENSED ENGINEER OF RECORDS FOR SITE-SPECIFIC "10MS L/R
TIME CONSTANT CALCULATIONS (V_DROP 1VMIN)" FOR OVER-CURRENT PROTECTION AND RUNTIMES.
7. CABLE LUGS ARE PROVIDED BY OTHERS.
8. FOR SKU#, SPECIFICATIONS AND RATINGS REFER TO SHEET-9 & 10.
9. APPLICABLE FOR SINGLE MAINS ONLY, TO BE REMOVED FOR DUAL MAINS.

10. EACH POWER MODULE IS 50kW RATED. REFER TO SHEET-9 & 10 FOR APPLICABLE NUMBER OF POWER MODULES FOR VARIOUS UPS RATINGS.
11. LIB-1, LIB-2 ARE OPTIONAL (SKU#GVL0PT005).
12. THE UPS IS RATED FOR 65kA Icw, HOWEVER WHEN USED WITH MAINTENANCE BYPASS CABINET THE SOLUTION IS RATED FOR 25kA Icw.
13. THESE INTERFACE BUSBARS ARE PART OF MBC SKU#GVLMBCA200K500HS.
14. FOR THESE CABLES TOP CABLE ENTRY ALONE IS POSSIBLE.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

TITLE: Galaxy VL UPS
Input: 380/400/415/440V AC 40-70Hz 3PH SINGLE/DUAL MAINS
Output: 380/400/415/440V AC 50/60Hz 3PH 200-500kW
1 UPS WITH BATTERY FOR 3WIRE SYSTEM
SYSTEM ONE LINE DIAGRAM (WITH MBC)

DWG NO: GVL200K500DHS-SD
DRAWN: RANJITHA 07-FEB-23
ENGINEER: VLAD MURESAN 08-FEB-23
APPROVED: VLAD MURESAN 08-FEB-23
PROJECT: DRAWINGS SHEET 3 OF 10
REV: 0
ANGLE PROJECTION N/A

3 WIRE / 3 WIRE IT SYSTEM

GALAXY VL PARALLEL 3–WIRE SYSTEM, 200–500KW 380/400/415/440V AC IN, 380/400/415/440V AC OUT UPS –SYSTEM SITE PLANNING DATA											
MAINS INPUT (SINGLE MAINS): 380/400/415/440V AC, 40–70Hz 3PH, 3 WIRE+PE 3 WIRE+PE BYPASS INPUT: 380/400/415/440V AC, 50/60Hz, 3PH, 3 WIRE+PE WIRE+PE						MAINS INPUT (DUAL MAINS): 380/400/415/440V AC,40–70Hz 3PH, 3 WIRE+PE OUTPUT: 380/400/415V AC, 50/60Hz, 3PH, 3 LI-ION BATTERY/CLASSIC BATTERY CABINET / BATTERY BREAKER BOX/KIT (FOR THIRD PARTY BATTERY SOLUTION)					
UPS SKU/CR NUMBER	DEFAULT NUMBER OF POWER MODULES (50kW)	EXPANDABLE UP TO (kW)	APPLICABLE NUMBER OF POWER MODULES	NUMBER OF REDUNDANT POWER MODULE (50kW)	APPLICABLE CLASSIC BATTERY CABINET	NOMINAL MAINS INPUT CURRENT (A) @ 380/400/415/440V AC	MAXIMUM MAINS INPUT CURRENT (A) @ 380/400/415/440V AC	BYPASS INPUT CURRENT (A) @ 380/400/415/440V AC	UPS / SYSTEM OUTPUT CURRENT (A) @ 380/400/415/440V AC	BATTERY CURRENT (A DC)	
										®FULL LOAD AND NOMINAL BATTERY VOLTAGE	®FULL LOAD AND MINIMUM BATTERY VOLTAGE
GVL200K500HS	4	200	4	0	ENGINEER TO ORDER ITEM (CONTACT SCHNEIDER ELECTRIC FOR DETAILS)	316/299/288/272	364/359/346/326	307/292/281/265	304/289/278/262	434	543
		200	5	1							
		250	5	0							
		250	6	1		395/374/360/340	455/449/432/408	384/364/351/331	380/361/348/328	543	678
		300	6	0		474/449/432/408	546/539/519/490	460/437/422/398	456/433/417/394	651	814
		300	7	1							
		350	7	0							
		350	8	1		553/524/505/476	637/629/605/571	537/510/492/464	532/505/487/459	760	949
		400	8	0		632/599/577/544	728/719/692/653	614/583/562/530	608/577/556/525	868	1085
		400	9	1							
		450	9	0							
		450	10	1		711/674/649/612	819/809/778/734	691/656/632/596	684/650/626/590	977	1221
		500	10	0	790/749/721/680	910/898/865/816	767/729/703/663	760/722/696/656	1085	1356	
GVL300K500DS	6	EXPANDABLE FROM 300KW – 500KW (REFER TO THE ABOVE APPLICABLE ROWS BASED ON THE EXPANDED RATING OF UPS)									
GVL400K500DS	8	EXPANDABLE FROM 300KW – 500KW (REFER TO THE ABOVE APPLICABLE ROWS BASED ON THE EXPANDED RATING OF UPS)									
GVL500K500DS	10	REFER TO THE ABOVE 500KW ROW FOR SPECIFICATIONS									

Li-Ion SMPS SUPPLY BATTERY BREAKERS (OPTIONAL) SKU#GVLOPT005	
DEVICE ID	BREAKER SPECIFICATION AND MODEL NUMBER (MAKE: SCHNEIDER ELECTRIC)
LIB-1 / LIB-2	3P, 6.3A, 690V, 100kA Icu@500V, Model: GV2P10

NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES.
2. REFER TO PRODUCT INSTALLATION DOCUMENTATION FOR SITE PREPARATIONS.
3. FINAL SELECTIONS ARE RESPONSIBILITY OF ENGINEER OF RECORDS BASED ON INSTALLED CONDITIONS AND SCC/SELECTIVE CO-ORDINATION/ARC-FLASH ANALYSIS.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.



TITLE:	Galaxy VL UPS	
Input:	380/400/415/440V AC 40-70Hz 3PH SINGLE/DUAL MAINS	
Output:	380/400/415/440V AC 50/60Hz 3PH 200-500KW	
	1&6 UPS WITH BATTERY FOR 3WIRE SYSTEM	
	SYSTEM ONE LINE DIAGRAM - SITE PLANNING DATA 1	
PROJECT:	DRAWINGS	SHEET 9 OF 10

DWG NO: GVL200K500DHS-SD		
DRAWN:	RANJITHA	07-FEB-23
ENGINEER:	VLAD MURESAN	08-FEB-23
APPROVED:	VLAD MURESAN	08-FEB-23

REV.	2
ANGLE	
PROJECTION	
N/A	

3 WIRE / 3 WIRE IT SYSTEM

GVL PARALLEL 3–WIRE, RECOMMENDED UPSTREAM OVER CURRENT PROTECTION DEVICE WITH TRIP UNIT (3 POLE) MODEL NUMBER (MAKE: SCHNEIDER ELECTRIC)																	
RATING (kW)	LOCATION	380V				400V				415V				440V			
		In	Ir setting	Ir (A)	I _{sd} (x Ir)	In	Ir setting	Ir (A)	I _{sd} (x Ir)	In	Ir setting	Ir (A)	I _{sd} (x Ir)	In	Ir setting	Ir (A)	I _{sd} (x Ir)
200	INPUT	ComPacT NSX 400H MicroLogic 2.0 (3P: C4032D400)															
		400	0.92	368	<10	400	1	360	<10	400	0.97	349	<10	400	0.95	342	<10
	BYPASS/OUTPUT	ComPacT NSX 400H MicroLogic 2.0 (3P: C4032D400)															
		400	0.95	342	10	400	0.9	324	10	400	0.98	314	10	400	0.93	298	10
	BATTERY (LIB–1/LIB–2)	ComPacT NS 630S DC TM–D (C634TM630D)															
		360	0.9	567	<10	360	0.9	567	<10	360	0.9	567	<10	360	0.9	567	<10
250	INPUT	ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630)															
		630	0.92	460	<10	630	1	450	<10	630	0.97	436	<10	630	0.94	423	<10
	BYPASS/OUTPUT	ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630)							ComPacT NSX 400H MicroLogic 2.0 (3P: C4032D400)								
		630	0.95	428	10	630	0.9	405	10	400	0.98	392	10	400	0.93	372	10
	BATTERY (LIB–1/LIB–2)	MasterPacT NW10HDC–D MicroLogic 1.0 DC/ (48649+65272)															
		1000	–	1000	1500	1000	–	1000	1500	1000	–	1000	1500	1000	–	1000	1500
300	INPUT	ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630)															
		630	0.96	547	<10	630	0.95	542	<10	630	0.92	524	<10	630	0.9	513	<10
	BYPASS/OUTPUT	ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630)															
		630	0.9	513	10	630	0.98	490	10	630	0.94	470	10	630	1	450	10
	BATTERY (LIB–1/LIB–2)	MasterPacT NW10HDC–D MicroLogic 1.0 DC/ (48649+65272)															
		1000	–	1000	<10	1000	–	1000	<10	1000	–	1000	<10	1000	–	1000	<10
350	INPUT	ComPacT NS800H MicroLogic 5.0 (3P: 33553)				ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630)											
		800	0.8	640	<10	630	1	630	<10	630	0.97	611	<10	630	0.94	592	<10
	BYPASS/OUTPUT	ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630)															
		630	0.95	598	10	630	1	570	10	630	0.96	547	10	630	0.92	524	10
	BATTERY (LIB–1/LIB–2)	MasterPacT NW10HDC–D MicroLogic 1.0 DC/ (48649+65272)															
		1000	–	1000	<10	1000	–	1000	<10	1000	–	1000	<10	1000	–	1000	<10
400	INPUT	ComPacT NS800H MicroLogic 5.0 (3P: 33553)															
		800	0.95	760	<10	800	0.9	720	<10	800	0.9	720	<10	800	0.9	720	<10
	BYPASS/OUTPUT	ComPacT NS800H MicroLogic 5.0 (3P: 33553)							ComPacT NSX 630H MicroLogic 2.0 (3P: C6332D630)								
		800	0.9	720	10	800	0.9	720	10	630	1	630	10	630	0.94	592	10
	BATTERY (LIB–1/LIB–2)	MasterPacT NW20HDC–D MicroLogic 1.0 DC/ (48652+65273)															
		2000	–	2000	<10	2000	–	2000	<10	2000	–	2000	<10	2000	–	2000	<10
450	INPUT	ComPacT NS1000H MicroLogic 5.0 (3P: 33559)							ComPacT NS800H MicroLogic 5.0 (3P: 33553)								
		1000	0.9	900	<8 X In	1000	0.9	900	<8 X In	800	0.98	784	<10 X In	800	0.95	760	<10 X In
	BYPASS/OUTPUT	ComPacT NS800H MicroLogic 5.0 (3P: 33553)															
		800	0.98	784	10 X In	800	0.95	760	10 X In	800	0.9	720	10 X In	800	0.9	720	10 X In
	BATTERY (LIB–1/LIB–2)	MasterPacT NW20HDC–D MicroLogic 1.0 DC/ (48652+65273)															
		2000	–	2000	2500	2000	–	2000	2500	2000	–	2000	2500	2000	–	2000	2500
500	INPUT	ComPacT NS1000H MicroLogic 5.0 (3P: 33559)															
		1000	0.95	950	<8 X In	1000	0.9	900	<8 X In	1000	0.9	900	<8 X In	1000	0.9	900	<8 X In
	BYPASS/OUTPUT	ComPacT NS1000H MicroLogic 5.0 (3P: 33559)							ComPacT NS800H MicroLogic 5.0 (3P: 33553)								
		1000	0.9	900	8 X In	1000	0.9	900	8 X In	800	0.98	784	10 X In	800	0.95	760	10 X In
	BATTERY (LIB–1/LIB–2)	MasterPacT NW20HDC–D MicroLogic 1.0 DC/ (48652+65273)															
		2000	–	2000	2500	2000	–	2000	2500	2000	–	2000	2500	2000	–	2000	2500

NOTES:
1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES.
2. REFER TO PRODUCT INSTALLATION DOCUMENTATION FOR SITE PREPARATIONS.
3. FINAL SELECTIONS ARE RESPONSIBILITY OF ENGINEER OF RECORDS BASED ON INSTALLED CONDITIONS AND SCC/SELECTIVE CO–ORDINATION/ARC–FLASH ANALYSIS.

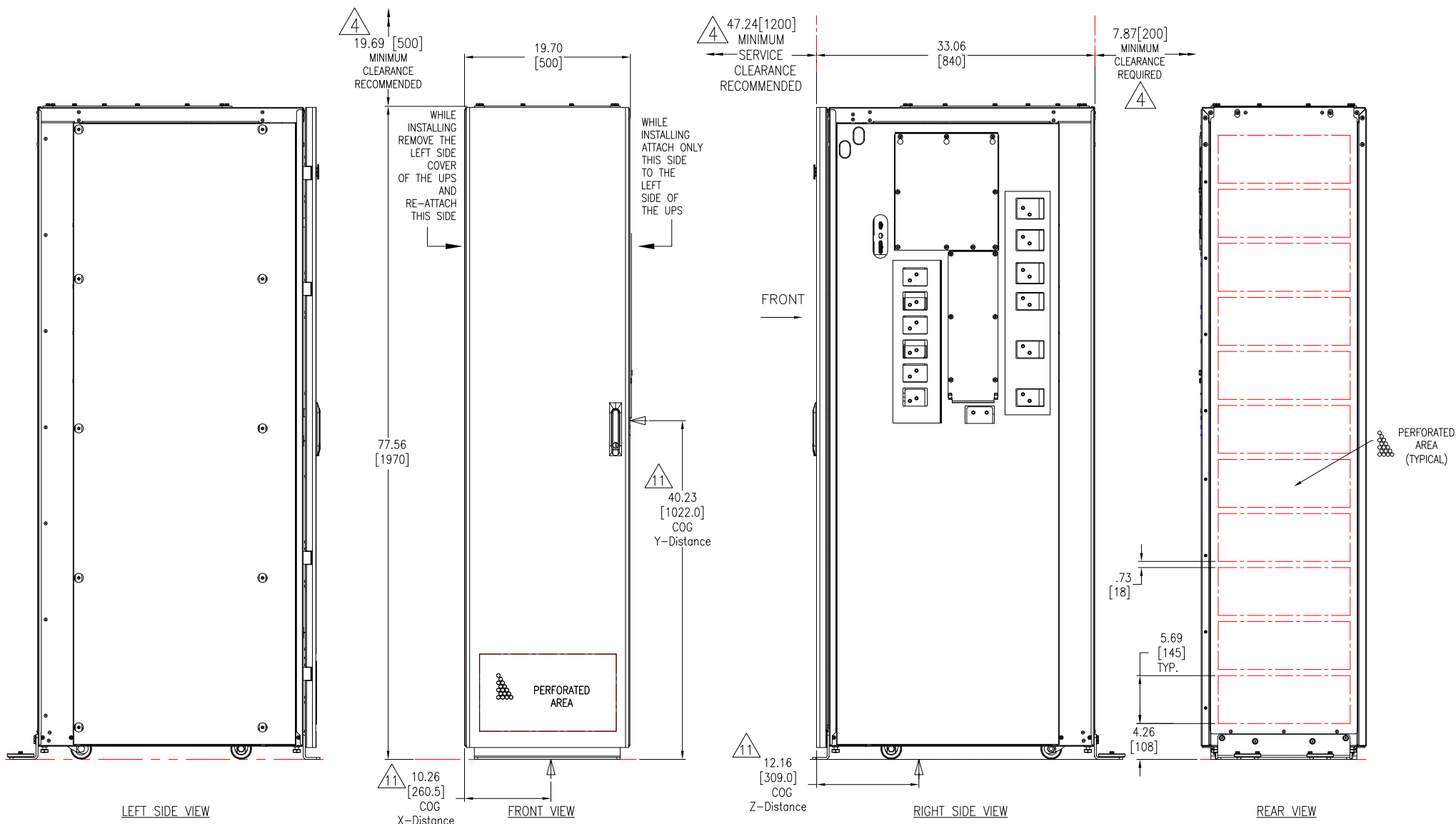
THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.



TITLE: Galaxy VL UPS
Input:380/400/415/440V AC 40–70Hz 3PH SINGLE/DUAL MAINS
Output: 380/400/415/440V AC 50/60Hz 3PH 200–500kW
1&6 UPS WITH BATTERY FOR 3WIRE SYSTEM
SYSTEM ONE LINE DIAGRAM – SITE PLANNING DATA 2
PROJECT: DRAWINGS SHEET 10 OF 10

DWG NO: GVL200K500DHS–SD
DRAWN: RANJITHA 20–JUN–22
ENGINEER: VLAD MURESAN 10–AUG–22
APPROVED: VLAD MURESAN 10–AUG–22

REV. 1
ANGLE PROJECTION N/A



THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

TITLE: Galaxy VL
MAINTENANCE BYPASS CABINET UL TYPE
Input: 400/415/480V, 3PH, 50/60Hz
Output: 400/415/480V, 3PH, 50/60Hz
GENERAL ARRANGEMENT

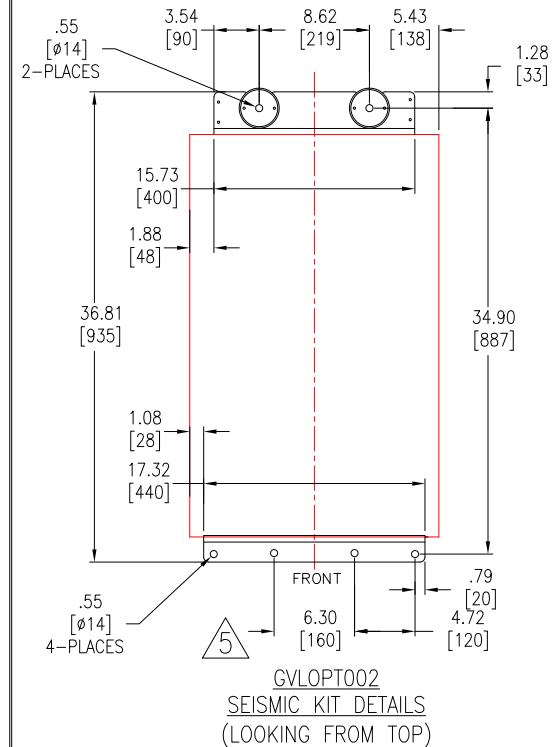
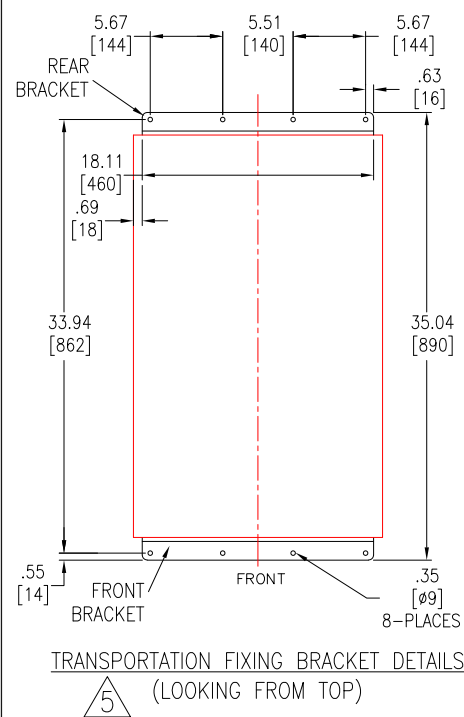
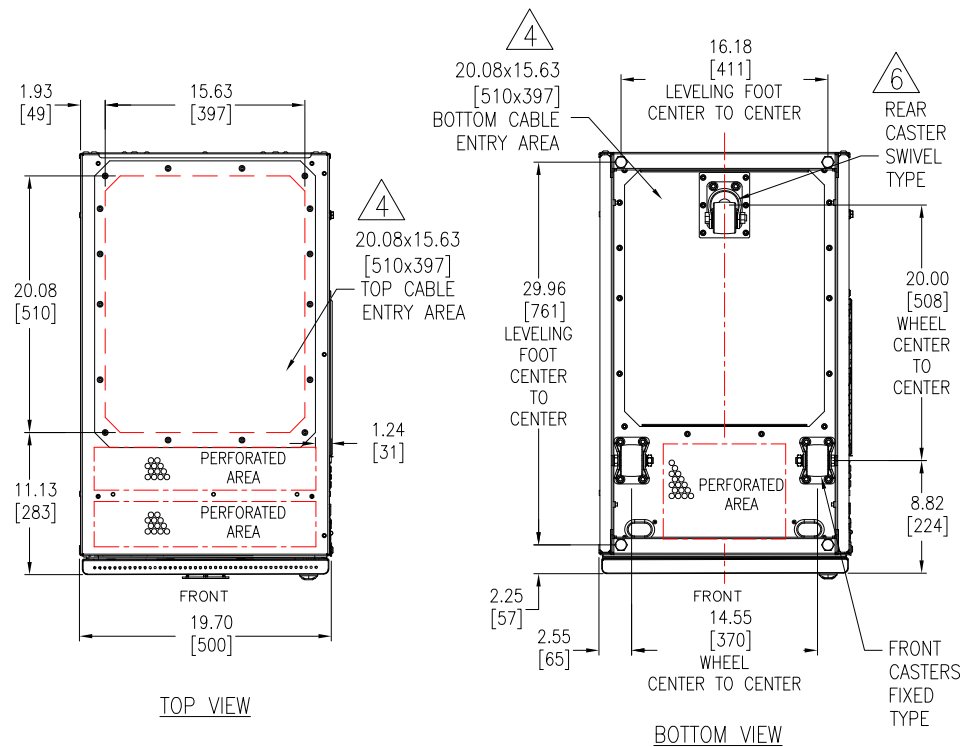
PROJECT: SUBMITTAL DRAWINGS **SHEET** 1 OF 4

DWG NO: GVLMBCA200K500G **REV.** 3

DRAWN BY: BALA/JAYAPRAKASH 21-SEP-22 **THIRD**

ENGINEER: A.D/H.L. 21-SEP-22 **ANGLE**

APPROVED BY: C.N/A.D/H.L/VLAD 21-SEP-22 **PROJECTION**



NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES.
2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
3. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].

△ 4. DRILL/PUNCH HOLES IN PLATE. REMOVE PLATE FROM CABINET BEFORE DRILLING/PUNCHING.

△ 5. 5. FOR NON-SEISMIC LOCATION: USE REAR TRANSPORTATION BRACKET ONLY.

FOR SEISMIC LOCATION : SEISMIC KIT IS REQUIRED (GVLOPT002).

△ 6. ONLY REAR CASTER TO BE REMOVED FOR BOTTOM CABLE ENTRY.

7. SOME STRUCTURAL DETAILS HAVE BEEN OMITTED FOR THE PURPOSE OF CLARITY.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

TITLE: Galaxy VL
MAINTENANCE BYPASS CABINET UL TYPE
Input: 400/415/480V, 3PH, 50/60Hz
Output: 400/415/480V, 3PH, 50/60Hz
TOP-BOTTOM VIEWS & ANCHORING

PROJECT: SUBMITTAL DRAWINGS **SHEET** 2 OF 4

DWG NO: GVLMBCA200K500G

DRAWN BY: BALA/JAYAPRAKASH 21-SEP-22

ENGINEER: A.D/H.L. 21-SEP-22

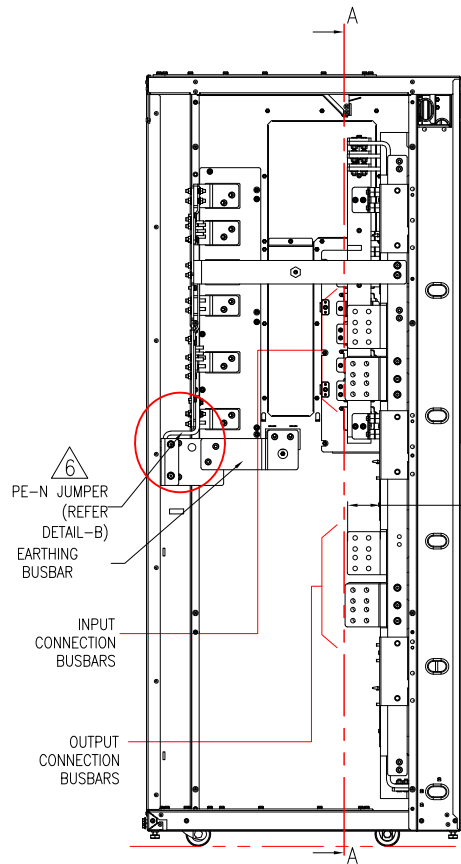
APPROVED BY: C.N/A.D/H.L/VLAD 21-SEP-22

REV. 2

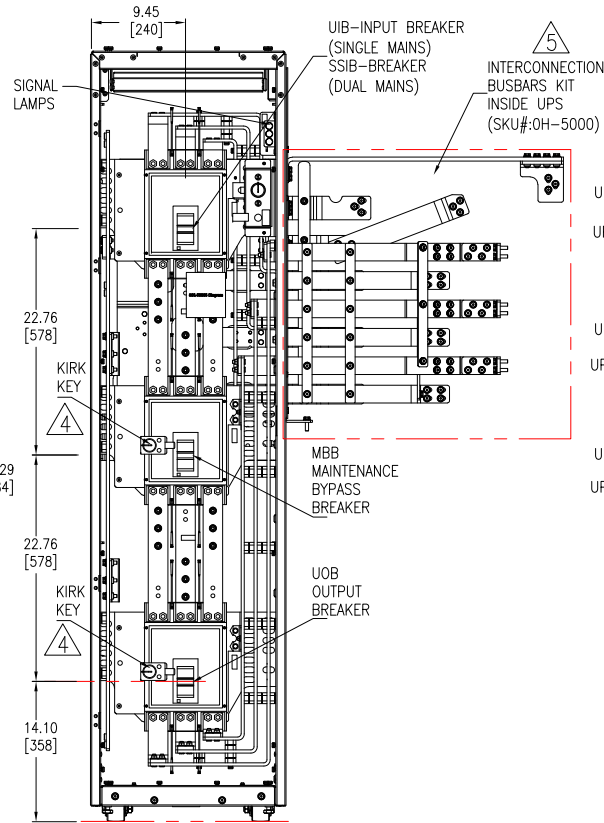
THIRD

ANGLE

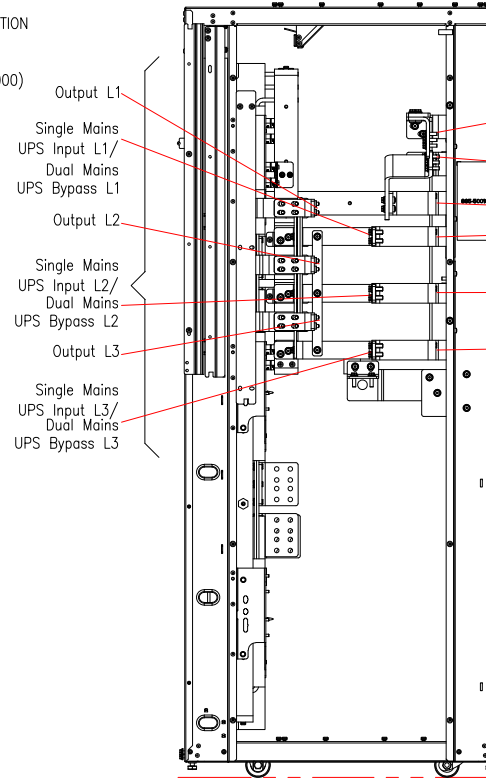
PROJECTION



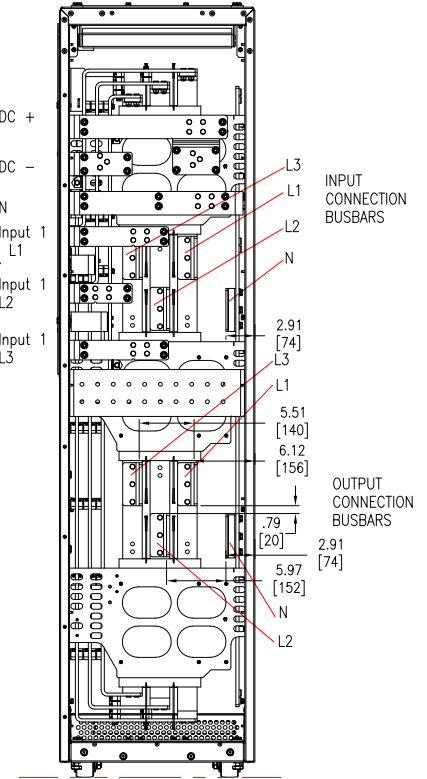
INTERNAL LEFT SIDE VIEW



FRONT VIEW



INTERNAL RIGHT SIDE VIEW



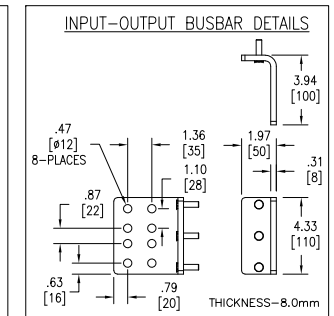
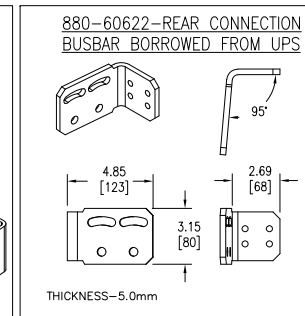
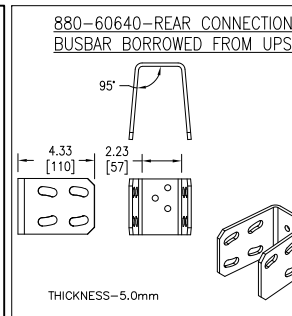
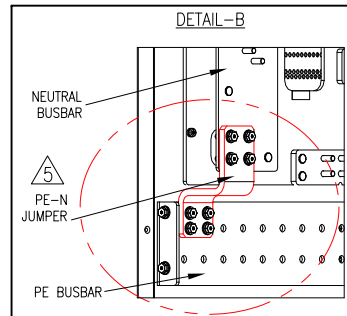
SECTION A-A

SWITCH-DISCONNECTOR DETAILS

COMPONENT	TYPE	RATING
UIB/SSIB/MBB/UOB	MCCB, P FRAME MIC 5.0 SQD	1200A, 600VAC, 3P

NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES.
2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
3. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
- △4. OPTIONAL SKU# GVSOPT004.
- △5. INTERCONNECTION KIT (OH-5000) IS PART OF MBC UNIT.
- △6. PE-N JUMPER PART OF INTERFACE KIT(OH-5000) SHOULD BE USED BETWEEN PE BUSBAR AND NEUTRAL BUSBAR ONLY FOR TN-C SYSTEM INSTALLATION.
7. SOME STRUCTURAL DETAILS HAVE BEEN OMITTED FOR THE PURPOSE OF CLARITY.



THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

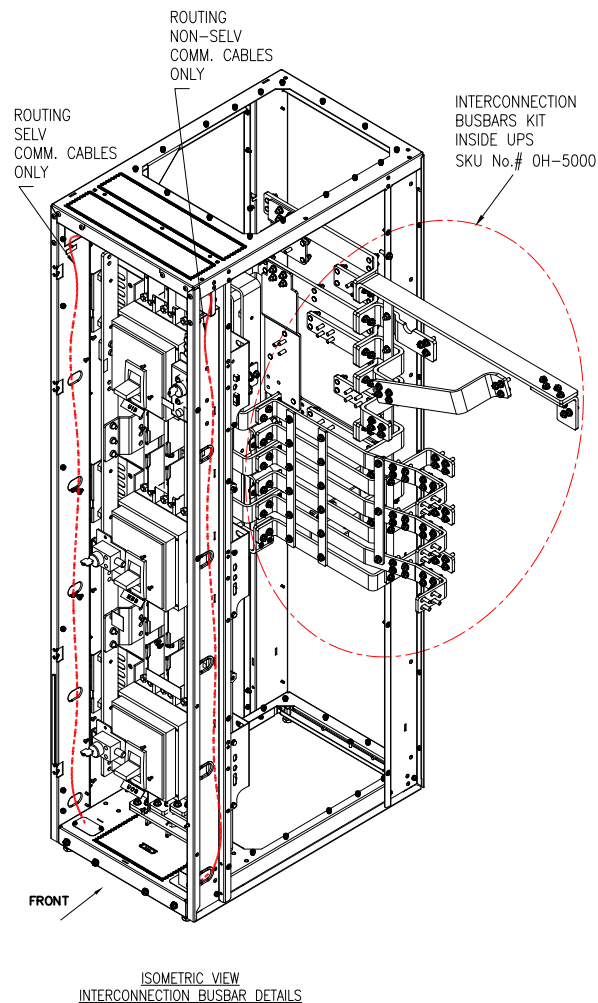
TITLE: Galaxy VL
MAINTENANCE BYPASS CABINET UL TYPE
Input: 400/415/480V, 3PH, 50/60Hz
Output: 400/415/480V, 3PH, 50/60Hz
INTERNAL VIEW-1

PROJECT: SUBMITTAL DRAWINGS **SHEET** 3 OF 4

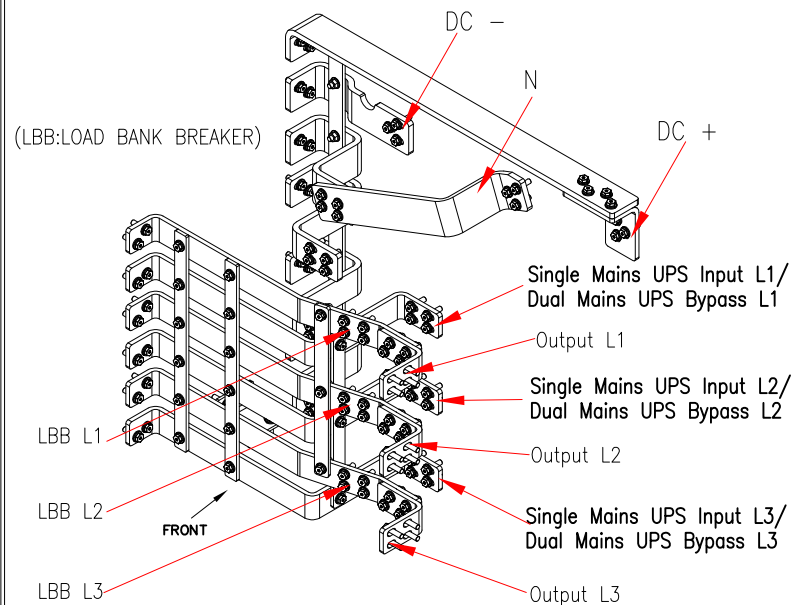
DWG NO: GVLMBCA200K500G
DRAWN BY: BALA/JAYAPRAKASH
ENGINEER: A.D./H.L.

APPROVED BY: C.N/A.D./H.L./VLAD

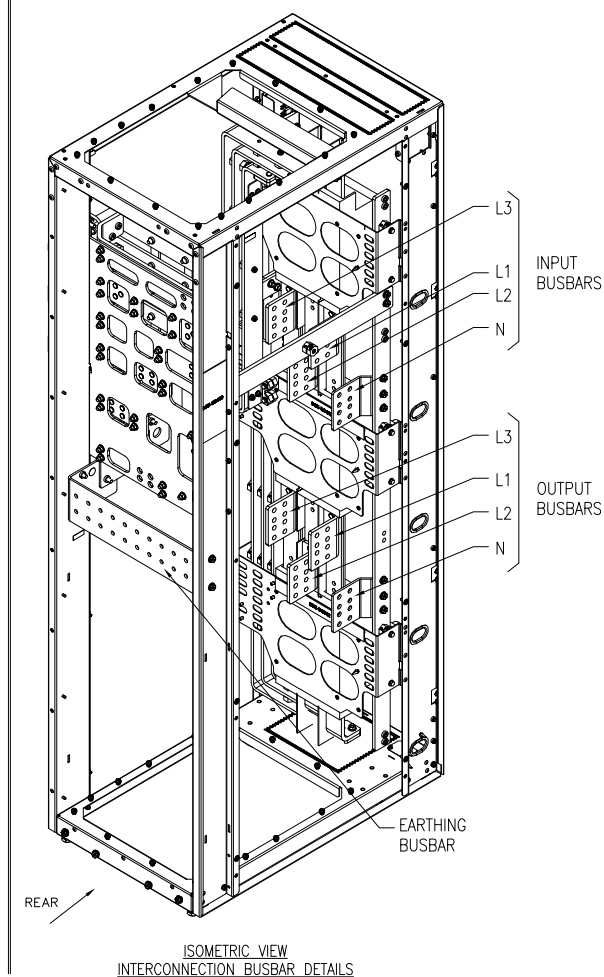
REV. 3
DATE 21-SEP-22
THIRD 21-SEP-22
ANGLE 21-SEP-22
PROJECTION



INTERCONNECTION BUSBARS KIT PART No.# 0H-5000 (MBC TO UPS)



ISOMETRIC VIEW (ENLARGED VIEW)



ISOMETRIC VIEW INTERCONNECTION BUSBAR DETAILS

NOTES:

1. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES.
2. REFER TO PRODUCT DOCUMENTATION FOR ADDITIONAL DETAILS PRIOR TO INSTALLATION AND SITE PREPARATION WORK.
3. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. SOME STRUCTURAL DETAILS HAVE BEEN OMITTED FOR THE PURPOSE OF CLARITY.

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

Schneider Electric

TITLE: Galaxy VL
MAINTENANCE BYPASS CABINET UL TYPE
Input: 400/415/480V, 3PH, 50/60Hz
Output: 400/415/480V, 3PH, 50/60Hz
INTERNAL VIEW-2

PROJECT: SUBMITTAL DRAWINGS SHEET 4 OF 4

DWG NO: GVLMBCA200K500G REV. 2

DRAWN BY: BALA/JAYAPRAKASH 21-SEP-22 THIRD ANGLE

ENGINEER: A.D./H.L. 21-SEP-22

APPROVED BY: C.N./A.D./H.L./VLAD 21-SEP-22 PROJECTION



ENERGY STAR CERTIFIED

Uninterruptible Power Supplies

Schneider Electric - Galaxy VL UPS 200 scalable to 500 kW 400/480VStart-up 5x8 : GVL200K500DS

Specifications

ENERGY STAR Unique ID:	2381572
Brand Name:	Schneider Electric
Model Name:	Galaxy VL UPS 200 scalable to 500 kW 400/480VStart-up 5x8
Model Number:	GVL200K500DS
Power Conversion Mechanism:	Static
Minimum Configuration Tested Model Number:	GVL200K500DS
Active Output Power Rating Minimum Configuration (W):	200000
Apparent Output Power Rating Minimum Configuration (VA):	200000
Maximum Configuration Tested Model Number:	GVL500KDS
Active Output Power Rating Maximum Configuration (W):	500000
Topology (ac):	Multi-Mode Double Conversion
Topology and Product Type Combined:	ac - Other
Application:	Data Center
Rated Input Voltage (V rms):	380-480
Rated Input Frequency (Hz):	50-60
Rated Output Voltage (V):	380-480
Rated Output Frequency (Hz):	50-60
Rack Mountable:	No
Height (mm):	1970
Width (mm):	850
Depth (mm):	925
Normal Mode(s) Input Dependency Characteristic (ac):	Voltage and Frequency Independent,Voltage and Frequency Dependent
Modular UPS:	Yes
Number of Normal Modes:	Multiple-normal-mode
Default Normal Mode (ac):	Voltage and Frequency Dependent
Test Input Voltage (V rms):	480
Test Input Frequency (Hz):	60
Test Output Voltage (V):	480

Test Output Frequency (Hz):	60
Total Input Power in W at 0% Load Min Config Lowest Dependency (ac):	852.12
Total Input Power in W at 0% Load Min Config Highest Dependency (ac):	429.14
Efficiency at 25% Load Min Config Lowest Dependency (ac):	96.3
Efficiency at 25% Load Min Config Highest Dependency (ac):	98.9
Efficiency at 50% Load Min Config Lowest Dependency (ac):	97.1
Efficiency at 50% Load Min Config Highest Dependency (ac):	99.3
Efficiency at 75% Load Min Config Lowest Dependency (ac):	97.2
Efficiency at 75% Load Min Config Highest Dependency (ac):	99.4
Efficiency at 100% Load Min Config Lowest Dependency (ac):	97.2
Efficiency at 100% Load Min Config Highest Dependency (ac):	99.5
Weighted Efficiency Calc Min Config Lowest Dependency:	96.9
Weighted Efficiency Calc Min Config Highest Dependency:	99.2
Minimum Configuration Input Power Factor Highest-Input Dependency:	0.99
Total Input Power in W at 0% Load Max Config Lowest Dependency (ac):	1952.82
Total Input Power in W at 0% Load Max Config Highest Dependency (ac):	899.06
Efficiency at 25% Load Max Config Lowest Dependency (ac):	96.4
Efficiency at 25% Load Max Config Highest Dependency (ac):	99.0
Efficiency at 50% Load Max Config Lowest Dependency (ac):	97.1
Efficiency at 50% Load Max Config Highest Dependency (ac):	99.3
Efficiency at 75% Load Max Config Lowest Dependency (ac):	97.2
Efficiency at 75% Load Max Config Highest Dependency (ac):	99.4
Efficiency at 100% Load Max Config Lowest Dependency (ac):	97.1
Efficiency at 100% Load Max Config Highest Dependency (ac):	99.4
Weighted Efficiency Calc Max Config Lowest Dependency:	96.9
Weighted Efficiency Calc Max Config Highest Dependency:	99.3

Maximum Configuration Input Power Factor Lowest-Input Dependency:	1.0
Maximum Configuration Input Power Factor Highest-Input Dependency:	1.0
Efficiency (%):	96.9
Modular UPS Module Tested Model Number:	0G-PM50KD2
Energy Storage Mechanism:	Battery
Energy Storage System Technology:	Valve Regulated Lead-acid Battery
Energy Storage System Configuration:	Separate Enclosure
Energy Storage System Removable to Another Room:	Yes
Energy Storage System Runtime at 100% Load (min.):	N/A
Energy Storage System Runtime at 50% Load (min.):	N/A
Energy Storage System Warranty (yrs):	N/A
Energy Storage System Information URL:	N/A
Battery Recycling URL:	https://www.apc.com/us/en/who-we-are/sustainability/recycling-options.jsp
Network Connections Available:	Serial Port,Ethernet
Communication Protocols:	HTTP,HTTPS,Modbus TCP,SNMP (v1, 2 or 3),Modbus RTU
Manufacturer Take Back Program:	Yes
Manufacturer Take Back Program URL:	https://www.apc.com/us/en/who-we-are/sustainability/recycling-options.jsp
Model Web Page URL:	https://www.apc.com/shop/us/en/products/P-GVL200K500DS
Test Method Guidelines:	https://www.apc.com/us/en/who-we-are/sustainability/
Date Available on Market:	2021-04-03
Date Certified:	2021-07-06
Markets:	United States, Canada
ENERGY STAR Certified:	Yes

Additional Model Information

Galaxy VL UPS 200 scalable to 500 kW, 400/480V,GVL200K500D,

UPC Codes	731304423041, 731304423089
------------------	----------------------------

Captured On:
10/13/2023



VRLA UPS Battery System

BTECH's S5 battery Monitoring and Validation Systems are designed specifically for your UPS VRLA Monoblock battery systems; as each system can manage up to (8) eight parallel strings. BTECH's impedance measurement technology is considered the reference method for stationary monitoring system ohmic testing. BTECH's S5 system has the sensitivity and high-end filtering required to finding failing cells in any application and UPS/charger type. BTECH's patented rate of change analysis finds bad units well before they pose a risk to your critical systems. BTECH's S5 system uses fewer wires than any of our competitors. The wire set is pre-designed, pre-terminated and tested; cutting installation time in half while increasing system reliability.

Key System Features

- Real-Time Monitoring of System/String/Unit Voltages, Float, Charge and Discharge Current
- Programmable Cell Impedance Measurement: Up to 24x/Day
- Battery Discharge Data Logging
- Up to 320 Individual Units and 8 Strings per system
- For use with all battery jars, including 16 Volt
- Individual String Current Monitoring for multi-string systems
- Complete Isolation from the Battery String

Facility Management System Integration:

- MODBUS over TCP/IP for simple third-party software integration
- SNMP Compliant
- (6) Programmable Output Relays
- (4) Programmable Input Relays

IFC Compliance (International Fire Code)

Real-Time Thermal Runaway Management, Ambient, Pilot Cell and Differential Unit temperatures (Delta T) are recorded; if the Delta T measurement reaches a 15°F threshold, the system generates a critical alarm. Delta T alarms are recognized as the best way to identify and mitigate Thermal Runaway. The system monitors elevated unit voltages and excessive float charging. Optional smoke detection enables the S5 system to provide compliance with Local Fire Code. Operators have the option to take a programmable relay contact in the S5 system and turn off the battery charge, or trip battery breaker (dual Shunt trips required).

Alarm and Data Acquisition Ports:

- Integral Dial Up to 56k Modem
- Integral Ethernet Card (Cat 5/6)
- Local: RS-232 and USB
- Alarms: Text message to multiple cell phones, pagers or e-mail addresses through BVM Software or BMS integration

Safety

BTECH's Quick-Disconnect Safety Fuses simplify battery replacements while protecting personnel during installation and maintenance.

Why BTECH Is The World Leader In Battery Monitoring

WE'RE SUPERIOR

With over 7,000 systems installed worldwide, BTECH's patented impedance method provides rock solid data accuracy and stability, allowing more time to respond – no other system comes close.

WE'RE NON-DESTRUCTIVE

With a load signal optimized to the battery type, our system never subjects your batteries to a stressful load test. Plus, our system is not powered by your batteries avoiding unnecessary parasitic battery loads.

WE KNOW YOUR BATTERIES

BTECH doesn't just manufacture battery monitoring systems, BTECH's core competencies include DC plant experts, DC plant maintenance and UPS/charger design requirements. These core skills not only enable BTECH to provide the industry leading consulting services our customers expect but also provide unbiased support on the best practices in battery maintenance, battery testing and battery



System Specifications

Measurement Capability:

- Total Voltage: 0-600V
- Unit Voltage: 6-16 VD
- Unit Impedance: 100μΩ to 20mΩ

Temperature:

- Unit and Ambient: -32°F to 160°F
- Differential: 15°F from default ambient

Discharge Events:

- Date & Time
- System Voltage
- Load Current
- Power Removed
- Unit Voltage Decay

Discharging Logging:

- Programmable

Connection Capacity:

- Total Number Strings: 8
- Total Number of Units: 320

Measurement Accuracy & Repeatability:

- System Voltage: +/-0.1% Full Scale
- Unit Voltage: +/-0.1% of Reading
- Unit Impedance: +/-0.01 mΩ
- Temperature: +/-1.0°F

Power Requirements:

- 110 – 250 VAC 50/60 Hz (UPS Protected Power) (max 110 watts)

Enclosure:

- SCM – 600 Controller: NEMA 1 Metal Rack or Wall Mount
- VM24i Module: Voltage/Temperature/Current Flame Retardant Poly
- 1 Current Transducer per string 1% sensitivity

LED Indicators – VM24i DCM:

- Green = Power On

LED Indicators – SCM 600 Controller:

- Green = Summary No Alarms
- Yellow = Summary Maintenance Alarms
- Red = Summary Critical Alarms
- Red Equipment = Hardware Failure
- Alternating Green = Performing Measurement

Software:

- BVM 4.x Windows 7® based software package
- BVM Observer 4.x designed for Windows® 7 or above

System Configuration

S5H	1	12	040	C	O	WM	00
type	strings	point voltage	monitoring	measurement	options	configuration	custom code
S5H (60-600)	1-4 1	12 12	2-480 040	clamp, per string: C		cabinet, WM	
		1.2 01		clamp, per system: T		Rack Mount, RM	
		2 02		(2-4 strings): S			
		4 04					
		6 06					
		8 08					

Testimonials

"BTECH's Battery Monitoring Systems have proven to greatly reduce battery maintenance costs, extend the life of the batteries and virtually eliminate battery failure by being able to predict precisely which cells need to be replaced in advance.

Based on our experience, I highly recommend BTECH Battery Monitoring Systems."

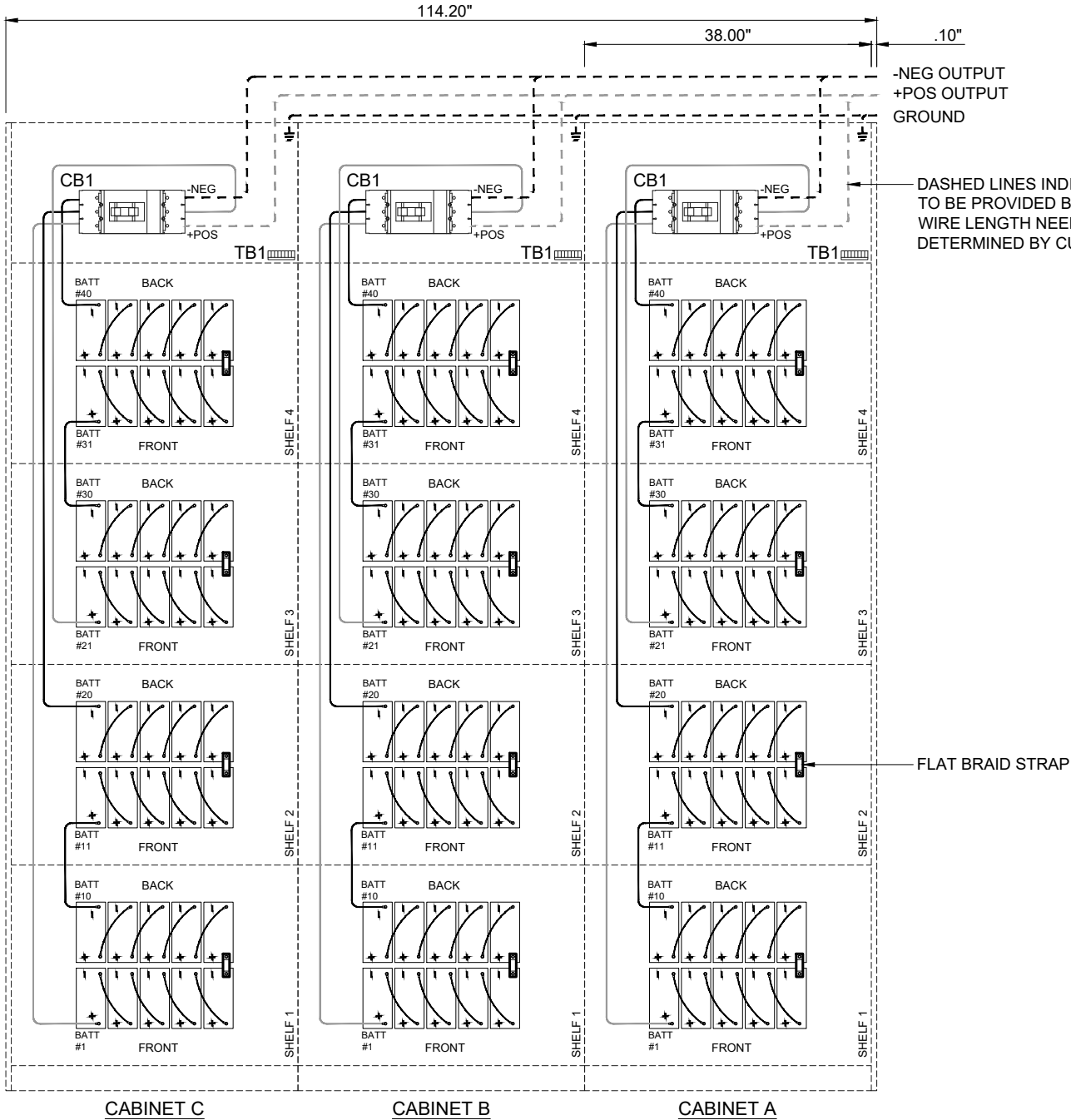
-S. Alim, Manager of Engineering, ADP



POSITIONING OF COMPONENTS ARE FOR ILLUSTRATION PURPOSES AND MAY NOT BE REPRESENTED IN THE EXACT LOCATION INDICATED.

- CAUTION: HIGH VOLTAGE, RISK OF ELECTRICAL SHOCK**
- FOLLOW ALL SAFETY PRECAUTIONS WHEN WORKING ON THIS SYSTEM
 - ALWAYS WEAR PROPER SAFETY EQUIPMENT INCLUDING EYE PROTECTION

- GENERAL NOTES:**
- ONLY QUALIFIED TECHNICIANS SHOULD PERFORM INSTALLATION OR MAINTENANCE OF THIS BATTERY SYSTEM.
 - ALL TOOLS SHOULD BE INSULATED TO PREVENT ELECTRICAL SHOCK.
 - OPEN DISCONNECTS BEFORE INSTALLATION OR MAINTENANCE.
 - CHECK DC VOLTAGE AT BATTERY OUTPUT AND UPS OUTPUT TO ENSURE PROPER POLARITY BEFORE MAKING FINAL CONNECTIONS.



ELECTRICAL ILLUSTRATION

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF INTRAPACK INDUSTRIES INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF INTRAPACK INDUSTRIES INC. IS PROHIBITED

NO.	DATE	REVISION DESCRIPTION

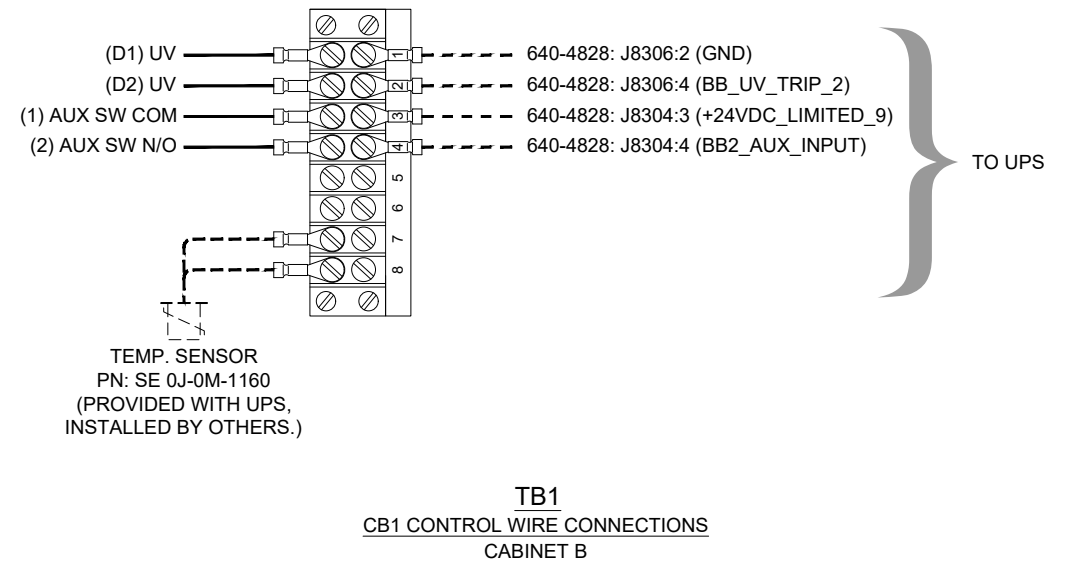
IntraPack
WWW.INTRAPACK.COM

® 10650 MARKISON ROAD
DALLAS, TX. 75238
PHONE: 214-348-7105
EMAIL: SALES@INTRAPACK.COM
© INTRAPACK 2022

SYSTEM WEIGHT: 14,310 lbs			
JOB NO.	N/A	DATE:	05/26/2022
QUOTE NO.	IPC22-0804	DRAWN BY:	SM
SCALE:	N.T.S.	APPR. BY:	

ADJACENT REMOTE TOP TERMINAL BATTERY RACK SYSTEM	
DRAWING NO. GVL-120H505-480-3-3D350-AR	REV. A00

*****NOTE:
INSTALLING CONTRACTOR TO VERIFY ALL
CONTROL CONNECTIONS TO THE UPS WITH
SCHNEIDER ELECTRIC DOCUMENTATION
PRIOR TO INSTALLATION**



NO.	DATE	REVISION DESCRIPTION



SYSTEM WEIGHT: 14,310 lbs			
JOB NO.	N/A	DATE:	05/26/2022
QUOTE NO.	IPC22-0804	DRAWN BY:	SM
SCALE:	N.T.S.	APPR. BY:	

REV.
A00

Product data sheet

Specifications



Power Module, 50 kW at 400/480V, 25 kW at 208V, for Galaxy V Ranges

GVPM50KD

Overview

Presentation	A 50kW (400V or 480V) / 25kW (208V) power module compatible with the Galaxy VS and Galaxy VL 3-phase UPS. When the power module is installed, the UPS automatically detects the change. Available as a power module replacement, or for increased capacity for the scalable Galaxy VS models.
Lead time	Usually Ships within 2 Weeks

Main

Other Input Voltage	400/480 V
Other Output Voltage	400 V 480 V
Kw Rating	50000 W
Rated power in VA	50000 VA

Physical

Height	5.12 in (130 mm)
Width	17.01 in (432 mm)
Depth	25.39 in (645 mm)
Net Weight	83.78 lb(US) (38 kg)

Output

Max Configurable Power (Watts)	50000 W
--------------------------------	---------

Environmental

Ambient Air Temperature for Operation	32...122 °F (0...50 °C)
Relative Humidity	0...95 % non-condensing
Operating altitude	0...9842.52 ft (0...3000 m)
Ambient Air Temperature for Storage	-13...131 °F (-25...55 °C)
Storage Relative Humidity	10...80 % non-condensing

Ordering and shipping details

GTIN	731304410959
------	--------------

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	12.99 in (330 mm)
Package 1 Width	30.71 in (780 mm)
Package 1 Length	22.83 in (580 mm)
Package 1 Weight	136.69 lb(US) (62 kg)

Offer Sustainability

REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration
Mercury free	Yes
China RoHS Regulation	China RoHS declaration Pro-active China RoHS declaration (out of China RoHS legal scope)
RoHS exemption information	Yes
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.

Recommended replacement(s)

Galaxy VL

UPS

Installation

200-500 kW 380/400/415/440/480 V

Latest updates are available on the Schneider Electric website

6/2023



Legal Information

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this guide are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owners.

This guide and its content are protected under applicable copyright laws and furnished for informational use only. No part of this guide may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the guide or its content, except for a non-exclusive and personal license to consult it on an "as is" basis. Schneider Electric products and equipment should be installed, operated, serviced, and maintained only by qualified personnel.

As standards, specifications, and designs change from time to time, information contained in this guide may be subject to change without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this material or consequences arising out of or resulting from the use of the information contained herein.



Find the manuals here:
Trouvez les manuels ici:
在这里找到手册
Hier finden Sie die Handbücher:
Encuentre los manuales aquí:
Encontre os manuais aqui:

IEC



UL



IEC: https://www.productinfo.schneider-electric.com/galaxyvl_iec/
UL: https://www.productinfo.schneider-electric.com/galaxyvl_ul/

Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS	5
FCC Statement	6
Electromagnetic Compatibility	6
Safety Precautions	6
Additional Safety Precautions After Installation	9
Electrical Safety	10
Battery Safety	11
Specifications	13
Specifications for 200 kW UPS	13
Specifications for 250 kW UPS	16
Specifications for 300 kW UPS	19
Specifications for 350 kW UPS	22
Specifications for 400 kW UPS	25
Specifications for 450 kW UPS	28
Specifications for 500 kW UPS	31
IEC-Specific Specifications	34
Surge Protection Device (SPD)	34
Upstream and Downstream Protection for IEC	35
Recommended Cable Sizes for IEC	39
Recommended Bolt and Lug Sizes for IEC	45
UL-Specific Specifications	46
Upstream and Downstream Protection for UL	46
Recommended Cable Sizes for UL	48
Recommended Bolt and Lug Sizes for UL	53
Inverter Short Circuit Capabilities (Bypass not Available)	54
Requirements for a Third Party Battery Solution	57
Third Party Battery Breaker Requirements	57
Guidance for Organizing Battery Cables	57
Environment	59
Compliance	60
UPS Weights and Dimensions	61
Clearance	61
Torque Specifications	61
Single System Overview	62
Parallel System Overview	63
Installation Procedure for UPS	64
Installation Procedure for UPS with Maintenance Bypass	
Cabinet	65
Position the UPS	66
Install the Seismic Anchoring (Option)	67
Prepare the UPS for Top Cable Entry	69
Prepare for TNC Earthing System	71
Prepare for HRG Earthing System	72

Connect Power Cables in the UPS in System over 45 kAIC/kA Icw	73
Connect Power Cables in the UPS in System up to 45 kAIC/kA Icw	80
Connect the Signal Cables	84
Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products	87
Connect the Modbus Cables	91
Connect the PBUS Cables	93
Connect the Signal Cables for External Synchronization	94
Install the Power Module(s)	98
Add Translated Safety Labels to Your Product	100
Backfeed Protection	101
Final installation	104
Decommission or Move the UPS to a New Location	106

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, 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 inference, in which case the user may be required to take additional measures.

Failure to follow these instructions can result in equipment damage.

Safety Precautions

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All safety instructions in this document must be read, understood and followed.

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not install the UPS system until all construction work has been completed and the installation room has been cleaned.

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- The product must be installed according to the specifications and requirements as defined by Schneider Electric. It concerns in particular the external and internal protections (upstream breakers, battery breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.
- After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS system must be installed according to local and national regulations. Install the UPS according to:

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

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

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

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

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

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

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

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

⚠ WARNING**HAZARD OF ARC FLASH**

Do not make mechanical changes to the product (including removal of cabinet parts or drilling/cutting of holes) that are not described in the Installation Manual.

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

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

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

⚠️⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

⚠️⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠ 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 battery manufacturer's installation manual for battery installation and maintenance instructions.

Specifications

Specifications for 200 kW UPS

	Voltage (V)	380	400	415	440	480
Input	Connections	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ¹ (L1, L2, L3, N, G) or 3-wire ¹ (L1, L2, L3, G) Dual mains: 3-wire ¹ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A²s)	3.1 MA²s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

1. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ²	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ³)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ⁴) 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 ⁴) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	304	289	278	262	241
	Minimum short circuit rating ⁵	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating ⁶	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 54.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

2. 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.

3. Per NEC 250.30.

4. 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.

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

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

	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	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ⁷ (L1, L2, L3, N, G) or 3-wire ⁷ (L1, L2, L3, G) Dual mains: 3-wire ⁷ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A ² s)	3.1 MA ² s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

7. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ⁸	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ⁹)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ¹⁰) 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 ¹⁰) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	380	361	348	328	301
	Minimum short circuit rating ¹¹	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				—
	Maximum short circuit rating ¹²	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				—
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 54.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

8. 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.

9. Per NEC 250.30.

10. 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.

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

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

	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	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ¹³ (L1, L2, L3, N, G) or 3-wire ¹³ (L1, L2, L3, G) Dual mains: 3-wire ¹³ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A ² s)	3.1 MA ² s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

13. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ¹⁴	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ¹⁵)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ¹⁶) 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 ¹⁶) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	456	433	417	394	361
	Minimum short circuit rating ¹⁷	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating ¹⁸	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 54.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

14. 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.

15. Per NEC 250.30.

16. 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.

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

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

	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	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ¹⁹ (L1, L2, L3, N, G) or 3-wire ¹⁹ (L1, L2, L3, G) Dual mains: 3-wire ¹⁹ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A ² s)	3.1 MA ² s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

19. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ²⁰	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ²¹)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ²²) 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 ²²) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	532	505	487	459	421
	Minimum short circuit rating ²³	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				—
	Maximum short circuit rating ²⁴	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				—
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 54.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

20. 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.

21. Per NEC 250.30.

22. 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.

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

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

	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	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ²⁵ (L1, L2, L3, N, G) or 3-wire ²⁵ (L1, L2, L3, G) Dual mains: 3-wire ²⁵ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A ² s)	3.1 MA ² s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

25. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ²⁶	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ²⁷)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ²⁸) 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 ²⁸) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	608	577	556	525	481
	Minimum short circuit rating ²⁹	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating ³⁰	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 54.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

26. 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.

27. Per NEC 250.30.

28. 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.

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

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

	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	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ³¹ (L1, L2, L3, N, G) or 3-wire ³¹ (L1, L2, L3, G) Dual mains: 3-wire ³¹ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A ² s)	3.1 MA ² s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

31. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ³²	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ³³)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ³⁴) 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 ³⁴) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	684	650	626	590	541
	Minimum short circuit rating ³⁵	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				—
	Maximum short circuit rating ³⁶	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				—
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 54.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

32. 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.

33. Per NEC 250.30.

34. 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.

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

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

	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	Single mains: 4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE) Dual mains: 3-wire (L1, L2, L3, PE)				Single mains: 4-wire ³⁷ (L1, L2, L3, N, G) or 3-wire ³⁷ (L1, L2, L3, G) Dual mains: 3-wire ³⁷ (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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	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				
	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				
Bypass	Connections	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				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	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating (three cycles)	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				65 kAIC 65 kAIC with maintenance bypass cabinet 45 kAIC with bottom entry cabinet 45 kAIC with backfeed breaker kit installed in the UPS
	I ² t thyristor value (A ² s)	3.1 MA ² s				
	Bypass backfeed protection options	1: Upstream installation of breaker with shunt trip connected to the UPS, OR 2: Installation with maintenance bypass cabinet, OR 3: Installation of backfeed breaker kit in the UPS.				

37. WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

	Voltage (V)	380	400	415	440	480
Output	Connections ³⁸	4-wire (L1, L2, L3, N, PE) or 3-wire (L1, L2, L3, PE)				4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC ³⁹)
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$				
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous ⁴⁰) 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 ⁴⁰) Battery operation: 125% for 1 minute Bypass operation: 125% continuous, 1600% for 100 milliseconds
	Dynamic load response	$\pm 5\%$ after 2 ms, $\pm 1\%$ after 50 ms				
	Output power factor	1				
	Nominal output current (A)	760	722	696	656	601
	Minimum short circuit rating ⁴¹	Dependent on upstream protection. See section for Recommended upstream protection for IEC for details.				–
	Maximum short circuit rating ⁴²	65 kA l _{cw} 25 kA l _{cw} with maintenance bypass cabinet 45 kA l _{cw} with bottom entry cabinet 45 kA l _{cc} with backfeed breaker kit installed in the UPS				–
	Inverter output short circuit capabilities	Varies with time. See graph and table values in Inverter Short Circuit Capabilities (Bypass not Available), page 54.				
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (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				
	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				

38. 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.

39. Per NEC 250.30.

40. 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.

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

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

	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.

IEC-Specific Specifications

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 (Iscor) ⁴³	According to installation prospective short circuit level
Earthing system ⁴⁴	TN-S, TT, IT, TN-C
Poles	3P/4P depending on earthing configuration
Standards	IEC 61643-11 / UL 1449
Monitoring	Yes

43. Lower short circuit rating can be achieved with fuse protection.
44. Corner grounding not permitted.

Upstream and Downstream Protection for IEC

⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Circuit breakers must have instantaneous trip time of maximum 60 ms.
- Circuit breakers must have instantaneous override values set according to the table below.
- Circuit breakers must be installed for input (unit input breaker UIB) and bypass (static switch input breaker SSIB).
- For parallel system with three or more UPSs: Circuit breakers must be installed for the output (unit output breaker UOB) of each UPS. The unit output breaker (UOB) is sized as the static switch input breaker (SSIB).
- Live Swap is not supported for $>65\text{kA}_{bf}$ installations where current limiting disconnect devices are used to protect the UPS.

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

Schneider Electric reserves the right to remove the Live Swap label from the product front if the conditions are not met.

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 breakers 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 breakers are sized based on end-of-discharge voltage which has been defined as 380 VDC.

Upstream Protection for IEC and Minimum Prospective Phase-To-Earth Short Circuit at the UPS Input/Bypass Terminals

⚠️ 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 breaker (and its settings) from the table below.

Recommended Upstream Protection for IEC

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

UPS rating	200 kW								
	Input				Bypass/Output				Battery
I _{kPh-PE} (kA)	5				4.5				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
Breaker 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
I _o	400	400	360	360	360	360	320	320	–
I _r setting	0.93	0.92	0.98	0.93	0.95	0.9	0.98	0.93	0.9
I _r	372	368	353	335	342	324	314	298	567
I _{sd}	<10 x I _r	<10 x I _r	<10 x I _r	<10 x I _r	10 x I _r	10 x I _r	10 x I _r	10 x I _r	<10 x I _r

UPS rating	250 kW								
	Input				Bypass/Output				Battery
I _{kPh-PE} (kA)	6				6				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
Breaker 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
I _o	500	500	450	450	450	450	400	400	–
I _r setting	0.93	0.92	0.98	0.93	0.95	0.9	0.98	0.93	–
I _r	465	460	441	418	428	405	392	372	1000
I _{sd}	<10 x I _r	<10 x I _r	<10 x I _r	<10 x I _r	10 x I _r	10 x I _r	10 x I _r	10 x I _r	1500

UPS rating	300 kW								
	Input				Bypass/Output				Battery
I _{kPh-PE} (kA)	7.5				7				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
Breaker 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
I _o	570	570	570	500	570	500	500	450	–
I _r setting	0.98	0.97	0.93	1	0.9	0.98	0.94	1	–
I _r	559	553	530	500	513	490	470	450	1000
I _{sd}	<10 x I _r	<10 x I _r	<10 x I _r	<10 x I _r	10 x I _r	10 x I _r	10 x I _r	10 x I _r	<10 x I _r

UPS rating	350 kW								
	Input				Bypass/Output				Battery
I _{kPh-PE} (kA)	8.5				8				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
Breaker 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

UPS rating	350 kW								
	Input				Bypass/Output				Battery
I_{kPh-PE} (kA)	8.5				8				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
I_o	—	630	630	630	630	570	570	570	—
I_r setting	0.9	0.8	0.98	0.93	0.95	1	0.96	0.92	—
I_r	720	640	617	586	598	570	547	524	1000
I_{sd}/i_i^{45}	<10 x I_r	<10 x I_r	<10 x I_r	<10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	<10 x I_r
tsd (s)	<0.2	NA							

UPS rating	400 kW								
	Input				Bypass/Output				Battery
I_{kPh-PE} (kA)	10				9.5				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
Breaker 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)
I_n /trip unit	800	800	800	800	800	800	630	630	2000
I_o	—	—	—	—	—	—	630	630	—
I_r setting	0.95	0.95	0.9	0.9	0.9	0.9	1	0.94	—
I_r	760	760	720	720	720	720	630	592	2000
I_{sd}/i_i^{45}	<10 x I_n	<10 x I_n	<10 x I_n	<10 x I_n	10 x I_n	10 x I_n	10 x I_r	10 x I_r	<10 x I_r
tsd (s)	<0.2						NA		

UPS rating	450 kW								
	Input				Bypass/Output				Battery
I_{kPh-PE} (kA)	12				10.5				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
Breaker 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)
I_n /trip unit	1000	1000	800	800	800	800	800	800	2000
I_o	—	—	—	—	—	—	—	—	—
I_r setting	0.9	0.9	1	0.95	0.98	0.95	0.9	0.9	—
I_r	900	900	800	760	784	760	720	720	2000
I_{sd}/i_i^{45}	<8 x I_n	<8 x I_n	<10 x I_n	<10 x I_n	10 x I_n	10 x I_n	10 x I_n	10 x I_n	2500
tsd (s)	<0.2								NA

45. Only applicable for MicroLogic 5.0.

UPS rating	500 kW								
	Input				Bypass/Output				Battery
I_{KPh-PE} (kA)	12.5				12				NA
Voltage (V)	380	400	415	440	380	400	415	440	380-440
Breaker 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
I _o	–	–	–	–	–	–	–	–	–
I _r setting	0.95	0.95	0.9	0.9	0.9	0.9	0.98	0.95	–
I _r	950	950	900	900	900	900	784	760	2000
I _{sd} /i _{ij} ⁴⁶	<8 x I _n	<8 x I _n	<8 x I _n	<8 x I _n	8 x I _n	8 x I _n	10 x I _n	10 x I _n	2500
t _{sd} (s)	<0.2								NA

Recommended Downstream Protection for Distribution Circuit Breakers for IEC

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 breaker (UIB)/static switch input breaker (SSIB) when external backfeed protection is used.

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

46. Only applicable for MicroLogic 5.0.

Recommended Cable Sizes for IEC

⚡⚡ 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 240 mm².
- 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 mm² on input/output/bypass busbars
- 4 x 240 mm² or 8 x 150 mm² 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 assertions⁴⁷:

- 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.

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
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

47. 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 43.

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
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

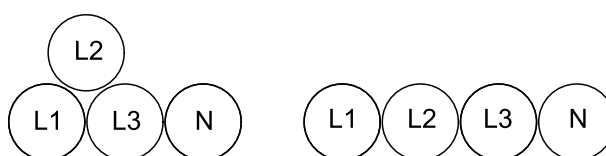
UPS rating	300 kW				350 kW			
Voltage (V)	380	400	415	440	380	400	415	440
Input phases (mm ²)	2 x 150	2 x 150	2 x 150	2 x 120	2 x 240	2 x 185	2 x 185	2 x 150
Input PE (mm ²)	1 x 150	1 x 150	1 x 150	1 x 120	1 x 240	1 x 185	1 x 185	1 x 150
Bypass/output phases (mm ²)	2 x 120	2 x 120	1 x 240	1 x 240	2 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) ⁴⁸	(3 x 185) ⁴⁸	2 x 240	2 x 240	(3 x 185) ⁴⁸	(3 x 185) ⁴⁸	(3 x 185) ⁴⁸	(3 x 185) ⁴⁸
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) ⁴⁸	(3 x 185) ⁴⁸	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) ⁴⁸	(3 x 185) ⁴⁸	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)

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.



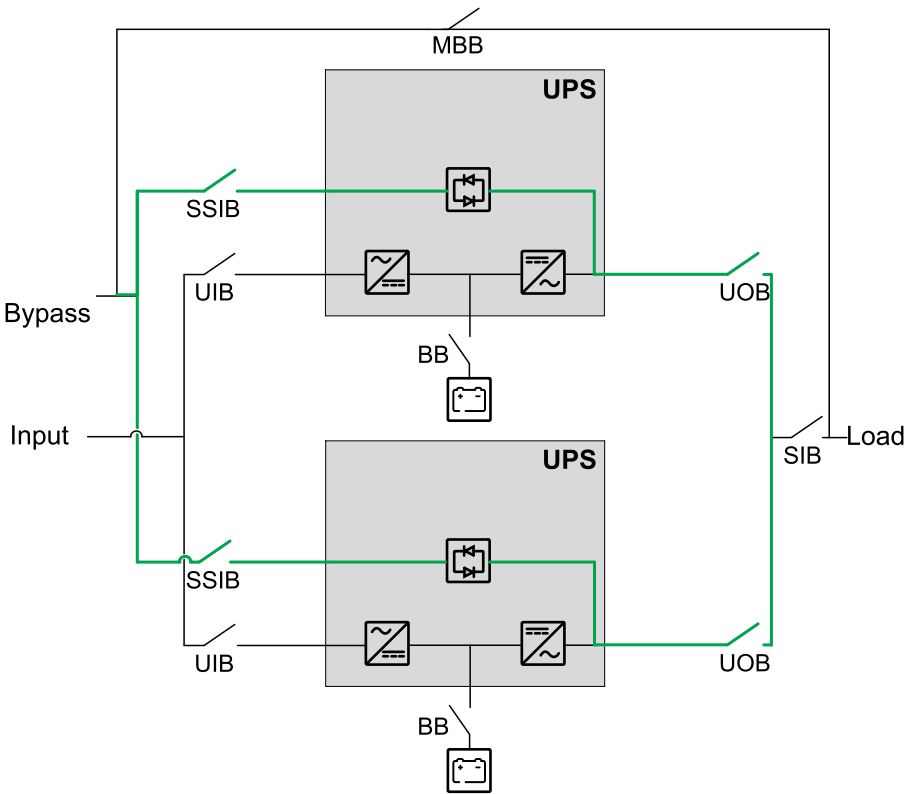
Load Sharing in Bypass Operation in a Parallel System

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

48. For parallel UPS systems, you must refer to this table: Standard eConversion Limits Based on Non-recommended Cable Sizes, page 43.

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 43.

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% 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 43.

Standard eConversion Limits Based on Non-recommended Cable Sizes

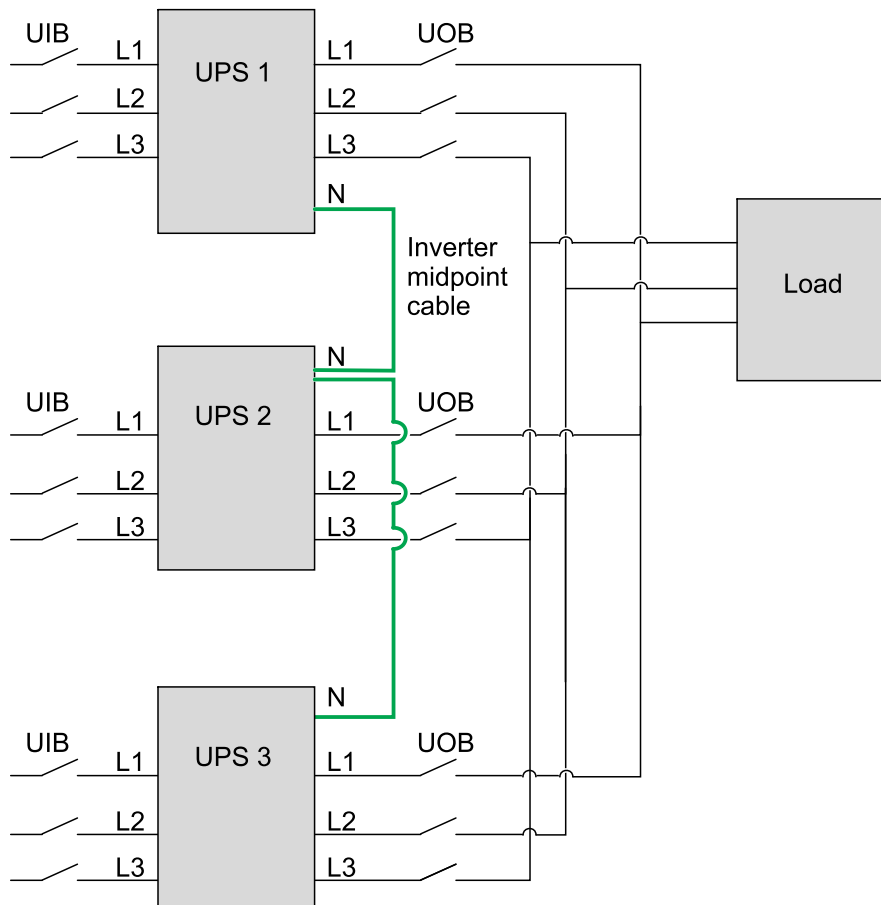
UPS rating	Minimum load %
200 kW	50%
250 kW	40%
300 kW	34%
350 kW	29%
400 kW	25%
450 kW	22%
500 kW	20%

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.

For 3-Wire Parallel Systems Only

In a parallel installation installed as a 3-wire AC configuration, the inverter midpoint of each UPS must be interconnected by cable in a daisy chain configuration. The inverter midpoint cable size can be found in the recommended cable sizes table.



When the inverter midpoint of the parallel UPSs is permanently connected, there is still potentially dangerous voltage present on the neutral busbar inside the UPS even after the UPS has been isolated from the parallel system for maintenance and has been completely shut down. Due to the dangerous voltages on the neutral busbar, all service activities that need access inside the I/O section by opening the inner door require full shutdown of the entire parallel system and transfer to maintenance bypass.

⚡⚠ 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.

NOTE: For 3-wire parallel systems that have neutral available from the input source, the parallel system can be installed as a 4-wire AC configuration, which does not require the inverter midpoint connection between each UPS. Contact Schneider Electric for more details.

Recommended Bolt and Lug Sizes for IEC

Cable size mm ²	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

UL-Specific Specifications

Upstream and Downstream Protection for UL

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Circuit breakers must have instantaneous trip time of maximum 50 ms.
- Circuit breakers must have instantaneous override values set according to the table below.
- Circuit breakers must be installed for input (unit input breaker UIB) and bypass (static switch input breaker SSIB).
- For parallel system with three or more UPSs: Circuit breakers must be installed for the output (unit output breaker UOB) of each UPS. The unit output breaker (UOB) is sized as the static switch input breaker (SSIB).
- Live Swap is not supported for >65kA_{bf} installations where current limiting disconnect devices are used to protect the UPS.

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

Schneider Electric reserves the right to remove the Live Swap label from the product front if the conditions are not met.

CAUTION

HAZARD OF FIRE

- Connect only to a circuit with the below specifications.
- Connect to a circuit provided with a maximum 1000 A branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA70, and the Canadian Electrical Code, Part I, C22.1.

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

Recommended Upstream Protection for UL

The bypass/output breakers 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 breakers 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	
	Input	Bypass	Input	Bypass
Breaker type	LJF36400CU31X	LJF36400CU31X	LJF36400CU31X	LJF36400CU31X
I _r	320	280	400	360
t _r	≥4	≥4	≥4	≥4
I _i (x I _n)	≤12	≤12	≤12	≤12

UPS rating	300 kW		350 kW		400 kW	
	Input	Bypass	Input	Bypass	Input	Bypass
Breaker type	PJF36060CU31-A	PJF36060CU31A	PJF36060CU31A	PJF36060CU31A	PJF36080CU31A	PJF36060CU31A
I _r	480	420	540	480	640	540

UPS rating	300 kW		350 kW		400 kW	
	Input	Bypass	Input	Bypass	Input	Bypass
tr	≥4	≥4	≥4	≥4	≥4	≥4
li (x ln)	≤12	≤12	≤10	≤12	≤10	≤12

UPS rating	450 kW		500 kW	
	Input	Bypass	Input	Bypass
Breaker type	PJF36080CU31A	PJF36080CU31A	PJF36080CU31A	PJF36080CU31A
I _r	720	640	800	720
tr	≥4	≥4	≥4	≥4
li (x ln)	≤8	≤10	≤8	≤10

Recommended Cable Sizes for UL

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

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 assertions⁴⁹:

- 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 breakers for battery breakers.

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.

Copper

UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
Voltage (V)	480	480	480	480	480	480	480
Input phases (AWG/kcmil)	1 x 350	1 x 500	2 x 4/0	2 x 300	2 x 350	2 x 400	2 x 500
Input EGC (AWG/kcmil)	1 x 3	1 x 3	2 x 2	2 x 1	2 x 1/0	2 x 1/0	2 x 1/0
Bypass/output phases (AWG/kcmil)	1 x 300	1 x 400	1 x 600	2 x 250	2 x 300	2 x 350	2 x 400
Bypass EGC/output EGC (AWG/kcmil)	1 x 4	1 x 3	1 x 2	2 x 2	2 x 1	2 x 1/0	2 x 1/0
DC+/DC- (AWG/kcmil) (mm ²)	2 x 300	2 x 400	3 x 350	3 x 400	4 x 350	4 x 400	4 x 500

49. 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 51 table in this installation scenario.

Copper (Continued)

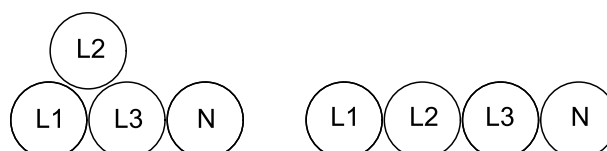
UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
Voltage (V)	480	480	480	480	480	480	480
DC EGC (AWG/kcmil)	2 x 1	2 x 1/0	3 x 2/0	3 x 2/0	4 x 3/0	4 x 4/0	4 x 4/0
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	1 x 350	1 x 500	2 x 4/0	2 x 300	2 x 350	2 x 400	2 x 500

Aluminum

UPS rating	200 kW	250 kW	300 kW	350 kW	400 kW	450 kW	500 kW
Voltage (V)	480	480	480	480	480	480	480
Input phases (AWG/kcmil)	1 x 500	2 x 250	2 x 300	2 x 400	2 x 500	(3 x 300) ⁵⁰	(3 x 400) ⁵⁰
Input EGC (AWG/kcmil)	1 x 1	2 x 1	2 x 1/0	2 x 2/0	2 x 3/0	3 x 3/0	3 x 3/0
Bypass/output phases (AWG/kcmil)	1 x 400	1 x 600	2 x 250	2 x 350	2 x 400	2 x 500	2 x 600
Bypass EGC/output EGC (AWG/kcmil)	1 x 2	1 x 1	2 x 1/0	2 x 1/0	2 x 2/0	2 x 3/0	2 x 3/0
DC+/DC- (AWG/kcmil) (mm ²)	2 x 500	3 x 300	3 x 500	4 x 350	4 x 500	5 x 400	5 x 500
DC EGC (AWG/kcmil)	1 x 2/0	3 x 3/0	3 x 4/0	4 x 4/0	4 x 250	5 x 350	5 x 350
Inverter midpoint cable for 3-wire parallel (AWG/kcmil)	1 x 500	2 x 250	2 x 300	2 x 400	2 x 500	3 x 300	3 x 400

Guidance for Organizing Input, Bypass, And Output Cables

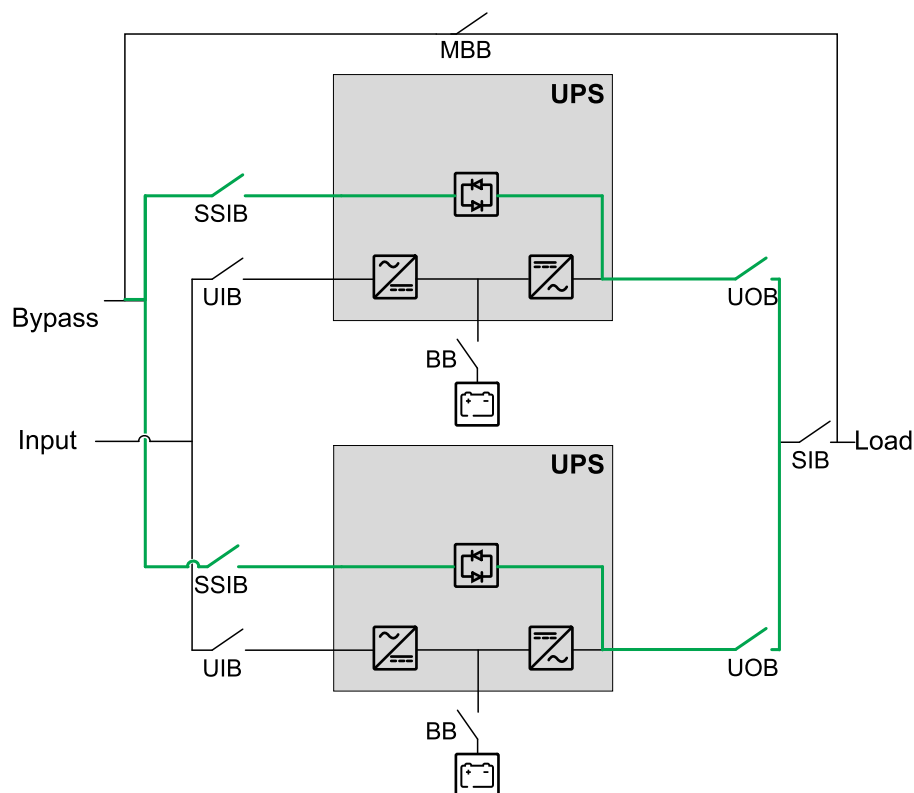
The input, bypass, and output cables must be grouped in circuits. On raceways, use one of the two shown cable formations.

**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.

50. For parallel UPS systems, the Standard eConversion Limits Based on Non-recommended Cable Sizes, page 51 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 51 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% 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 51](#) table for the voltage ratings percentages.

Standard eConversion Limits Based on Non-recommended Cable Sizes

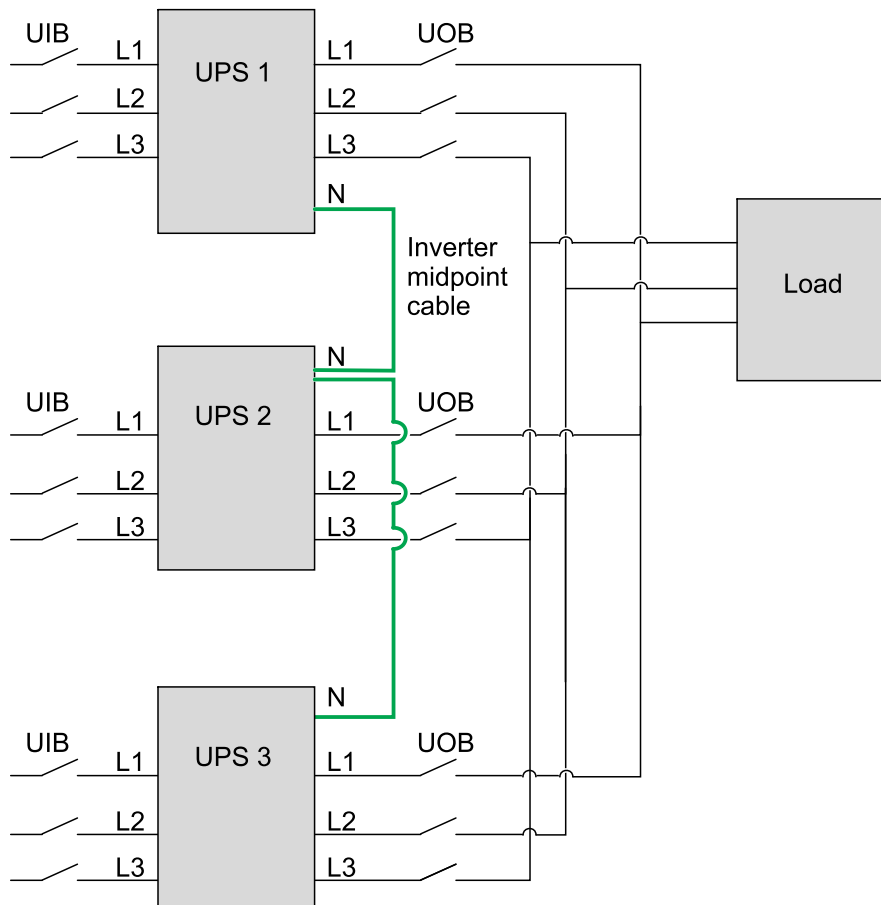
UPS rating	Minimum load %
200 kW	50%
250 kW	40%
300 kW	34%
350 kW	29%
400 kW	25%
450 kW	22%
500 kW	20%

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.

For 3-Wire Parallel Systems Only

In a parallel installation installed as a 3-wire AC configuration, the inverter midpoint of each UPS must be interconnected by cable in a daisy chain configuration. The inverter midpoint cable size can be found in the recommended cable sizes table.



When the inverter midpoint of the parallel UPSs is permanently connected, there is still potentially dangerous voltage present on the neutral busbar inside the UPS even after the UPS has been isolated from the parallel system for maintenance and has been completely shut down. Due to the dangerous voltages on the neutral busbar, all service activities that need access inside the I/O section by opening the inner door require full shutdown of the entire parallel system and transfer to maintenance bypass.

⚡⚠ 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.

NOTE: For 3-wire parallel systems that have neutral available from the input source, the parallel system can be installed as a 4-wire AC configuration, which does not require the inverter midpoint connection between each UPS. Contact Schneider Electric for more details.

Recommended Bolt and Lug Sizes for UL

NOTICE

RISK OF EQUIPMENT DAMAGE

Use only UL approved compression cable lugs.

Failure to follow these instructions can result in equipment damage.

Copper

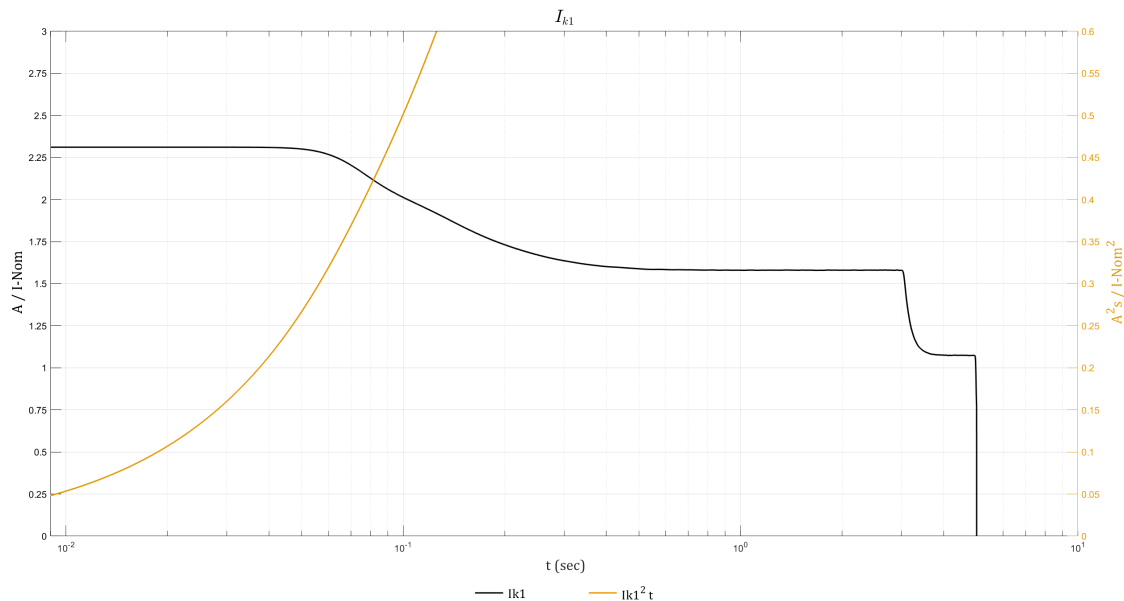
Cable size	Bolt size	Cable lug type (one hole)	Cable lug type (two hole NEMA)	Crimping tool	Die
1/0 AWG	M10x35mm	LCB1/0-12-X	LCC1/0-12-X	CT-930	CD-920-1/0 Pink P42
2/0 AWG	M10x35mm	LCB2/0-12-X	LCC2/0-12-X	CT-930	CD-920-2/0 Black P45
3/0 AWG	M10x35mm	LCB3/0-12-X	LCC3/0-12-X	CT-930	CD-920-3/0 Orange P50
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

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

Inverter Short Circuit Capabilities (Bypass not Available)

IK1 – Short Circuit between a Phase and Neutral



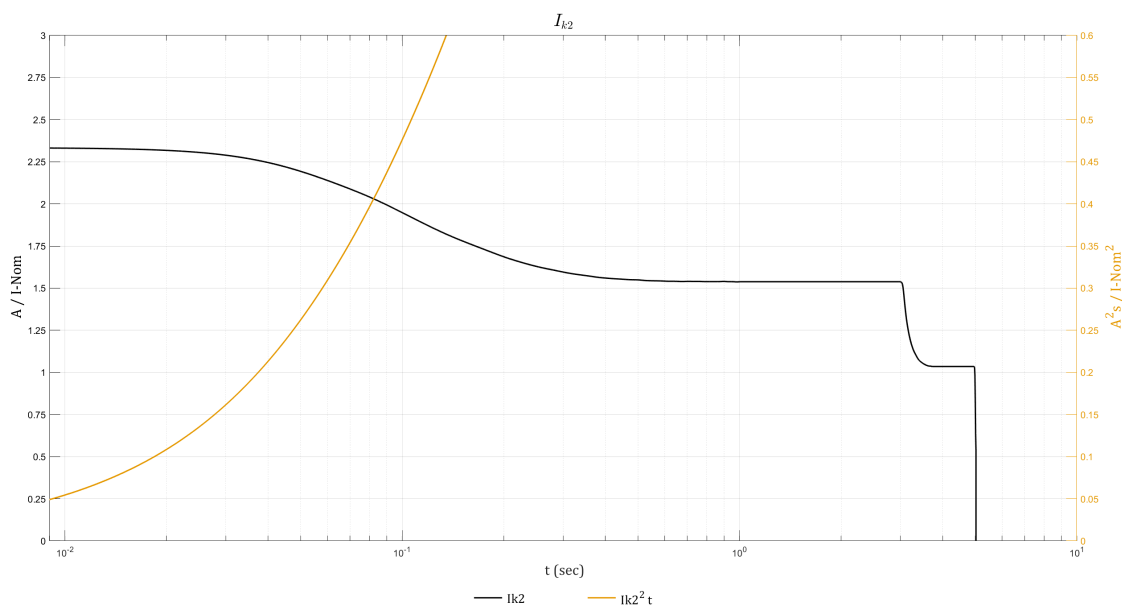
IK1 400 V

S [kVA]	10ms; I[A]/I ² t [A ² t]	20ms; I[A]/I ² t [A ² t]	30ms; I[A]/I ² t [A ² t]	100ms; I[A]/I ² t [A ² t]	1s; I[A]/I ² t [A ² t]
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]/I ² t [A ² t]	20ms; I[A]/I ² t [A ² t]	30ms; I[A]/I ² t [A ² t]	100ms; I[A]/I ² t [A ² t]	1s; I[A]/I ² t [A ² t]
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



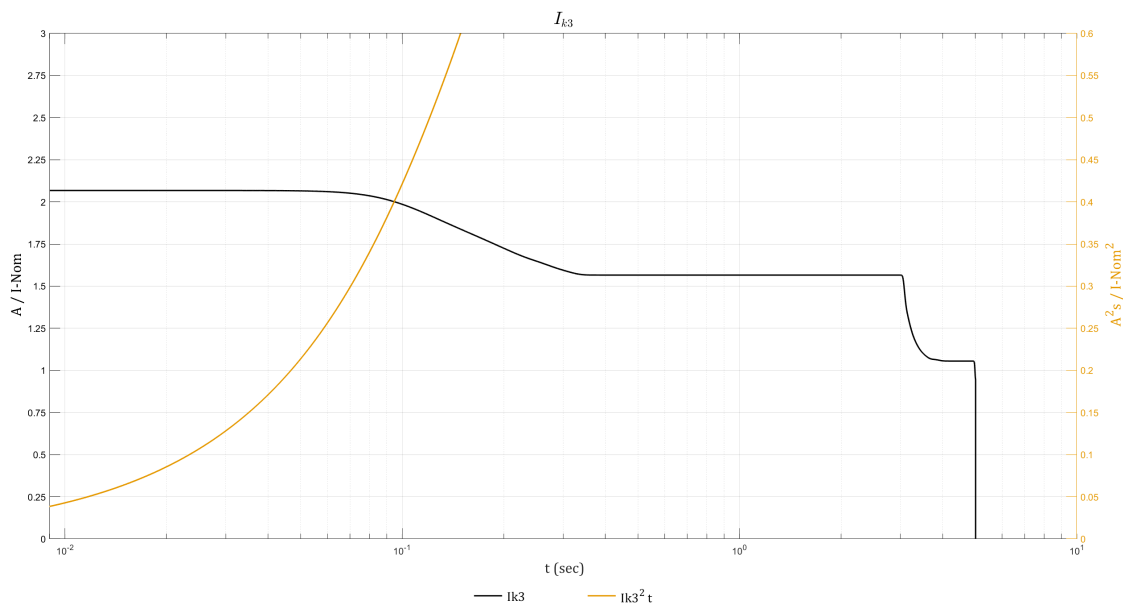
IK2 400 V

S [kVA]	10ms; $I[A]/I^2t [A^2t]$	20ms; $I[A]/I^2t [A^2t]$	30ms; $I[A]/I^2t [A^2t]$	100ms; $I[A]/I^2t [A^2t]$	1s; $I[A]/I^2t [A^2t]$
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; $I[A]/I^2t [A^2t]$	20ms; $I[A]/I^2t [A^2t]$	30ms; $I[A]/I^2t [A^2t]$	100ms; $I[A]/I^2t [A^2t]$	1s; $I[A]/I^2t [A^2t]$
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; $I[A]/I^2t [A^2t]$	20ms; $I[A]/I^2t [A^2t]$	30ms; $I[A]/I^2t [A^2t]$	100ms; $I[A]/I^2t [A^2t]$	1s; $I[A]/I^2t [A^2t]$
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; $I[A]/I^2t [A^2t]$	20ms; $I[A]/I^2t [A^2t]$	30ms; $I[A]/I^2t [A^2t]$	100ms; $I[A]/I^2t [A^2t]$	1s; $I[A]/I^2t [A^2t]$
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

Requirements for a Third Party Battery Solution

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

Third Party Battery Breaker Requirements

⚠ ⚠ DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH - All selected battery 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 breakers. Failure to follow these instructions will result in death or serious injury.

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

Design Requirements for Battery Breaker

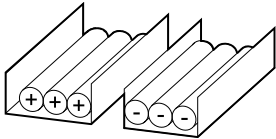
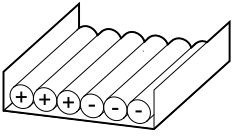
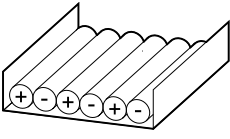
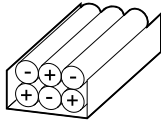
Battery breaker rated DC voltage > Normal battery voltage	The normal voltage of the battery configuration is defined as the highest nominal occurring battery voltage. This can be equivalent to the float voltage which may be defined as number of battery blocks x number of cells x cell float voltage .
Battery 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 breaker and connected to the UPS. The UPS can monitor up to four battery breakers.
Short-circuit breaking capability	The short-circuit breaking capability must be higher than the short-circuit DC current of the (largest) battery configuration.
Minimum trip current	The minimum short-circuit current to trip the battery breaker must match the (smallest) battery configuration, to make the breaker trip in case of a short circuit, up to the end of its life time.
Common battery solution	Individual battery breaker for each UPS in the parallel system.

Guidance for Organizing Battery Cables

NOTE: For 3rd 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 ft). Contact Schneider Electric for installations with a longer distance.

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

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

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 mm² 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 mm² 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 mm² 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 mm² 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	
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%	

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 ⁵¹	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

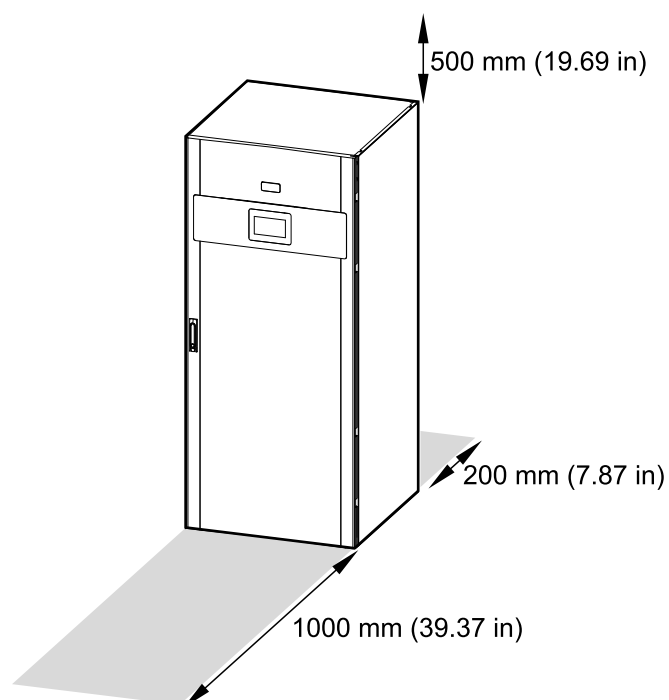
51. Corner grounding not permitted.

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.



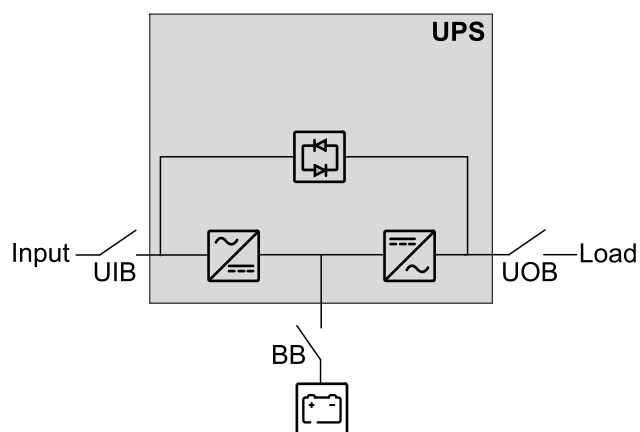
Torque Specifications

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)

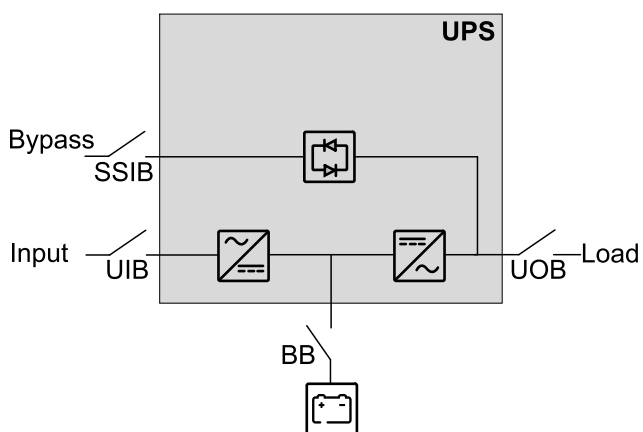
Single System Overview

UIB	Unit input breaker
SSIB	Static switch input breaker
UOB	Unit output breaker
BB	Battery breaker

Single System – Single Mains



Single System – Dual Mains

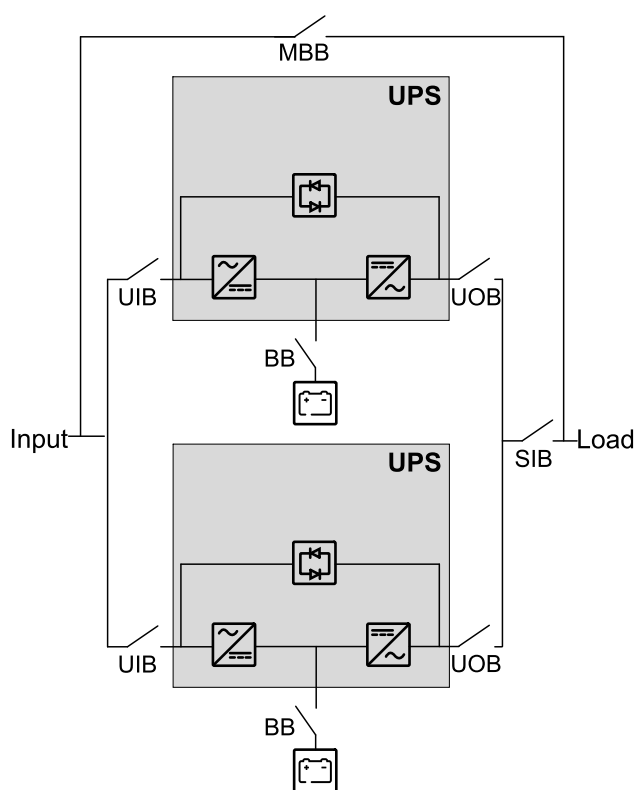


Parallel System Overview

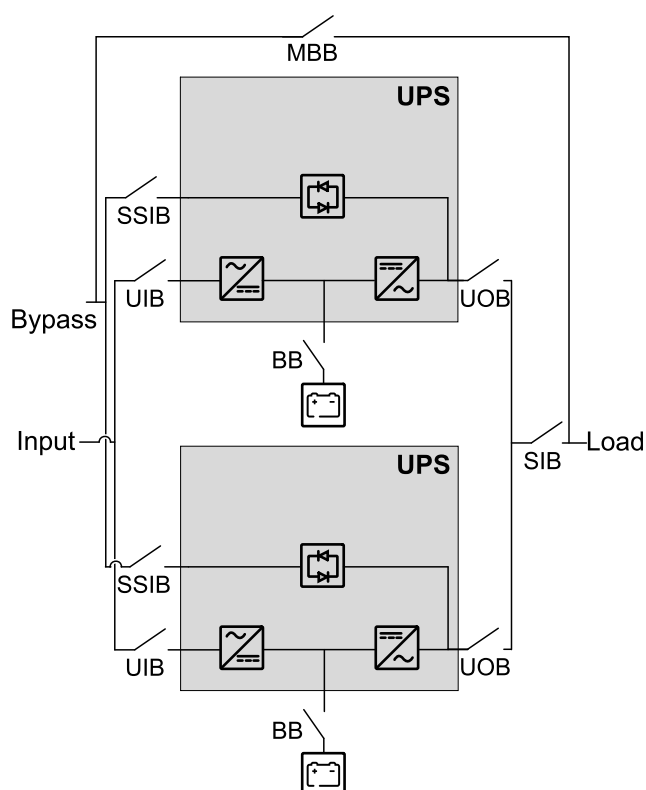
UIB	Unit input breaker
SSIB	Static switch input breaker
UOB	Unit output breaker
SIB	System isolation breaker
BB	Battery breaker
MBB	External maintenance bypass breaker

Galaxy VL can support up to 6 UPSs in parallel for capacity and up to 5+1 UPSs in parallel for redundancy with individual unit input breaker UIB and static switch input breaker 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 66.
 - With seismic anchoring: Install the Seismic Anchoring (Option), page 67.
2. Perform one of the following procedures:
 - Top cable entry: Prepare the UPS for Top Cable Entry, page 69.
 - 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 71.
 - Prepare for HRG Earthing System, page 72.
4. Perform one of the following procedures:
 - Connect Power Cables in the UPS in System over 45 kAIC/kA I_{cw}, page 73, or
 - Connect Power Cables in the UPS in System up to 45 kAIC/kA I_{cw}, page 80.
5. Connect the Signal Cables, page 84.
6. Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products, page 87.
7. Connect the Modbus Cables, page 91.
8. Only for parallel system: Connect the PBUS Cables, page 93.
9. Only for external synchronization: Connect the Signal Cables for External Synchronization, page 94.
10. Install the Power Module(s), page 98.
11. Add Translated Safety Labels to Your Product, page 100.
12. Final installation, page 104.

For moving or decommissioning the UPS after installation has been completed, please see Decommission or Move the UPS to a New Location, page 106.

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 84.
3. Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products, page 87.
4. Connect the Modbus Cables, page 91.
5. Only for external synchronization: Connect the Signal Cables for External Synchronization, page 94.
6. Install the Power Module(s), page 98.
7. Add Translated Safety Labels to Your Product, page 100.
8. Final installation, page 104.

For moving or decommissioning the UPS after installation has been completed, please see Decommission or Move the UPS to a New Location, page 106.

Position the UPS

⚡⚠ DANGER

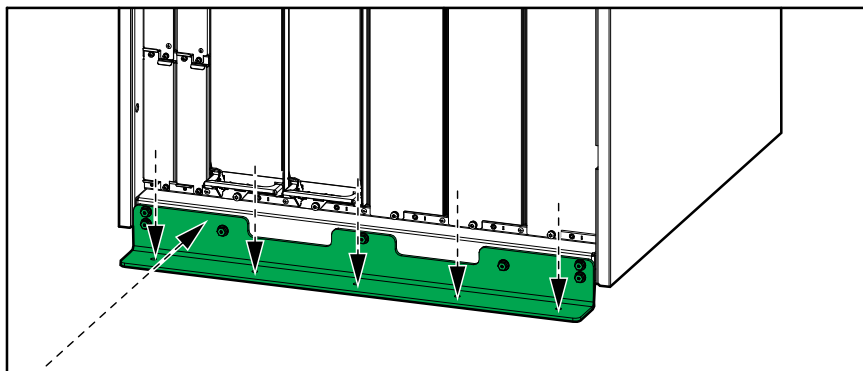
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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 – the hole diameter in the bracket is $\varnothing 14$ mm. Minimum requirement is M12 strength grade 8.8 hardware.



- 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.

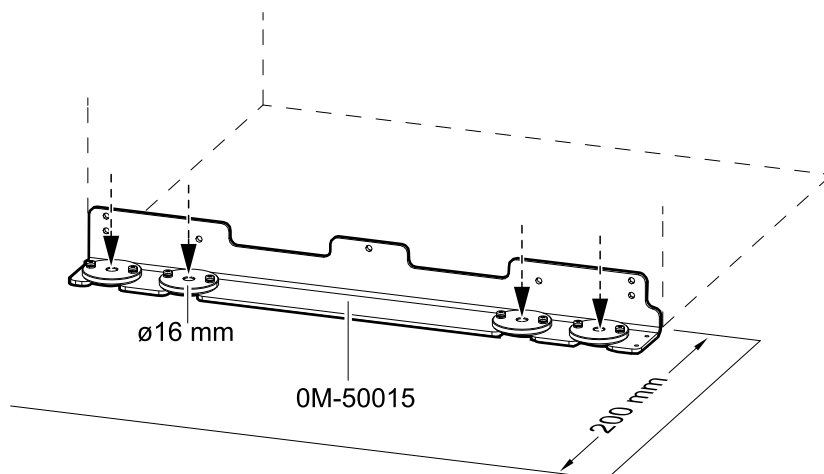
Failure to follow these instructions can result in equipment damage.

Install the Seismic Anchoring (Option)

Use the optional seismic kit GVLOPT002 for this procedure.

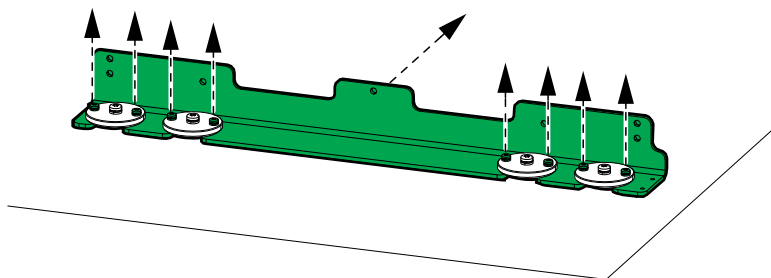
1. Mount the rear anchoring assembly to the floor. Use appropriate hardware for the floor type – the hole diameter in the rear anchors is $\varnothing 16$ mm. Minimum requirement is M12 strength grade 8.8 hardware.

Rear View



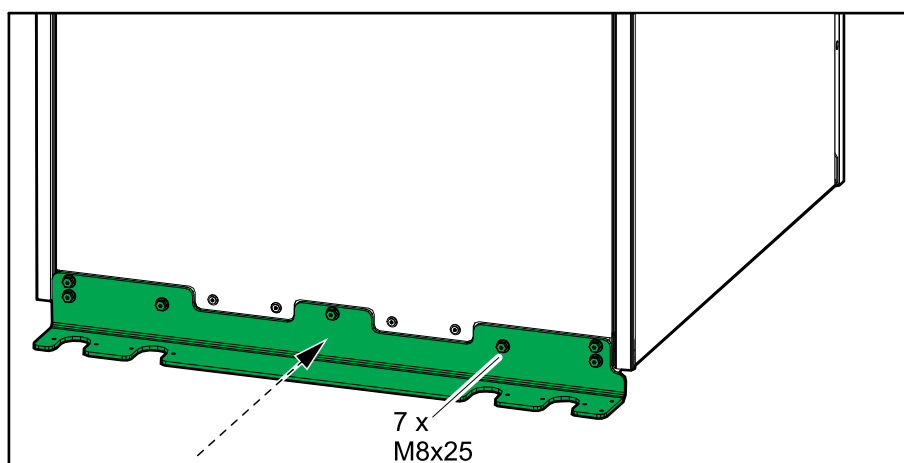
2. Remove all the screws and remove the anchoring bracket.

Rear View

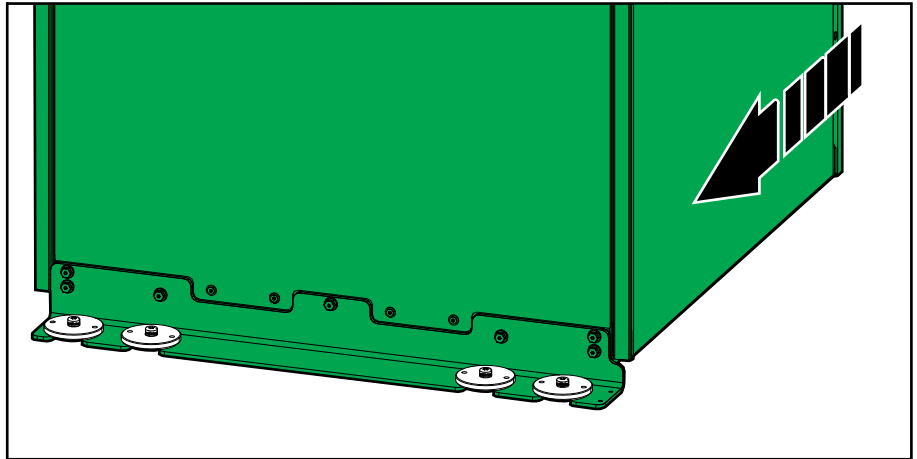


3. Install the rear anchoring brackets on the UPS with the provided M8x25 bolts.

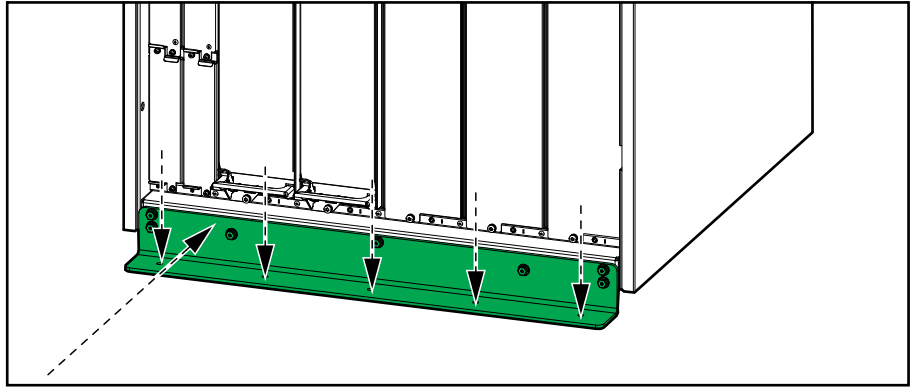
Rear View



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 $\varnothing 14$ mm. Minimum requirement is M12 strength grade 8.8 hardware.



Prepare the UPS for Top Cable Entry

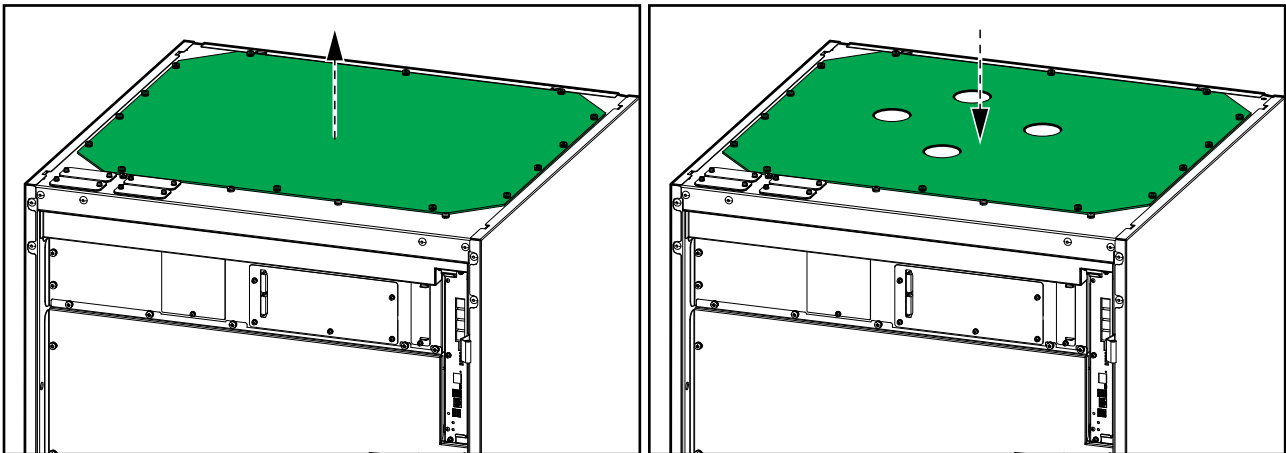
⚠ DANGER

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.

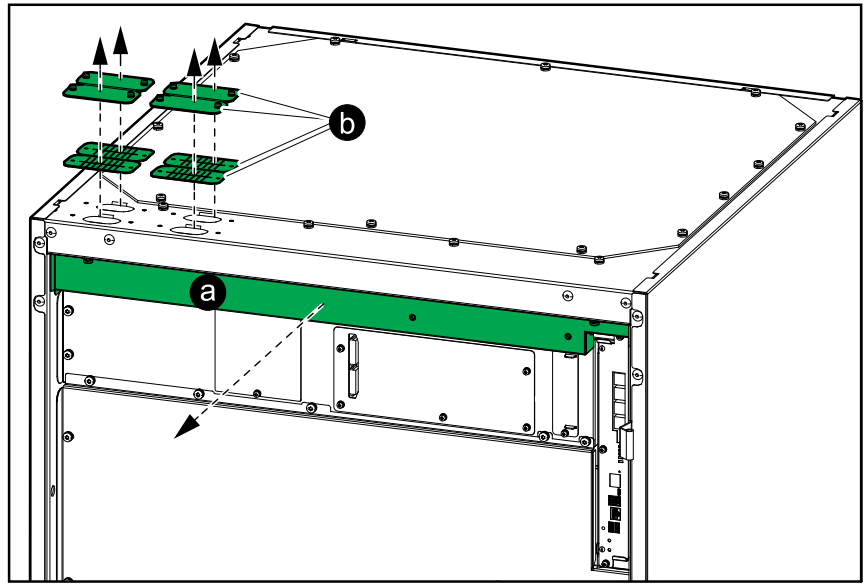
Failure to follow these instructions will result in death or serious injury.

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.

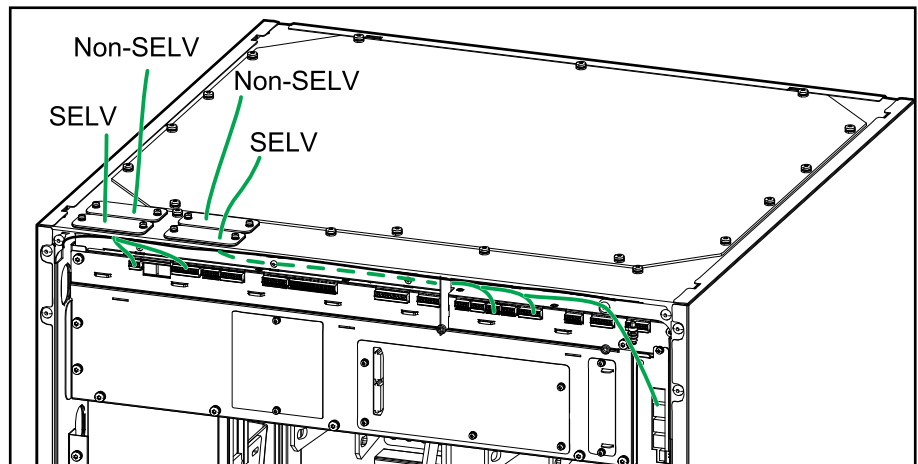


2. Prepare for signal cables:

- 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.

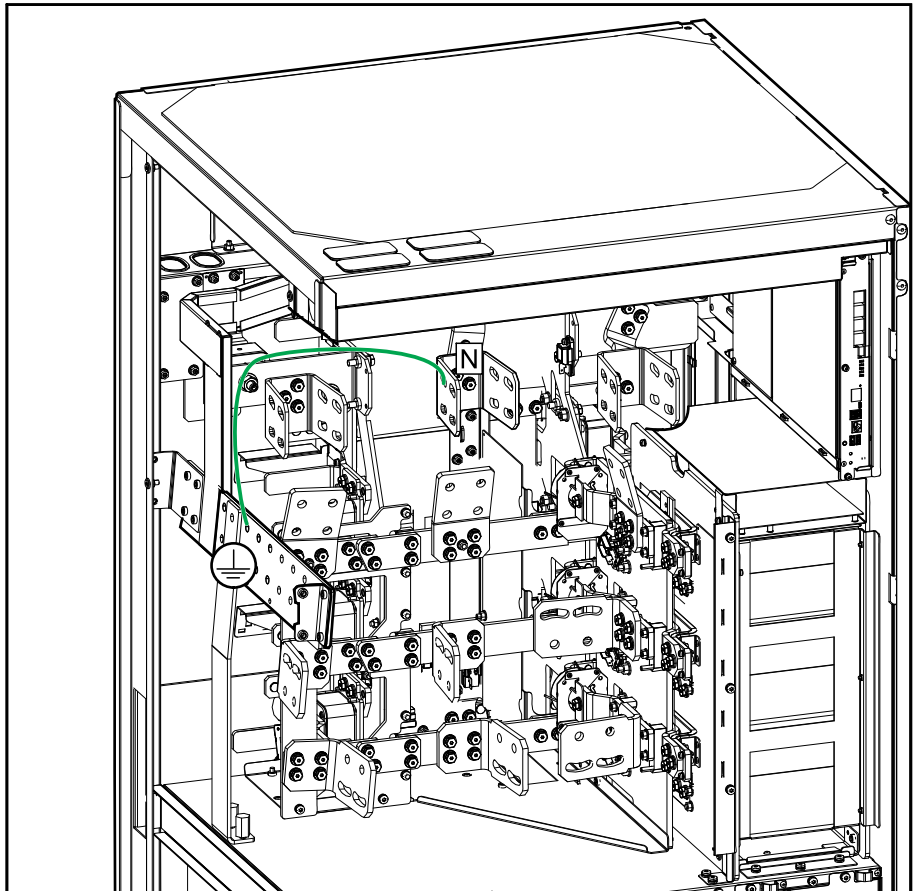


- c. **For installation without conduits/grommets:** Reinstall the brush plates.
 - d. **For installation with conduits/grommets:** Drill holes in the gland plates for conduits/grommets, install conduits/grommets, and reinstall the gland plates.
3. Route the signal cables as shown to separate the Class 2/SELV cables from the non-Class 2/non-SELV cables.



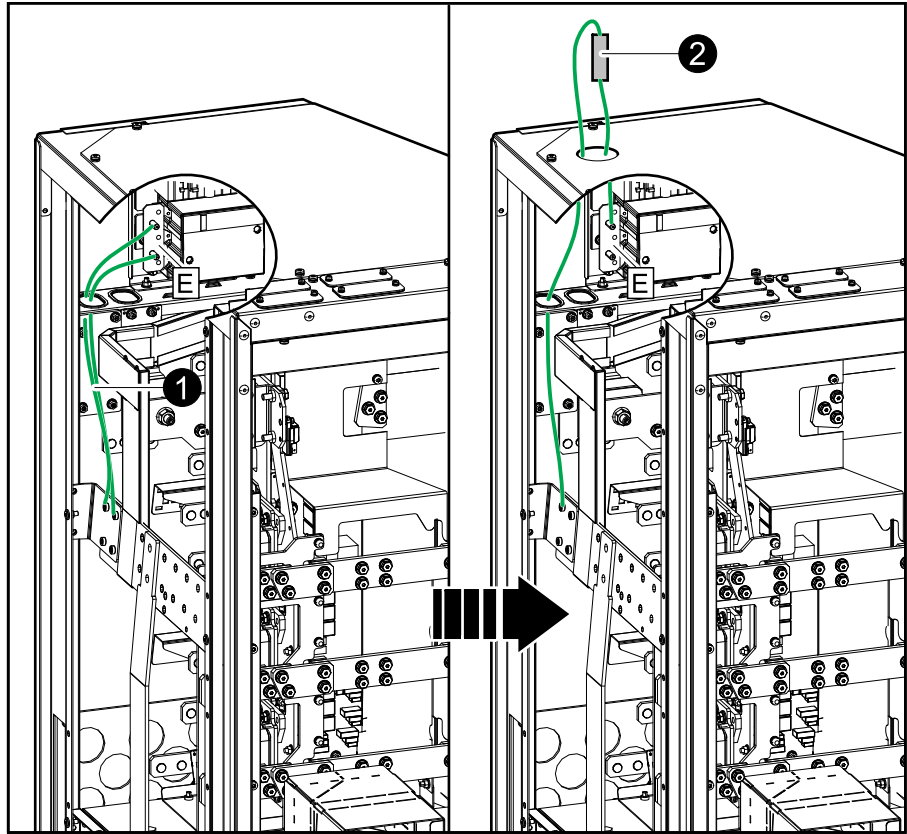
Prepare for TNC Earthing System

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

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 between the E terminal on the bonding contactor and the ground busbar according to NEC article 250.36.

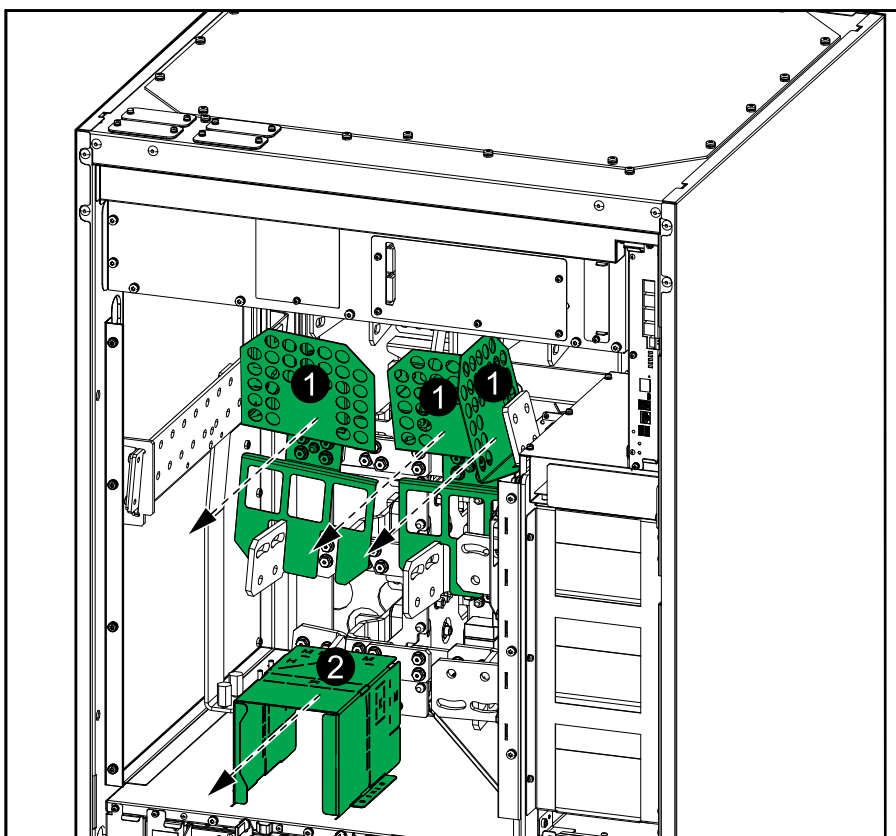


Connect Power Cables in the UPS in System over 45 kAIC/kA Icw

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

Use kit 0H-1816 for this procedure.

1. Remove the transparent plastic protectors from the busbars. Save for reinstallation after cable connection.

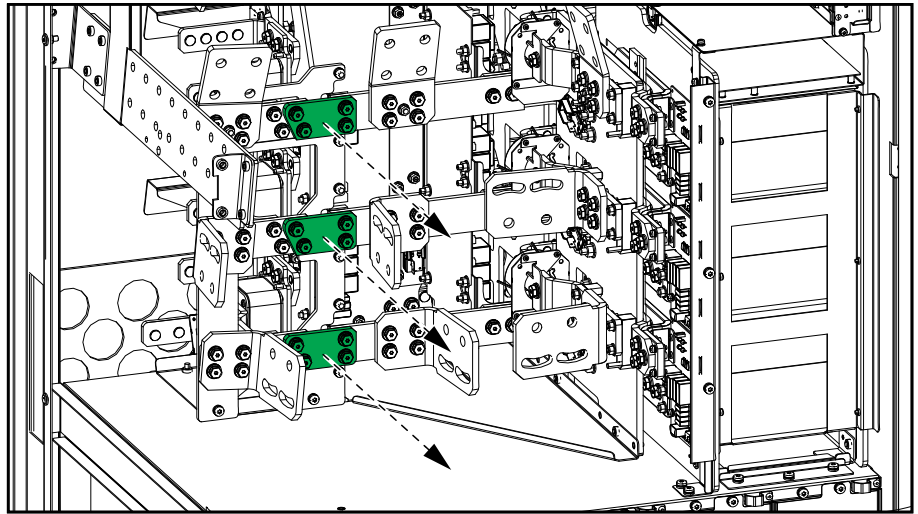


2. Remove the plastic box for easier access. Save for reinstallation after cable connection.

3. **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



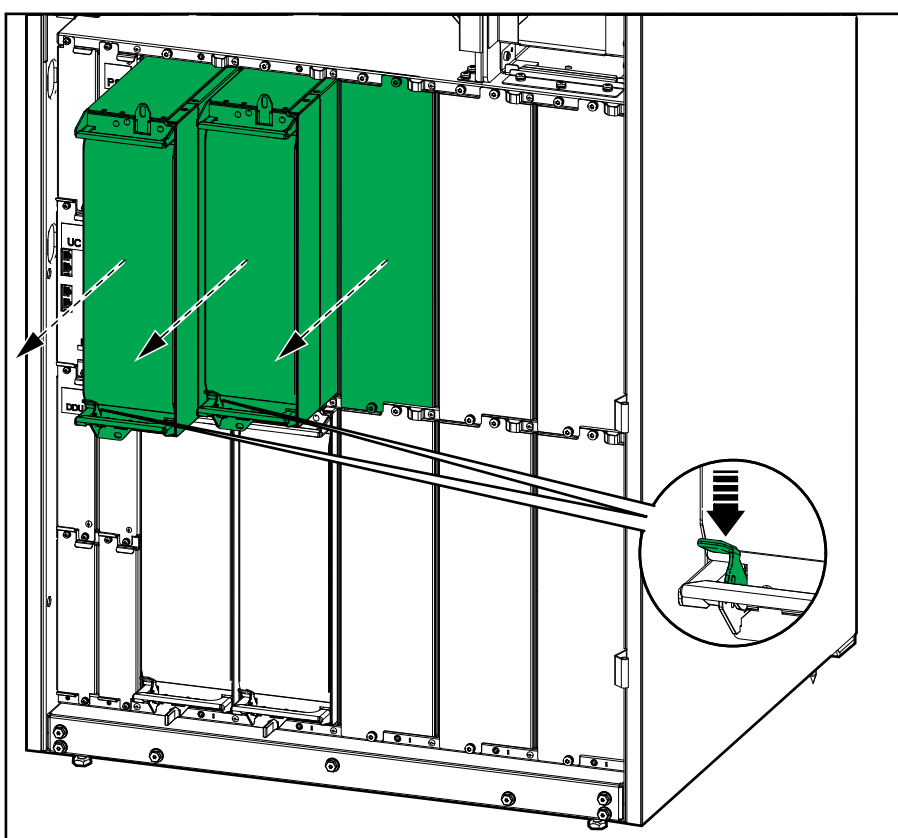
4. Remove the two top power modules and the left-most filler plate:
 - a. Remove the screws in the top and bottom of the power module and push the unlock switch.
 - b. Pull the power module halfway out. A locking mechanism prevents the power module from being pulled all the way out.
 - c. Release the lock by pressing the release button on the top of the power module and remove the power module.

⚠ CAUTION

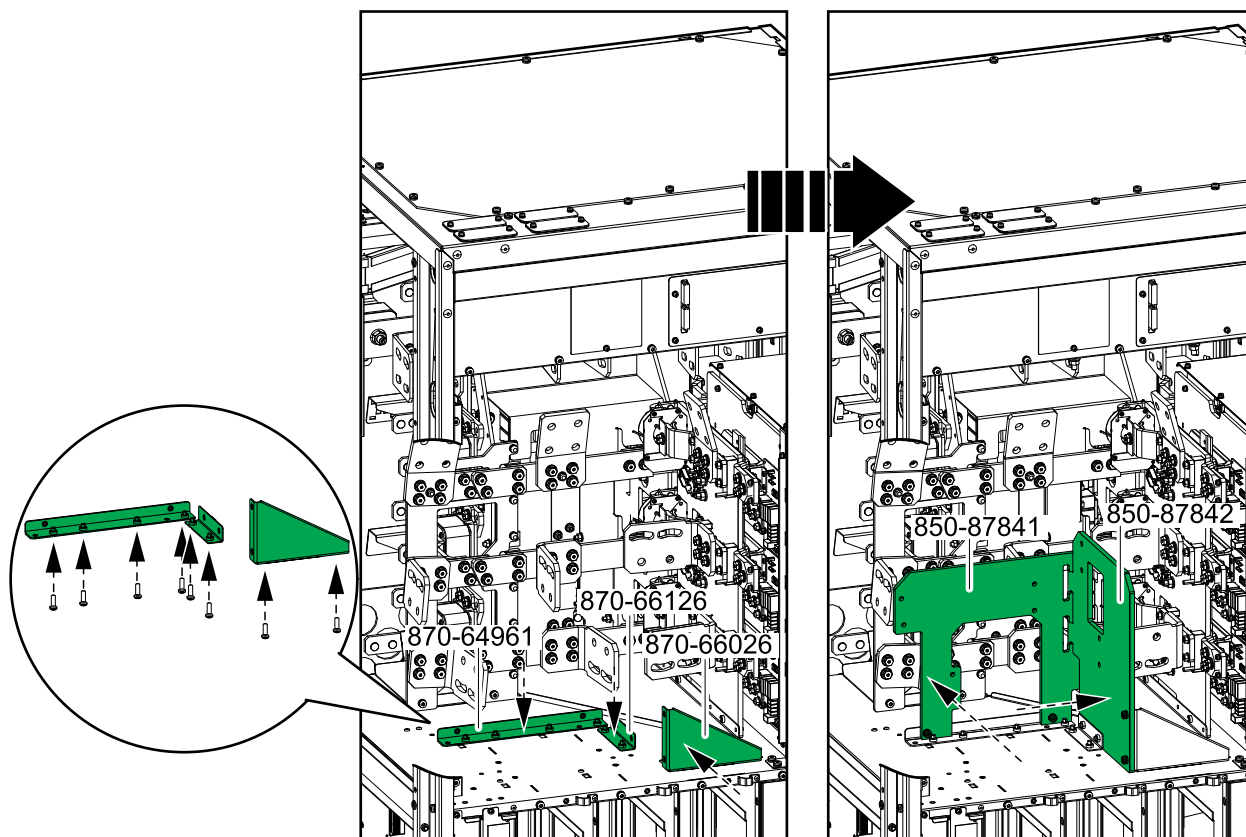
HEAVY LOAD

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

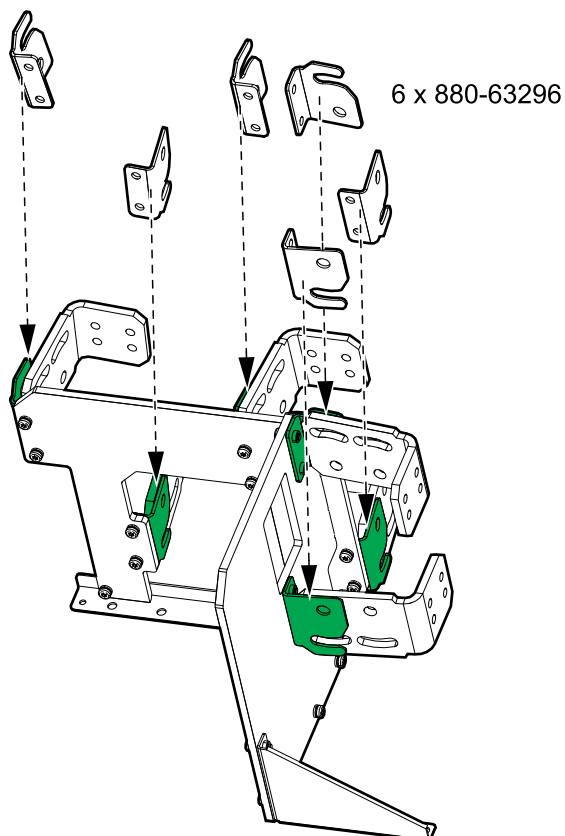
Failure to follow these instructions can result in injury or equipment damage.



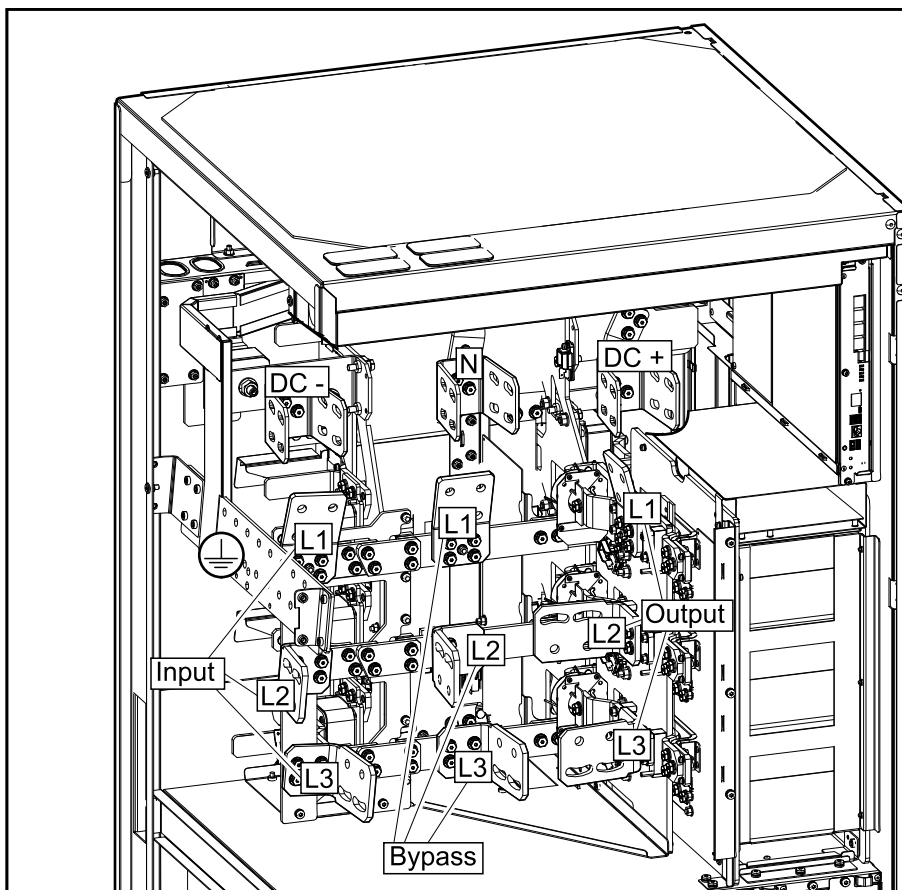
5. Install the three brackets and the two insulator parts on the shelf with the provided screws. Note that the screws are installed on the brackets from below the shelf.



6. Install the six brackets on the rear and right side of the insulator parts with the provided screws. The brackets connect from the insulator parts to the busbars. The bracket is fastened to the busbar when the power cable is installed.



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



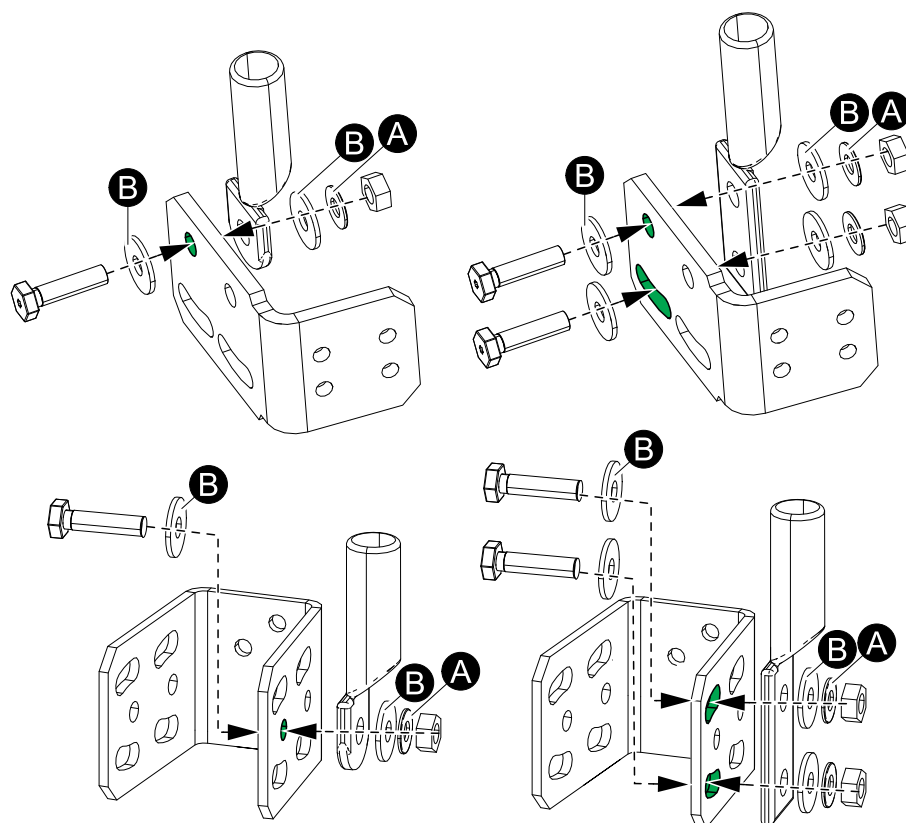
- a. Connect the PE cables/equipment grounding conductor (EGC).
- b. Connect the DC cables (DC+, DC-).
- c. Connect the input cables. Ensure to install the L2 and L3 power cable through both the busbar and the bracket.
- d. **Only for dual mains:** Connect the bypass cables. Ensure to install the L2 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.
- f. **Only for 3-wire parallel system:** Connect the inverter midpoint cable to the neutral busbar. Daisy-chain the inverter midpoint cable between the neutral busbars in the UPSs in the parallel system. Add the provided danger label 885-92714 on the inner door of the UPS.

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.

Cable Lug to Busbar Assembly

A. Spring washer – provided in kit.

B. Flat washer (not provided).

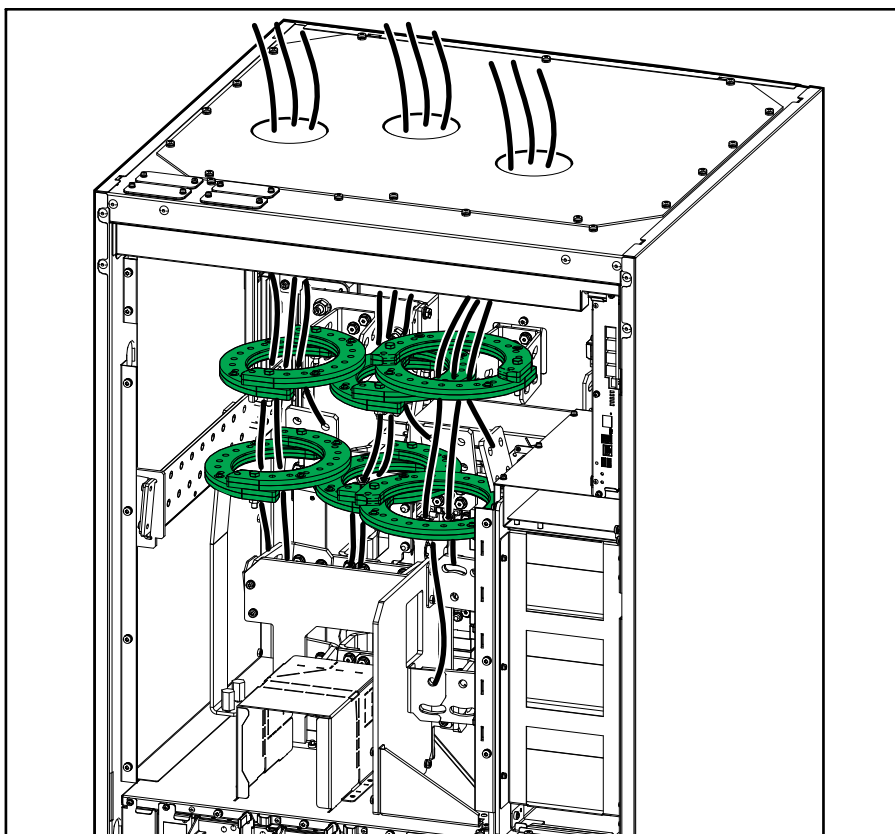
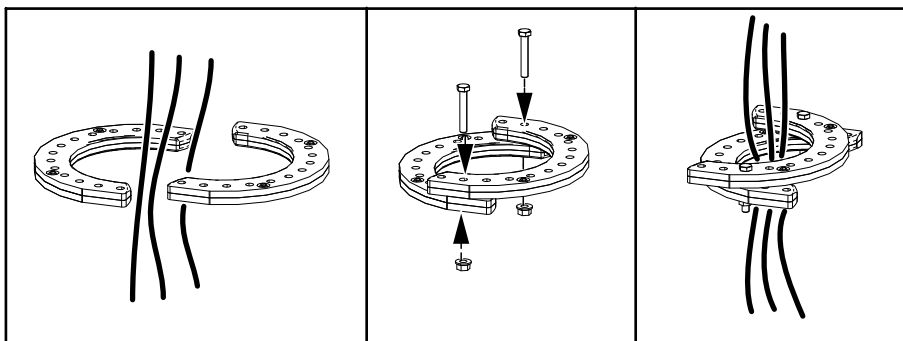
⚠ CAUTION**RISK OF CABLE LUG DISCONNECTION**

- 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.

8. Reinstall the plastic box in the original position.

9. Fasten the power cables with the provided plastic fasteners in the shown positions. Adjust the fasteners to the power cables so they are fitted tightly together.



10. Reinstall the transparent plastic protectors in the original position.
11. Reinstall the two power modules and the filler plate.

⚠ CAUTION

RISK OF ELECTRIC SHOCK

The transparent plastic protectors and the plastic box must be reinstalled in the original position after power cabling is completed.

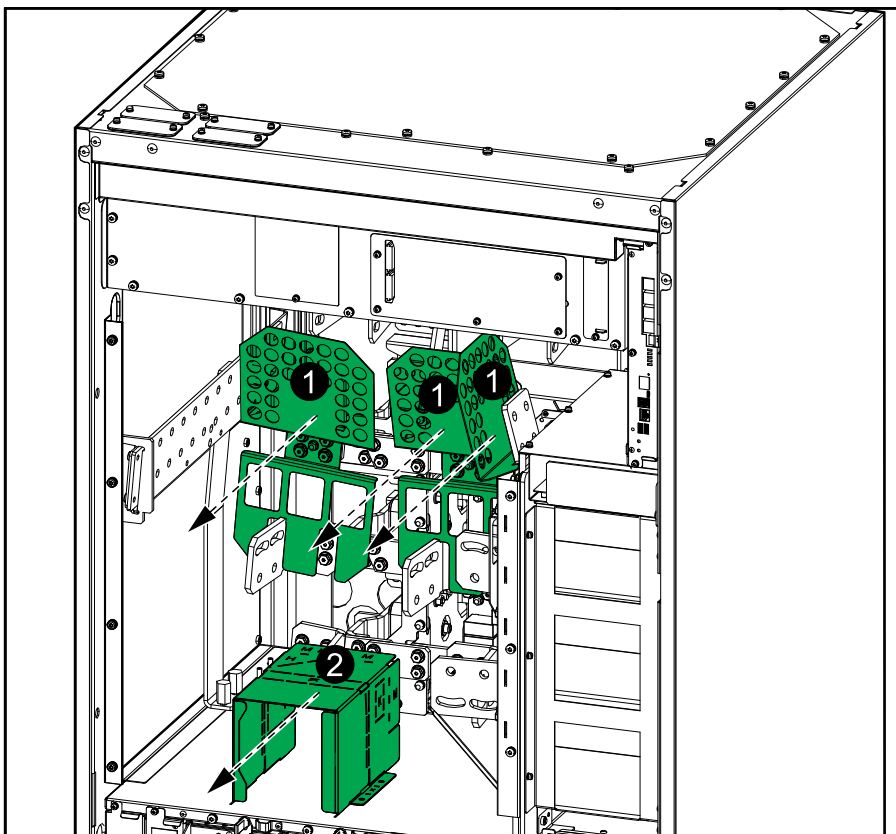
Failure to follow these instructions can result in injury or equipment damage.

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 Li-Ion battery control breaker kit (GVLOPT005) is part of your installation, the Li-Ion battery control breaker kit must be installed **before** the power cables are connected in the UPS. Follow the installation manual provided with the Li-Ion battery control breaker kit.

1. Remove the transparent plastic protectors from the busbars. Save for reinstallation after cable connection.

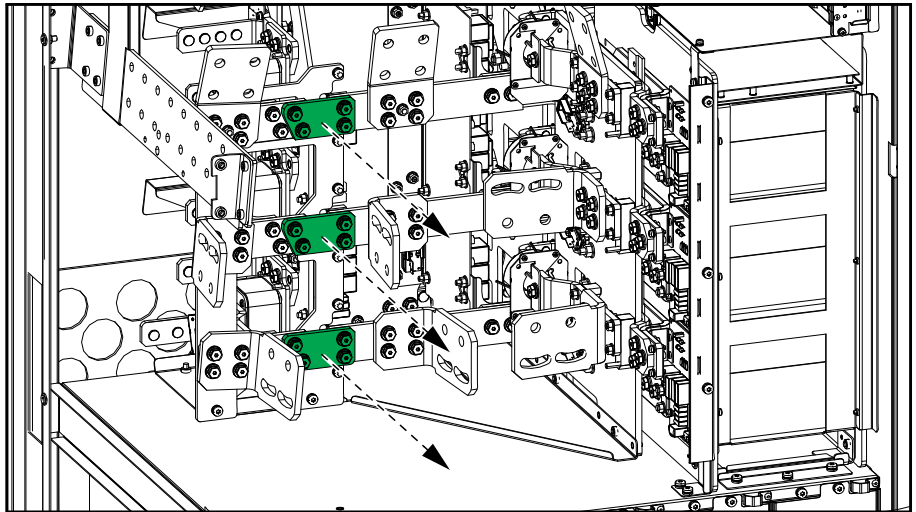


2. Remove the plastic box for easier access. Save for reinstallation after cable connection.

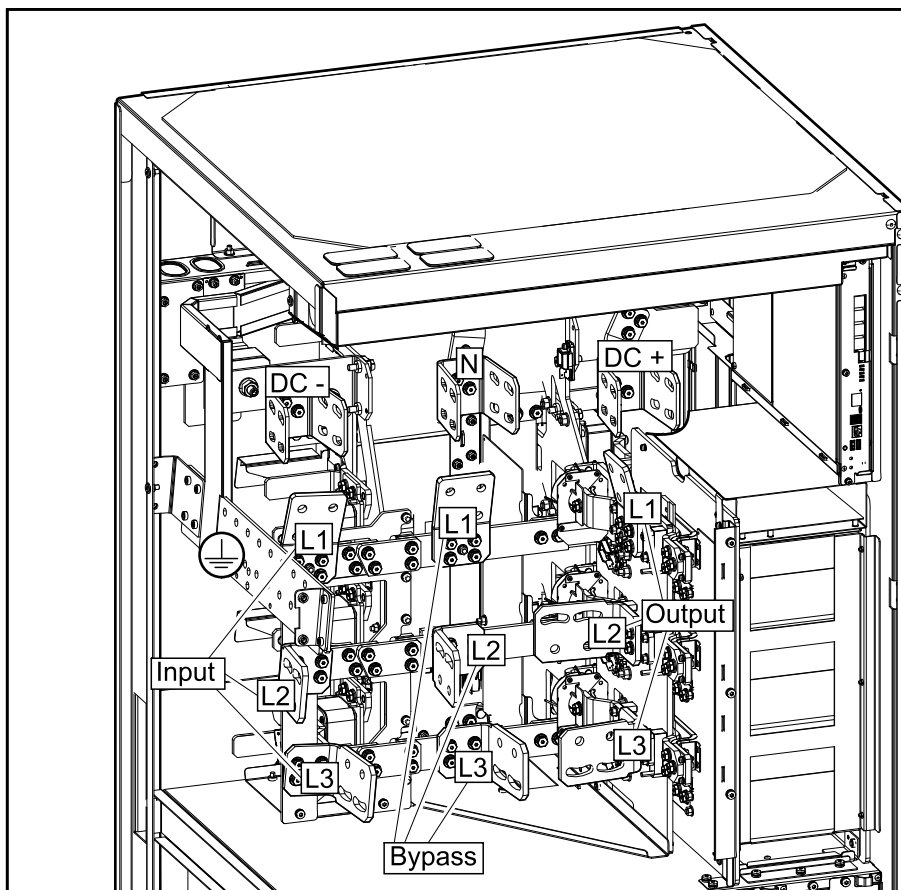
3. **Only for dual mains:** Remove the single mains busbars.

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

Front View of the UPS



4. 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.
- f. **Only for 3-wire parallel system:** Connect the inverter midpoint cable to the neutral busbar. Daisy-chain the inverter midpoint cable between the neutral busbars in the UPSs in the parallel system. Add the provided danger label 885-92714 on the inner door of the UPS.

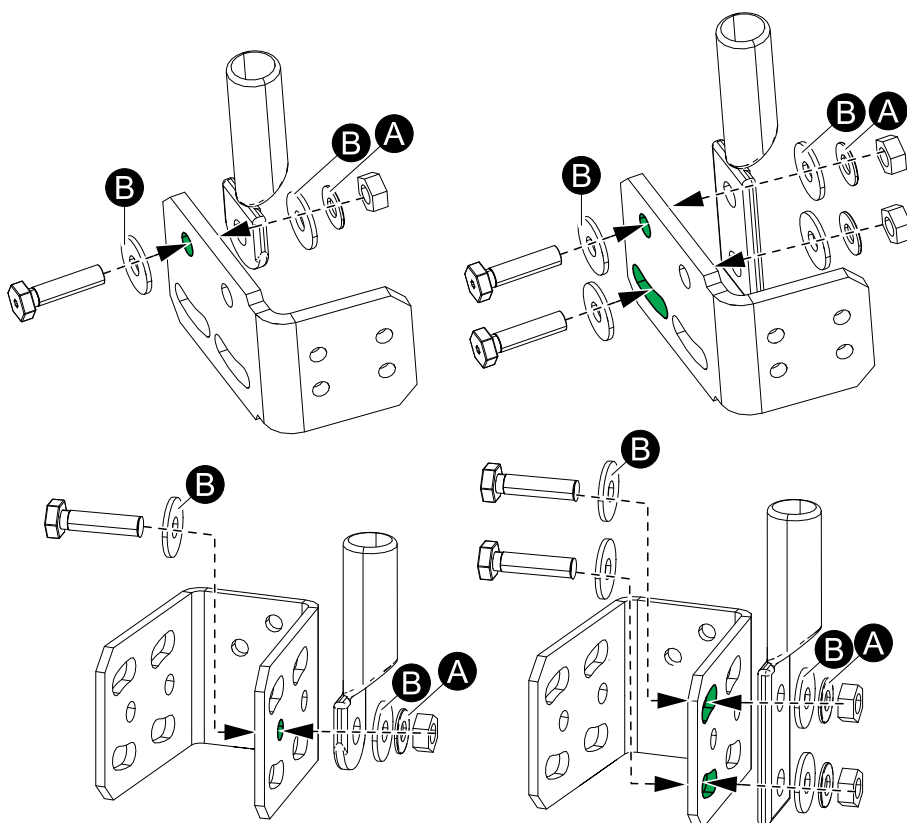
⚡⚡ DANGER

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.

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.

5. Reinstall the transparent plastic protectors in the original position.

6. Reinstall the plastic box in the original position.

⚠ CAUTION

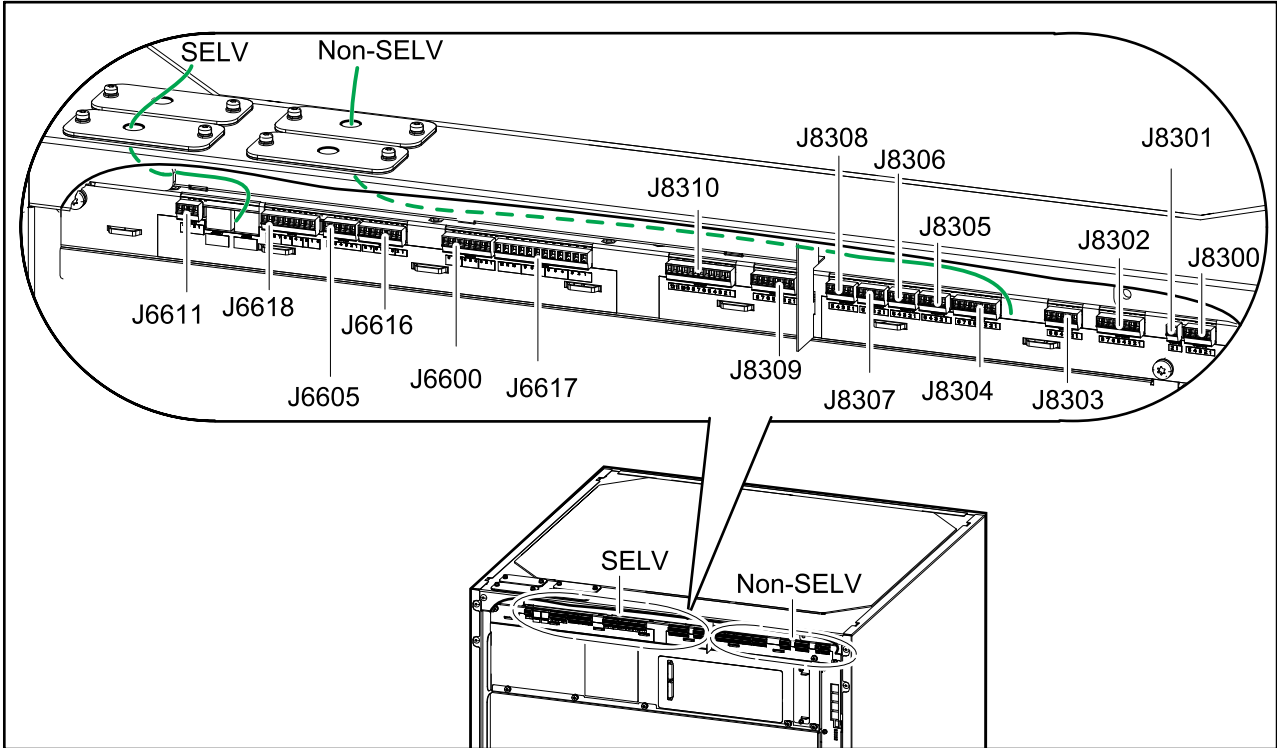
RISK OF ELECTRIC SHOCK

The transparent plastic protectors and the plastic box must be reinstalled in the original position after power cabling is completed.

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.

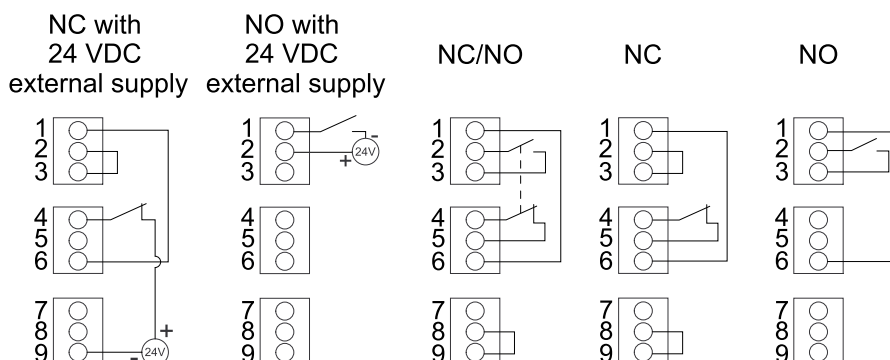
All Class 2/SELV signal cables shall be double insulated/jacket cable and minimum rated for 30 VDC. All non-Class 2/non-SELV signal cables shall be double insulated/jacket cable and minimum rated for 600 VAC.

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.

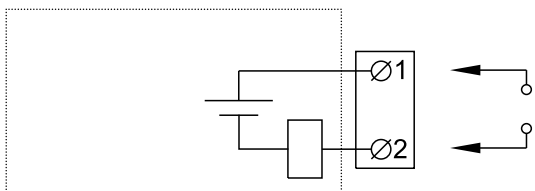
NOTE: The default setting for the EPO activation is to turn off the inverter.

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.

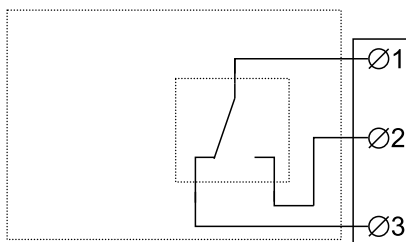
Do not connect any circuit to the input contacts unless it can be confirmed that the circuit is Class 2/SELV.

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.



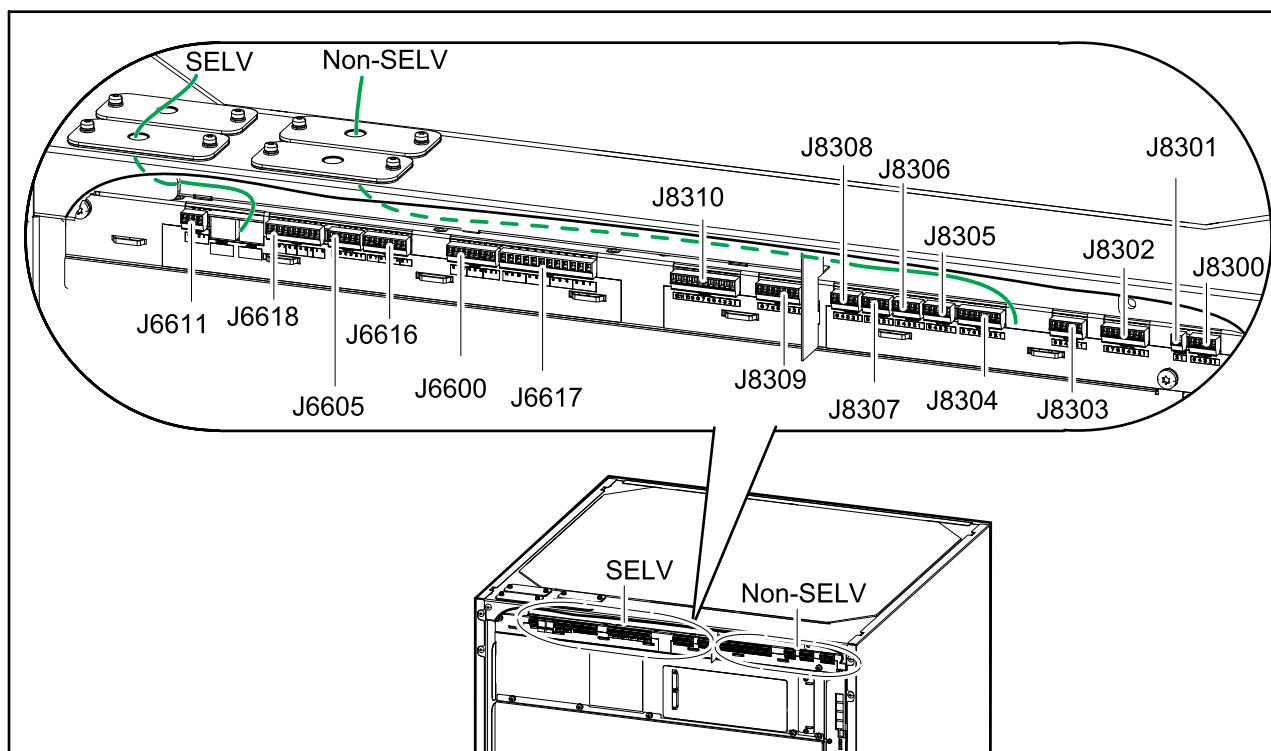
Name	Description	Location
OUT_1 (output relay 1)	Configurable output relay	Terminal J6617, 1-3

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

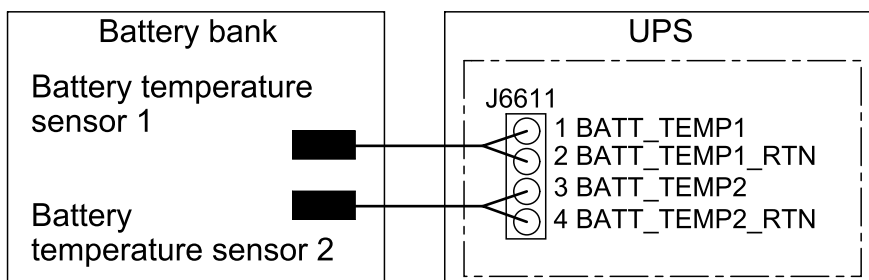
Position the temperature sensor as described to ensure correct temperature measurements.

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.

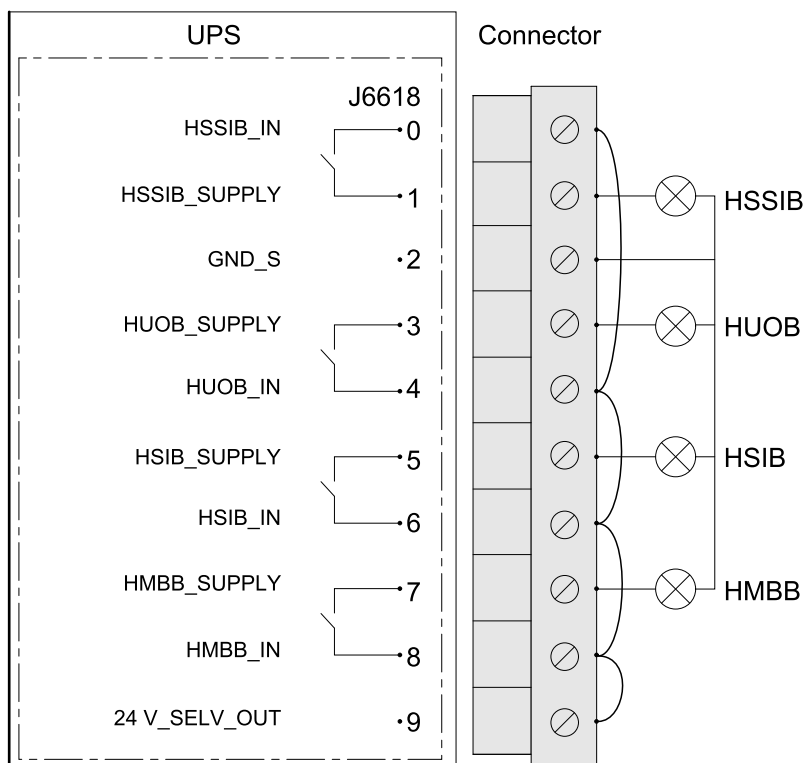
NOTE: Two temperature sensors are provided with the UPS.

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



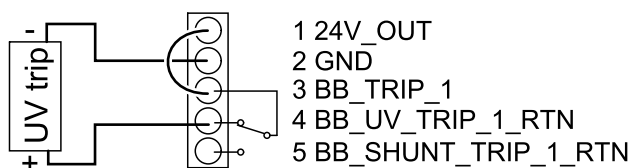
3. Connect signal cables from the breaker indicator lights in your switchgear to terminal J6618 in the top of the UPS. If an external supply is used, remove jumper from J6618 pin 8 and 9.

NOTE: The breaker 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 breaker indicator light terminals unless it can be confirmed that the circuit is Class 2/SELV.

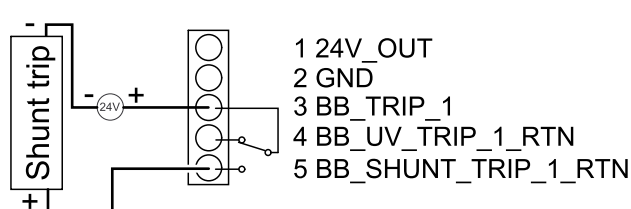
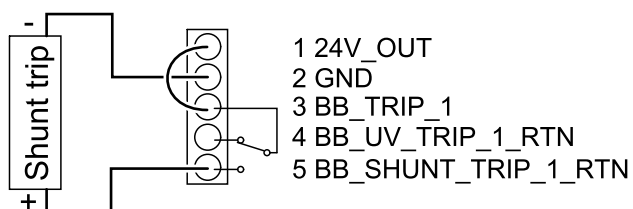
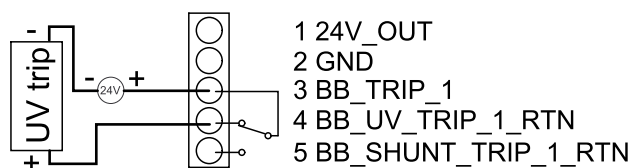


4. Connect the signal cables from the battery breaker(s) in your battery solution for shunt trip or undervoltage (UV) trip connection to the UPS. Follow the illustration for connection with internal or external 24 VDC supply. The UPS can connect to and monitor up to four battery breakers.
 - a. Connect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

Battery Breaker Trip Connection with Internal 24 VDC Supply



Battery Breaker Trip Connection with External 24 VDC Supply



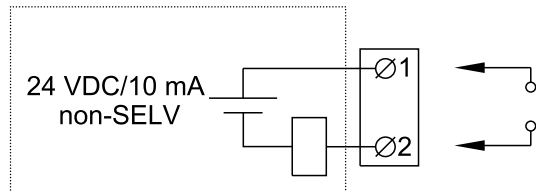
Supported Shunt

Voltage (V)	Current (A)	Time (ms)	Temperature	Recommended cable size ⁵²	
				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.

⁵². The recommended cable size is based on a voltage drop of maximum 0.8x24 VDC for 30 meter cables.

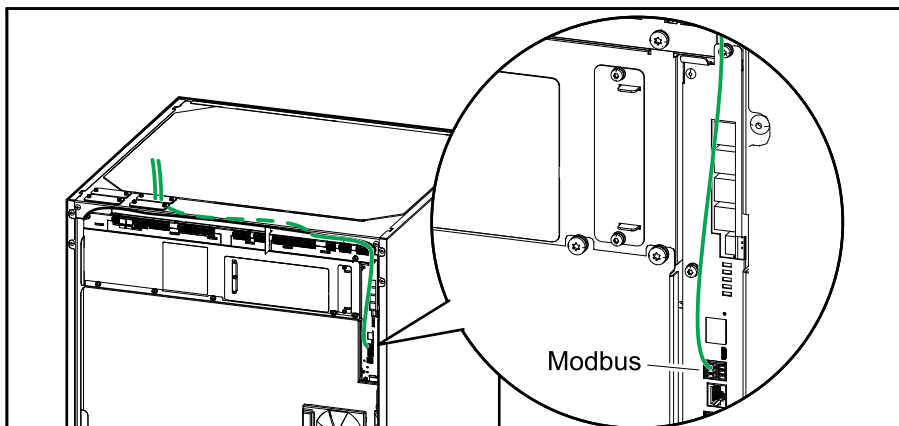
5. Connect signal cables from AUX switches in your switchgear to the UPS.



Terminal number	Function	Connection
J8303, 1-2	UOB_RED (redundant AUX switch in unit output breaker)	Connect to redundant AUX switch in unit output breaker UOB.
J8303, 5-6	SIB (system isolation breaker)	Connect to normally open (NO) AUX switch in system isolation breaker SIB for parallel system. SIB must contain an AUX switch for each connected UPS.
J8304, 1-2	BB1 (battery breaker 1)	Connect to normally open (NO) AUX switch in battery breaker number 1.
J8304, 3-4	BB2 (battery breaker 2)	Connect to normally open (NO) AUX switch in battery breaker number 2.
J8304, 5-6	BB3 (battery breaker 3)	Connect to normally open (NO) AUX switch in battery breaker number 3.
J8304, 7-8	BB4 (battery breaker 4)	Connect to normally open (NO) AUX switch in battery breaker number 4.
J8302, 7-8	UOB (unit output breaker)	Connect to normally open (NO) AUX switch in unit output breaker UOB.
J8302, 3-4	SSIB (static switch input breaker)	Connect to normally open (NO) AUX switch in static switch input breaker SSIB. SSIB must contain an AUX switch for each connected UPS.
J8302, 1-2	UIB (unit input breaker)	Connect to normally open (NO) AUX switch in unit input breaker UIB. UIB must contain an AUX switch for each connected UPS.
J8302, 5-6	MBB (maintenance bypass breaker)	Connect to normally closed (NC) AUX switch in maintenance bypass breaker MBB. MBB must contain an AUX switch for each connected UPS.
J8300, 1-5	EXT BF (external backfeed breaker)	See Backfeed Protection, page 101.
J8301, 1-2	EXT BF RED (redundant power supply for external backfeed breaker)	See Backfeed Protection, page 101.

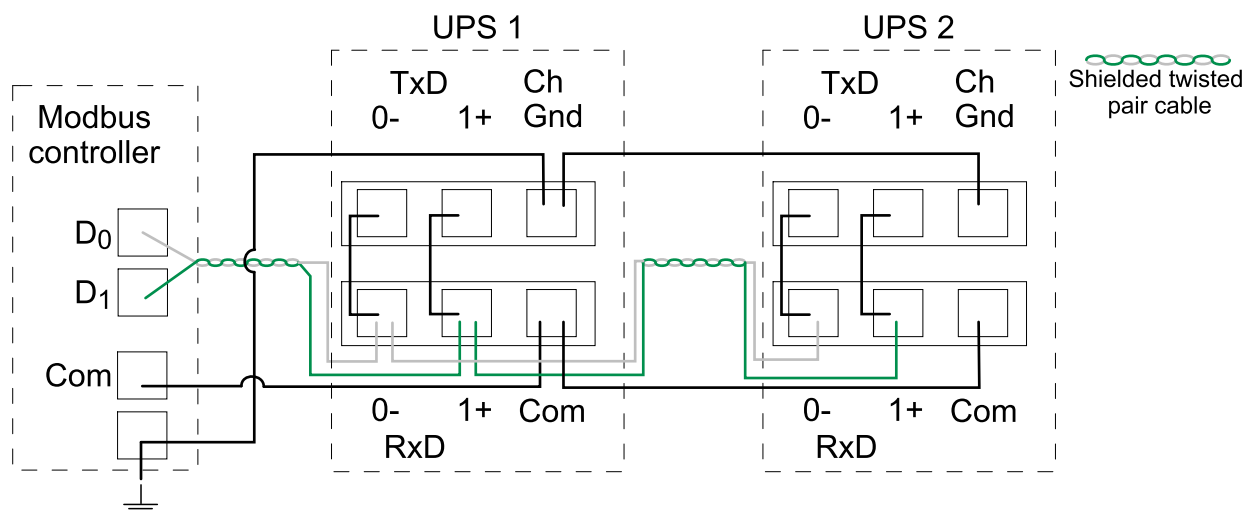
Connect the Modbus Cables

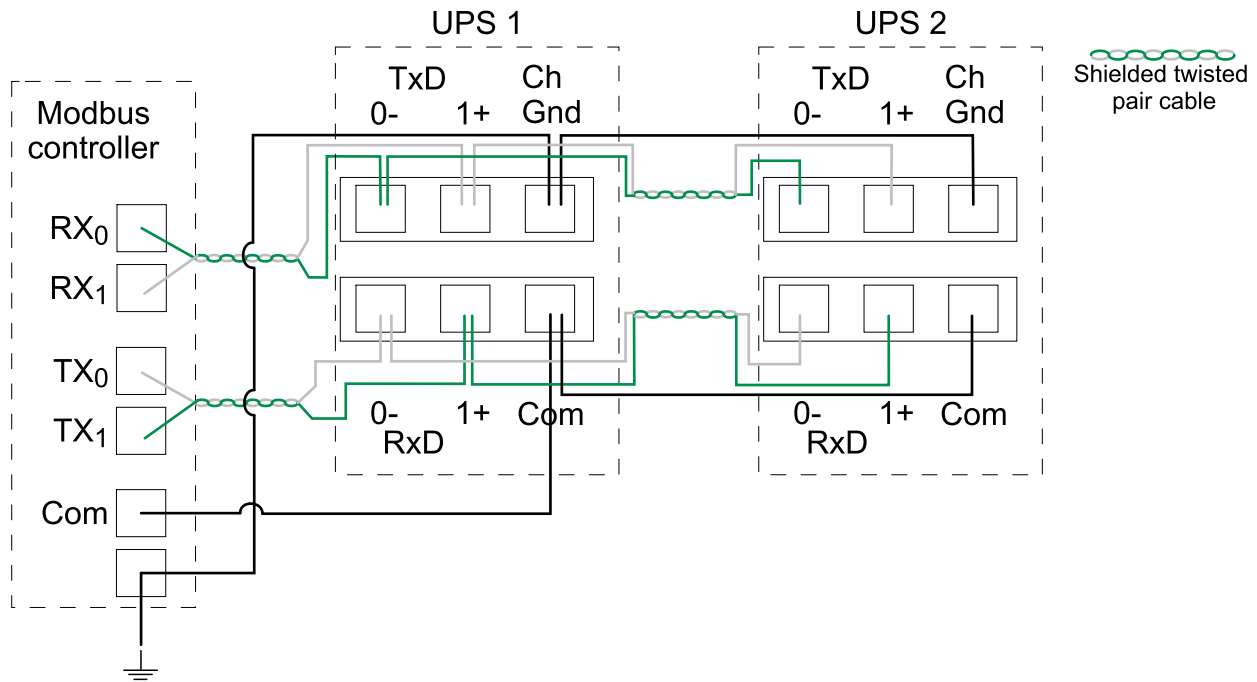
1. Connect the Modbus cables to the UPS(s). Use either 2-wire or 4-wire connection.



- 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

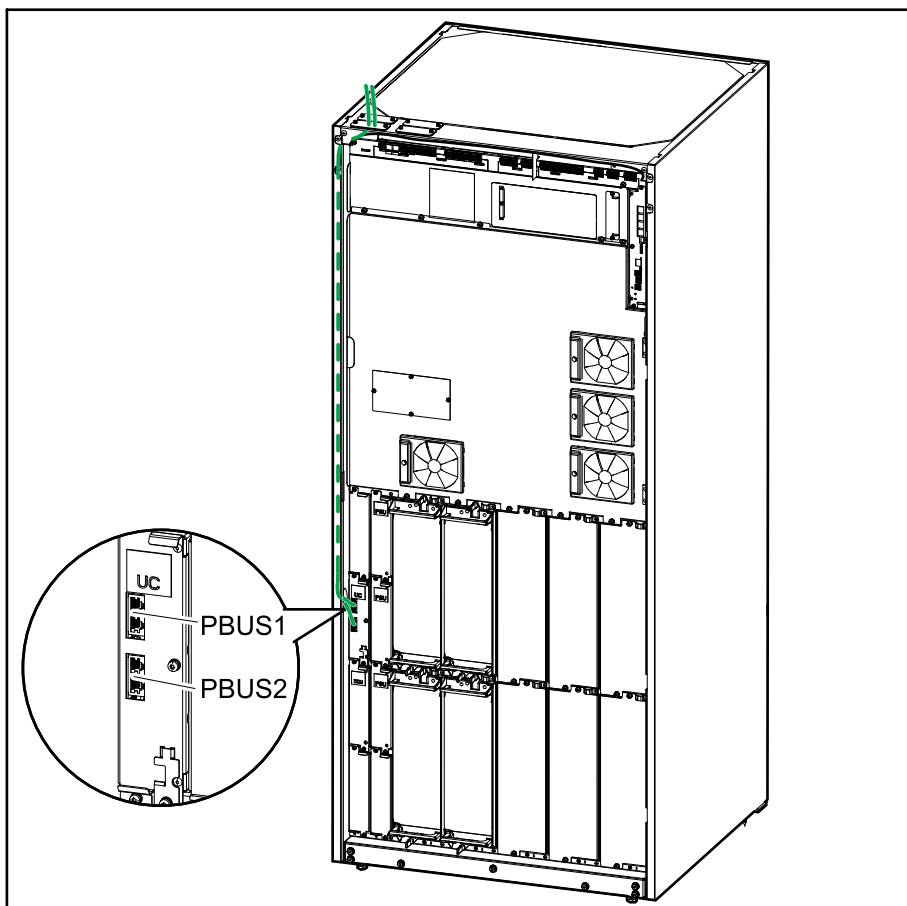
2. Install 150 Ohm termination resistors at each end of each bus if the buses are very long and operate at high data rates. Busses under 610 meters (2000 feet) at 9600 baud or under 305 meters (1000 feet) at 19.200 baud should not require termination resistors.

Connect the PBUS Cables

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

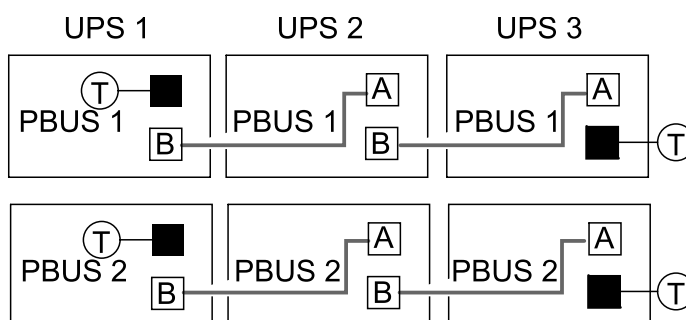
It is recommended to use the PBUS cables provided by Schneider Electric (0W7995 or 0W7996).

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 disconnecter device at the source before removing the transparent protection cover.

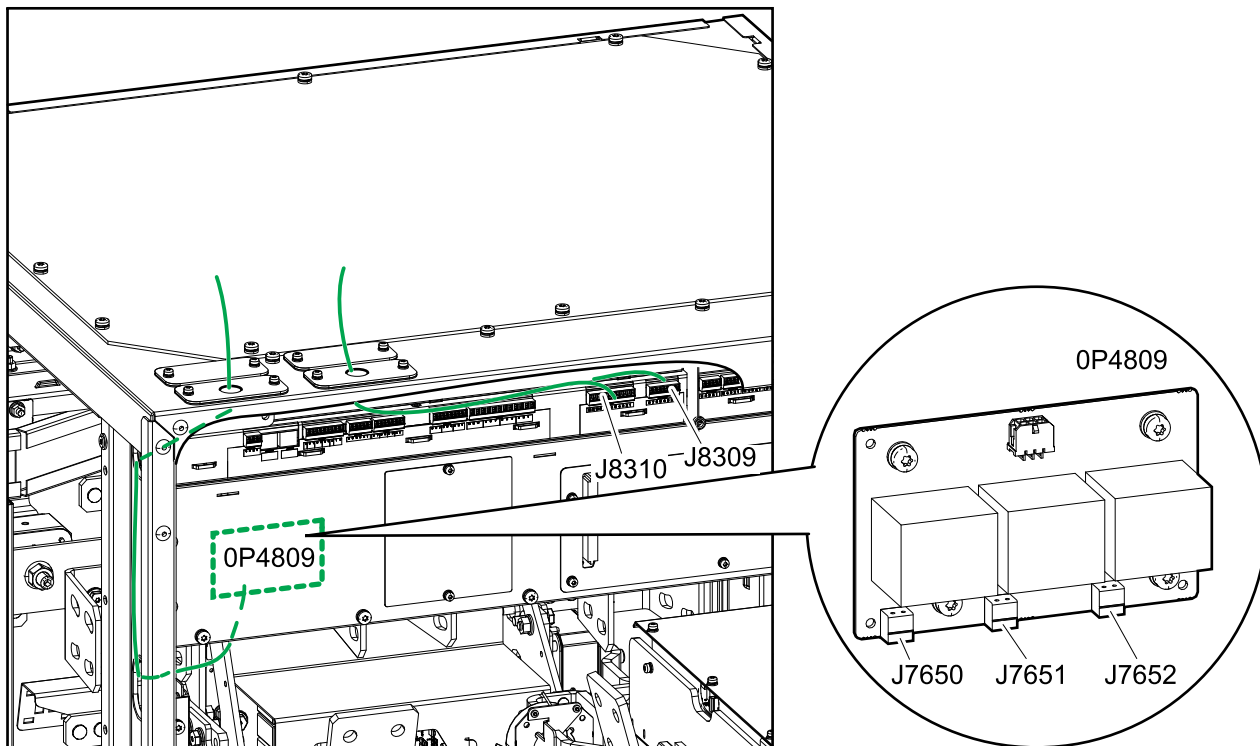
Failure to follow these instructions will result in death or serious injury.

Cable Size and Fuse Disconnecter Device for External Synchronization

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

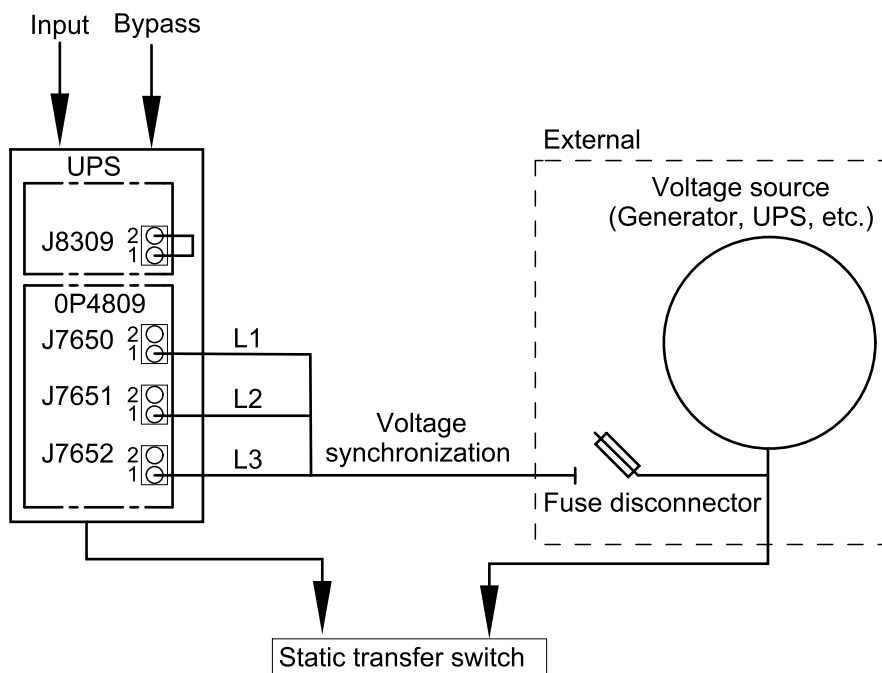
The maximum voltage for external synchronization is equal to the input voltage range given in the specifications. The non-Class 2/non-SELV cables for external synchronization shall be a jacket cable and rated for 600 VAC.

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 disconnecter devices are installed at the source as shown in the diagrams.

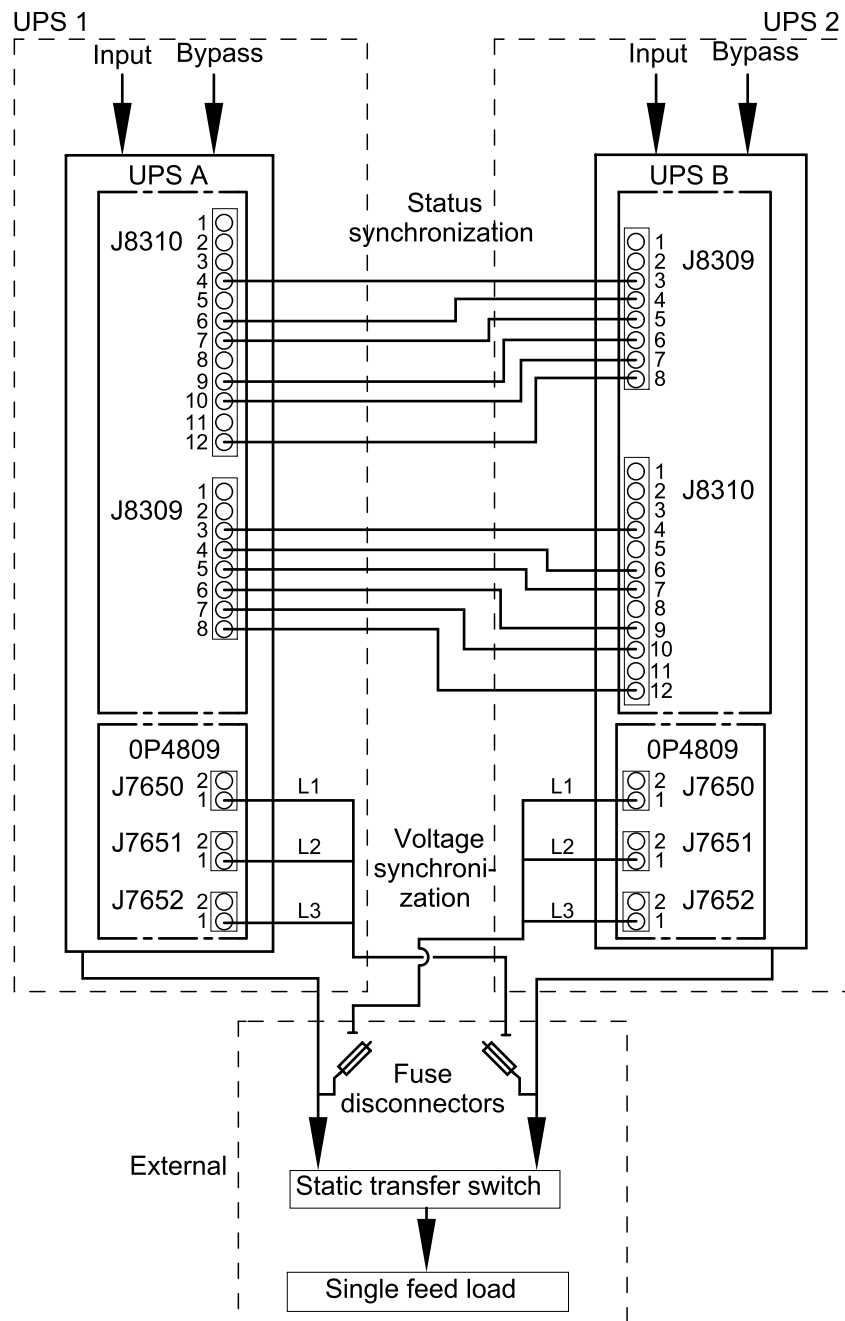


Signal Cable Connections for UPS Synchronization to a Fixed Voltage Source

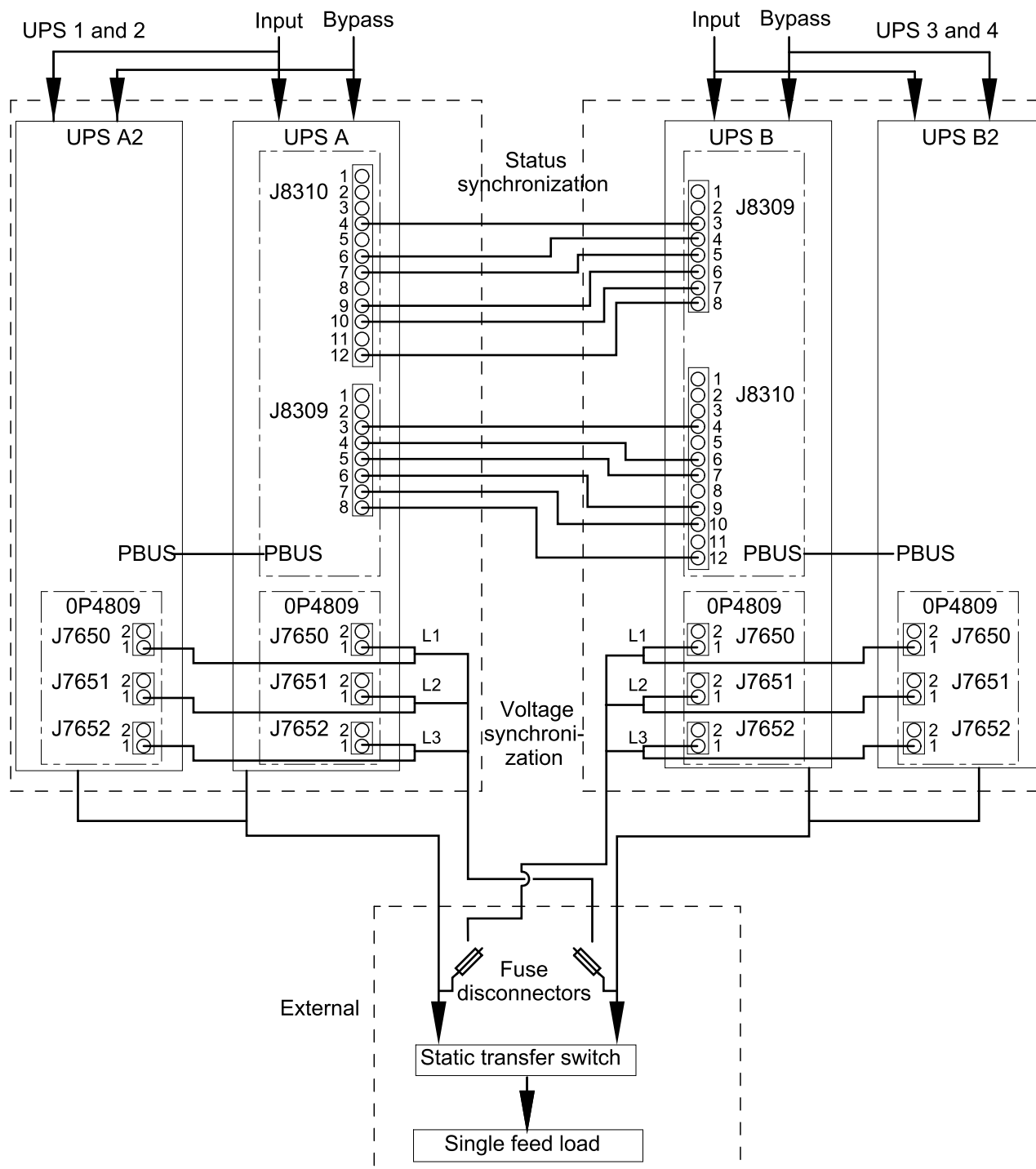
NOTE: The connection on J8309 pin 1 and 2 can be with a jumper or can be controlled externally from a PLC or another external system.



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



- Reinstall the transparent protection cover on the external synchronization board OP4809 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 OP4809.

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

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

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.

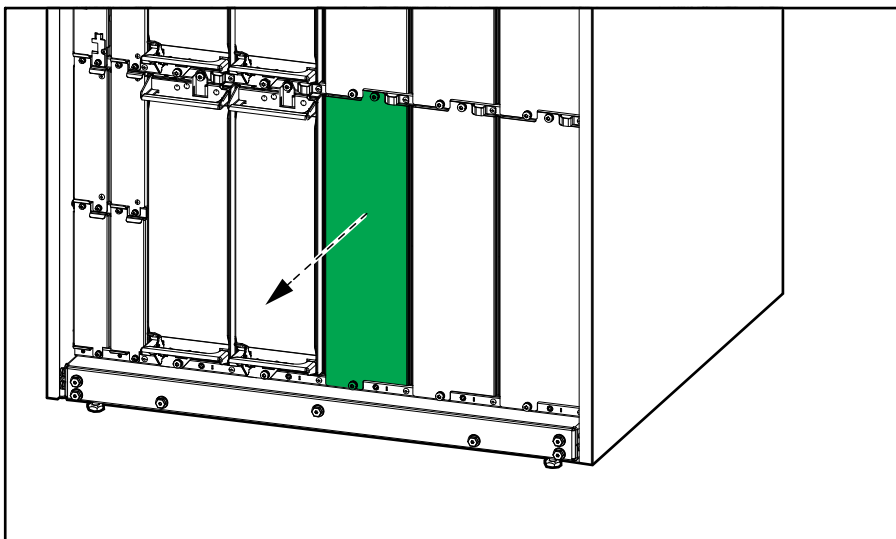
⚠ CAUTION

HEAVY LOAD

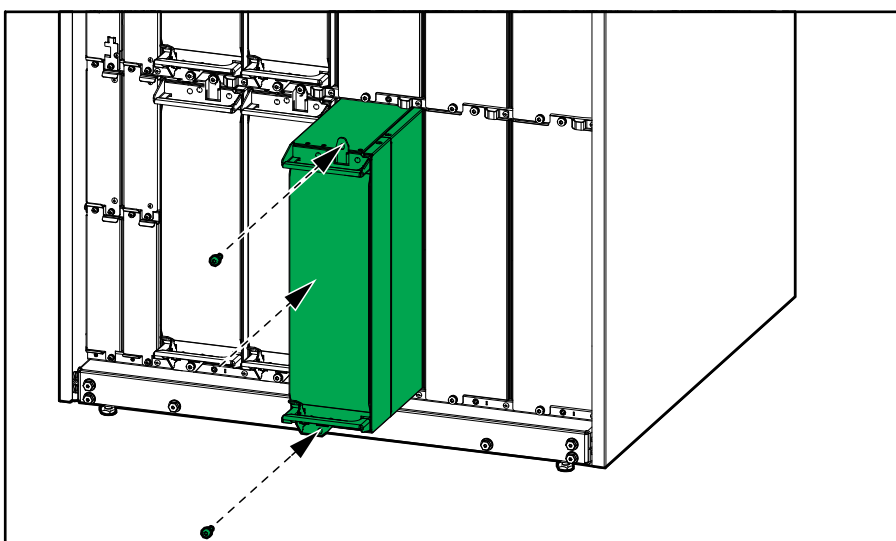
Power modules are heavy (38 kg (83.77 lbs)) and require two persons to lift.

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

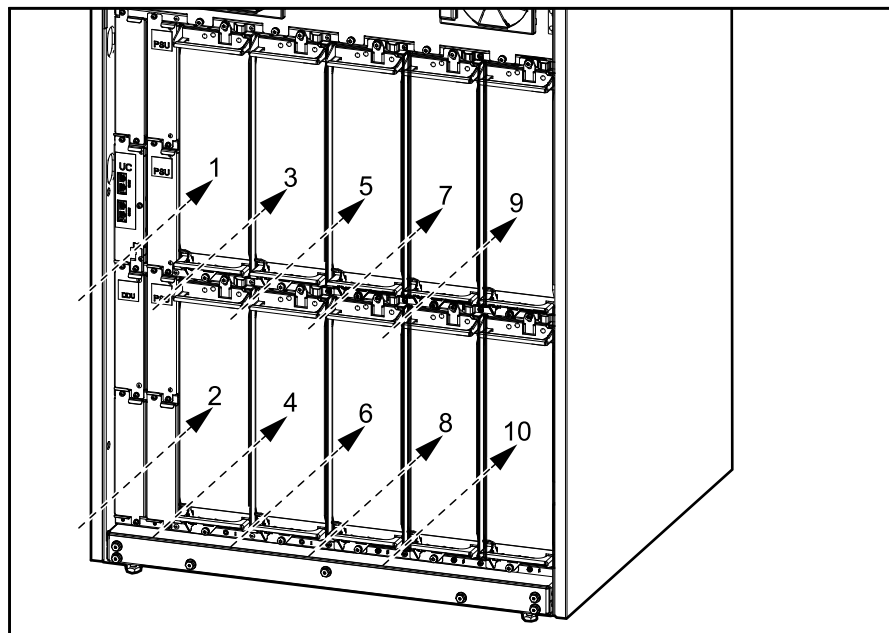
1. Remove the filler plate from the empty power module slot. Save the filler plate for future use.



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.



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 885-XXX 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 885-XXX 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 breaker with shunt trip connected to the UPS. See diagrams and instructions in *Installation of Third Party Backfeed Protection*, page 101.
- 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 breaker 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 breaker shunt trip and AUX switch to the UPS as shown below. Use double insulated cables. Breaker 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 breaker.

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 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):

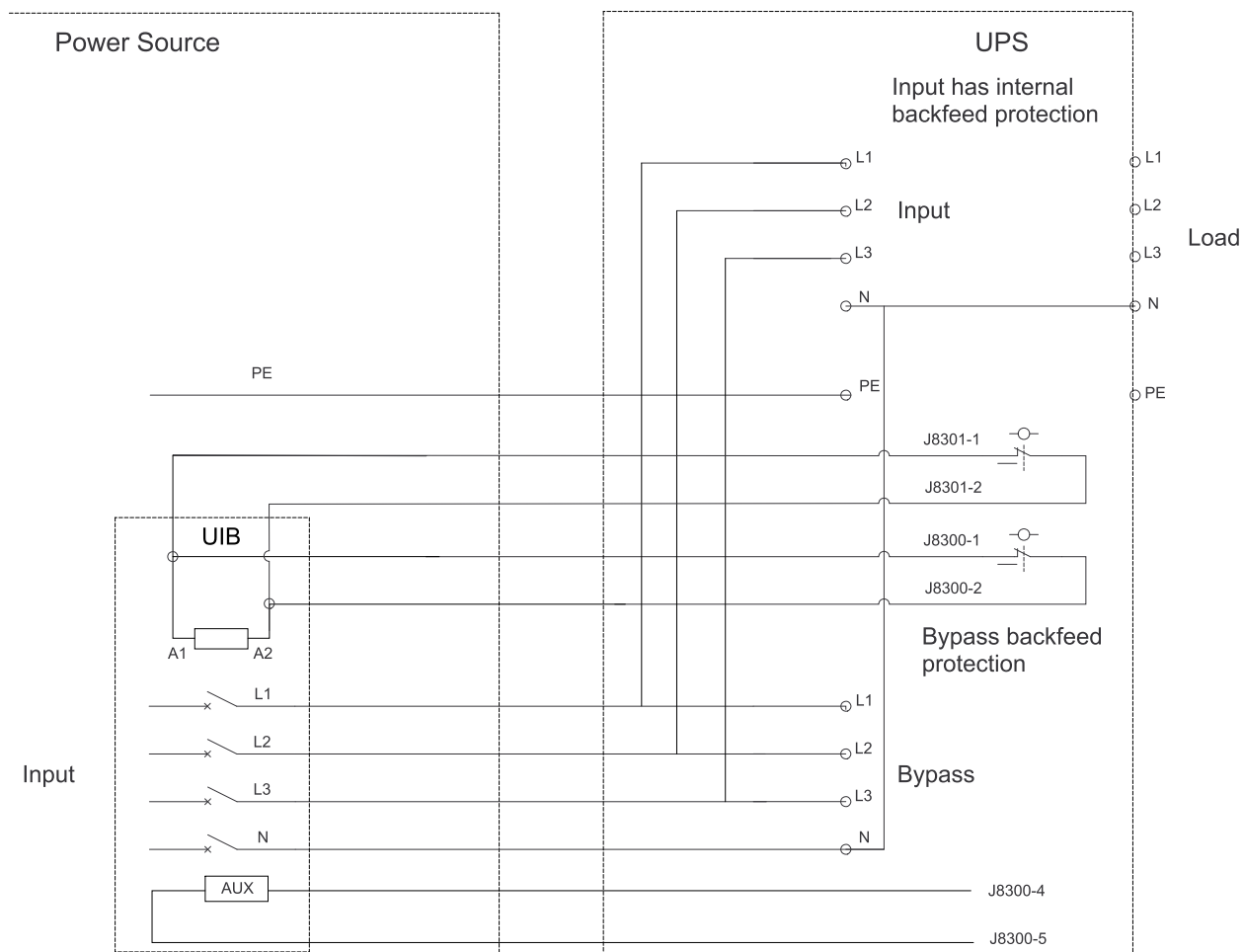
⚡ ⚠ DANGER

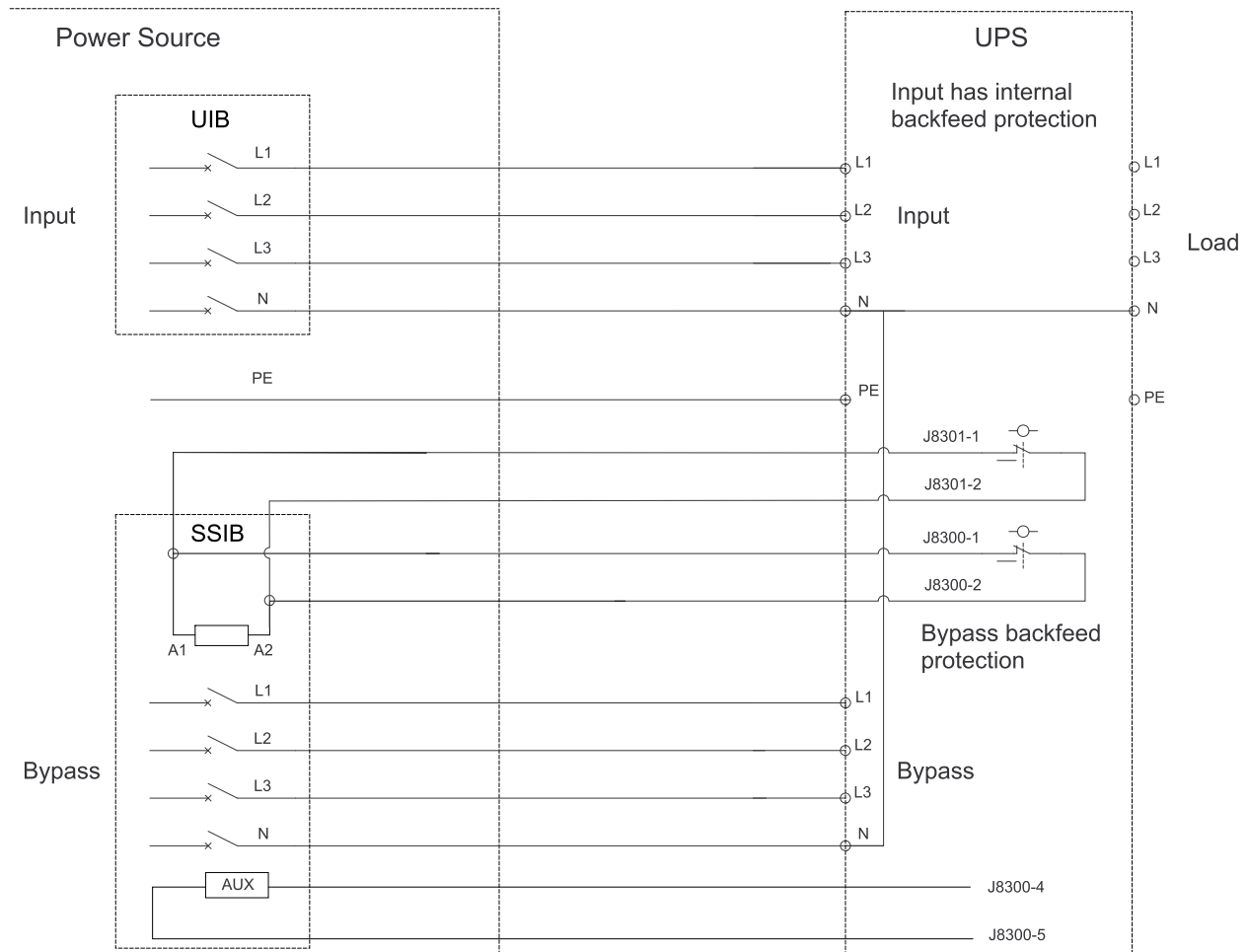
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

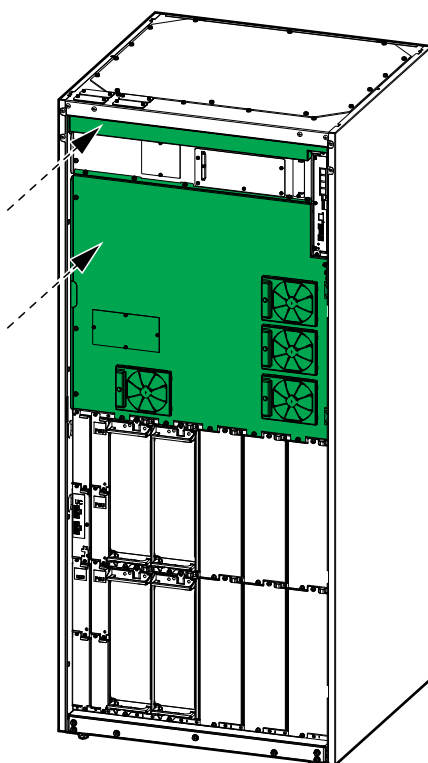


UPS and Third Party Backfeed Protection – Dual Mains

Final installation

1. Verify that the transparent plastic protectors and the plastic box (removed in Connect Power Cables in the UPS in System up to 45 kAIC/kA Icw, page 80 or Connect Power Cables in the UPS in System over 45 kAIC/kA Icw, page 73) have been reinstalled in their original position.
2. Verify that the transparent protection cover on the external sync board 0P4809 (removed in Connect the Signal Cables for External Synchronization, page 94) has been reinstalled in its original position.
3. Close the inner door and fasten with screws.
4. Reinstall the cover over the signal connections.

Front View of the UPS

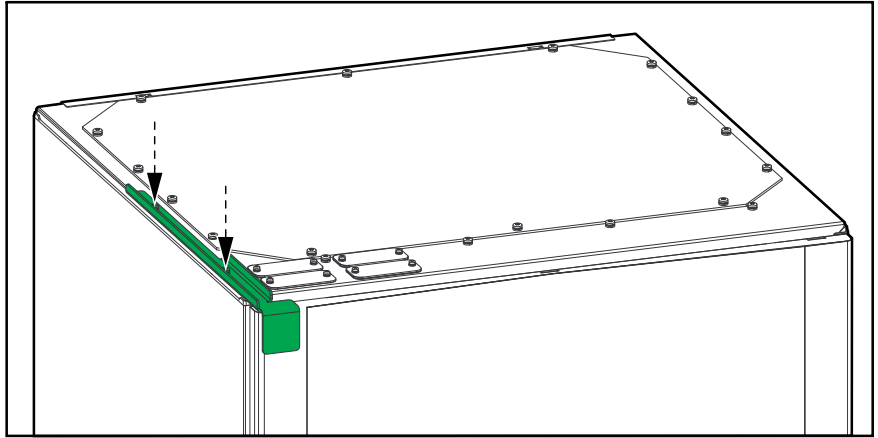


5. On the label 885-91896 on the front of the UPS, mark the short circuit rating relevant for this UPS system depending on installed auxiliaries and options.

	65 kAIC/kA Icw (UPS alone)
	65 kAIC with GVLBCA200K500G (UPS with maintenance bypass cabinet for UL)
	45 kAIC/kA Icw with GVBEC (UPS with bottom entry cabinet)
	45 kAIC/kA Icc with GVLOPT003/GVLOPT004 installed (UPS with backfeed kit for UL/backfeed kit for IEC installed)
	25 kA Icw with GVLBCA200K500H (UPS with maintenance bypass cabinet for IEC)

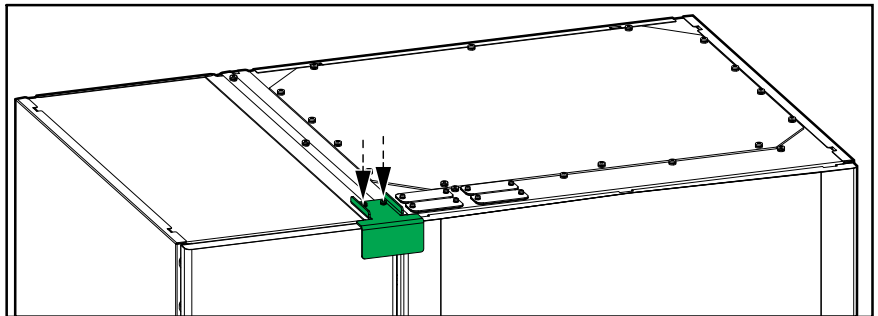
6. **Only for seismic anchoring:** Close the front door(s) and perform one of the following:
- For UPS alone, install the provided seismic top bracket 870-18110 in the top left side of the UPS.

The UPS



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

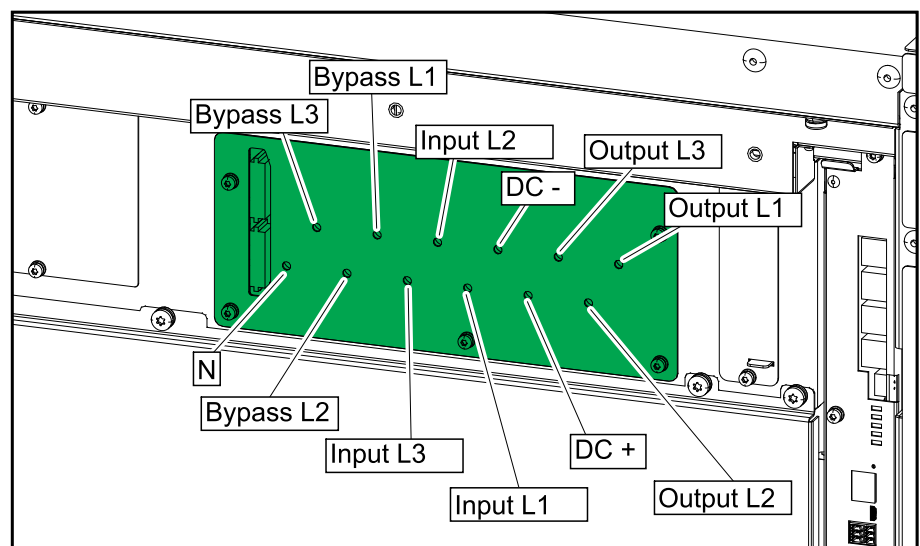
The Bottom Entry Cabinet/Maintenance Bypass Cabinet and the UPS



Decommission or Move the UPS to a New Location

1. Shut down the UPS completely – follow the instructions in the UPS operation manual.
2. Lockout/Tagout all breakers in the maintenance bypass cabinet/the switchgear in the OFF (open) position.
3. Lockout/Tagout all battery breakers in the switchgear/battery solution in the OFF (open) position.
4. Open the front door of the UPS.
5. If present, Lockout/Tagout the backfeed breaker BF2 in the OFF (open) position.
6. 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**TOP-HEAVY CABINET**

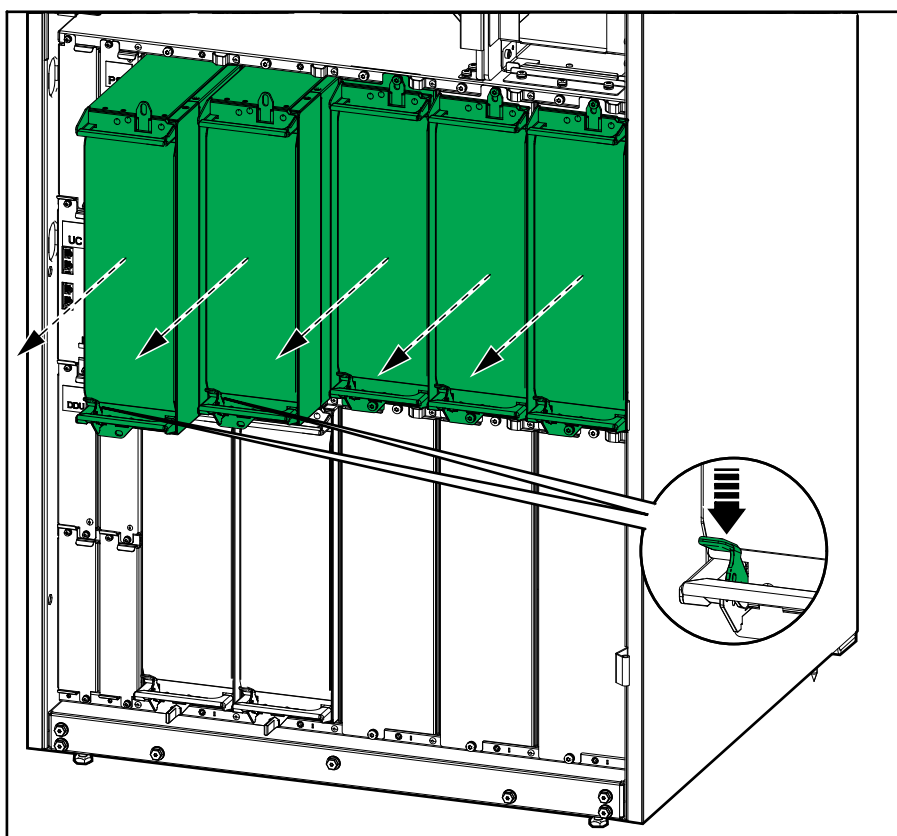
Do not remove any power modules from the bottom row of the UPS. This will make the UPS top-heavy and make it tilt more easily.

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.



- Remove the screws in the top and bottom of the power module and push the unlock switch.
- Pull the power module halfway out. A locking mechanism prevents the power module from being pulled all the way out.
- Release the lock by pressing the release button on the top of the power module and remove the power module.
- Install a filler plate (if available) in front of the empty power module slot.
- 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/DC busbar before continuing.

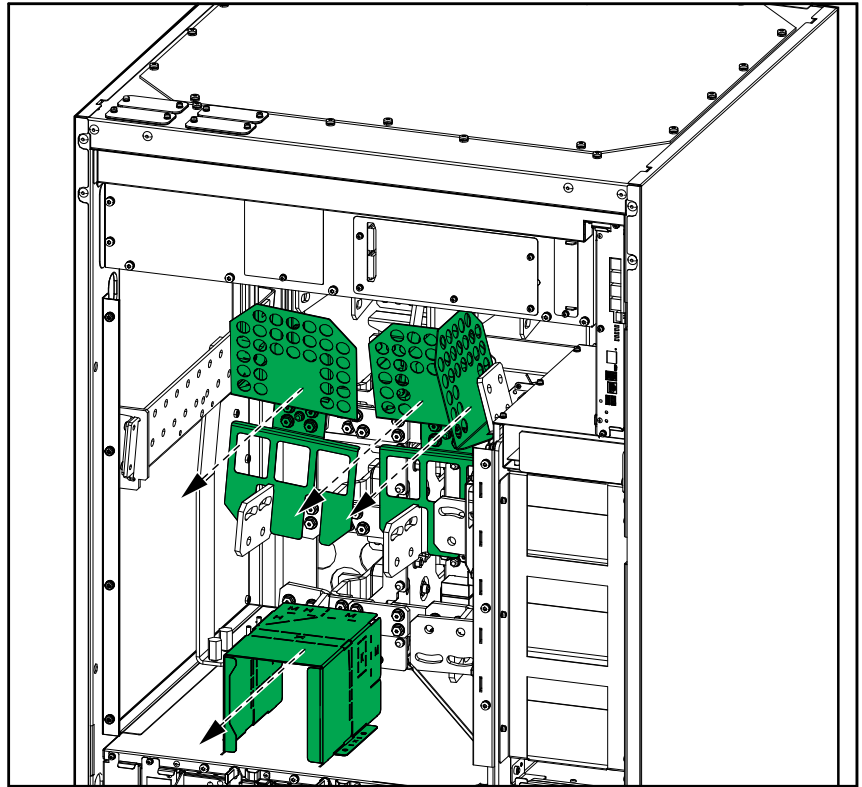
⚡⚠ DANGER**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

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

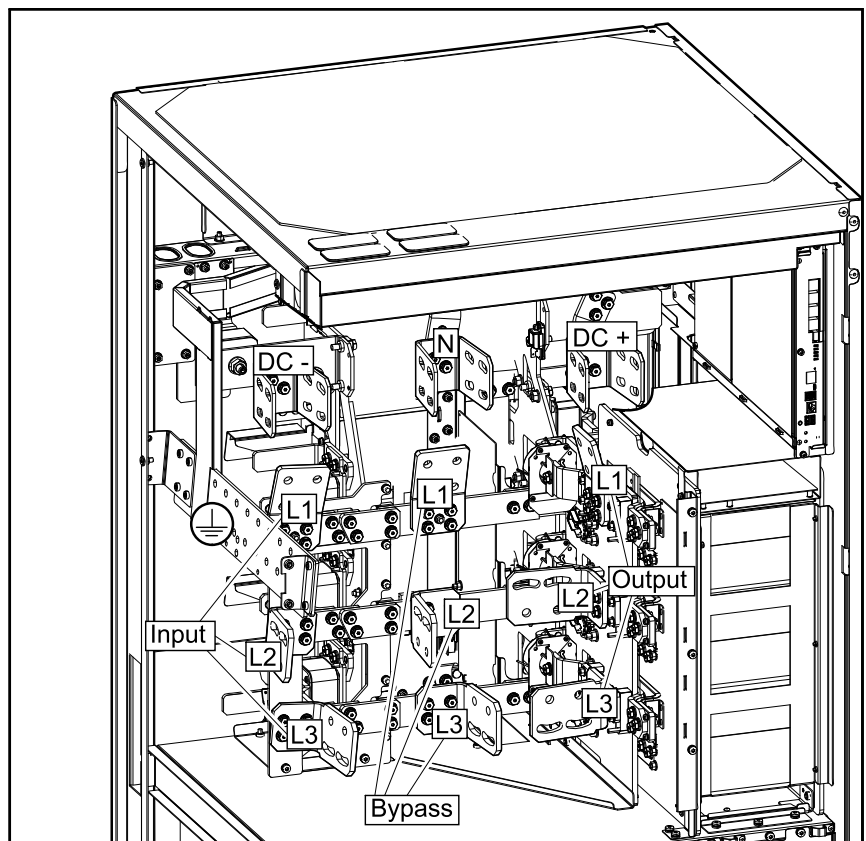
Failure to follow these instructions will result in death or serious injury.

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 for reinstallation after cable disconnection.



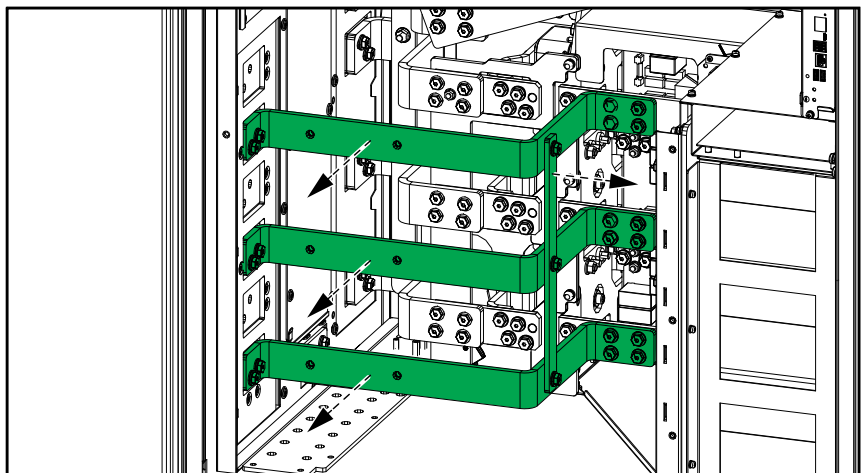
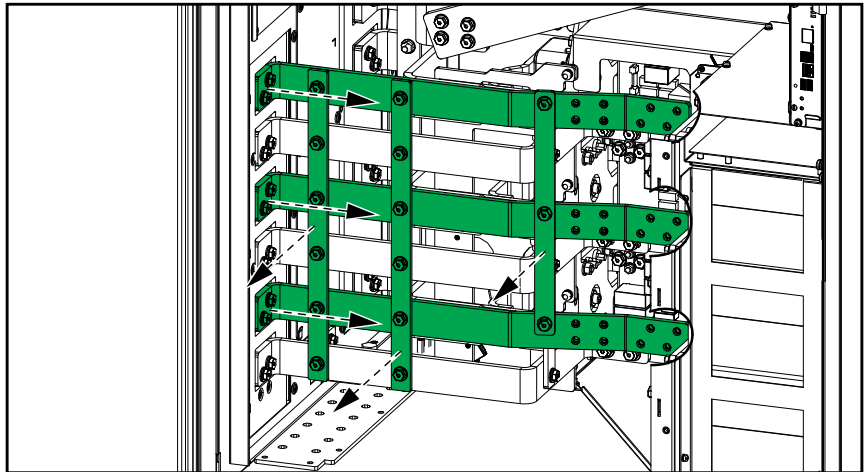
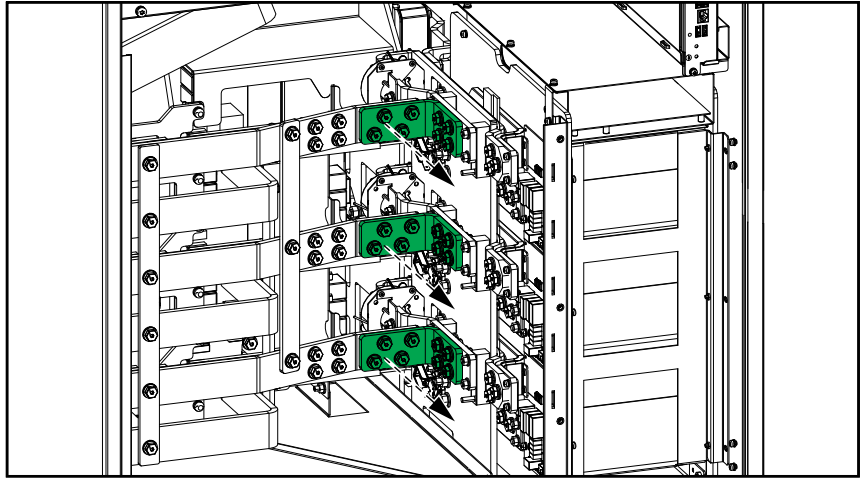
- b. Disconnect all power cables from the UPS.

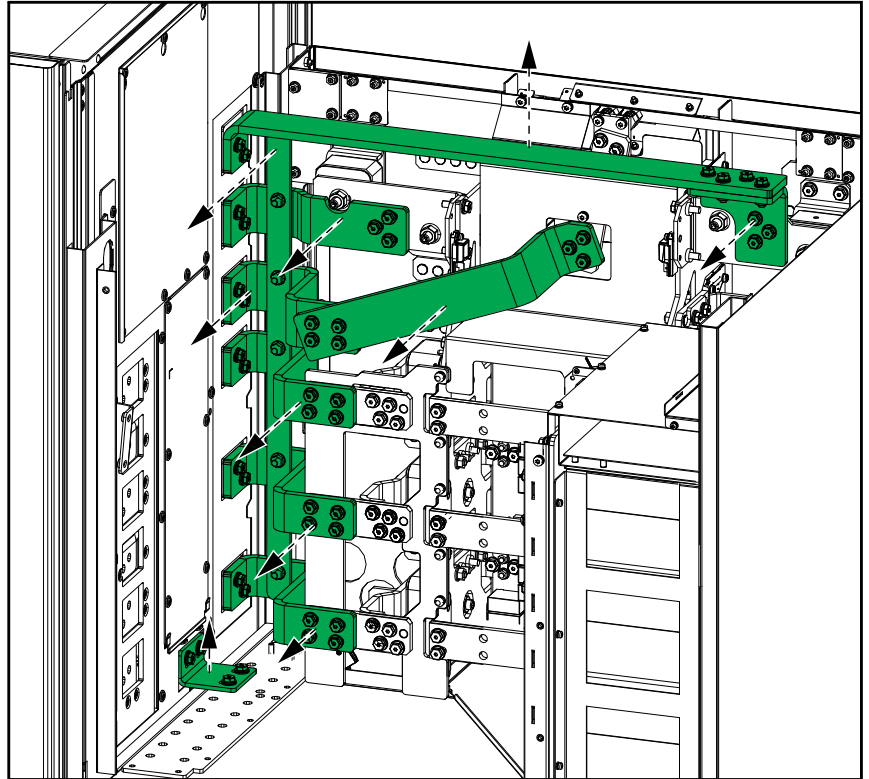


- c. Reinstall the transparent plastic protectors on the busbars. Reinstall the plastic box

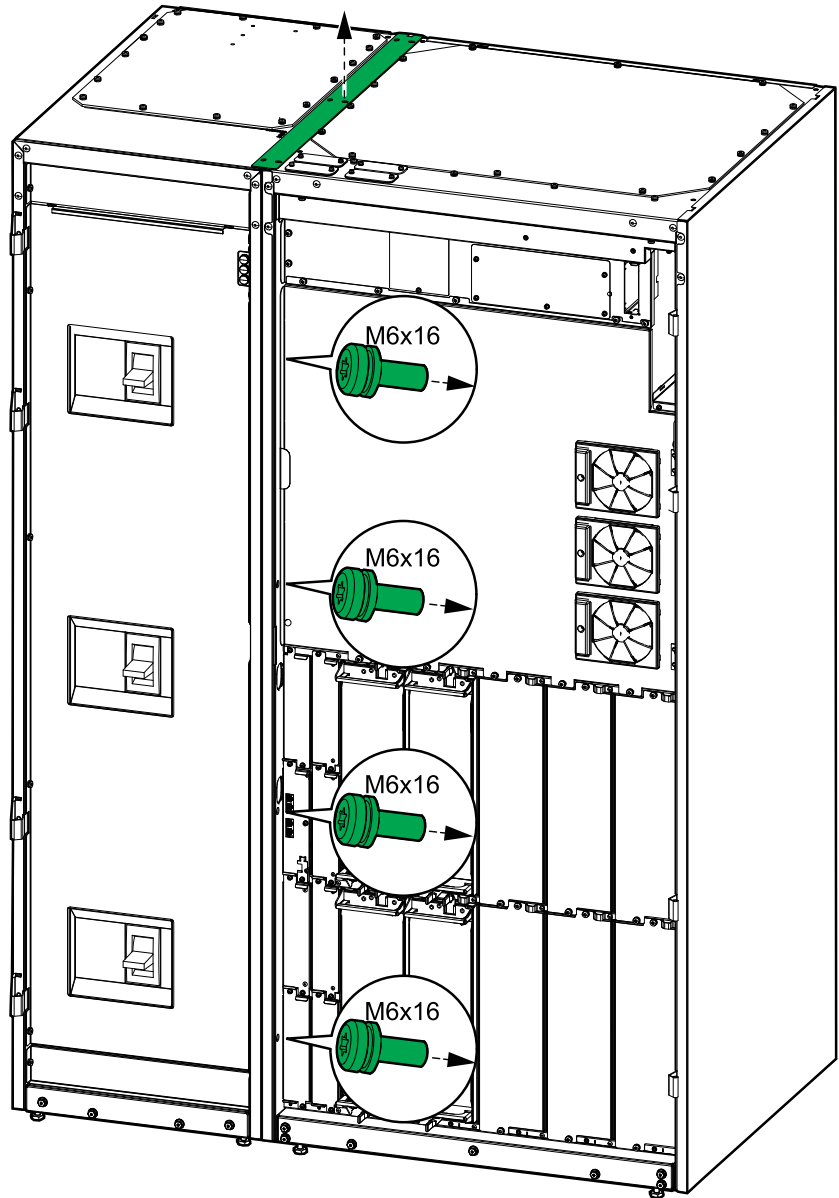
11. **For UPS system with maintenance bypass cabinet:** Perform the following steps:
 - a. Remove the busbars and insulator parts that connect the UPS to the maintenance bypass cabinet. Refer to the maintenance bypass cabinet installation manual for details. Save all parts for reinstallation.

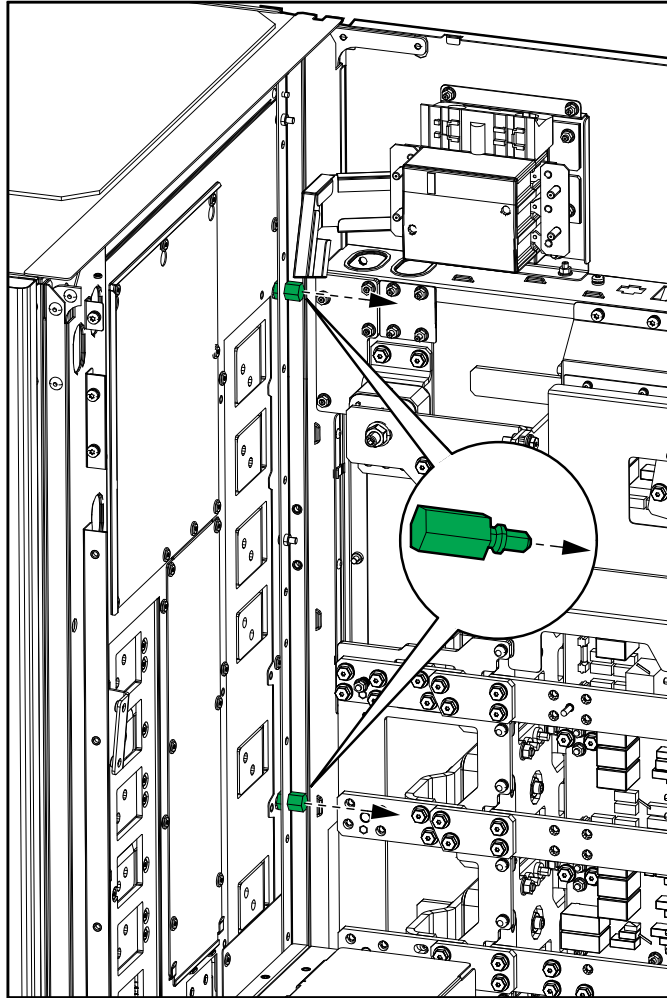
Front View of the UPS





- b. 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.





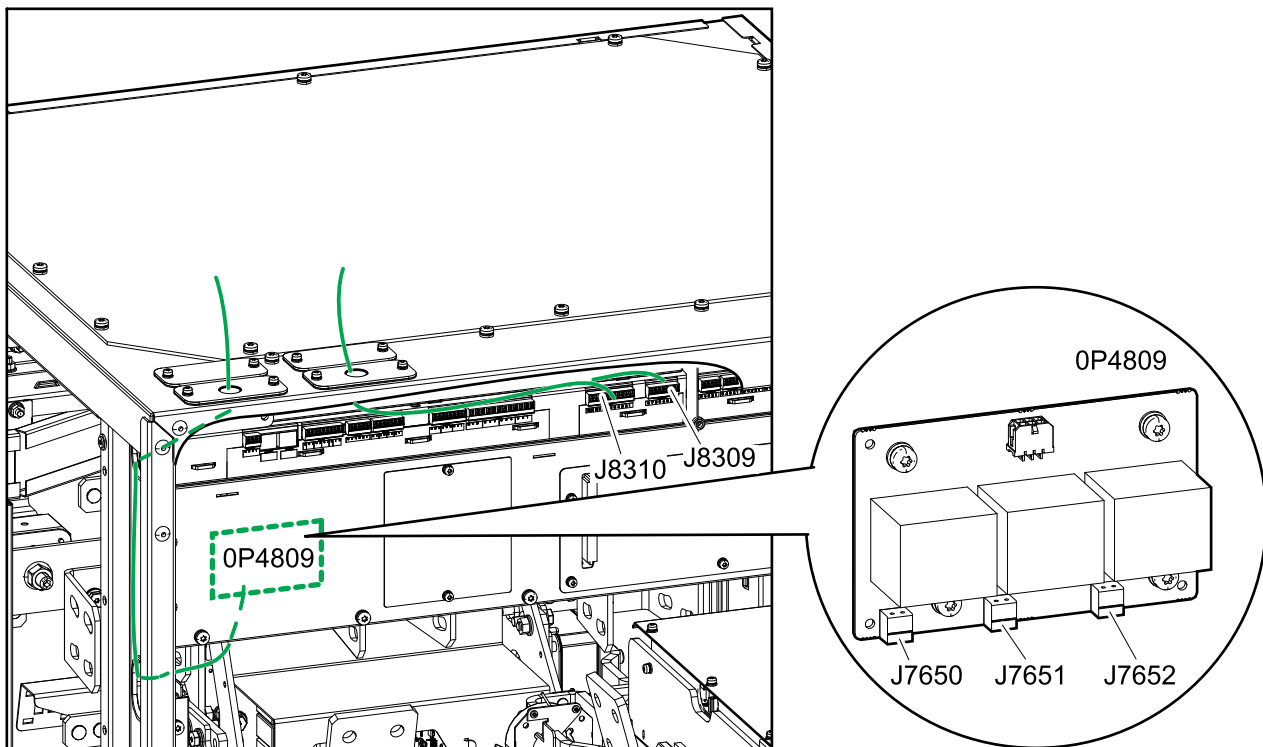
12. **If external sync is present:** Remove the transparent protection cover from the external synchronization board 0P4809. The external synchronization board 0P4809 is located on the rear of the front plate. Disconnect the signal cables from the external synchronization board 0P4809.

⚡ ⚠ DANGER

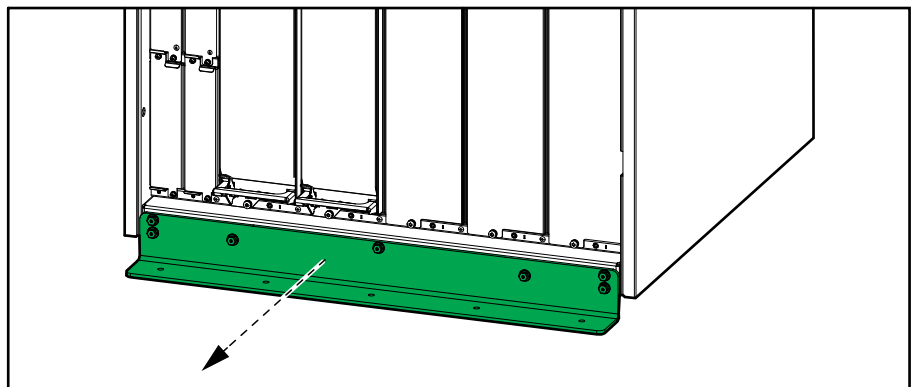
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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 disconnecter device at the source before removing the transparent protection cover.

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



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



16. Close and lock the front door.
17. Raise the feet of the UPS until the casters have full contact with the floor.

18. You can now move the UPS by rolling it over the floor on the casters.

⚠ WARNING

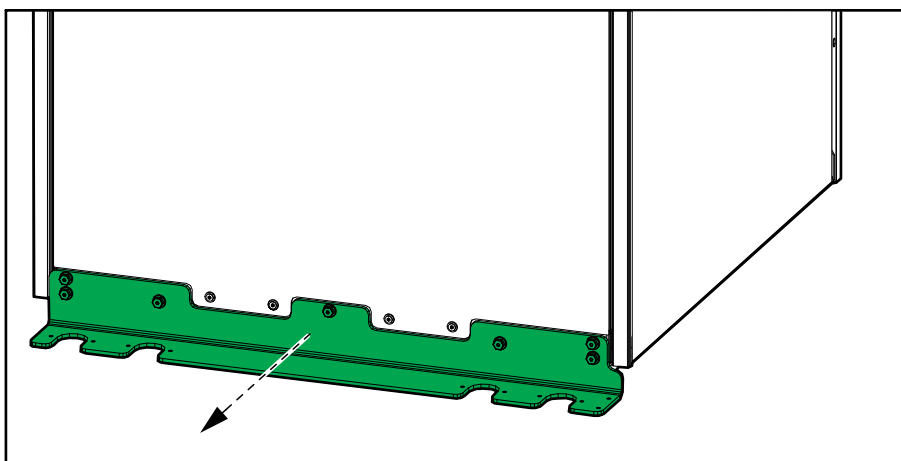
TIPPING HAZARD

- 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.

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

Rear View



20. **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

TIPPING HAZARD

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

- that personnel performing the transport have necessary 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**TIPPING 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.

21. Perform one of the following:
 - Decommission the UPS, OR
 - Move the UPS to a new location to install it.
22. **Only for installing the UPS in new a location:** Follow the installation manual to install the UPS in the new location. See *Installation Procedure for UPS*, page 64 or *Installation Procedure for UPS with Maintenance Bypass Cabinet*, page 65 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.

Galaxy VL

Maintenance Bypass Cabinet for UL

Installation

GVLMBCA200K500G

Latest updates are available on the Schneider Electric website
11/2022



Legal Information

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this guide are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owners.

This guide and its content are protected under applicable copyright laws and furnished for informational use only. No part of this guide may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the guide or its content, except for a non-exclusive and personal license to consult it on an "as is" basis. Schneider Electric products and equipment should be installed, operated, serviced, and maintained only by qualified personnel.

As standards, specifications, and designs change from time to time, information contained in this guide may be subject to change without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this material or consequences arising out of or resulting from the use of the information contained herein.

Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS	5
Safety Precautions	6
Additional Safety Precautions After Installation.....	7
Electrical Safety	8
Battery Safety	9
Specifications	11
Maximum Short Circuit Rating	11
Trip Settings.....	11
Recommended Upstream Protection.....	11
Recommended Cable Sizes	11
Recommended Bolt and Lug Sizes	12
Torque Specifications.....	12
Maintenance Bypass Cabinet Weights and Dimensions.....	13
Clearance	13
Environment.....	13
System Overview	14
Installation Procedure	15
Install the Seismic Anchoring (Option)	16
Prepare for Installation	18
Connect the Power Cables.....	24
Restrain the Cables.....	28
Interconnect the UPS with the Maintenance Bypass Cabinet.....	30
Prepare the UPS for Internal Busbar Connection	33
Install Busbars Between the UPS and the Maintenance Bypass Cabinet in Single Mains System	36
Install Busbars Between the UPS and the Maintenance Bypass Cabinet in Dual Mains System.....	38
Install Busbars for Load Bank Breaker (Option).....	41
Prepare for Signal Cables in Top Cable Entry Systems.....	42
Prepare for Signal Cables in Bottom Cable Entry Systems.....	44
Connect the Signal Cables Between the Maintenance Bypass Cabinet and the UPS.....	47
Add Translated Safety Labels to Your Product.....	50
Final Installation	51

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.

Safety Precautions

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not install the product until all construction work has been completed and the installation room has been cleaned.

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The product must be installed according to the specifications and requirements as defined by Schneider Electric. It concerns in particular the external and internal protections (upstream breakers, battery breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS system must be installed according to local and national regulations. Install the UPS according to:

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

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚡⚡ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

⚡⚡ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚡⚡ WARNING

HAZARD OF ARC FLASH

Do not make mechanical changes to the product (including removal of cabinet parts or drilling/cutting of holes) that are not described in the installation manual.

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

NOTICE

RISK OF OVERHEATING

Respect the space requirements around the product and do not cover the ventilation openings when the product is in operation.

Failure to follow these instructions can result in equipment damage.

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 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.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

Battery Safety

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

⚠ 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.

Specifications

Maximum Short Circuit Rating

The maximum short circuit rating for the maintenance bypass cabinet is 65 kA RMS symmetrical Icc.

⚠ CAUTION
HAZARD OF CABLE MOVEMENT IN SHORT CIRCUIT CONDITIONS In systems over 35 kAIC it is mandatory to restrain the power cables: • Use 10 mm nylon rope or rope with a minimum tensile strength of 1000 kg (2204.62 lbs). Failure to follow these instructions can result in injury or equipment damage.

Trip Settings

NOTE: The power cables for 200-300 kW must be sized for 350 kW for SSIB/UOB because the minimum Ir setting for PJF36120CU33A is 0.4. This is only excepted if the power cables for SSIB/UOB are projected upstream.

UPS rating	Breaker type	UIB					SSIB/MBB/UOB				
		Ir	tr	Isd	tsd	li	Ir	tr	Isd	tsd	li
200 kW	PJF36120CU33A	0.4	1	1.5	Off	6	0.4	0.5	1.5	Off	6
250 kW	PJF36120CU33A	0.4	1	1.5	Off	6	0.4	0.5	1.5	Off	6
300 kW	PJF36120CU33A	0.4	1	1.5	Off	6	0.4	0.5	1.5	Off	6
350 kW	PJF36120CU33A	0.5	1	1.5	Off	6	0.4	0.5	1.5	Off	6
400 kW	PJF36120CU33A	0.5	1	1.5	Off	6	0.4	0.5	1.5	Off	6
450 kW	PJF36120CU33A	0.6	1	1.5	Off	6	0.5	0.5	1.5	Off	6
500 kW	PJF36120CU33A	0.7	1	1.5	Off	6	0.5	0.5	1.5	Off	6

Recommended Upstream Protection

Refer to the UPS installation manual for recommended upstream protection.

Recommended Cable Sizes

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

Refer to the UPS installation manual for recommended cable sizes.

Recommended Bolt and Lug Sizes

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
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

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

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)

Bolt size	Torque
M10	30 Nm (22 lb-ft / 194.7 lb-in)
M12	50 Nm (36.87 lb-ft / 442.5 lb-in)

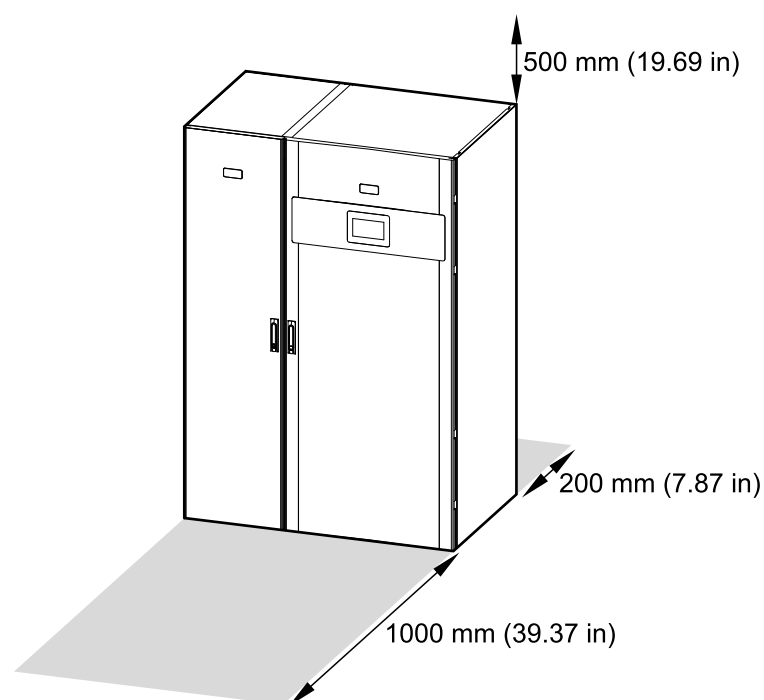
Maintenance Bypass Cabinet Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVLMBCA200K500G	158 (348)	1970 (77.55)	500 (19.68)	847 (33.34)

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.

Front View of the Maintenance Bypass Cabinet and the UPS



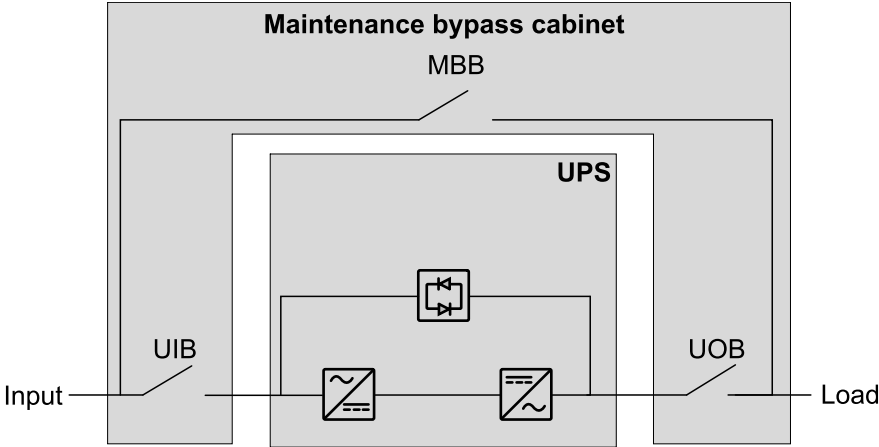
Environment

	Operating	Storage
Temperature	0 °C to 40 °C (32 °F to 104 °F)	-25 °C to 55 °C (-13 °F to 131 °F)
Relative humidity	0-95% non-condensing	0-95% non-condensing
Protection class	IP20	
Color	RAL 9003, gloss level 85%	

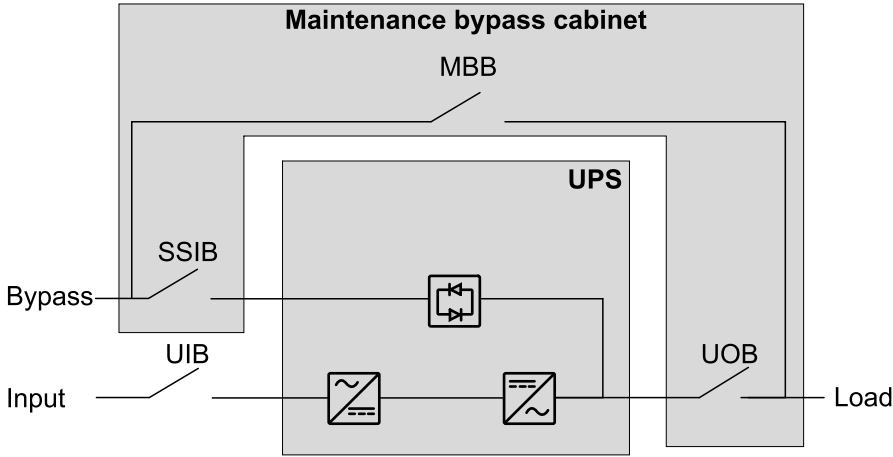
System Overview

UIB	Unit input breaker
SSIB	Static switch input breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker

Single Mains UPS System



Dual Mains UPS System



Installation Procedure

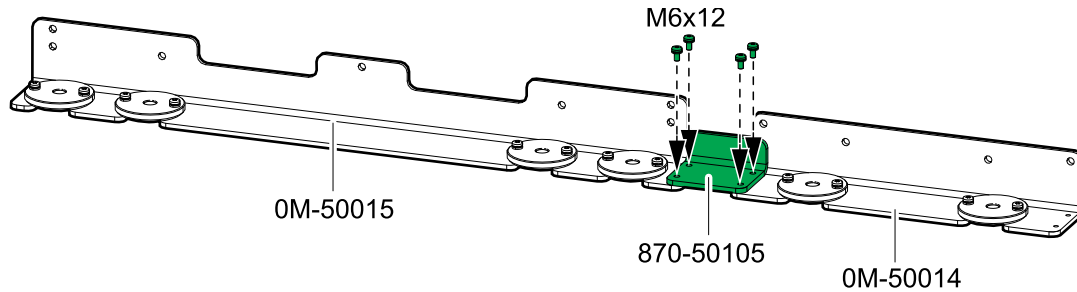
1. Install the Seismic Anchoring (Option), page 16.
2. Prepare for Installation, page 18.
3. Connect the Power Cables, page 24.
4. Interconnect the UPS with the Maintenance Bypass Cabinet, page 30.
5. Prepare the UPS for Internal Busbar Connection, page 33.
6. Connect the busbars between the UPS and the maintenance bypass cabinet. Perform one of the following procedures:
 - Install Busbars Between the UPS and the Maintenance Bypass Cabinet in Single Mains System, page 36, or
 - Install Busbars Between the UPS and the Maintenance Bypass Cabinet in Dual Mains System, page 38.
7. Install Busbars for Load Bank Breaker (Option), page 41.
8. Prepare for signal cabling. Perform one of the following procedures:
 - Prepare for Signal Cables in Top Cable Entry Systems, page 42, or
 - Prepare for Signal Cables in Bottom Cable Entry Systems, page 44.
9. Connect the Signal Cables Between the Maintenance Bypass Cabinet and the UPS, page 47.
10. Follow the UPS installation manual and other auxiliary product installation manuals to connect relevant signal cables and external communication cables in the UPS.
11. Add Translated Safety Labels to Your Product, page 50.
12. Final Installation, page 51.

Install the Seismic Anchoring (Option)

Use the optional seismic kit GVLOPT002 for this procedure.

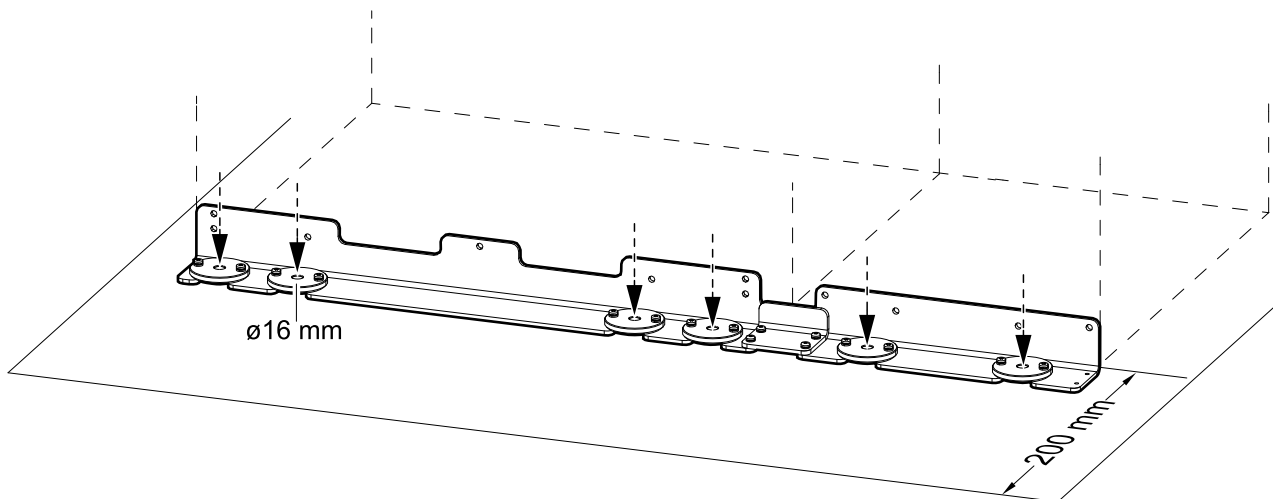
1. Connect the rear anchoring assemblies for the UPS and the maintenance bypass cabinet with the interconnection plate.

Rear View



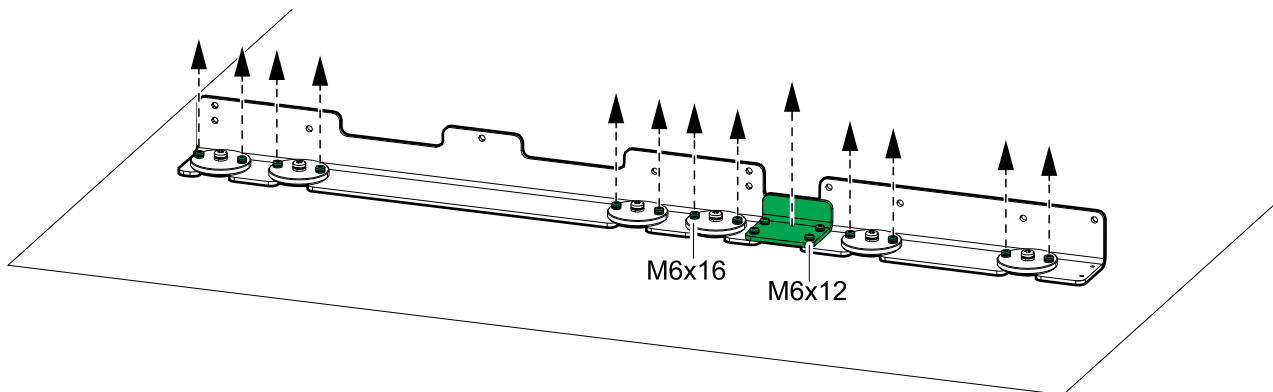
2. Mount the rear anchoring assembly to the floor. Use appropriate hardware for the floor type – the hole diameter in the rear anchors is $\varnothing 16$ mm. Minimum requirement is M12 strength grade 8.8 hardware.

Rear View



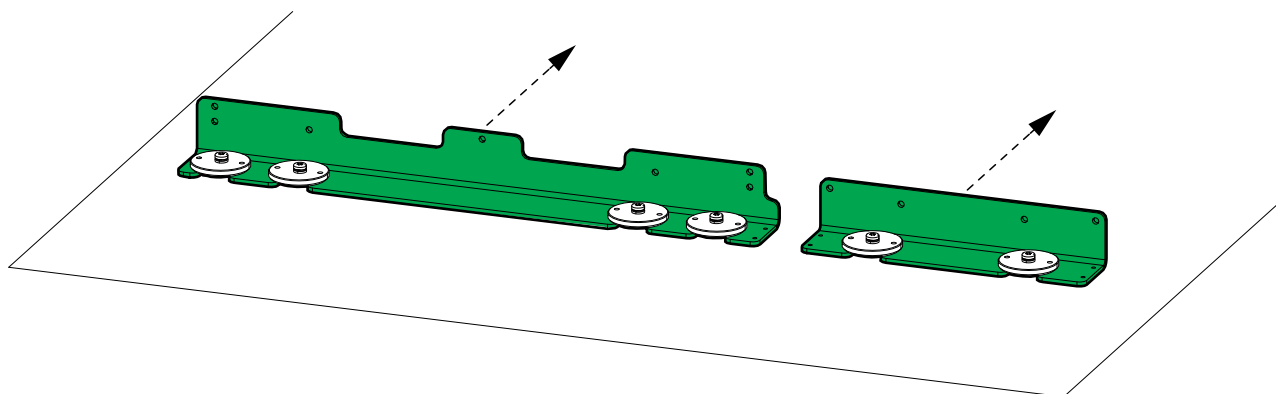
3. Remove all the screws and the interconnection plate.

Rear View



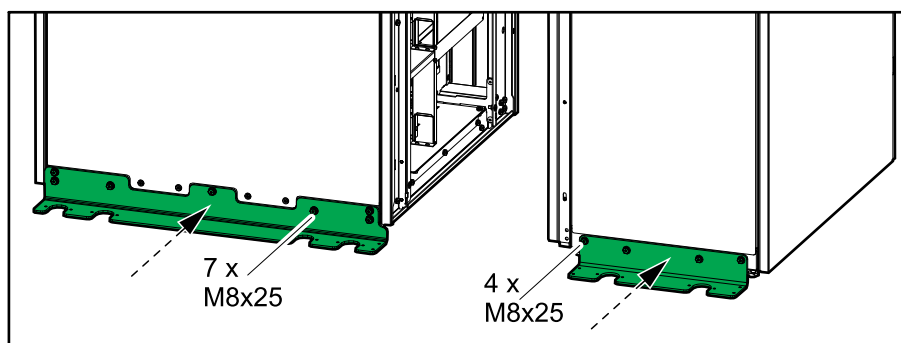
4. Remove the rear anchoring brackets.

Rear View



5. Install the rear anchoring brackets on the UPS and the maintenance bypass cabinet with the provided bolts.

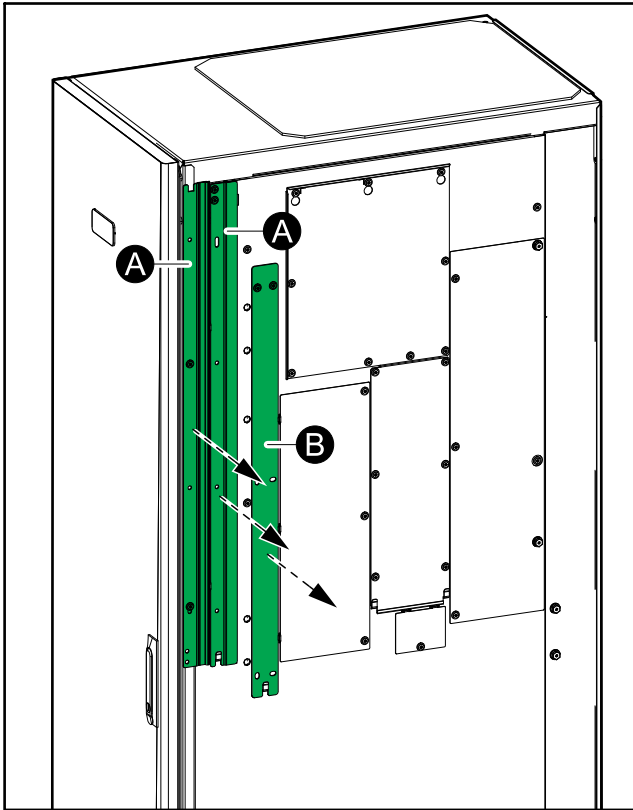
Rear View of the UPS and the Maintenance Bypass Cabinet



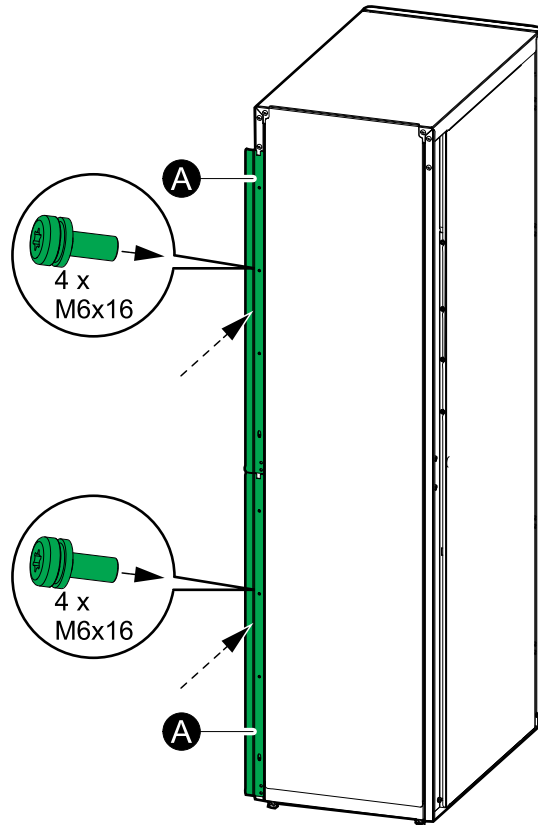
Prepare for Installation

1. Remove the brackets (A) and (B) from the maintenance bypass cabinet. Install the brackets (A) on the rear of the maintenance bypass cabinet. Save the bracket (B) for top interconnection with the UPS.

Right Side View of the Maintenance Bypass Cabinet

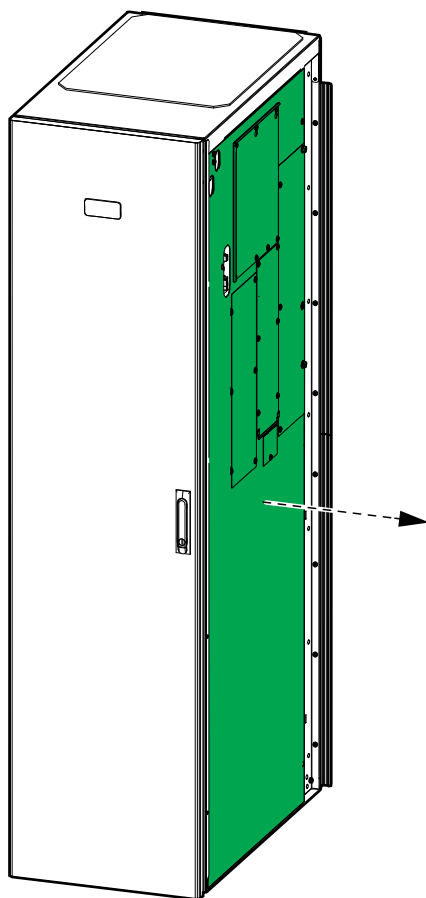


Rear View of the Maintenance Bypass Cabinet



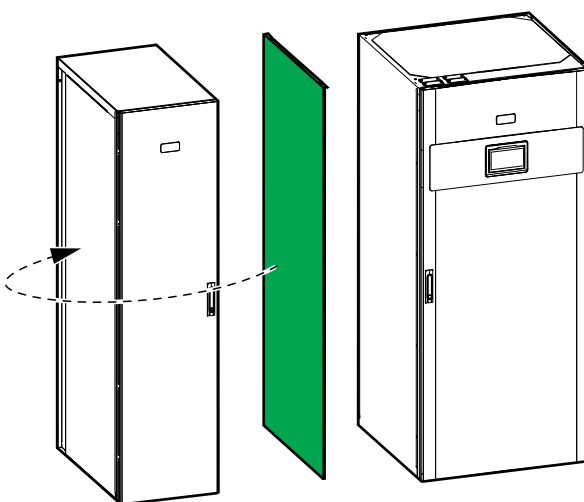
2. Remove the right side panel from the maintenance bypass cabinet.

The Maintenance Bypass Cabinet

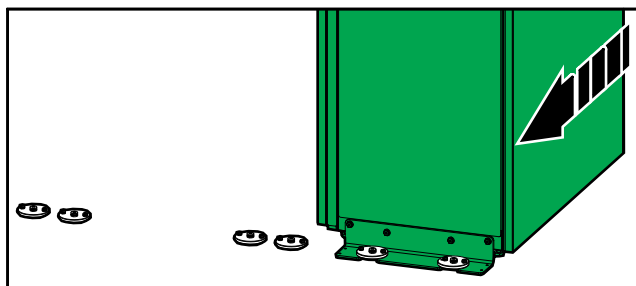
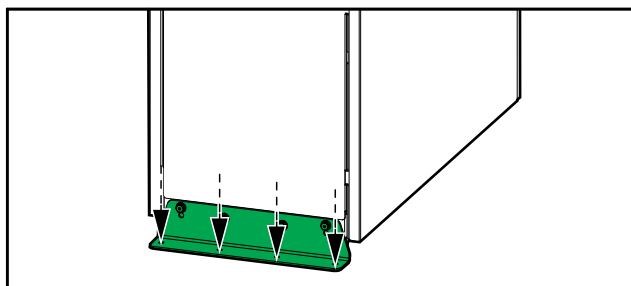


3. Remove the left side panel from the UPS. Install the left side panel on the maintenance bypass cabinet.

The Maintenance Bypass Cabinet and the UPS



4. Push the maintenance bypass cabinet into final position. Align with seismic anchoring, if present. For systems without seismic anchoring, reinstall the rear transportation bracket on the maintenance bypass cabinet and mount it to the floor.

Rear View with Seismic Anchoring**Rear View without Seismic Anchoring**

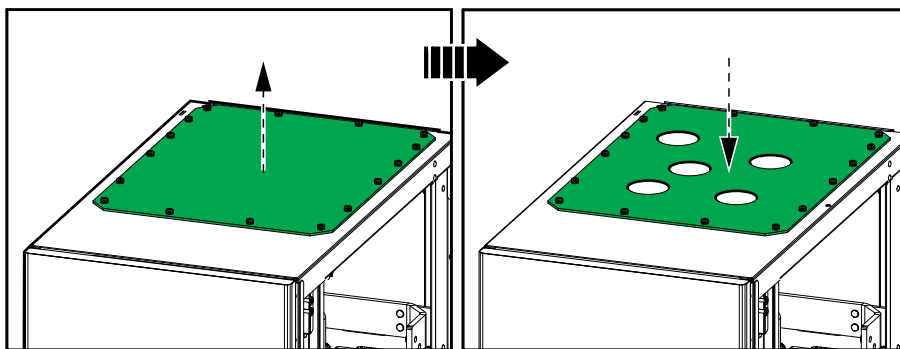
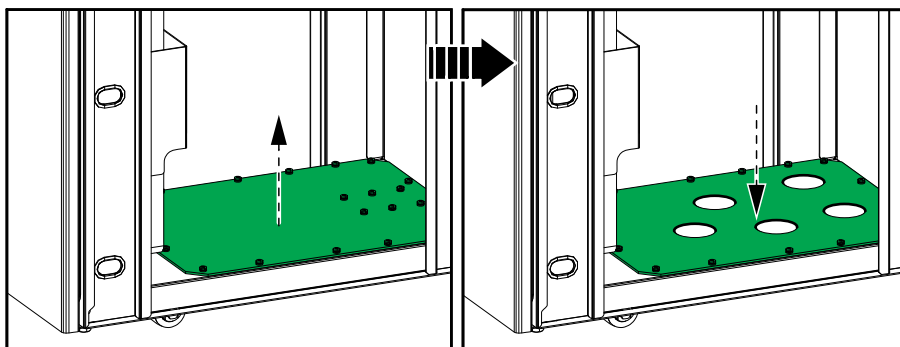
5. Prepare for power cables:

- a. Remove the top or bottom gland plate.
- b. For bottom cable entry, remove the rear caster and the caster screws from the bottom gland plate. Discard the caster.
- c. Drill or punch holes for power cables or conduits in the gland plate. Conduits are not provided.
- d. Reinstall the top or bottom gland plate.

⚡ ⚠ 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.

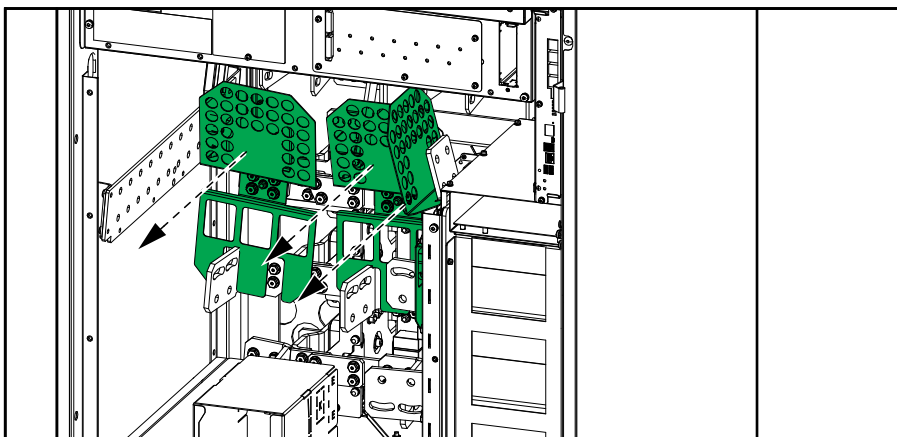
Failure to follow these instructions will result in death or serious injury.

Top Cable Entry**Bottom Cable Entry**

6. Open the inner door on the UPS.

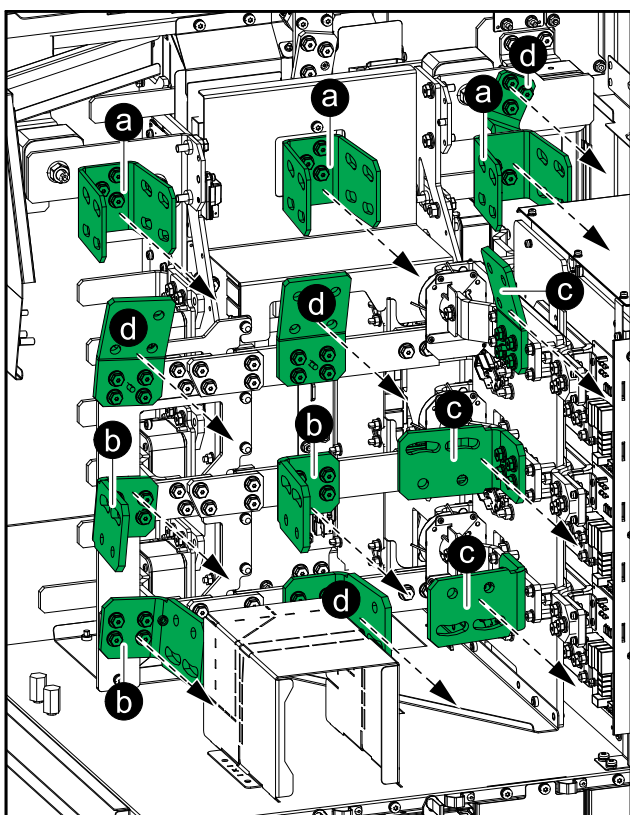
7. Remove the transparent protection covers in the UPS.

Front View of the UPS

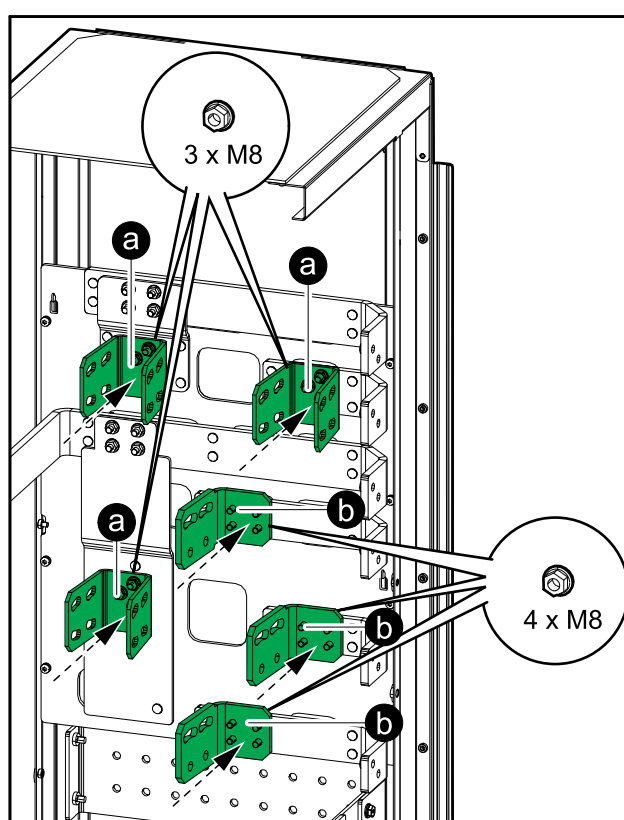


8. Remove busbars from the UPS. Some of the busbars will be installed in the maintenance bypass cabinet:
- Remove the three busbars from the UPS. Install the three busbars in the maintenance bypass cabinet with the nine provided M8 nuts with washer (provided in kit). If the M8 nuts with washer are not in the provided kit, new M8 nuts with washer must be locally sourced and used.
 - Remove the three busbars from the UPS. **Only for dual mains:** Install the three busbars in the maintenance bypass cabinet with the 12 provided M8 nuts with washer (provided in kit). If the M8 nuts with washer are not in the provided kit, new M8 nuts with washer must be locally sourced and used.
 - Remove the three busbars from the UPS. Save for load bank breaker (LBB) option if this is part of the system.
 - Remove the four busbars from the UPS. Discard or save for spare parts.

Front View of the UPS



Front View of the Maintenance Bypass Cabinet



Connect the Power Cables

⚠ CAUTION

HAZARD OF CABLE MOVEMENT IN SHORT CIRCUIT CONDITIONS

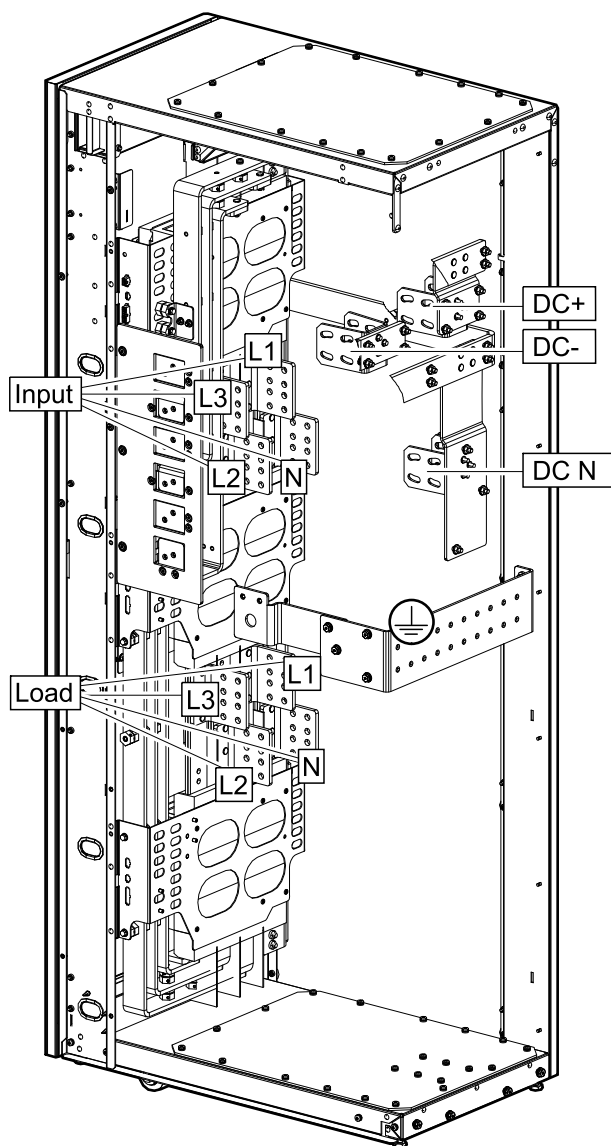
In systems over 35 kAIC it is mandatory to restrain the power cables:

- Use 10 mm nylon rope or rope with a minimum tensile strength of 1000 kg (2204.62 lbs).

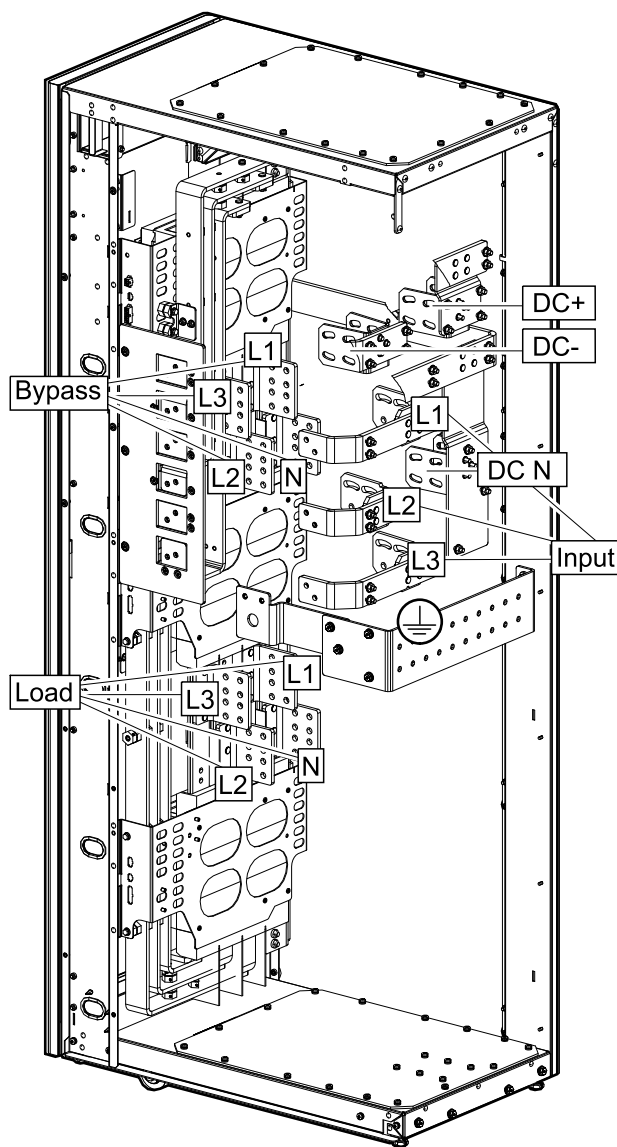
Failure to follow these instructions can result in injury or equipment damage.

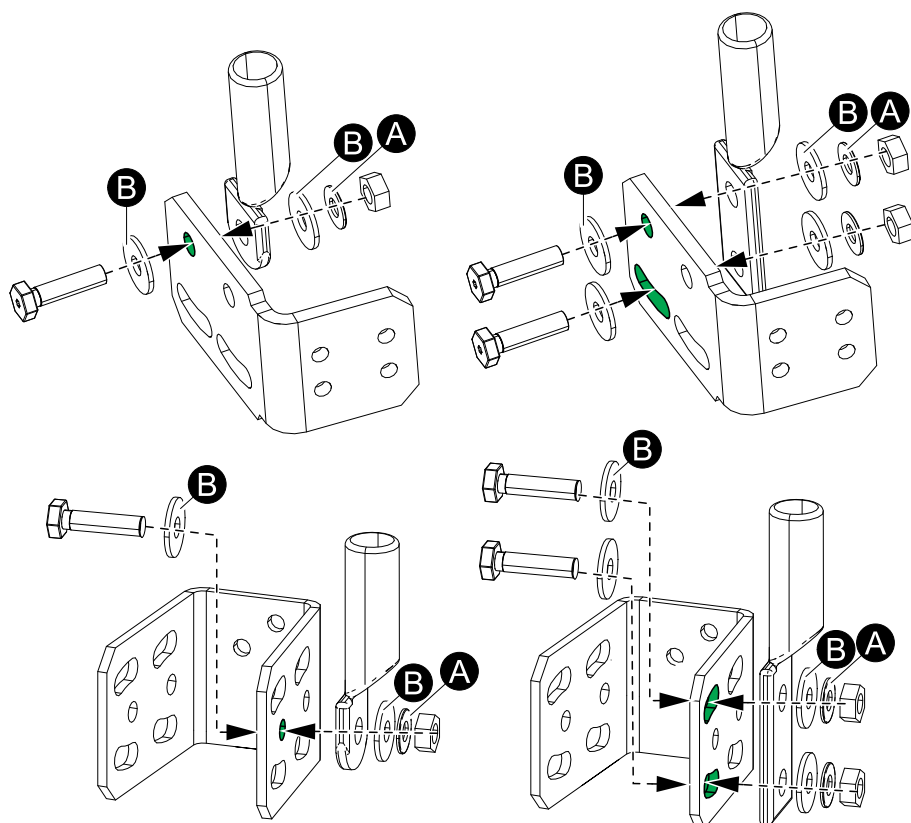
1. Route the power cables through the top or bottom of the maintenance bypass cabinet.
2. Connect the EGC (Equipment Grounding Conductor), input cables, bypass cables (in dual mains systems), load cables, and DC cables. Assemble the cable lugs to the busbars as shown.

Single Mains



Dual Mains



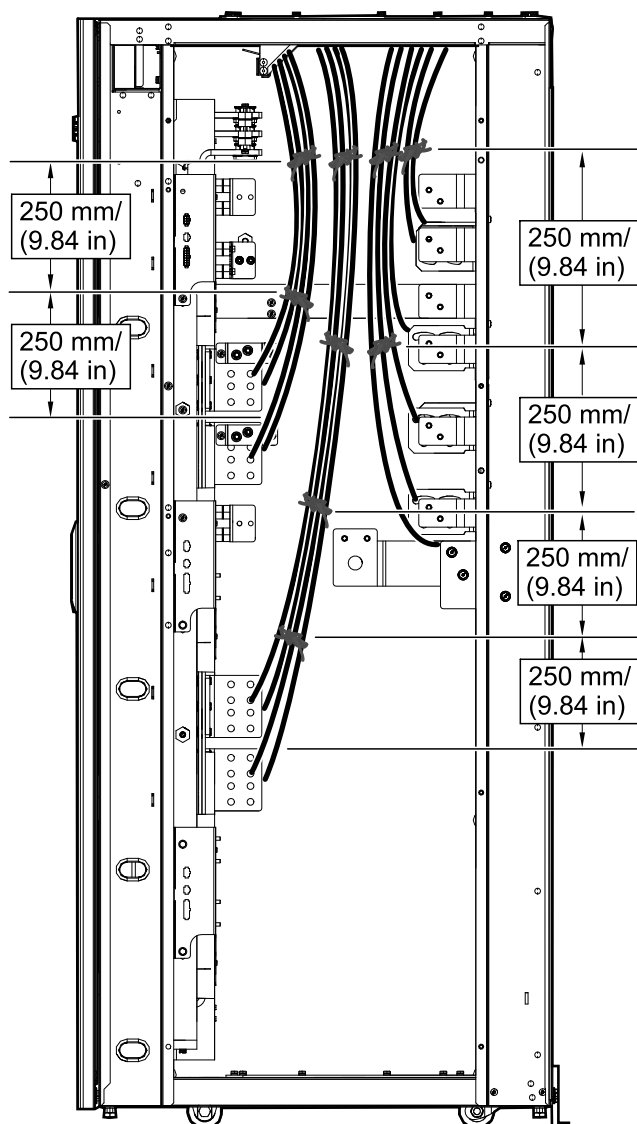
Cable Lug to Busbar Assembly

A. Spring washer – provided in kit.

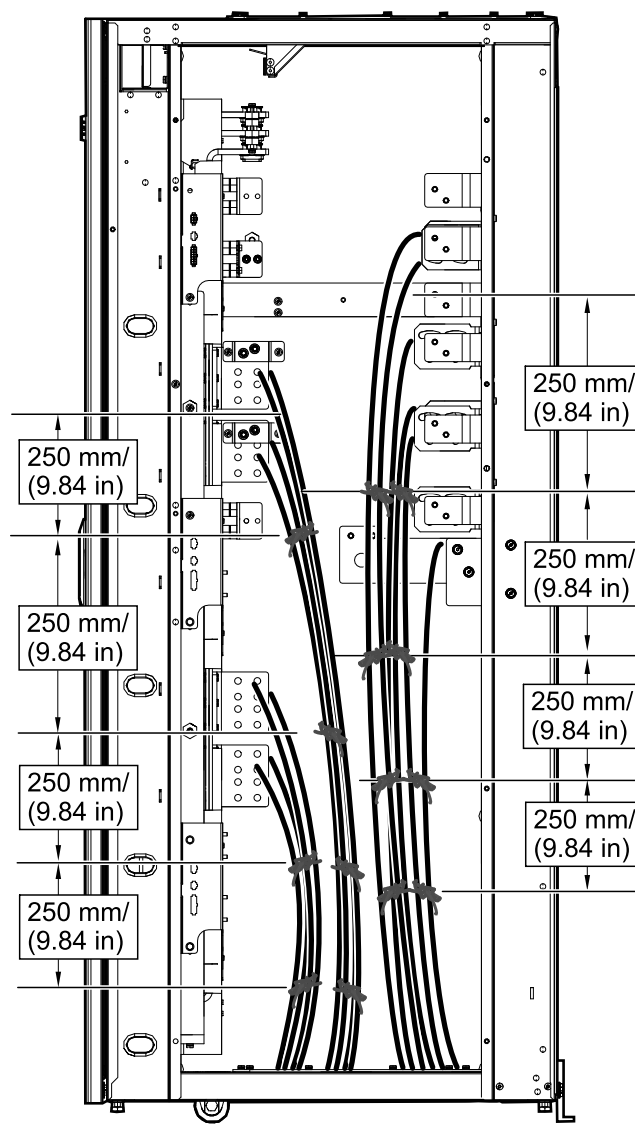
B. Flat washer (not provided).

3. **Mandatory in systems over 35 kAIC:** Tie the power cables together at 250 mm (9.84 in) from the power cable terminals and at each 250 mm (9.84 in) interval. Wrap the rope around the power cables five times before tying a knot at each interval – see *Restrain the Cables*, page 28 for guidance.

Side View – Top Cable Entry



Side View – Bottom Cable Entry



4. Check the fastening of the cable lugs.

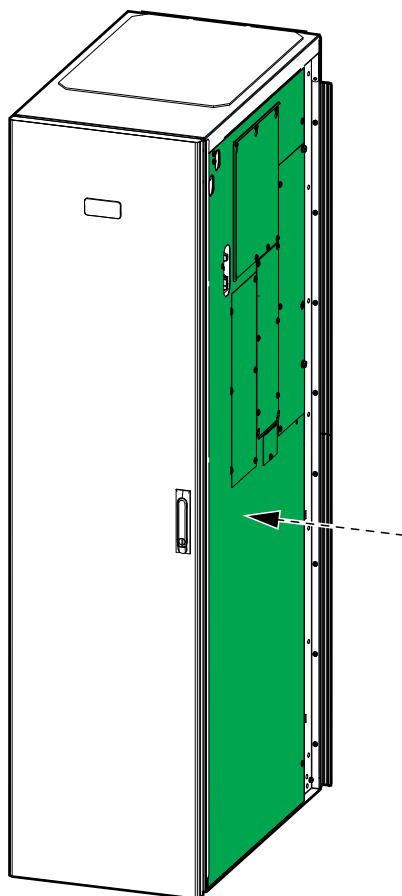
⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

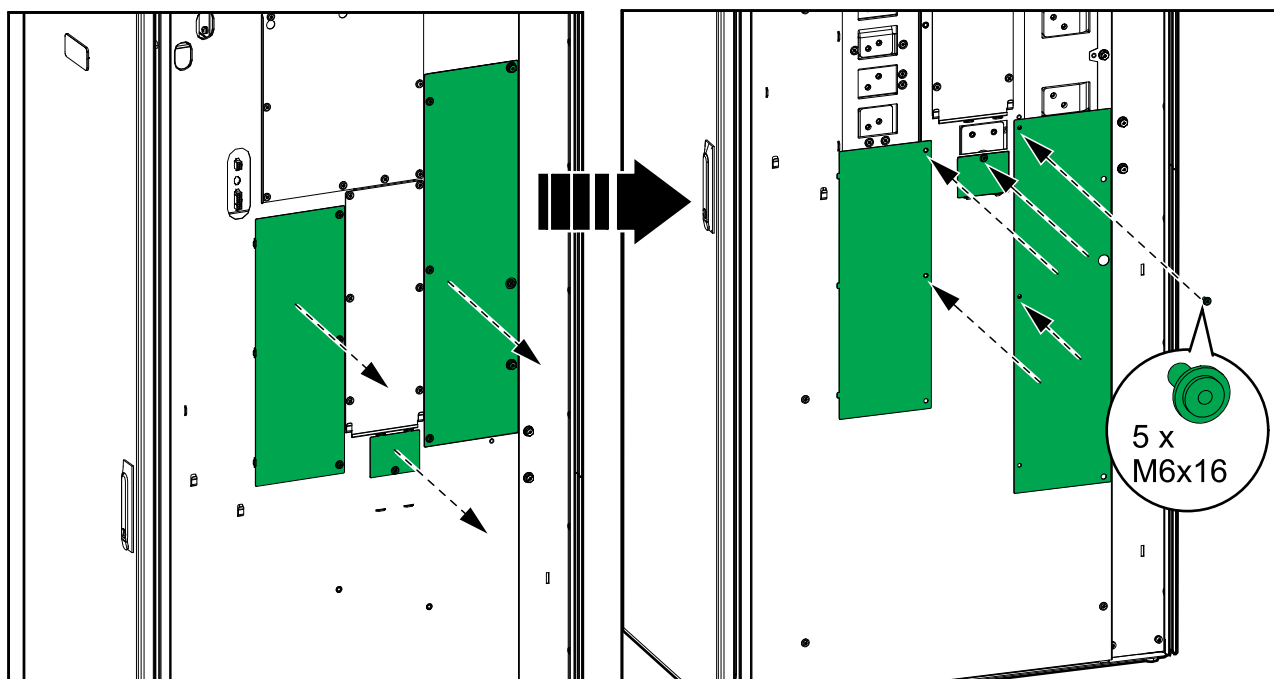
Check the fastening of the cable lugs. If the cable lugs move due to pulling on cables, the bolt can become loose.

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

5. Reinstall the right side panel on the maintenance bypass cabinet.



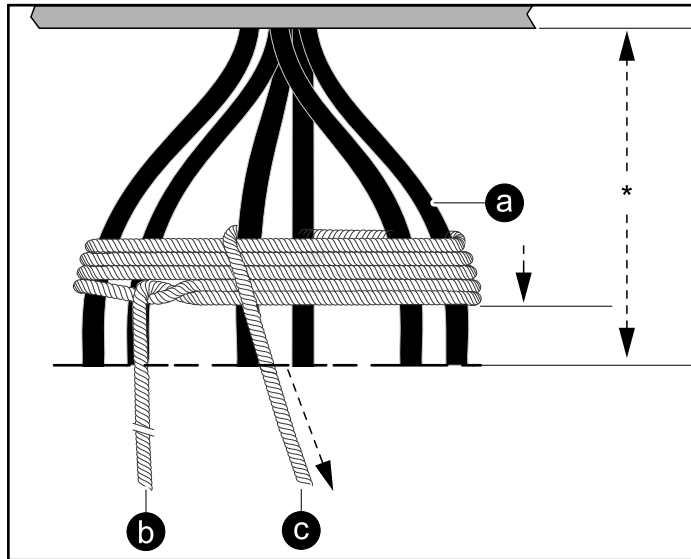
6. Reposition the protection covers on the right side panel. Reuse the M6 screws.



Restrain the Cables

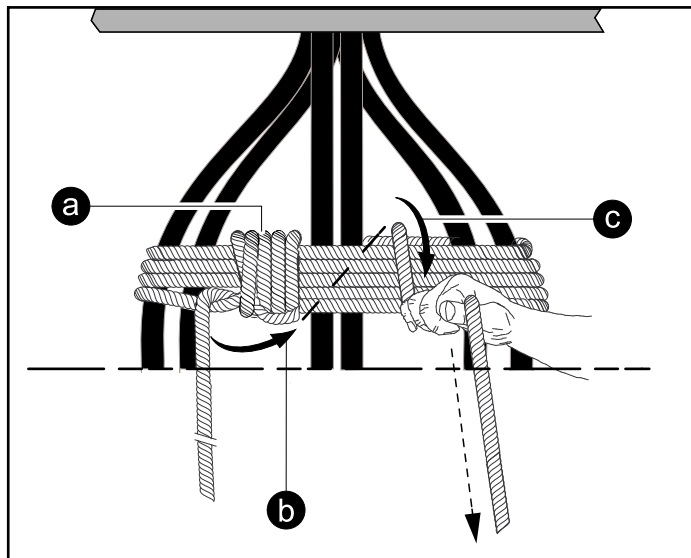
Use 3/8 in nylon rope to restrain the cables.

1. Wrap the rope around the cables (a). Wrap the cables four times leaving 1 m (3 ft) of excess rope at the first end (b). Pull rope (c) taut.

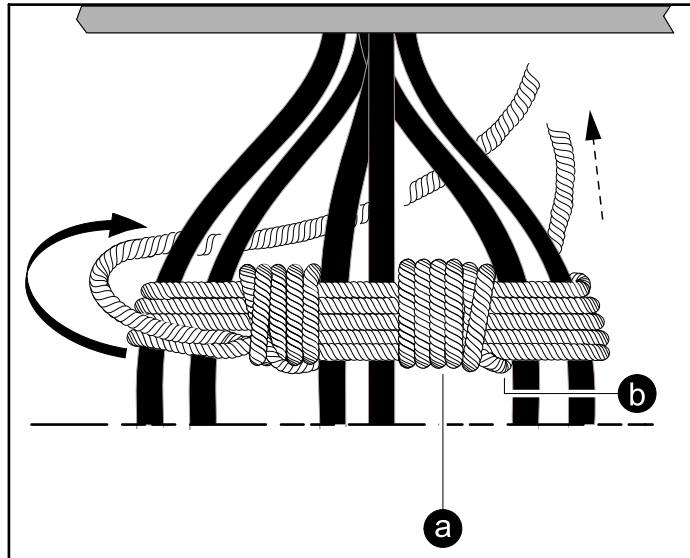


* Unsupported cable length.

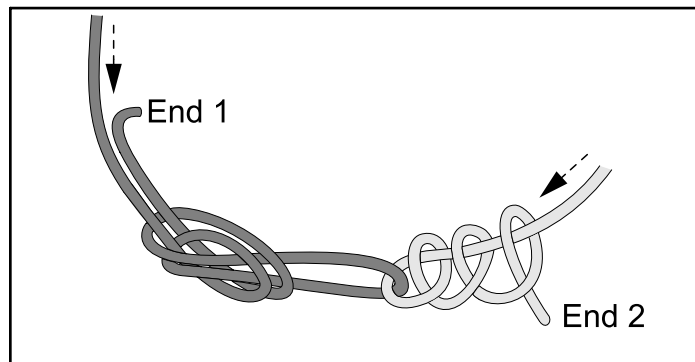
2. Wrap rope (a) several times until the space between the first two sets of cables is completely filled. Weave final rope loop underneath the previous loop (b). Bring rope (c) through the other open area and pull the rope taut.



3. Wrap rope (a) several times until the space between the second and the third set of cables is completely filled. Wave the final rope loop (b) underneath the previous loop as shown. Pull the rope taut.



4. Tie rope End 1 and End 2 together as shown. The rope must be taut. Cut off excess rope and tape ends to prevent fraying.



5. Repeat the procedure where needed.

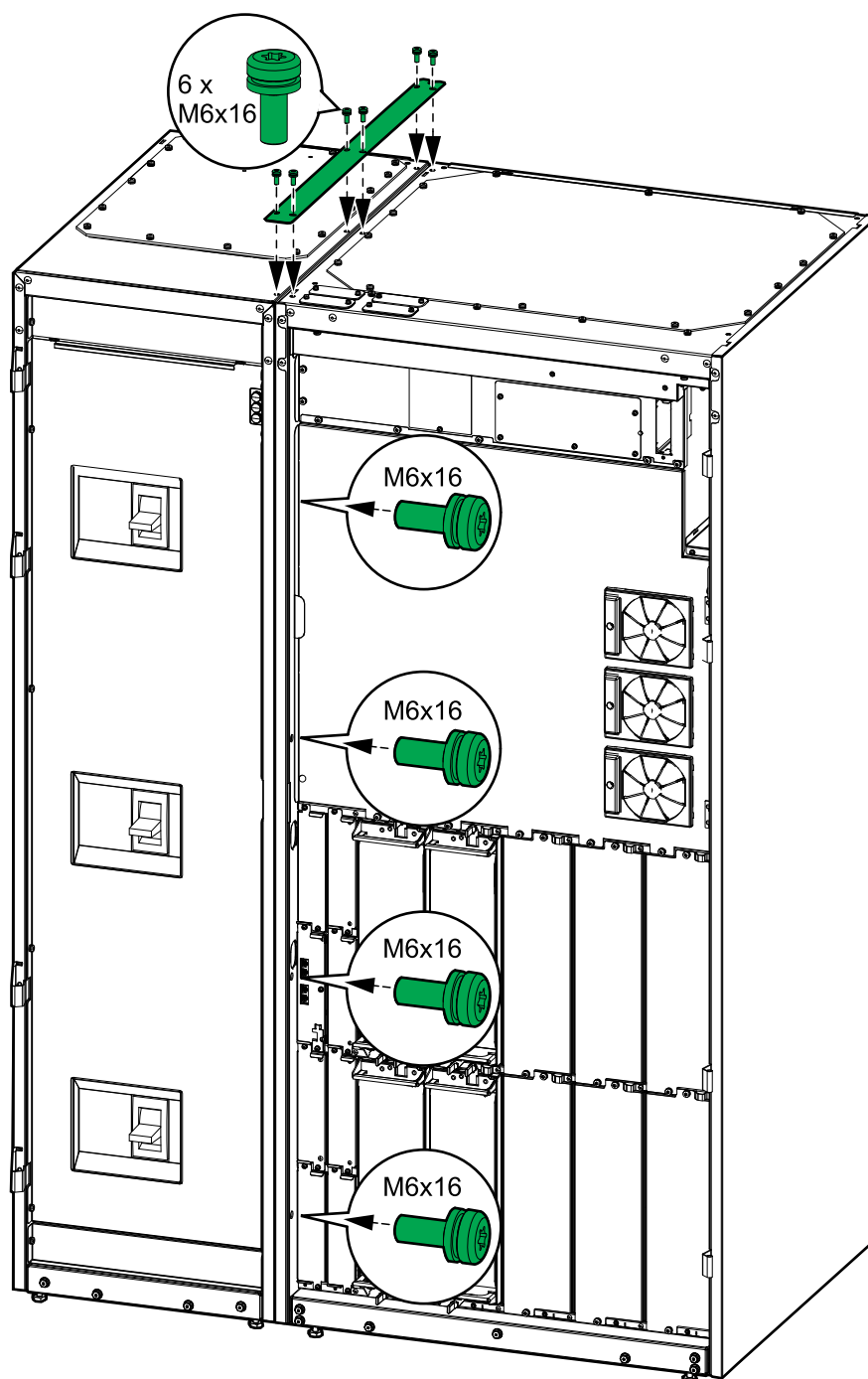
Interconnect the UPS with the Maintenance Bypass Cabinet

1. Push the UPS into position next to the maintenance bypass cabinet. Align with seismic anchoring, if present.
2. Lower the front and rear leveling feet on the maintenance bypass cabinet and 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 cabinet is level.

<i>NOTICE</i>
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.

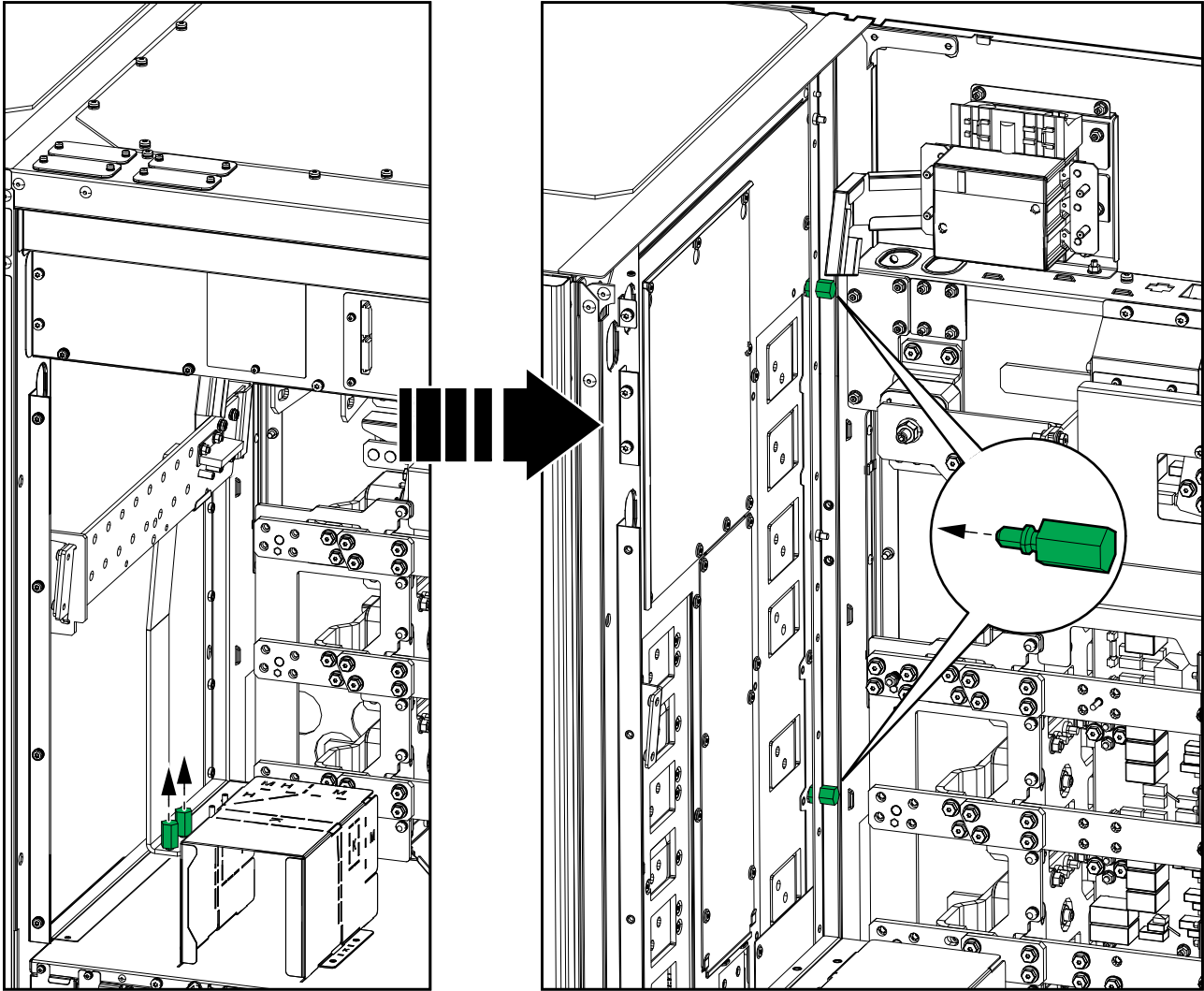
3. Interconnect the maintenance bypass cabinet and the UPS in the front with screws as shown

4. Install the top bracket. The top bracket was removed from the side of the maintenance bypass cabinet earlier.



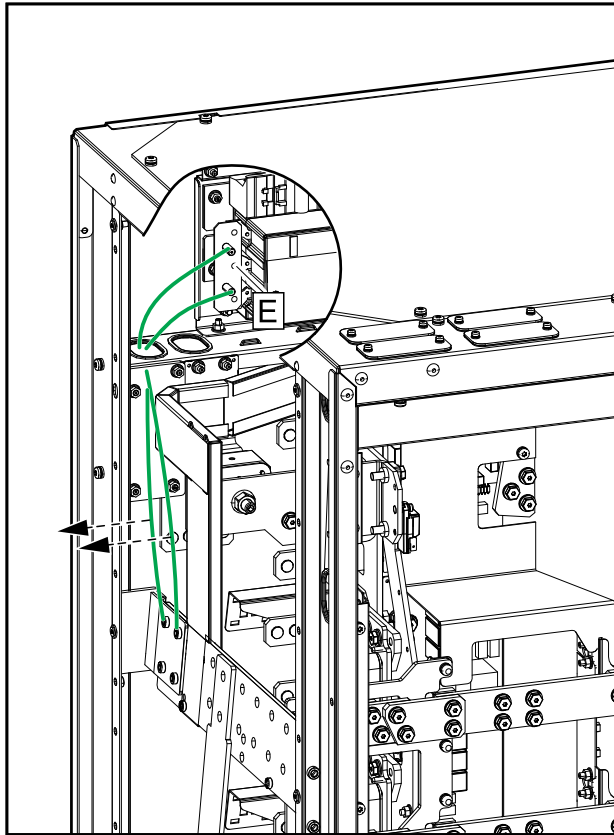
5. Open the inner door in the UPS.

6. Remove the two special screws from the UPS and use for rear interconnection between the maintenance bypass cabinet and the UPS as shown.



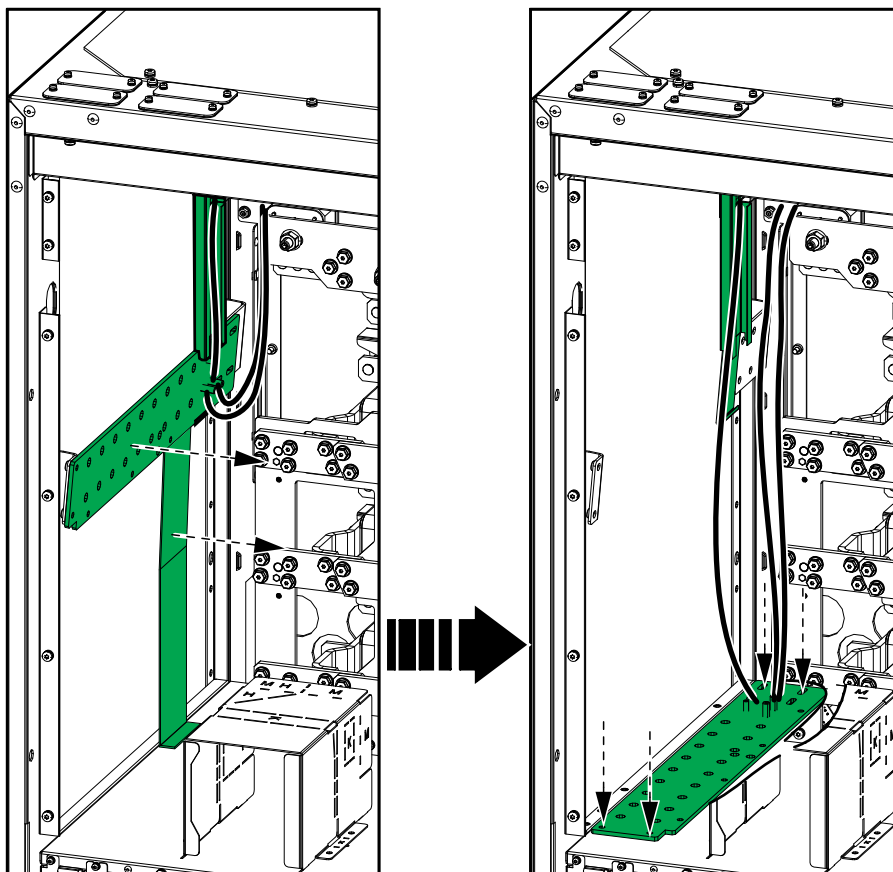
Prepare the UPS for Internal Busbar Connection

1. **Only for HRG earthing system:** Remove and discard the two preconnected cables that connect the E terminal on the bonding contactor to the ground busbar.

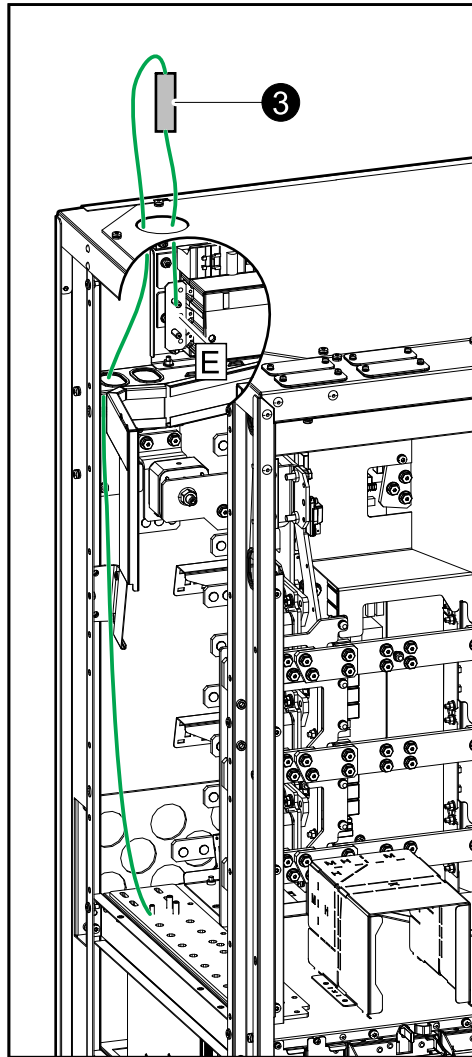


2. Reposition the ground busbar in the UPS:

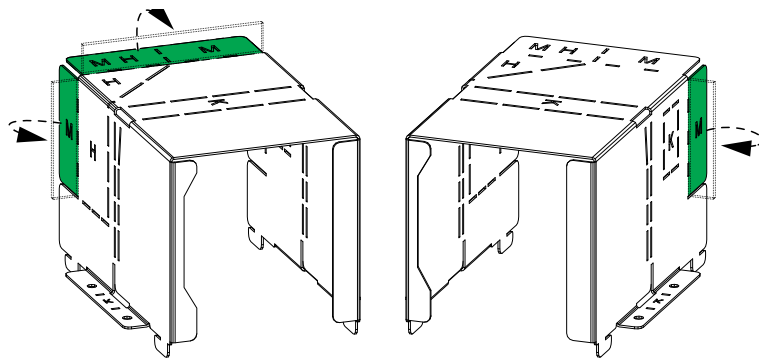
- a. Disconnect the EMC cable, the EMC cable holder and the bonding cables from the ground busbar. Note the connection of the cables on the ground busbar.
- b. Remove and discard the copper busbar.
- c. Move the ground busbar to the new position.
- d. Hold onto the EMC cable holder and pull gently on the end of the EMC cable to extend the length. Reconnect the EMC cable to the ground busbar.
- e. Reconnect the bonding cables to the ground busbar



3. **Only for HRG earthing system:** Connect an external impedance between the E terminal on the bonding contactor and the ground busbar according to NEC 2014 article 250.36.



4. Bend the M zone flaps upwards on the plastic box. This is necessary to make room for the internal busbars between the maintenance bypass cabinet and the UPS.

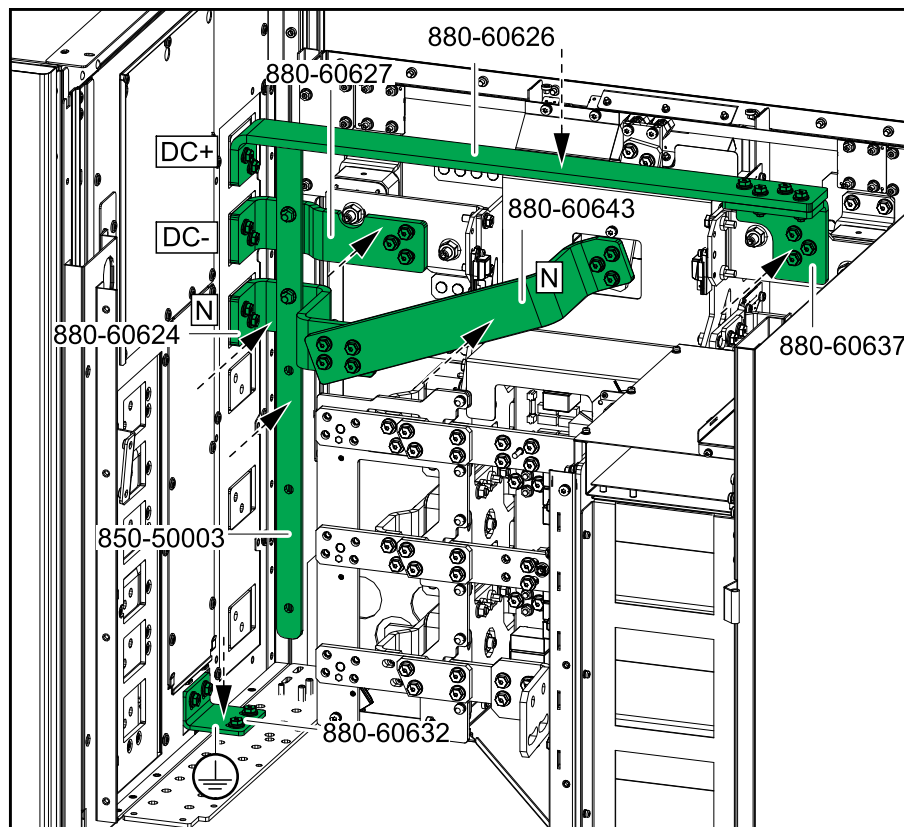


Install Busbars Between the UPS and the Maintenance Bypass Cabinet in Single Mains System

The busbars and insulator parts are provided in a kit with the maintenance bypass cabinet. The part numbers shown on the illustrations are printed on the parts. Use the provided M8x30 screws and torque to 17.5 Nm (12.91 lb-ft / 154.9 lb-in).

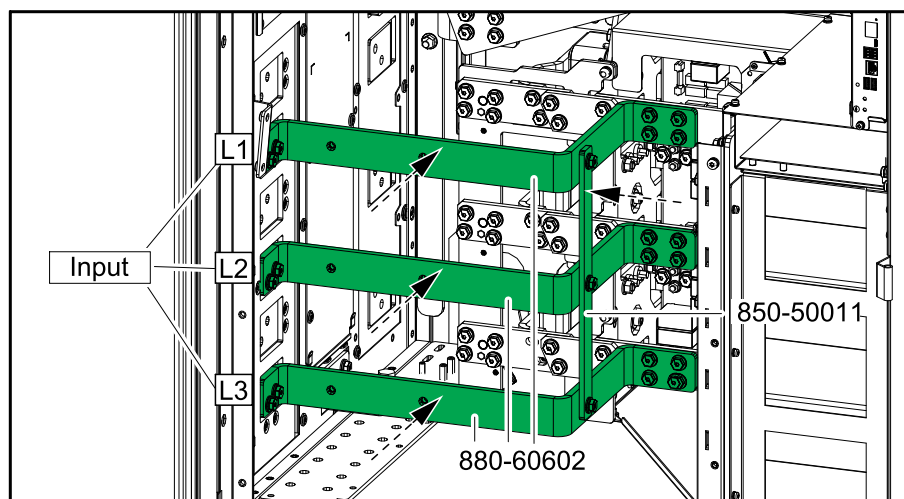
1. Install the neutral busbars, the DC busbars, the insulator part, and the ground busbar.

Front View of the UPS



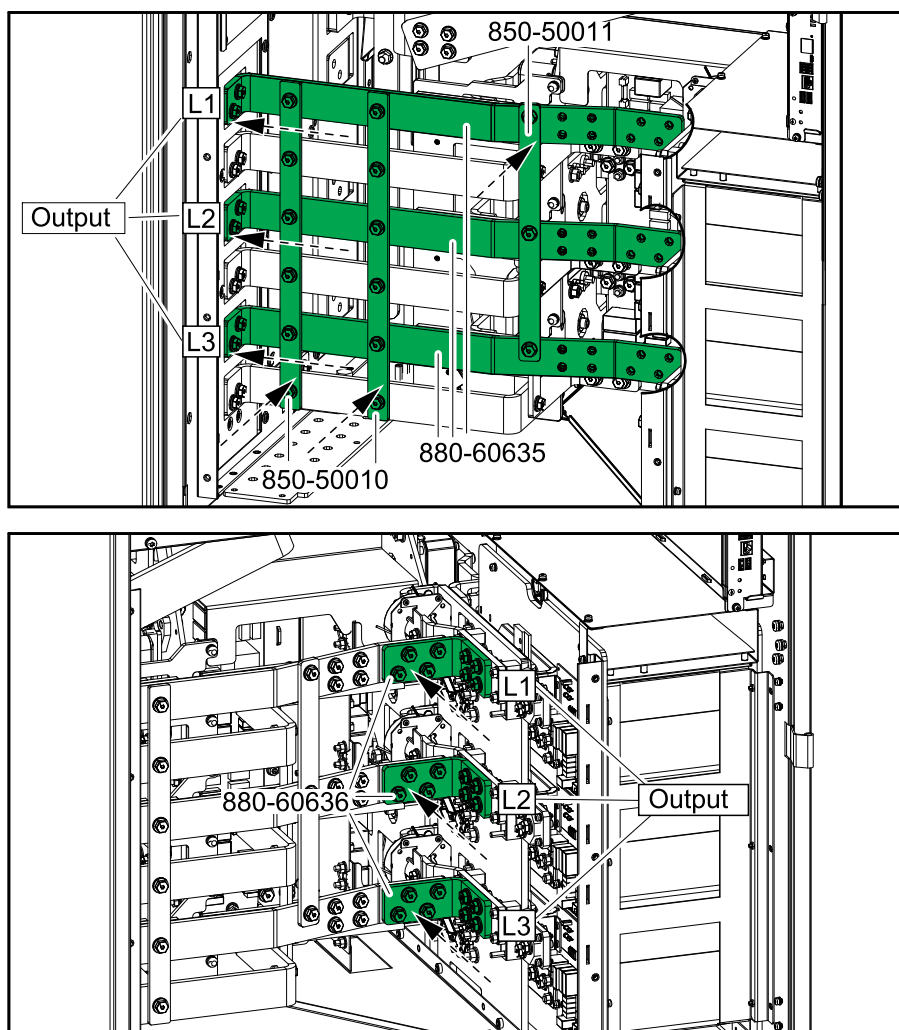
2. Install the input busbars and the insulator part.

Front View of the UPS



3. Install the output busbars and the insulator parts.

Front View of the UPS



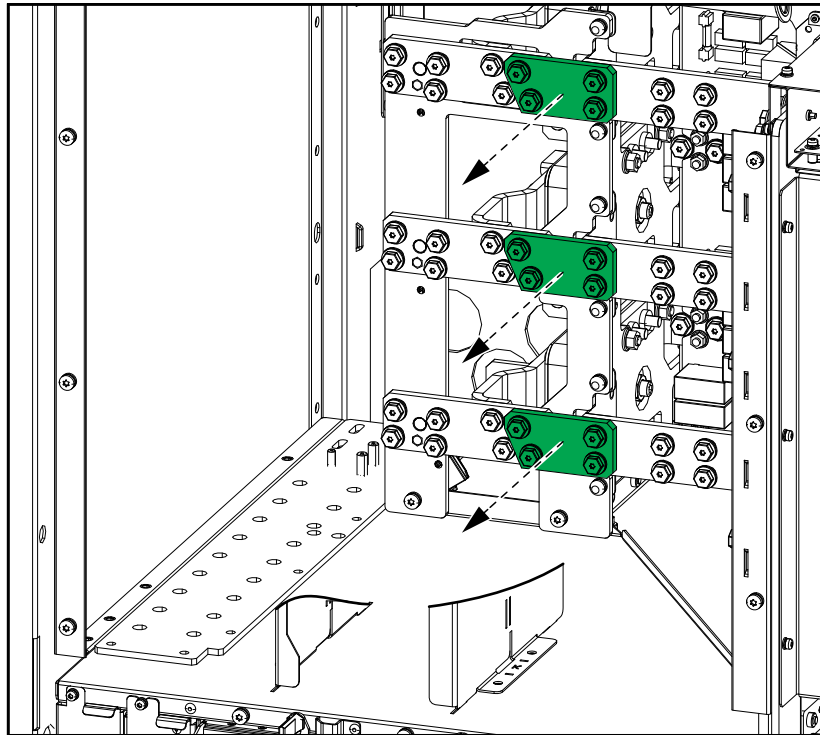
Install Busbars Between the UPS and the Maintenance Bypass Cabinet in Dual Mains System

The busbars and insulator parts are provided in a kit with the maintenance bypass cabinet. The part numbers shown on the illustrations are printed on the parts. Use the provided M8x30 screws and torque to 17.5 Nm (12.91 lb-ft / 154.9 lb-in).

1. Remove the three single mains busbars.

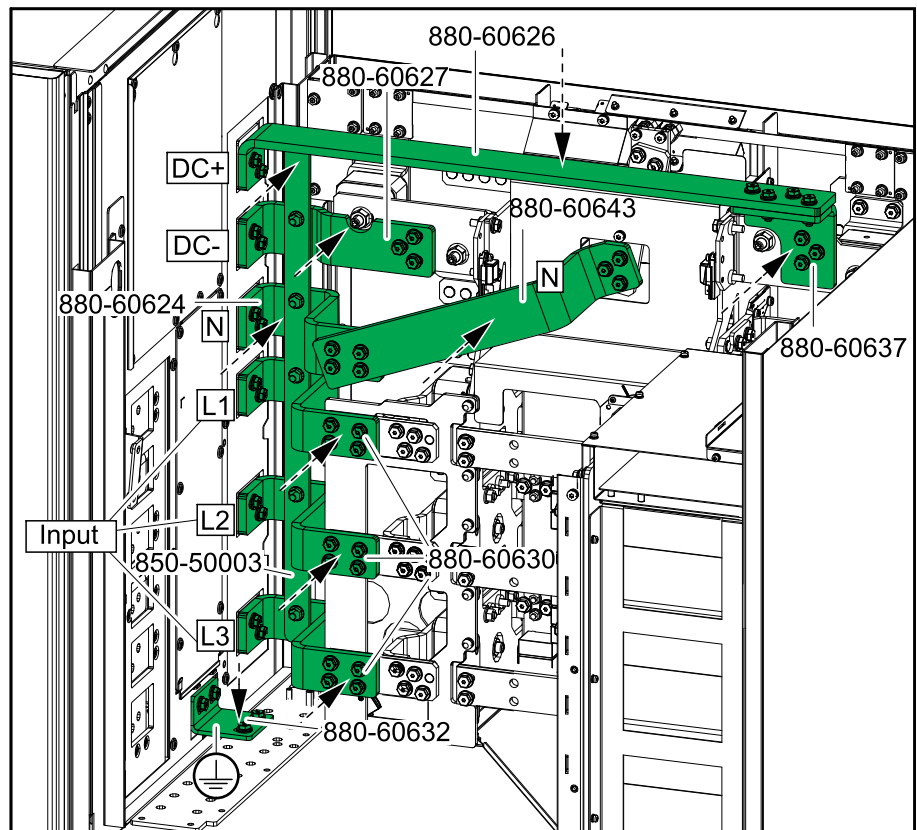
NOTE: Save the three single mains busbars. They are needed for testing during start-up of the UPS.

Front View of the UPS



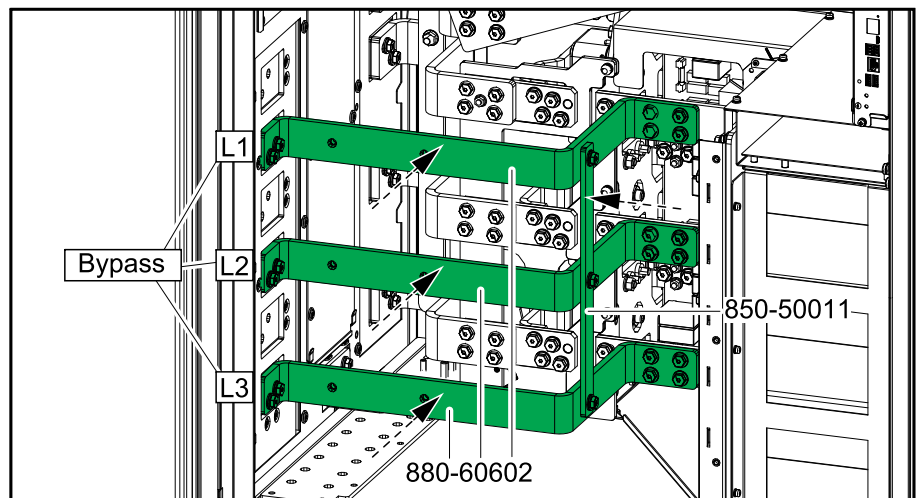
2. Install the input busbars, the neutral busbar, the DC busbars, the insulator part, and the ground busbar.

Front View of the UPS

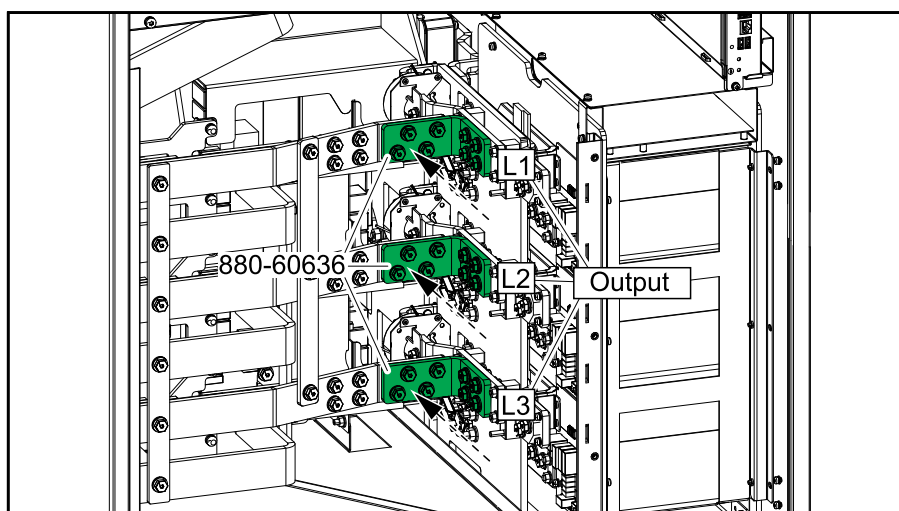
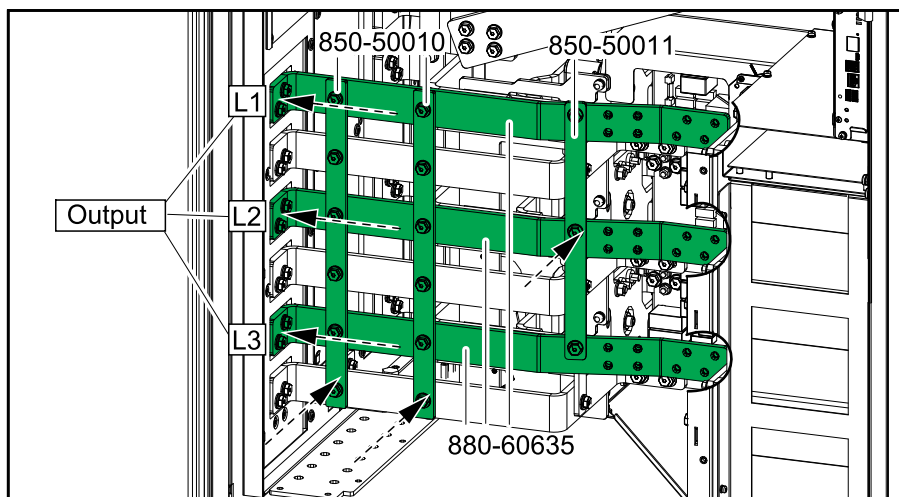


3. Install the bypass busbars and the insulator part.

Front View of the UPS



4. Install the output busbars and the insulator parts.

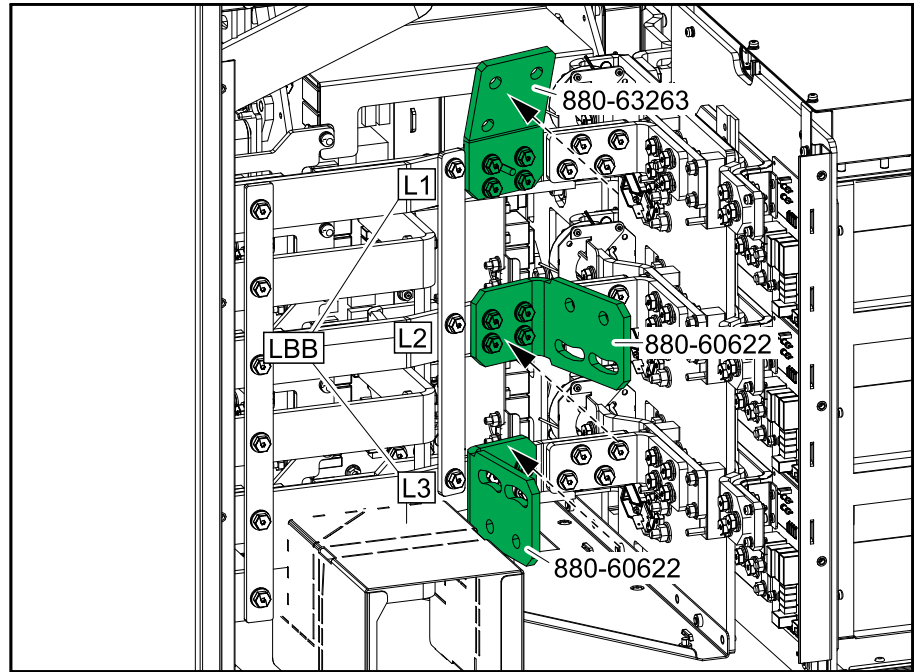
Front View of the UPS

Install Busbars for Load Bank Breaker (Option)

NOTE: The busbars for the load bank breaker were removed from the UPS during preparation for installation.

1. Install busbars for load bank breaker (LBB) in the UPS. Note the direction of the busbars.

Front View of the UPS



2. The load bank breaker cables can be routed through the top of the UPS for a permanent installation or through the open inner door for a temporary installation. See the UPS manual for information on how to create top cable entry in the UPS.

Prepare for Signal Cables in Top Cable Entry Systems

⚠ DANGER

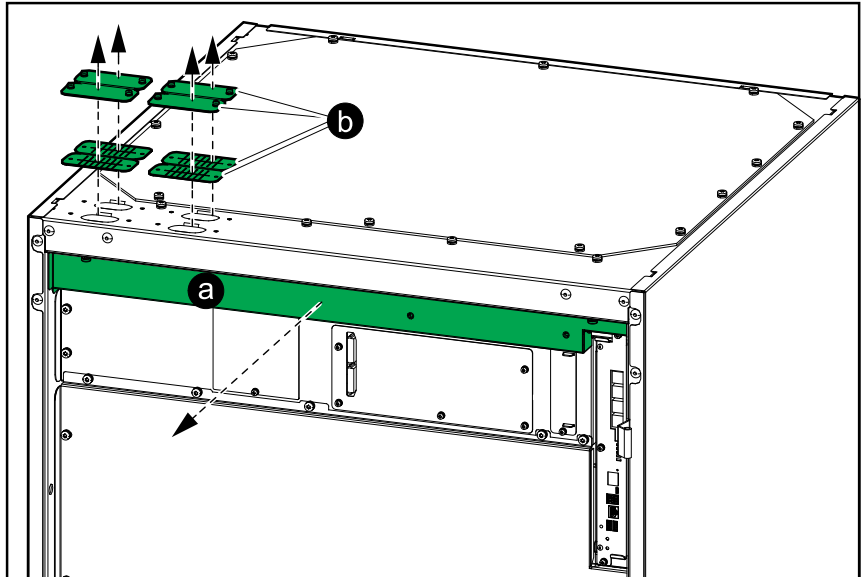
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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 the UPS for signal cables:
 - a. Remove the cover.
 - b. Remove the gland plates and brush plates from the top of the UPS.

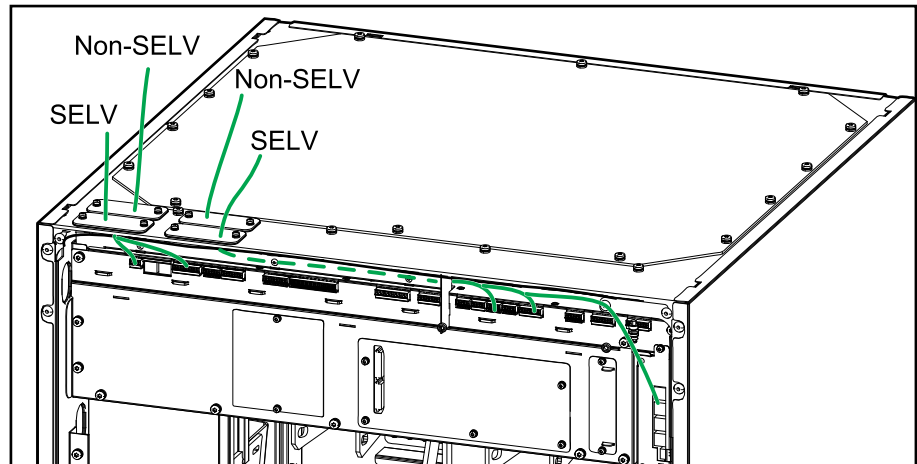
Front View of the UPS



- c. **For installation without conduits:** Reinstall the brush plates.
 - d. **For installation with conduits:** Drill a hole in the gland plates for conduits, install conduits, and reinstall the gland plates.

2. Route the signal cables as shown to separate the Class 2/SELV cables from the non-Class 2/non-SELV cables. A divider inside the cable channel separates the cables.

Front View of the UPS



Prepare for Signal Cables in Bottom Cable Entry Systems

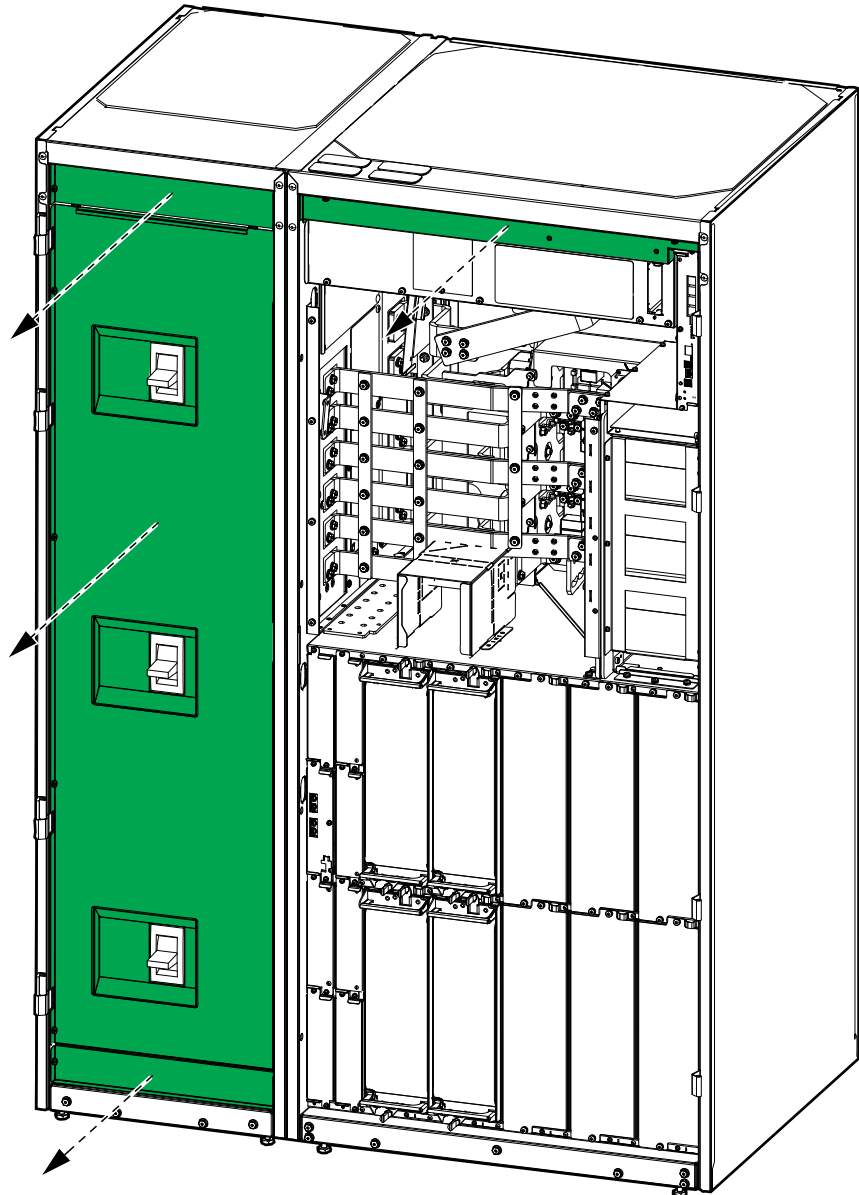
⚠ DANGER

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.

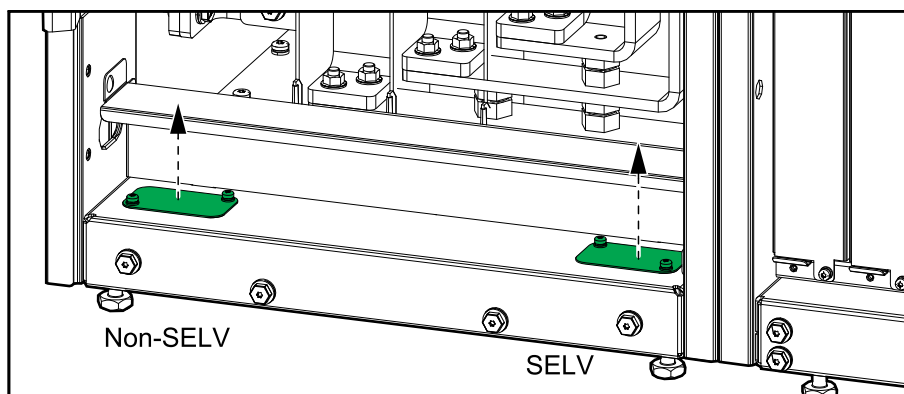
Failure to follow these instructions will result in death or serious injury.

1. Remove the covers.

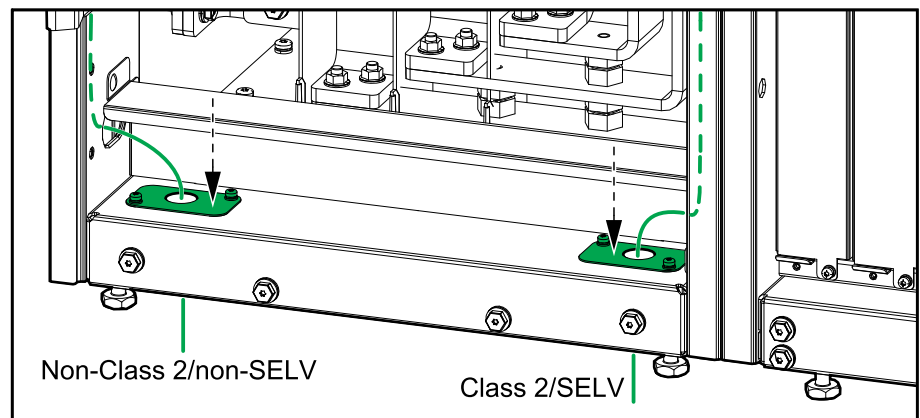
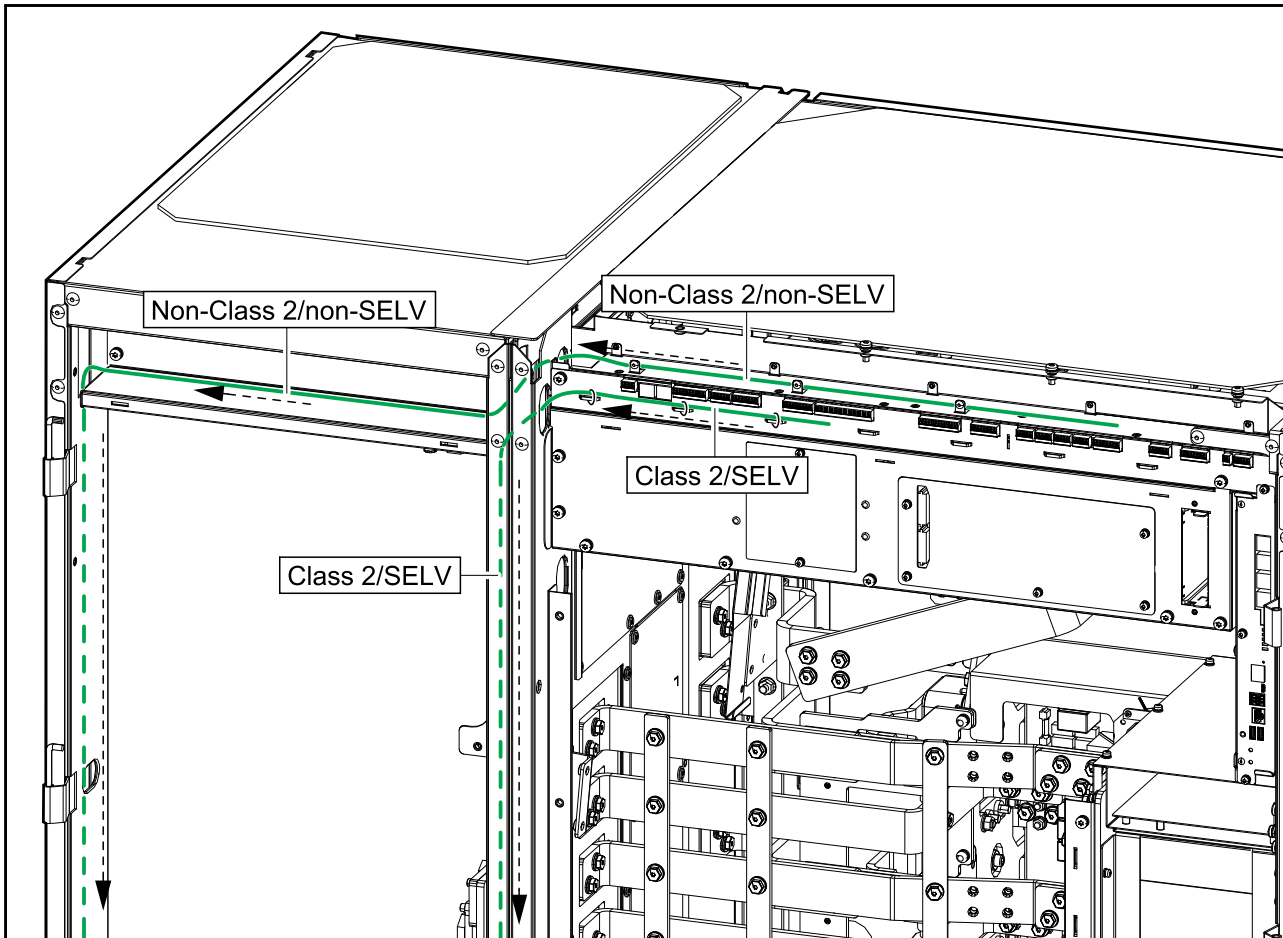


2. Prepare for signal cables:

- a. Remove the gland plates.
- b. Drill/punch holes for signal cables or conduits in the gland plate. Install conduits (not provided), if applicable.
- c. Reinstall the gland plates.



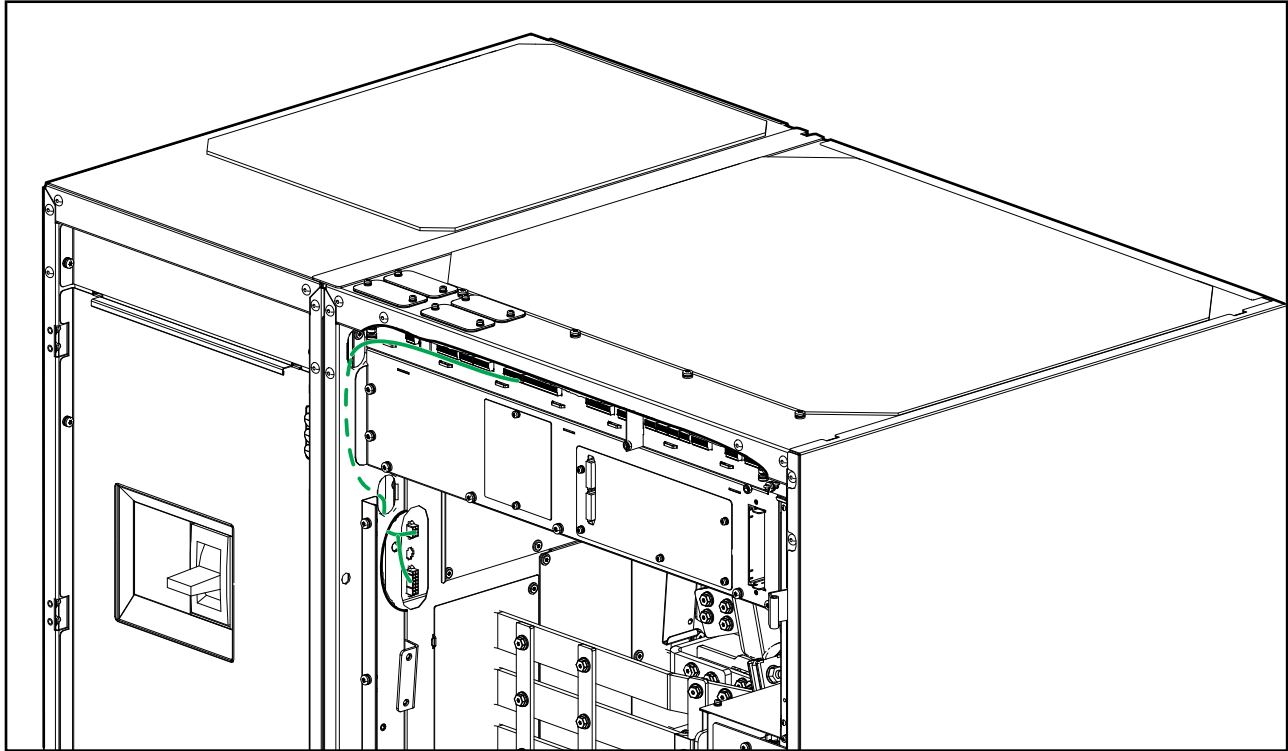
3. Route the signal cables from the UPS, into the maintenance bypass cabinet, and out through the bottom of the maintenance bypass cabinet.



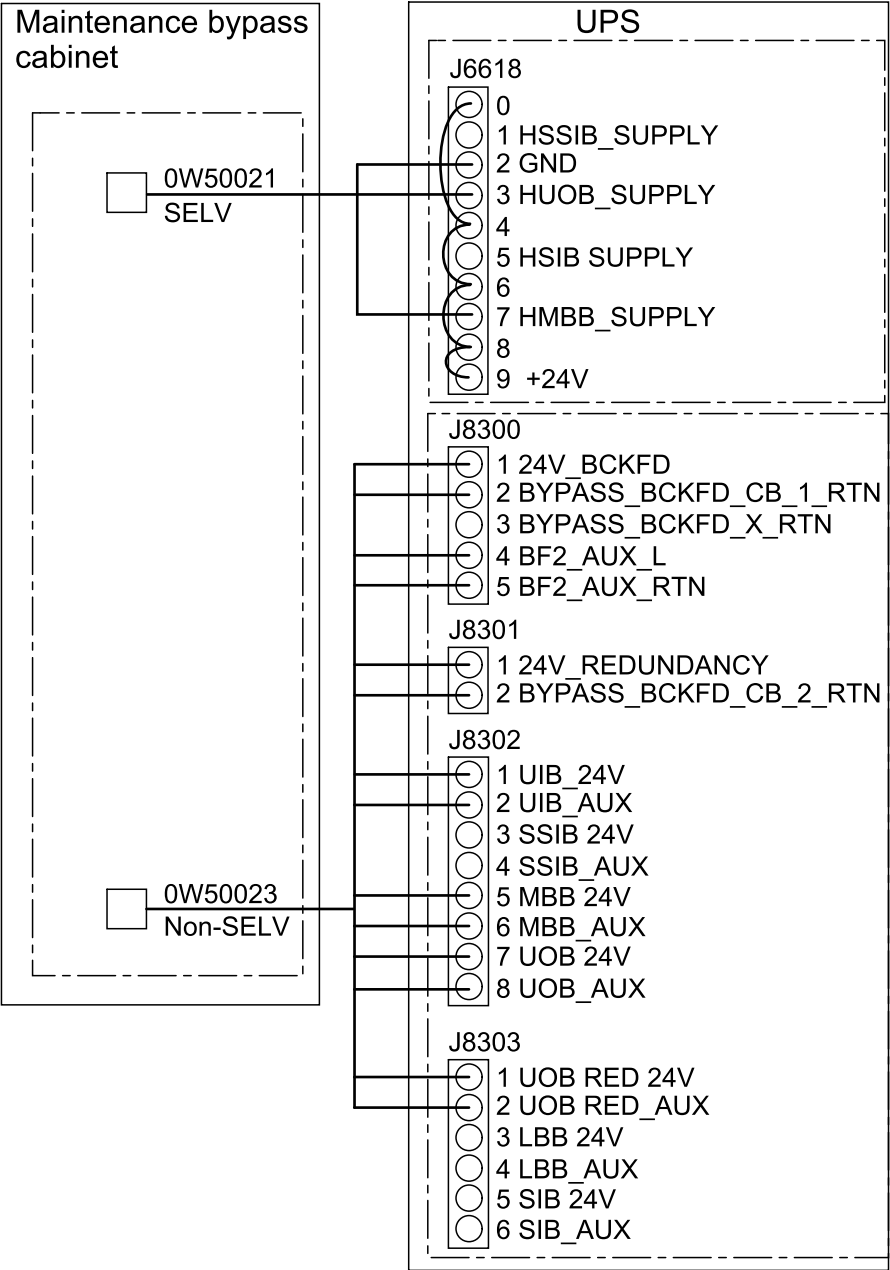
4. Reinstall the covers.

Connect the Signal Cables Between the Maintenance Bypass Cabinet and the UPS

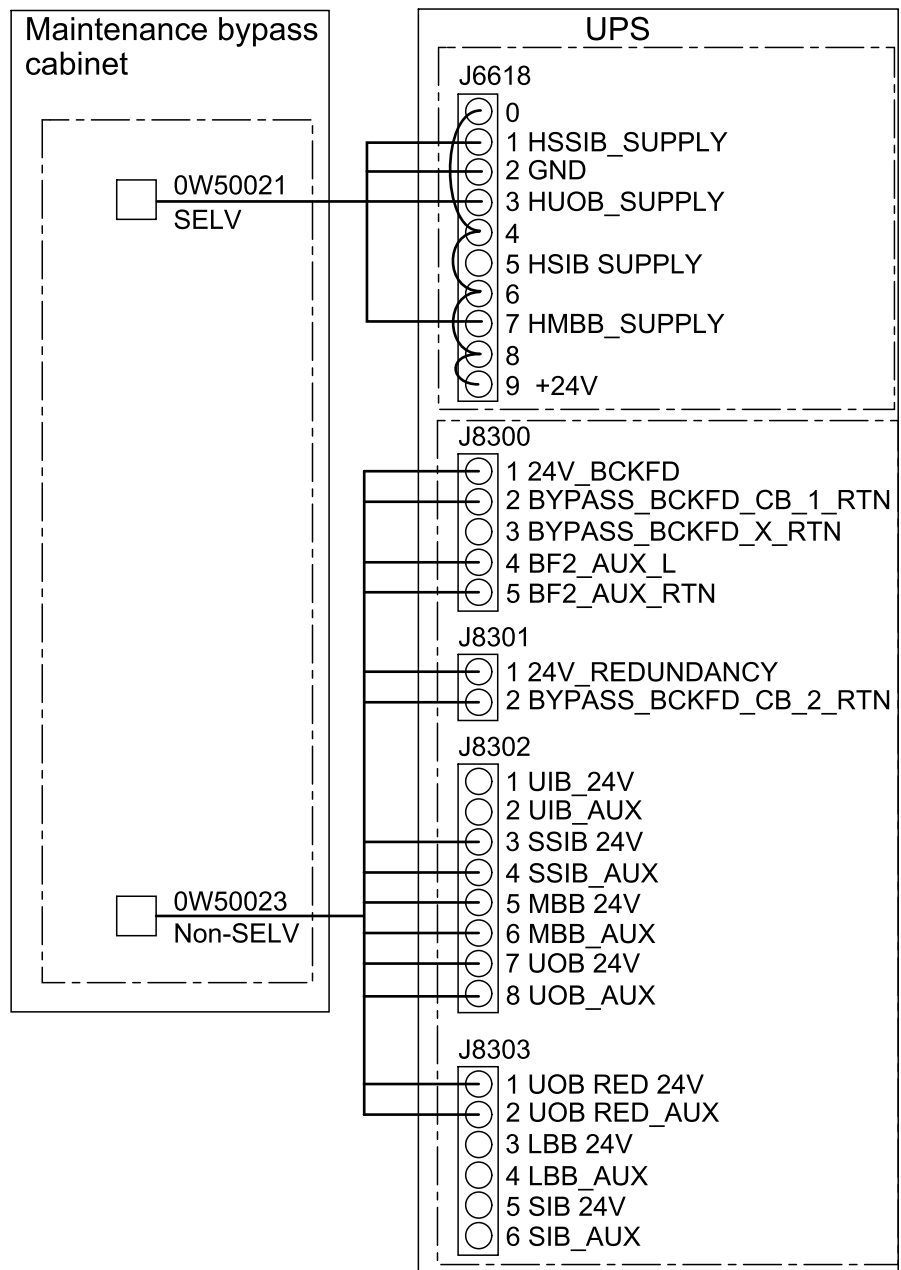
1. Connect the provided Class 2/SELV signal cable 0W50021 and the provided non-Class 2/non-SELV signal cable 0W50023 between the maintenance bypass cabinet and the UPS as shown.



Single Mains System



Dual Mains System



Add Translated Safety Labels to Your Product

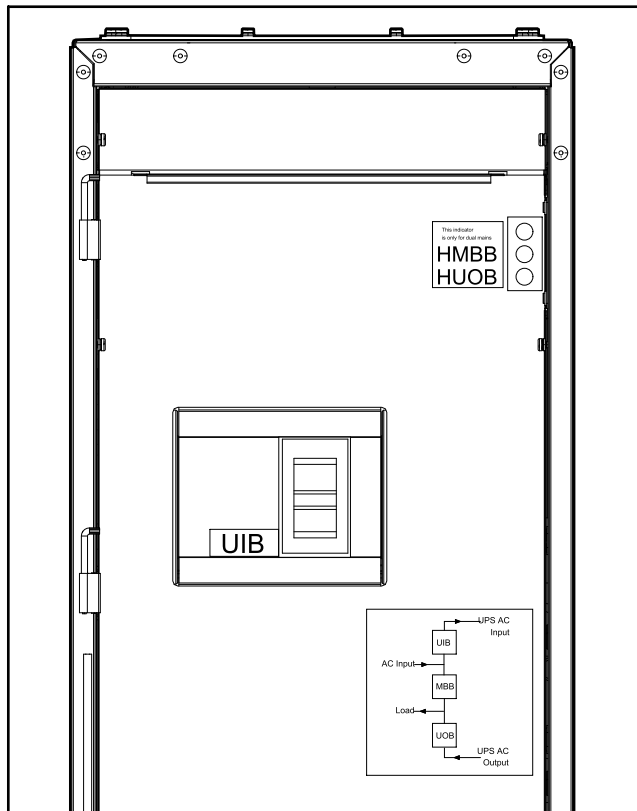
The safety labels on your product are in English and French. Sheets with translated safety labels are provided with your product.

1. Find the sheets with translated safety labels provided with your product.
2. Check which 885-XXX 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 885-XXX numbers.
4. Add the replacement safety label in your preferred language to your product on top of the existing French safety label.

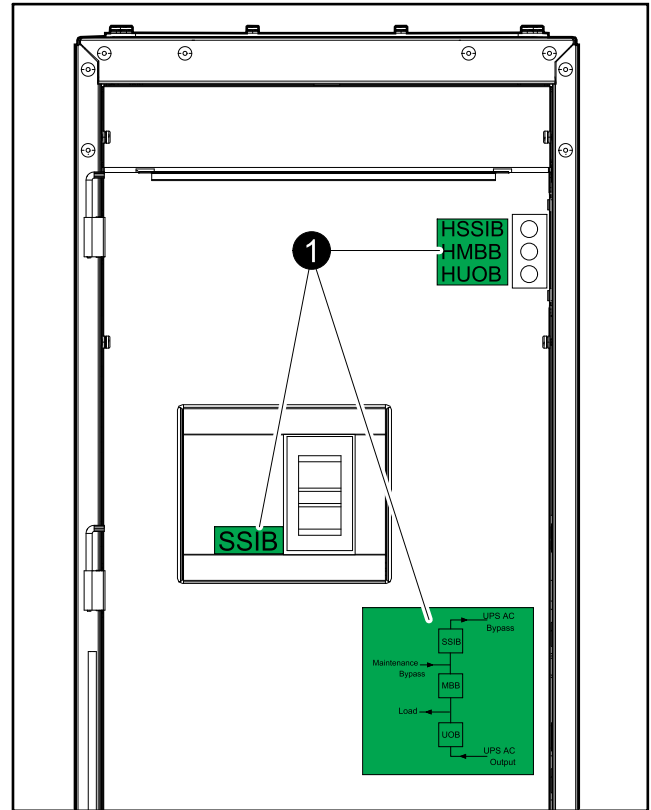
Final Installation

1. **Only for dual mains:** Add the labels for SSIB, the indicator lights, and the diagram label on the maintenance bypass cabinet. The labels are provided with this manual.

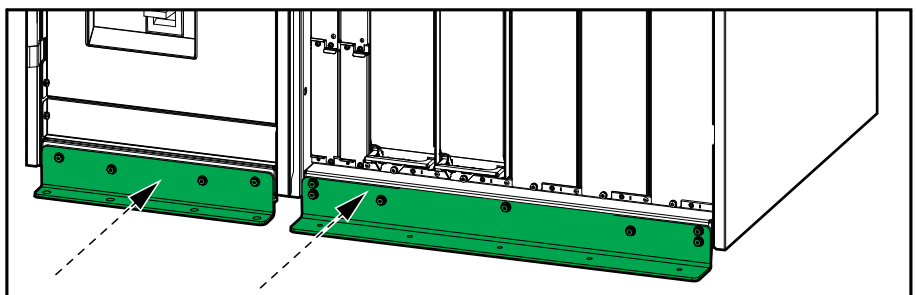
Single Mains



Dual Mains



2. Add label 885-91965 (provided with the UPS) on the maintenance bypass cabinet.
3. **Only for seismic anchoring:** Install the seismic front anchoring bracket on the maintenance bypass cabinet and on the UPS. Mount the seismic front brackets to the floor. Use appropriate hardware for the floor type – the hole diameter in the seismic front bracket is $\varnothing 14$ mm. The minimum requirement is M12 strength grade 8.8 hardware.



4. Close the front door on the maintenance bypass cabinet

Galaxy VL

UPS

Operation

Latest updates are available on the Schneider Electric website

6/2023



Legal Information

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this guide are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owners.

This guide and its content are protected under applicable copyright laws and furnished for informational use only. No part of this guide may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the guide or its content, except for a non-exclusive and personal license to consult it on an "as is" basis. Schneider Electric products and equipment should be installed, operated, serviced, and maintained only by qualified personnel.

As standards, specifications, and designs change from time to time, information contained in this guide may be subject to change without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this material or consequences arising out of or resulting from the use of the information contained herein.



Find the manuals here:
Trouvez les manuels ici:
在这里找到手册
Hier finden Sie die Handbücher:
Encuentre los manuales aquí:
Encontre os manuais aqui:

IEC



UL



IEC: https://www.productinfo.schneider-electric.com/galaxyvl_iec/
UL: https://www.productinfo.schneider-electric.com/galaxyvl_ul/

Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS	5
FCC Statement	6
Electromagnetic Compatibility	6
Safety Precautions	6
Overview of User Interface	8
Display	8
Menu Tree.....	10
System Level Controller (SLC) and Unit Controller (UC) Overview.....	11
Operation Modes	12
UPS Modes.....	12
System Modes	15
Configuration	17
Set the Display Language	17
Configure the UPS Input	17
Configure the Output.....	18
Output Transformer Voltage Compensation	19
Configure the Battery Solution	20
Configure High Efficiency Mode	23
Configure the Breakers	23
Configure the Input Contacts	24
Configure the Output Relays	25
Configure the Network	27
Configure the Modbus.....	29
Set the UPS Name	31
Set the Date and Time	31
Configure the Display Preferences.....	31
Configure the Air Filter Reminder	32
Save the UPS Settings on a USB Device.....	32
Restore the UPS Settings from a USB Device.....	33
Change the Password.....	33
Operation Procedures	34
Transfer the UPS from Normal Operation to Static Bypass	
Operation.....	34
Transfer the UPS from Static Bypass Operation to Normal	
Operation.....	34
Turn the Inverter OFF	34
Turn the Inverter ON	34
Set the Charger Mode.....	34
Shut Down the UPS System into Maintenance Bypass Operation.....	35
Shut Down into Maintenance Bypass Operation for Single UPS System	
with Kirk Key Installed	36
Start Up the UPS System from Maintenance Bypass Operation	37
Start Up from Maintenance Bypass Operation for Single UPS System	
with Kirk Key Installed	38
Access a Configured Network Management Interface.....	39
Enable HTTP/HTTPS Protocols	39

Enable SNMP Protocols	40
View the Logs.....	41
View the System Status Information	42
Tests.....	45
Start a Runtime Calibration Test.....	45
Stop a Runtime Calibration Test.....	46
Start a Battery Test	46
Stop a Battery Test	46
Maintenance	47
Connect Temperature/Humidity Sensor (Option)	47
Replace the Air Filter (GVLOPT001)	48
Live Swap: Add, Remove, or Replace a Power Module.....	49
Determine if you need a Replacement Part.....	53
Return Parts to Schneider Electric	53
Troubleshooting	54
Status LED Lighting per UPS Operation Mode	54
Export UPS Report to a USB Device	55

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, 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 inference, in which case the user may be required to take additional measures.

Failure to follow these instructions can result in equipment damage.

Safety Precautions

DANGER

HAZARD OF ELECTRICAL 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 ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

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.

CAUTION

RISK OF HOT SURFACE

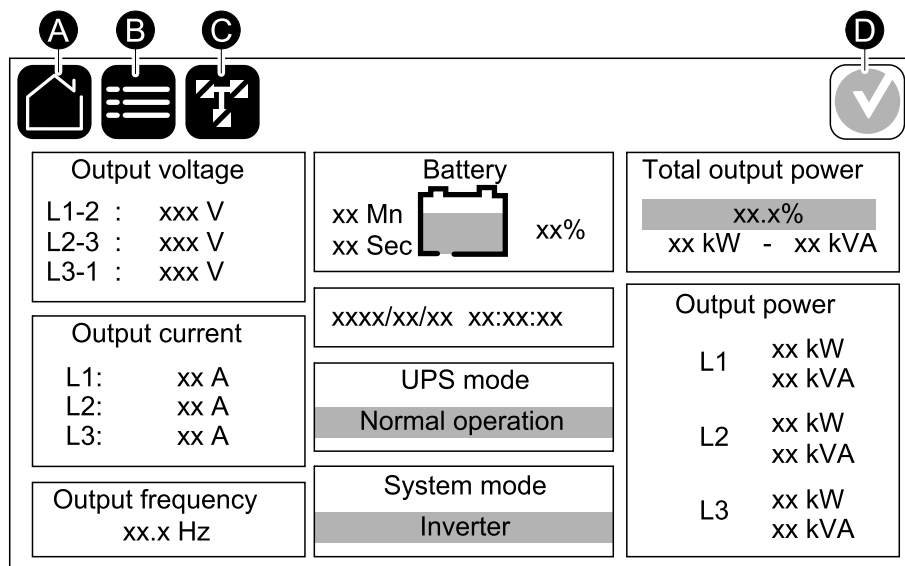
The cabinet backplate can exceed temperatures of 65 °C (149 °F) at 50 °C (122 °F) ambient room temperature, if the air filter(s) in the front door is clogged. Replace the air filter regularly as described in the UPS operation manual.

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

Overview of User Interface

Display

Overview of the Home Screen



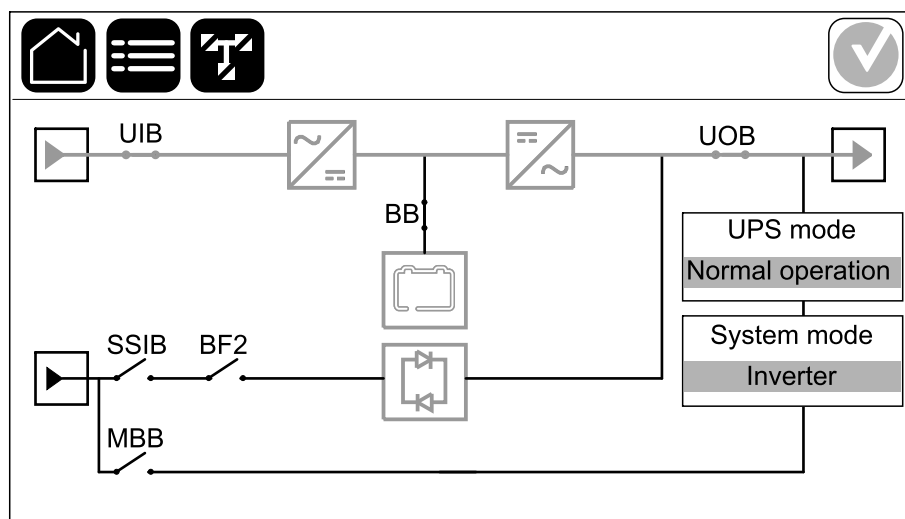
- A. Home button - tap this button on any screen to return to the home screen.
- B. Main menu button - tap this button on any screen to access the menus.
- C. Mimic diagram button - tap this button on any screen to access the mimic diagram.
- D. Alarm status symbol - tap this button on any screen to access the active alarms log.

You can tap on the output or battery fields on the home screen to go directly to the detailed measurement pages.

Mimic Diagram

The mimic diagram will adapt to your system configuration – the mimic diagrams shown here are just examples.

Example of Single UPS System – Dual Mains

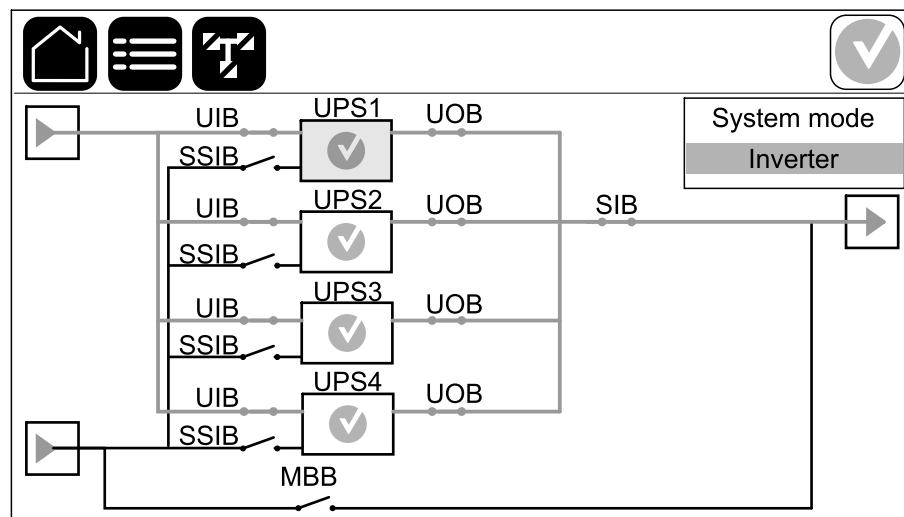


The green power line (gray in illustration) in the mimic diagram shows the power flow through the UPS system. Active modules (inverter, rectifier, battery, static bypass switch, etc.) are framed in green and inactive modules are framed in black. Modules framed in red are inoperable or in an alarm condition.

NOTE: The mimic diagram only shows one battery breaker BB even if more battery breakers have been connected and configured for monitoring. If one or more of the monitored battery breakers are in the closed position, the BB on the mimic diagram will show as closed. If all of the monitored battery breakers are in the open position, the BB on the mimic diagram will show as open.

In mimic diagrams for parallel systems, tap on the gray UPS to see the mimic diagram on UPS level.

Example of Parallel System – Dual Mains with Individual UIB and SSIB



Alarm Status Symbol

The alarm status symbol (gray in illustration) in the top right corner of the display changes depending on the alarm status of the UPS system.

	Green: No alarms present in the UPS system.
	Blue: Informational alarm(s) present in the UPS system. Tap the alarm status symbol to open the active alarms log.
	Yellow: Warning alarm(s) present in the UPS system. Tap the alarm status symbol to open the active alarms log.
	Red: Critical alarm(s) present in the UPS system. Tap the alarm status symbol to open the active alarms log.

Menu Tree

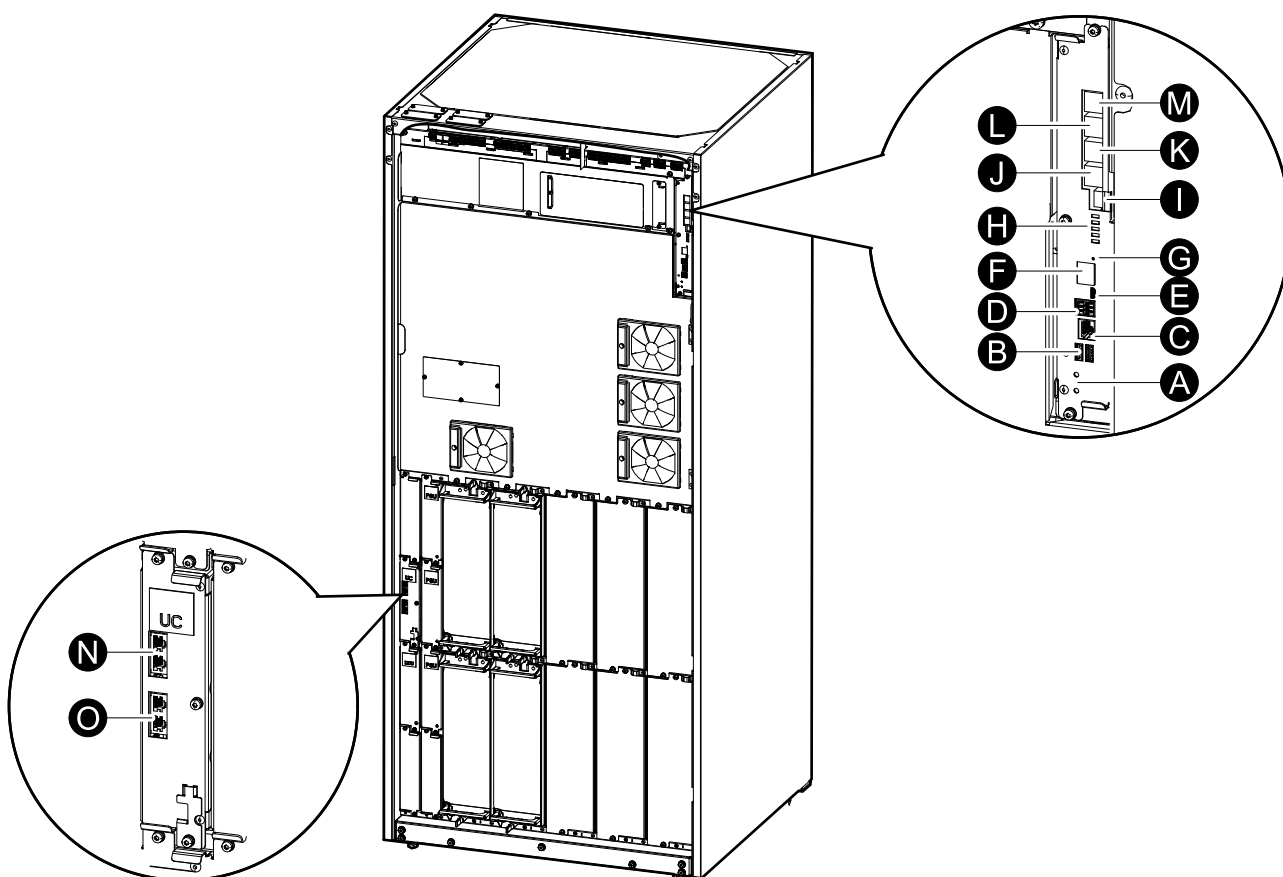
- **Status**
 - Input
 - Output
 - Bypass
 - Battery
 - Temperature
 - Power modules
 - Parallel¹
- **Logs**
- **Control²**
 - Operation mode
 - Inverter
 - Charger
 - Guided sequences
- **Configuration²**
 - UPS
 - Output
 - Battery
 - High efficiency
 - Breakers
 - Contacts and relays
 - Network
 - Modbus
 - General
 - Reminder
 - Save/restore
 - Update status
- **Maintenance**
 - Buzzer
 - Status LEDs
 - Breaker lamp
 - Battery²
 - Runtime calibration²
 - Battery replacement²
 - UPS report²
- **Statistics**
- **About**
- **Logout**
- Flag button – Tap this button to set the display language.

Some menus contain more submenus than described in this manual. These submenus are grayed out and are only for use by Schneider Electric to avoid unwanted load impacts. Other menu items can also be grayed out/not shown on the display if they are not relevant or not released yet for this particular UPS system.

1. This menu is only available in a parallel system.

2. This menu requires administrator login to access.

System Level Controller (SLC) and Unit Controller (UC) Overview



- A. Inverter ON/OFF buttons
- B. USB ports³
- C. Universal I/O³
- D. Modbus port³
- E. USB Micro-B port³
- F. Network port³
- G. Reset button³
- H. Status LEDs⁴
- I. Display power supply
- J. Display port
- K. Service port⁵
- L. For future use
- M. For future use
- N. PBUS 1⁶
- O. PBUS 2⁶

3. Built-in network management card.

4. See Status LED Lighting per UPS Operation Mode, page 54.

5. The service port can only be used by a Schneider Electric Field Service Representative with approved Schneider Electric tools to configure the unit, retrieve logs, and upgrade firmware. The service port cannot be used for any other purpose. The service port is only active when the Field Service Representative is within physical proximity to the UPS and manually activates the connection. Do not connect to a network. The connection is not intended for network operation and may cause inoperability of the network.

6. Do not disconnect during operation of the UPS. Do not connect to a network. The connection is not intended for network operation and may cause inoperability of the network.

Operation Modes

The UPS has two different levels of operation modes:

- **UPS mode:** The operation mode of the individual UPS. See [UPS Modes](#), page 12.
- **System mode:** The operation mode of the complete UPS system that supplies the load. See [System Modes](#), page 15.

UPS Modes

eConversion Mode

eConversion provides a combination of maximum protection and highest efficiency, that permits to reduce the electricity absorbed by the UPS by a factor three compared with double conversion. eConversion is now the generally recommended operation mode and is enabled by default in the UPS but it can be disabled via the display menu. When enabled, eConversion can be set to always active or on a set schedule configured through the display menu.

In eConversion the UPS supplies the active part of the load through the static bypass as long as the utility/mains supply is within tolerance. The inverter is kept running in parallel so the input power factor of the UPS is maintained close to unity, regardless of the load power factor, as the reactive part of the load is significantly reduced in the UPS input current. In case of an interruption of the utility/mains supply, the inverter maintains the output voltage providing an uninterrupted transfer from eConversion to double conversion. The batteries are charged when the UPS is in eConversion mode and harmonics compensation is also provided.

eConversion mode can be used for the Galaxy VL UPS in the following conditions:

- The load on the UPS is $>5\%$ for a UPS in a single system.
- Voltage fluctuation is $\leq 10\%$ versus nominal voltage (adjustable setting from 3% to 10%).
- THDU is $\leq 5\%$.

NOTE: When changes to eConversion mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

NOTE: When a genset/generator is in use and frequency fluctuations are seen (typically due to downsizing), it is recommended to configure an input contact to disable high efficiency modes while the genset/generator is on.

NOTE: If external synchronization is required, it is generally recommended to disable eConversion.

Double Conversion (Normal Operation)

The UPS supports the load with conditioned power. Double conversion mode permanently creates a perfect sinewave at the system output, but this operation also uses more electricity.

Battery Operation

If the utility/mains supply fails, the UPS transfers to battery operation and supports the load with conditioned power from the DC source.

Requested Static Bypass Operation

The UPS can be transferred to requested static bypass operation following a command from the display. During requested static bypass operation, the load is supplied from the bypass source. If a fault is detected, the UPS will transfer to double conversion (normal operation) or forced static bypass operation. If there is an interruption to the utility/mains supply during requested static bypass operation, the UPS will transfer to battery operation.

Forced Static Bypass Operation

The UPS is in forced static bypass operation following a command from the UPS or because the user has pressed the inverter OFF button on the UPS. During forced static bypass operation, the load is supplied from the bypass source.

NOTE: The batteries are not available as an alternate power source while the UPS is in forced static bypass operation.

Maintenance Bypass Operation

When the maintenance bypass breaker MBB is closed in the external maintenance bypass cabinet, maintenance bypass panel, or third party switchgear, the UPS transfers to external maintenance bypass operation. The load is supplied with unconditioned power from the bypass source. Service and replacement can be performed on the entire UPS during external maintenance bypass operation via the maintenance bypass breaker MBB.

NOTE: The batteries are not available as an alternate power source while the UPS is in external maintenance bypass operation.

Static Bypass Standby Operation

Static bypass standby is only applicable to an individual UPS in a parallel system. The UPS enters static bypass standby operation if the UPS is prevented from entering forced static bypass operation and the other UPSs of the parallel system can support the load. In static bypass standby the output of the specific UPS is OFF. The UPS automatically transfers to the preferred operation mode when possible.

NOTE: If the other UPSs cannot support the load, the parallel system transfers to forced static bypass operation. The UPS in static bypass standby operation will then transfer to forced static bypass operation.

Battery Test Mode

The UPS is in battery test mode when the UPS is performing a battery self-test or a runtime calibration.

NOTE: The battery test will be aborted if the utility/mains supply is interrupted or if a critical alarm is present and the UPS will return to normal operation upon return of utility/mains.

ECO Mode

In ECO mode the UPS uses requested static bypass to power the load as long as the power quality is within tolerance. If a fault is detected (bypass voltage out of tolerance, output voltage out of tolerance, power interruption, etc) the UPS will transfer to double conversion (normal operation) or forced static bypass.

Depending on the transfer conditions, a minimal interruption of the load supply may happen (up to 10 ms). The batteries are charged when the UPS is in ECO mode. The main advantage of ECO mode is a reduction in the consumption of electrical power compared with double conversion.

NOTE: When changes to ECO mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

OFF Mode

The UPS is not supplying the load with power. The batteries are charged and the display is on.

System Modes

The system mode indicates the output status of the complete UPS system including the surrounding switchgear and indicates which source supplies the load.

eConversion Mode

eConversion provides a combination of maximum protection and highest efficiency, that permits to reduce the electricity absorbed by the UPS by a factor three compared with double conversion. eConversion is now the generally recommended operation mode and is enabled by default in the UPS but it can be disabled via the display menu. When enabled, eConversion can be set to always active or on a set schedule configured through the display menu.

In eConversion the UPS system supplies the active part of the load through the static bypass as long as the utility/mains supply is within tolerance. The inverter is kept running in parallel so the input power factor of the UPS system is maintained close to unity, regardless of the load power factor, as the reactive part of the load is significantly reduced in the UPS system input current. In case of an interruption of the utility/mains supply, the inverter maintains the output voltage providing an uninterrupted transfer from eConversion to double conversion. The batteries are charged when the UPS system is in eConversion mode and harmonics compensation is also provided.

eConversion mode can be used for the Galaxy VL UPS system in the following conditions:

- See the UPS installation manual for minimum load percentage for parallel UPS systems in eConversion.
- Voltage fluctuation is $\leq 10\%$ versus nominal voltage (adjustable setting from 3% to 10%).
- THDU is $\leq 5\%$.

NOTE: When changes to eConversion mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

NOTE: When a genset/generator is in use and frequency fluctuations are seen (typically due to downsizing), it is recommended to configure an input contact to disable high efficiency modes while the genset/generator is on.

NOTE: If external synchronization is required, it is generally recommended to disable eConversion.

Inverter Operation

In inverter operation the load is supplied by the inverters. The UPS mode can be in either double conversion (normal operation) or battery operation when the UPS system operation mode is inverter operation.

Requested Static Bypass Operation

When the UPS system is in requested static bypass operation, the load is supplied from the bypass source. If a fault is detected, the UPS system will transfer to inverter operation or forced static bypass operation.

Forced Static Bypass Operation

The UPS system is in forced static bypass operation following a command from the UPS system or because the user has pressed the inverter OFF button on the

UPSs. During forced static bypass operation, the load is supplied directly by the bypass source with unconditioned power.

NOTE: The batteries are not available as an alternate power source while the UPS system is in forced static bypass operation.

Maintenance Bypass Operation

In maintenance bypass operation, the load is supplied directly by the bypass source with unconditioned power via the maintenance bypass breaker MBB.

NOTE: The batteries are not available as an alternate power source in maintenance bypass operation.

ECO Mode

In ECO mode the UPS system uses requested static bypass to power the load as long as the power quality is within tolerance. If a fault is detected (bypass voltage out of tolerance, output voltage out of tolerance, power interruption, etc) the UPS system will transfer to double conversion (normal operation) or forced static bypass. Depending on the transfer conditions, a minimal interruption of the load supply may happen (up to 10 ms). The batteries are charged when the UPS system is in ECO mode. The main advantage of ECO mode is a reduction in the consumption of electrical power compared with double conversion.

NOTE: When changes to ECO mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

OFF Mode

The UPS system is not supplying the load with power. The batteries are charged and the display is on.

Configuration

Set the Display Language



1. Tap the flag button on the main menu screen.
2. Tap your language.

Configure the UPS Input

NOTE: This configuration is mandatory for correct UPS operation.

1. Tap **Configuration > UPS**.
 - a. Set the **Mains configuration** to **Single mains** or **Dual mains**.
 - b. Select **Autostart of the inverter** if you want to enable this function. When **Autostart of the inverter** has been enabled, the inverter will start up automatically when input voltage returns, after a shutdown due to drained battery.

NOTE: Autostart of the inverter is not allowed in a parallel system.

 **⚠ 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.

- c. Set **Transformer present** to **No transformer present**, **Input transformer**, **Output transformer**, or **Input and output transformers**.
- d. Set **Power module redundancy** to **N+0** or **N+1**.



Configuration

UPS



Mains configuration

☒ Single mains

☐ Dual mains

Autostart of the inverter

☒

Transformer present

No transformer present ▼

Power module redundancy

☒ N+0

☐ N+1

OK

Cancel

2. Tap **OK** to save your settings.

Configure the Output

NOTE: This configuration is mandatory for correct UPS operation.

1. Tap **Configuration > Output**.
 - a. Set the **AC voltage ph-ph** to **380VAC**, **400VAC**, **415VAC**, **440VAC**, or **480VAC** depending on your configuration.
 - b. Set the **Frequency** to **50Hz $\pm$ 1.0**, **50Hz $\pm$ 3.0**, **50Hz $\pm$ 10.0**, **60Hz $\pm$ 1.0**, **60Hz $\pm$ 3.0**, or **60Hz $\pm$ 10.0** depending on your configuration.
 - c. Tap **OK** to save your settings and tap the arrow symbol to go to the next page.

Configuration Output

AC voltage ph-ph

☒ 380VAC ☐ 440VAC

☐ 400VAC ☐ 480VAC

☐ 415VAC

Frequency

☐ 50Hz +/-1.0 ☐ 60Hz +/-1.0

☒ 50Hz +/-3.0 ☐ 60Hz +/-3.0

☐ 50Hz +/-10.0 ☐ 60Hz +/-10.0

1/2 OK Cancel

- d. Set the **Bypass and output tolerance (%)**. The bypass and output tolerance range is +3% to +10%, default is +10%.
- e. Set the **Voltage compensation (%)**. The output voltage of the UPS can be adjusted up to $\pm 3\%$ to compensate for different cable lengths. Default is 0%.
- f. Set the **Overload threshold (%)**. The overload range is 0% to 100%, default is 75%.
- g. Set the **Transformer voltage compensation (%)**. The transformer voltage compensation range is 0% to 3%, default is 0%. See [Output Transformer Voltage Compensation](#), page 19 for more details and [Configure the UPS Input](#), page 17 for configuring that an output transformer is present.
- h. Tap **OK** to save your settings.

The screenshot shows a configuration window with a top bar containing icons for home, menu, and settings, along with tabs for 'Configuration' and 'Output'. A checkmark icon is in the top right corner. The main area contains four settings, each with a label and an input field:

- Bypass and output tolerance (%) [xx]
- Voltage compensation (%) [xx]
- Overload threshold (%) [xx]
- Transformer voltage compensation (%) [xx]

At the bottom, there are navigation arrows, a page indicator '2/2', and 'OK' and 'Cancel' buttons.

Output Transformer Voltage Compensation

It is possible to compensate for an output transformer and balance the output voltage drop (0-3%).

1. Disconnect the load from the UPS.
2. Measure the voltage on the secondary side of the transformer at 0% load, and adjust the output voltage of the UPS manually via the **Voltage compensation (%)** setting to compensate for the voltage offset, if any.
3. Connect the load to the UPS.
4. Measure the voltage on the secondary side of the transformer again at X% load, and adjust the output voltage of the UPS via the **Transformer voltage compensation (%)** setting to compensate for the voltage drop in the transformer.

The transformer voltage compensation required at the specific load is used to make an automatic linear output voltage adjustment on the UPS according to the output load percentage.

Configure the Battery Solution

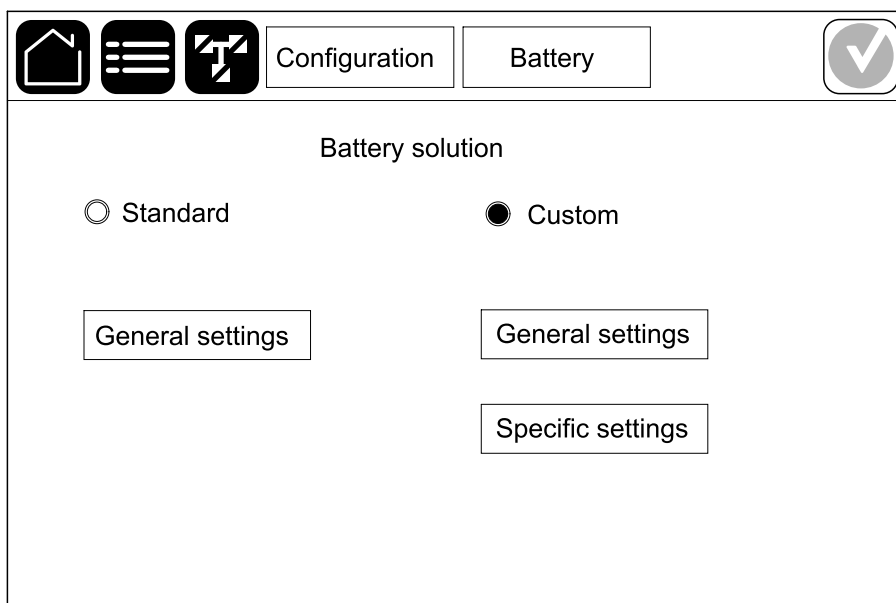
DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH

Battery settings must only be entered by qualified personnel knowledgeable of batteries, battery configuration, and the required precautions.

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

1. Tap **Configuration > Battery**.
2. Your battery solution type will be shown as:
 - **Standard** if you have a standard battery solution from Schneider Electric; The commercial reference for your specific battery configuration will be shown.
 - **Custom** if you have a custom battery solution.



The screenshot shows the 'Battery' configuration screen. At the top, there is a navigation bar with three icons: a home icon, a list icon, and a battery icon. To the right of these icons are two tabs: 'Configuration' and 'Battery'. A checkmark icon is visible in the top right corner. Below the navigation bar, the title 'Battery solution' is centered. There are two radio button options: 'Standard' (which is selected) and 'Custom'. Below these options, there are three buttons: 'General settings' under 'Standard', and 'General settings' and 'Specific settings' under 'Custom'.

3. Tap **General settings** and set up the following parameters:

NOTE: On each page, tap **OK** to save your settings and tap the arrow symbol to go to the next page.

Number of battery cabinets connected to the battery breaker	Showing number of battery cabinets connected to the battery breaker. Only configurable by Schneider Electric Service.
Low runtime warning (sec)	Set the threshold for remaining runtime in seconds that will activate the low runtime warning.
Charge capacity (%)	Set the maximum charge capacity in percentage of the UPS nominal power rating.
Temperature monitoring	Showing if temperature monitoring is enabled. Only configurable by Schneider Electric Service.
Temperature sensor # 1/Temperature sensor # 2	Showing presence of temperature sensors. Only configurable by Schneider Electric Service.
Minimum threshold (°C)	Set the minimum acceptable battery temperature in Celsius or Fahrenheit. Temperatures below this threshold will activate an alarm.
Maximum threshold (°C)	Set the maximum acceptable battery temperature in Celsius or Fahrenheit. Temperatures above this threshold will activate an alarm.
Charger autoboot mode	Showing charger autoboot mode. This function will automatically transfer the charger to boost charger mode after the system has been in battery operation. Only configurable by Schneider Electric Service.
Cyclic charge mode	Showing cyclic charge mode. During a cyclic charge, the system cycles between periods of float charging and resting. This function will continuously maintain the battery charge status without stressing the batteries by conducting a permanent float charging. Only configurable by Schneider Electric Service.
Test interval every	Set how often the UPS should run a battery test.
Test day of the week	Set on which day of the week the battery test should run.
Test start time (hh:mm)	Set which time of day the battery test should run.
Manual battery self-test mode	Set which battery test type should run: By capacity or By voltage/time .
Time limit (minutes)/Voltage limit (V)	If you chose battery test type By voltage/time , set the time limit or set the voltage limit.

4. **Only for custom battery solution:** Tap **Specific settings** to view the following settings:

NOTE: These settings are only configurable by Schneider Electric Service.

Battery type	Showing the configured battery type.
Battery midpoint connected	Showing if battery midpoint is connected.
Disable temperature monitoring	Showing if temperature monitoring is disabled.
Allow boost charge	Showing if boost charge is allowed. Boost charging makes it possible to conduct a fast charging in order to quickly restore a discharged battery.
Allow battery deep discharge	Showing if battery deep discharge is allowed. The deep discharge function allows to discharge the batteries to an even lower voltage level than the normally recommended value when in battery operation. Note that this may damage the batteries.
Enable battery automatic disconnect	Showing if battery automatic disconnect is enabled. When the UPS output is off and no ability to charge the batteries is available, this function will trip the battery breakers to avoid battery deep discharge after a period of: - Two weeks. 10 minutes with the battery cell voltage below the low battery shutdown level.
Capacity per battery block (Ah)	Showing the battery capacity per battery block in ampere hours for the battery bank connected to each battery breaker.
Number of parallel battery strings	Showing the number of battery strings connected in parallel for the battery bank connected to each battery breaker.
Number of battery blocks per string	Showing the number of battery blocks per battery string.
Number of battery cells per block	Showing the number of battery cells per battery block.
DC voltage per battery cell (V)	Showing the float voltage. Float charging is the basic charging function available on all types of batteries and automatically initiated by the charger.
	Showing the boost voltage. Boost charging makes it possible to conduct a fast charging in order to quickly restore a discharged battery.
	Showing the equalization voltage. Equalization charging is used when equalizing skewed open cell batteries. This is the charging method available using the highest possible charging voltage level. When equalization charging is conducted, water is evaporated from the open cell batteries which must be replaced when charging is completed.
Charge duration (sec)	Showing the duration in seconds of the charge for Boost charging and Equalization charging.
Nominal battery cell voltage (V)	Showing the nominal voltage level per battery cell.
DC shutdown voltage per battery cell (V)	Showing the voltage level per battery cell for when the battery must be shut down.

Nominal temperature (°C)/Nominal temperature (°F)	Showing the nominal temperature.
Charge current rate	Showing the charge current rate.

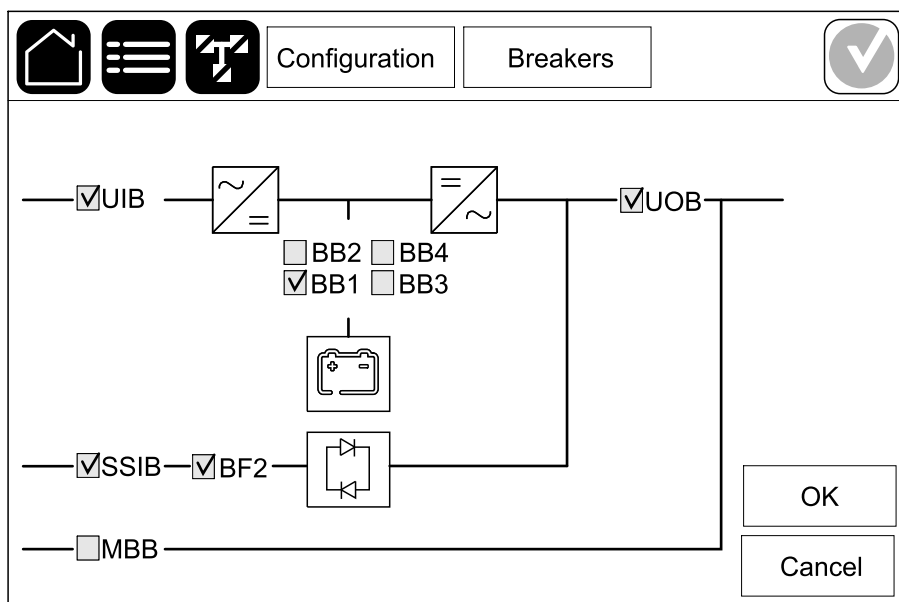
Configure High Efficiency Mode

1. Tap **Configuration > High efficiency**.
2. Select the **High efficiency mode: Disable, ECO mode, eConversion, or Disabled by system**.
NOTE: Contact Schneider Electric to enable **ECO mode**.
3. Select **eConversion harmonics compensator**, if relevant.
4. Select the **High efficiency schedule: Active on schedule, Always active, or Never active**.
 - a. For **Active on schedule**, tap **Schedule** and set up and enable the schedule(s) as needed.

Configure the Breakers

NOTE: This configuration is mandatory for correct UPS operation.

1. Tap **Configuration > Breakers**.
2. Tap the different breakers in the mimic diagram to configure which breakers are present in the UPS system. Square with a ✓ means that the breaker is present, empty square means that the breaker is not present. BF2 presence can only be configured by Schneider Electric Service.



NOTE: The UPS can monitor up to four battery breakers in a battery solution. The mimic diagram only shows one battery breaker BB even if more battery breakers have been connected and configured for monitoring. If one or more of the monitored battery breakers are in the closed position, the BB on the mimic diagram will show as closed. If all of the monitored battery breakers are in the open position, the BB on the mimic diagram will show as open.

3. Tap **OK** to save your settings.

Configure the Input Contacts

1. Tap **Configuration > Contacts and relays** and select the input contact that you want to configure.
2. Select a function from the drop-down list for the selected input contact:

None: No action assigned to this input contact.	Genset is supplying the UPS: Input to indicate that the UPS is being supplied by a generator. You must also select the reduction in battery charge current while the UPS is being supplied by a generator. Set Battery charge power during genset supply to 0% (no battery charging), 10% , 25% , 50% , 75% , or 100% (full battery charging). Battery charge power during genset supply is only selectable for this function.
Ground fault: Input to indicate that a ground fault is present.	Battery room ventilation is inoperable: Input to indicate that the battery room ventilation is inoperable. When the input is active, the battery charger will turn OFF.
User-defined 1: General purpose input.	External battery monitoring detected a fault: Input to indicate that the external battery monitoring has detected a fault. When the input is active, the UPS will post an alarm (no other action).
User-defined 2: General purpose input.	High efficiency mode is disabled: If this input is activated, the UPS is prevented from entering high efficiency mode (ECO mode and eConversion mode) or will exit any active high efficiency mode.
External energy storage monitoring detected a minor fault: Input to indicate that the external energy storage monitoring has detected a minor fault.	External signal turns charger off: If this input is activated, the charger will turn OFF on a signal from external equipment, e.g. on a signal from the external energy storage.
External energy storage monitoring detected a major fault: Input to indicate that the external energy storage monitoring has detected a major fault.	Transformer temperature is too high: Input to indicate that there is a high temperature alarm for the transformer.

3. Tap **OK** to save your settings.

Configure the Output Relays

1. Tap **Configuration > Contacts and relays** and select the output relay that you want to configure.
2. Set the **Delay (sec)**.
3. Select to enable **Energized check mode** (disabled as default).

When **Energized check mode** is enabled, the output relay is activated, and will deactivate when the events assigned to the output relay occurs (normally activated).

When **Energized check mode** is disabled, the output relay is deactivated, and will activate when the events assigned to the output relay occurs (normally deactivated).

Energized check mode must be individually enabled for each output relay and makes it possible to detect if the output relay is inoperable:

- If the power supply to the output relays is lost, the events assigned to all the output relays will be indicated as present.
- If a single output relay has become inoperable, the events assigned to the single output relay will be indicated as present.

4. Select the event(s) you want to assign to the output relay. On each page, tap **OK** to save your settings and tap the arrow symbol to go to the next page.

The screenshot shows the 'Contacts and relays' configuration screen for 'Output relay 1'. At the top, there are navigation icons (home, list, back, forward) and two tabs: 'Configuration' and 'Contacts and relays'. The 'Contacts and relays' tab is active. Below the tabs, the title 'Output relay 1' is displayed. Underneath, there are two settings: 'Delay (sec)' with a value of '11' in a text box, and 'Energized check mode' which is checked with a checkbox. Below these settings, there is a list of three events, each with a checked checkbox: 'UPS common alarm', 'UPS informational alarm', and 'UPS warning alarm'. At the bottom of the screen, there are navigation arrows, a page indicator '1/5', and two buttons: 'OK' and 'Cancel'.

NOTE: It is possible to assign several functions to the same output relay.

UPS common alarm: The output is triggered when any alarm is present for the UPS.	UPS in maintenance mode: The output is triggered when the unit output breaker UOB has been opened which transfers the UPS to maintenance mode. The UPS is not supplying the load.
UPS informational alarm: The output is triggered when an information alarm is present for the UPS.	External fault: The output is triggered the UPS detects an external fault.
UPS warning alarm: The output is triggered when a warning alarm is present for the UPS.	Fan inoperable: The output is triggered when one or more fans are inoperable.
UPS critical alarm: The output is triggered when a critical alarm is present for the UPS.	Battery voltage low: The output is triggered when the battery voltage is below the threshold.
System common alarm: The output is triggered when any alarm is present for the system.	Battery is not working correctly: The output is triggered when the batteries are not working correctly.
System informational alarm: The output is triggered when an information alarm is present for the system.	Battery is disconnected: The output is triggered when the batteries have been disconnected or the battery breaker(s) are open.
System warning alarm: The output is triggered when a warning alarm is present for the system.	Inverter overload: The output is triggered when there is an overload condition, while the UPS is in inverter operation.
System critical alarm: The output is triggered when a critical alarm is present for the system.	Output overload: The output is triggered when there is an overload condition, while the UPS is in inverter operation or bypass operation.
UPS in normal operation: The output is triggered when the UPS is in normal operation.	Input out of tolerance: The output is triggered when the input is out of tolerance.
UPS in battery operation: The output is triggered when the UPS is in battery operation.	Bypass out of tolerance: The output is triggered when the bypass is out of tolerance.
UPS in static bypass operation: The output is triggered when the UPS is in forced static bypass operation or requested static bypass operation.	EPO active: The output is triggered when the EPO has been activated.
UPS in maintenance bypass operation: The output is triggered when the UPS is in internal maintenance bypass operation or external maintenance bypass operation.	

5. Tap **OK** to save your settings.

Configure the Network

The network can be configured for the integrated and the optional network management card (NMC).

1. Tap **Configuration > Network > IPv4** and select **Integrated NMC** to configure the integrated network management card or **Optional NMC** to configure the optional network management card.
 - a. Set the **Address mode** to **Manual**, **BOOTP**, or **DHCP**.
 - b. You can also disable the network by selecting **Disable integrated NMC IPv4/Disable optional NMC IPv4**.
 - c. Tap **OK** to save your settings.



Configuration

Network



Disable integrated NMC IPv4 ☒

Address mode ☒ Manual ☐ DHCP ☐ BOOTP

System IP

Subnet mask

Default gateway

OK

Cancel

2. Tap **Configuration > Network > IPv6** and select **Integrated NMC** to configure the integrated network management card or **Optional NMC** to configure the optional network management card.
 - a. Set the **DHCPv6 mode** to **Address and other information**, **Non-address information only**, or **IPv6 never**.
 - b. Select **Auto configuration** or **Manual**.
 - c. You can also disable the network by selecting **Disable integrated NMC IPv6/Disable optional NMC IPv6**.
 - d. Tap **OK** to save your settings.



Configuration

Network



Disable integrated NMC IPv6 ☒

DHCPv6 mode

☒ Address and other information

☒ Auto configuration

☐ Non-address information only

☒ Manual

☐ IPv6 never

System IP

Default gateway

Current address

OK

Cancel

Configure the Modbus

The Modbus can be configured for the integrated and the optional network management card (NMC).

1. Tap **Configuration > Modbus** and select **Integrated NMC** to configure the integrated network management card or **Optional NMC** to configure the optional network management card.
2. Configure the settings on the first page:
 - a. Enable or disable **Serial Modbus**.
 - b. Set the **Parity** to **None**, **Even**, or **Odd**.
 - c. Set the **Stop bit** to 1 or 2.
 - d. Set the **Baud rate** to **2400**, **9600**, **19200**, or **38400**.
 - e. Set the **Target unique ID** to a number between 1 and 247.

NOTE: Every device on the bus must have exactly the same settings except the device address **Target unique ID**, which must be unique for every device. No two devices on the bus can have the same address.

Configuration Modbus

Serial Modbus

Disable ☒

Parity ☒ None ☐ Even ☐ Odd

Stop bit ☒ 1 ☐ 2

Baud rate ☒ 2400 ☐ 9600 ☐ 19200 ☐ 38400

Target unique ID [1 to 247]

< 1/2 > OK Cancel

- f. Tap **OK** to save your settings and tap the arrow symbol to go to the next page.

3. Configure the settings on the second page:

- a. Enable or disable **TCP Modbus**.
- b. Select **Port 502** or **Port [5000 to 32768]**.

Configuration Modbus

TCP Modbus

Disable ☒

Port 502 ☐

Port [5000 to 32768] ☐

2/2 OK Cancel

- c. Tap **OK** to save your settings.

Set the UPS Name

1. Tap **Configuration > General > UPS name**.
2. Set the UPS name.
3. Tap **OK** to save your settings.

Set the Date and Time

1. Tap **Configuration > General > Date and time**.
2. Set the **Year**, **Month**, **Day**, **Hour**, **Minute**, and **Second**.
3. Tap **OK** to save your settings.

Configure the Display Preferences

1. Tap **Configuration > General > Display**.
 - a. Set the **Alarm sound** to **Enable** or **Disable**. This will enable/mute all alarm sounds.
 - b. Set the temperature unit to **Celsius** or **Fahrenheit**.
 - c. Set the **Screen saver on after** to **5 min**, **15 min**, **30 min**, or **Never**. The screen saver will turn on after the set time where no activity has been performed on the display.
 - d. Set the **Display brightness** by tapping the - or +.
 - e. Set the **Touch screen sound** to **Enable** or **Disable**. This will enable/mute all display sounds (excluding alarm sounds).
 - f. Calibrate the touch functionality of the display by tapping the calibration button twice.

Configure the Air Filter Reminder

When the air filter has been replaced, reset the air filter reminder.

1. Tap **Configuration > Reminder**.

- Select **Enable reminder** to get reminders about replacing the air filter.
- Select the reminder interval: **1 month**, **3 months**, **6 months**, or **1 year** based on the installation room environment.

Under **Remaining time (weeks)** you can see how much service life the air filter in use has left.

c. Tap **Reset** to reset the air filter service life counter.

The screenshot shows a mobile application interface for configuring the air filter reminder. At the top, there is a navigation bar with three icons (home, menu, and a square with an arrow) and two buttons labeled 'Configuration' and 'Reminder'. A checkmark icon is in the top right corner. Below the navigation bar, the title 'Air filter check' is centered. Underneath, 'Enable reminder' is checked with a checkbox. Below that, 'Duration before first reminder' is shown with four radio button options: '1 month' (selected), '3 months', '6 months', and '1 year'. Below the radio buttons, 'Remaining time (weeks)' is displayed as '5'. At the bottom left, there is a label 'Restart air filter counter' and a 'Reset' button. At the bottom right, there are 'OK' and 'Cancel' buttons.

2. Tap **OK** to save your settings.

Save the UPS Settings on a USB Device

NOTE: The UPS can only accept settings that were originally saved from the same UPS. Settings saved from other UPSs cannot be reused.

- Tap **Configuration > Save/restore**.
- Open the front door.
- Insert your USB device in USB port 1 in the system level controller.
- Tap **Save** to save the present UPS settings on the USB device.

NOTE: Do not remove the USB device until the save process has finished.

Restore the UPS Settings from a USB Device

NOTE: The UPS can only accept settings that were originally saved from the same UPS. Settings saved from other UPSs cannot be reused. Settings can only be restored when the UPS is in maintenance bypass operation or off mode.

NOTE: Do not open the unit input breaker UIB at the end of the shutdown sequence as this will turn off the power to the display.

1. Tap **Control > Guided sequences > Shut down UPS system** or **Control > Guided sequences > Shut down a UPS in a parallel system**, and follow the steps which appear on the display.
2. Select **Configuration > Save/restore**.
3. Open the front door.
4. Insert your USB device in one of the USB ports on the UPS.
5. Tap **Restore** to implement saved UPS settings from the USB device. Wait for the system level controller to reboot automatically.

NOTE: Do not remove the USB device until the restore process has finished.

6. Select **Control > Guided sequences > Start up UPS system** or **Control > Guided sequences > Start up a UPS in a parallel system**, and follow the steps which appear on the display.

Change the Password

1. Tap **Logout**.
2. Tap **Configuration**.
3. Enter your password.

NOTE: The default administrator username and password is **admin**.

4. Tap **Change password** and enter the new password.

Operation Procedures

Transfer the UPS from Normal Operation to Static Bypass Operation

1. Select **Control > Operation mode > Transfer to bypass operation**.
2. Tap **OK** on the confirmation screen.

Transfer the UPS from Static Bypass Operation to Normal Operation

1. Select **Control > Operation mode > Transfer to normal operation**.
2. Tap **OK** on the confirmation screen.

Turn the Inverter OFF

IMPORTANT: This will turn off the supply to the load.

1. Select **Control > Inverter > Inverter off**.
2. Tap **OK** on the confirmation screen.

Turn the Inverter ON

1. Select **Control > Inverter > Inverter on**.
2. Tap **OK** on the confirmation screen.

Set the Charger Mode

1. Tap **Control > Charger**.
2. Tap **Float, Boost, or Equalization**.
3. Tap **OK** on the confirmation screen.

Shut Down the UPS System into Maintenance Bypass Operation

NOTE: Only operate a breaker when the associated breaker indicator lamp is illuminated.

1. Tap **Control > Guided sequences > Shut down UPS system** or **Control > Guided sequences > Shut down a UPS in a parallel system**, and follow the steps which appear on the display.

2. **Generic shutdown procedure for a UPS system with maintenance bypass breaker MBB:**

NOTE: The following are generic shutdown procedures. Always follow the steps of the **Guided sequences** which are specific to your system

- a. Select **Control > Operation mode > Transfer to bypass operation**.
- b. Close the maintenance bypass breaker MBB.
- c. Open the system isolation breaker SIB (if present).
- d. Open the unit output breaker UOB.
- e. Select **Control > Inverter > Inverter off** or press the inverter OFF button (hold for five seconds) on the controller section.
- f. Open the static switch input breaker SSIB (if present).
- g. Open the battery breaker(s).
- h. Open the unit input breaker UIB.
- i. Repeat step d to h for other UPSs in a parallel system.

Shut Down into Maintenance Bypass Operation for Single UPS System with Kirk Key Installed

NOTE: Only operate a breaker when the associated breaker indicator lamp is illuminated.

1. Select **Control > Operation mode > Transfer to bypass operation**.
2. Hold down the SKRU push-button, turn and remove key A from the SKRU interlock.
3. Insert key A in the interlock for the maintenance bypass breaker MBB and turn the key.
4. Close the maintenance bypass breaker MBB.
5. Open the unit output breaker UOB.
6. Turn and remove key B from the interlock for the unit output breaker UOB.
7. Insert key B in the SKRU interlock and turn the key to the locked position.
8. Select **Control > Inverter > Inverter off**.
9. Open the static switch input breaker SSIB (if present).
10. Open the battery breaker(s).
11. Open the unit input breaker UIB.

Start Up the UPS System from Maintenance Bypass Operation

NOTE: Only operate a breaker when the associated breaker indicator lamp is illuminated.

1. If open, close the unit input breaker UIB.
The display turns on. The rebooting sequence lasts approximately 3 minutes.
2. Select **Control > Guided sequences > Start up UPS system** or **Control > Guided sequences > Start up a UPS in a parallel system**, and follow the steps which appear on the display.
3. **Generic start-up procedure for a UPS system with maintenance bypass breaker MBB:**

NOTE: The following are generic start-up procedures. Always follow the steps of the **Guided sequences** which are specific to your system

- a. If open, close the unit input breaker UIB.
- b. Close the static switch input breaker SSIB (if present).
- c. Close the bypass backfeed breaker BF2 (if present).
- d. Close the battery breaker(s).
- e. Select **Control > Operation mode > Transfer to bypass operation** if possible.
- f. Close the unit output breaker UOB.
- g. Repeat step a to e for other UPSs in a parallel system.
- h. Close the system isolation breaker SIB (if present).
- i. Open the maintenance bypass breaker MBB.
- j. Select **Control > Inverter > Inverter on** or press the inverter ON button (hold for five seconds) on the system level controller.

Start Up from Maintenance Bypass Operation for Single UPS System with Kirk Key Installed

NOTE: Only operate a breaker when the associated breaker indicator lamp is illuminated.

1. Close the unit input breaker UIB.
The display turns on. The rebooting sequence lasts approximately three minutes.
2. Close the static switch input breaker SSIB (if present).
3. Close the bypass backfeed breaker BF2 (if present).
4. Close the battery breakers.
5. Select **Control > Operation mode > Transfer to bypass operation**.
6. Hold down the SKRU push-button, turn and remove key B from the SKRU interlock.
7. Insert key B in the interlock for the unit output breaker UOB and turn the key.
8. Close the unit output breaker UOB.
9. Open the maintenance bypass breaker MBB.
10. Turn and remove key A from the interlock for the maintenance bypass breaker MBB.
11. Insert key A in the SKRU interlock and turn the key to the locked position.
12. Select **Control > Inverter > Inverter on**.

Access a Configured Network Management Interface

The network management card web interface is compatible with:
Windows® operating systems:

- Microsoft® Internet Explorer® (IE) 10.x or higher, with compatibility view turned on.
- The latest release of Microsoft Edge

All operating systems:

- The latest releases of Mozilla® Firefox® or Google® Chrome®

The below procedure describes how to access the network management interface from a web interface. If enabled, it is also possible to use the following interfaces:

- SSH
- SNMP
- FTP
- SFTP

NOTE: Please visit www.schneider-electric.com to view the Security Deployment Guidelines and Security Handbook for the product.

The network management card supports NTP connection for synchronization of time. Ensure that only one network management interface in the entire UPS system (single or parallel) is set to synchronize time.

You can use either of the following protocols when you use the web interface:

- The HTTP protocol (disabled by default), which provides authentication by user name and Pin but no encryption.
- The HTTPS protocol (enabled by default), which provides extra security through Secure Socket Layer (SSL); encrypts user names, Pin, and data being transmitted; and authenticates network management cards by means of digital certificates.

See [Enable HTTP/HTTPS Protocols](#), page 39.

By default, SNMP protocols are disabled on the network management card to avoid cybersecurity risks. SNMP protocols must be enabled to use the monitoring functions of the network management card, or to connect to EcoStruxure IT Gateway or StruxureWare Data Center Expert. You can enable and use either of these SNMP protocols:

- SNMPv1, which provides minimal security. If using this protocol, Schneider Electric recommends customizing the access control parameters to enhance security.
- SNMPv3, which provides extra security through both encryption and authentication. Schneider Electric recommends using this protocol for better security and customizing the access control parameters.

See [Enable SNMP Protocols](#), page 40.

Enable HTTP/HTTPS Protocols

1. Access the network management interface by its IP address (or its DNS name, if a DNS name is configured).
2. Enter the user name and password. The default user name and password is **apc**. You will be prompted to change this password on the first login.
3. To enable or disable the HTTP or HTTPS protocol, go to **Configuration > Network > Web > Access**, select the protocol, set the parameters, and click on **Apply**.

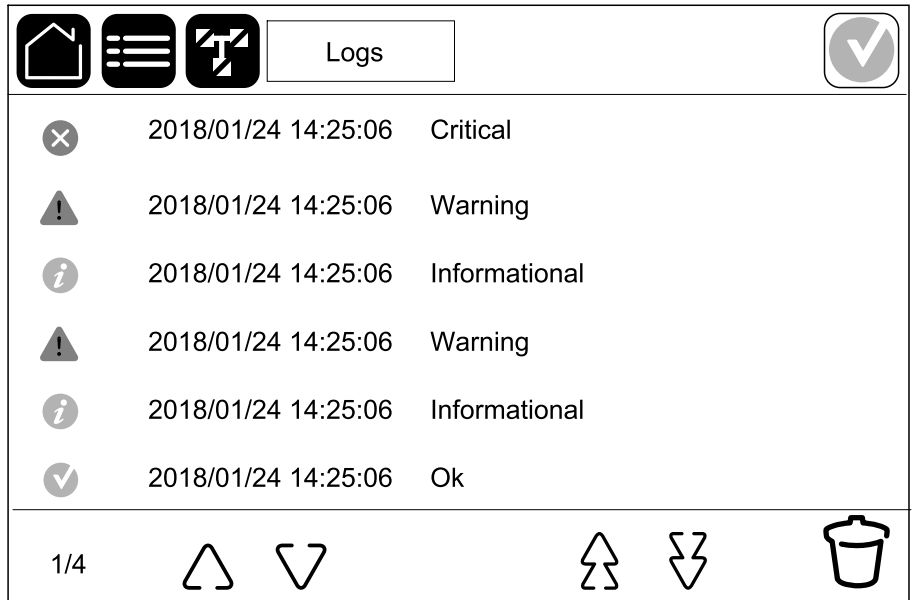
Enable SNMP Protocols

1. Access the network management interface by its IP address (or its DNS name, if a DNS name is configured).
2. Enter the user name and password. The default user name and password is **apc**. You will be prompted to change this password on the first login.
3. To enable SNMPv1 protocol:
 - a. Go to **Configuration > Network > SNMPv1 > Access**, select **Enable** and click on **Apply**.
 - b. Go to **Configuration > Network > SNMPv1 > Access Control** and set up the parameters.
4. To enable SNMPv3 protocol:
 - a. Go to **Configuration > Network > SNMPv3 > Access**, select **Enable** and click on **Apply**.
 - b. Go to **Configuration > Network > SNMPv3 > Access Control** and set up the parameters.
 - c. Go to **Configuration > Network > SNMPv3 > User Profiles** and set up the parameters.

NOTE: The SNMPv1 or SNMPv3 settings must match your settings on the EcoStruxure IT Gateway or StruxureWare Data Center Expert for the network management card 4 to communicate correctly with EcoStruxure IT Gateway or StruxureWare Data Center Expert.

View the Logs

1. Tap **Logs**. The log shows the latest 100 events with the newest events at the top of the list.
 - a. Tap the arrow buttons to go to the next or previous page.
 - b. Tap the double arrow buttons to go the first or last page.
 - c. Tap the recycle bin button to delete all events stored in the log.



View the System Status Information

1. Tap **Status**.

- a. Tap **Input, Output, Bypass, Battery, Temperature, Power modules**, or **Parallel** to see the status.

Input

Voltage ph-ph (phase-to-phase)	The present phase-to-phase input voltage.
Current	The present input current from the AC utility power source per phase in amperes (A).
Frequency	The present input frequency in hertz (Hz).
Voltage ph-N (phase-to-neutral) ⁷	The present phase-to-neutral input voltage in volts (V).
Total power	The present total active power input (for all three phases) in kW.
Power	The present active power (or real power) input for each phase in kilowatts (kW). Active power is the portion of power flow that, averaged over a complete cycle of the AC waveform, results in net transfer of energy in one direction.
Peak current	The present input peak current in amperes (A).
Power factor	The present ratio of the active power to apparent power.
Max. RMS current	The present maximum RMS current for each phase in amperes (A).
Energy	The total energy consumption since the time of installation.

Output

Voltage ph-ph (phase-to-phase)	The phase-to-phase output voltage at the inverter in volts (V).
Current	The present output current for each phase in amperes (A).
Frequency	The present output frequency in hertz (Hz).
Voltage ph-N (phase-to-neutral) ⁷	The phase-to-neutral output voltage at the inverter in volts (V).
Load	The percentage of the UPS capacity presently used across all phases. The load percentage for the highest phase load is displayed.
Neutral current ⁷	The present output neutral current in amperes (A).
Total power	The present active total output power (for all three phases) in kilowatts (kW).
Power	The present active power (or real power) output for each phase in kilowatts (kW). Active power is the portion of power flow that, averaged over a complete cycle of the AC waveform, results in net transfer of energy in one direction.
Peak current	The output peak current in amperes (A).
Power factor	The present output power factor for each phase. Power factor is the ratio of active power to apparent power.
Max. RMS current	The present maximum RMS current for each phase in amperes (A).
Crest factor	The present output crest factor for each phase. The output crest factor is the ratio of the peak value of the output current to the RMS (root mean square) value.
Energy	The total energy supplied since the time of installation.

⁷. Only applicable in systems with neutral connection.

Bypass

Voltage ph-ph (phase-to-phase) ⁸	The present phase-to-phase bypass voltage (V).
Current	The present bypass current for each phase, in amperes (A).
Frequency	The present bypass frequency in hertz (Hz).
Voltage ph-N (phase-to-neutral)	The present phase-to-neutral bypass voltage (V).
Total power	The present total active bypass power (for all three phases) in kilowatts (kW).
Power	The present active bypass power for each phase in kilowatts (kW). Active power is the time average of the instantaneous product of voltage and current.
Peak current	The bypass peak current in amperes (A).
Power factor	The present bypass power factor for each phase. Power factor is the ratio of active power to apparent power.
Max. RMS current	The present maximum RMS current for each phase in amperes (A).

Battery

Measurements	The present DC power being drawn from the battery, in kilowatts (kW).
	The present battery voltage (VDC).
	The present battery current in amperes (A). A positive current indicates that the battery is charging; a negative current indicates that the battery is discharging.
	Battery temperature from the connected temperature sensors in Celsius or Fahrenheit.
Battery	The amount of time before the batteries reach the low-voltage shutdown level. Also shows charge level of the battery as a percentage of full charge capacity.
	The present battery charge (Ah).
Configuration	Shows battery type.
Status	The general condition of the charger.
Mode	The operation mode of the charger (Off, Float, Boost, Equalization, Cyclic, Test).
Charging capacity	The maximum charge capacity in percentage of the UPS nominal power rating.

Temperature

Ambient temperature	Ambient temperature in Celsius or Fahrenheit.
Battery temperature	Battery temperature in Celsius or Fahrenheit from the connected battery temperature sensors.
Temperature	Ambient temperature in Celsius or Fahrenheit from the optional connected temperature sensors (AP9335T and AP9335TH). Naming to be set up via the network management interface.
Humidity	Humidity in percentage from the optional connected humidity sensors (AP9335TH). Naming to be set up via the network management interface.

8. Only applicable in systems with neutral connection.

Power modules

The view will show presence (present/not present) and status (OK, warning, critical) for each power module.

Parallel

Input current	The present input current from the input source per phase in amperes (A).
Bypass current	The present bypass current from the bypass source per phase in amperes (A).
Total output power	The total output power of the parallel UPS system showing the total load percentage and the total output power in kW and kVA for the parallel system.
Output current	The present output current for each phase in amperes (A).
Number of redundant UPSs	The number of redundant UPSs present.
Redundancy setting	The configured redundancy setting.

Tests

The UPS system can perform the following tests to ensure correct performance of the system:

- **Buzzer**
- **Status LEDs**
- **Breaker lamp**
- **Runtime calibration**
- **Battery**

Tap the menu button on the home screen and select **Maintenance** and **Buzzer**, or **Status LEDs**, or **Breaker lamp** to start the test of these functions. See [Start a Runtime Calibration Test](#), page 45 and [Start a Battery Test](#), page 46 for details and requirements for these tests.

Start a Runtime Calibration Test

This feature is used for calibrating the estimated remaining battery runtime value. In this test, the UPS transfers to battery operation and the batteries are discharged to the low DC warning level. Based on the elapsed time and information about the load, the battery capacity can be calculated and the estimated runtime calibrated.

Schneider Electric recommends performing a runtime calibration test at start-up, when batteries are replaced, or when changes are made to the battery solution.

NOTICE

RISK OF EQUIPMENT DAMAGE

- During a runtime calibration test, the batteries are reduced to a very low capacity and are therefore not capable of supporting the load in case of an input power failure.
- Batteries will be discharged to the low DC warning level and this will result in a short battery runtime after the calibration until the batteries are fully recharged.
- Repeated battery testing or calibration can affect the service life of the battery.

Failure to follow these instructions can result in equipment damage.

Prerequisites:

- No critical alarms present.
- Batteries must be 100% charged.
- The load percentage must be at least 10% and must not change more than 20% during the test. Example: If the load percentage is 30% at the start of the test, the test will abort if the load percentage drops below 24% or rises above 36% during the test.
- The bypass supply must be available.
- The operation mode must be normal operation, eConversion, or ECO mode.
- The system operation mode must be inverter, eConversion, or ECO mode.

1. Tap the menu button on the home screen.
2. Select **Maintenance > Runtime calibration > Start calibration**.
3. Tap **OK** on the confirmation screen.

Stop a Runtime Calibration Test

1. Tap the menu button on the home screen.
2. Select **Maintenance > Runtime calibration > Stop calibration**.
3. Tap **OK** on the confirmation screen.

Start a Battery Test

Prerequisites:

- The battery breakers are closed.
- No critical alarms present.
- The bypass supply must be available.
- Static bypass operation must be available.
- The batteries must be more than 50% charged.
- The runtime available must be more than 4 minutes.
- The operation mode must be normal operation, eConversion, or ECO mode.
- The system operation mode must be inverter, eConversion, or ECO mode.

This feature performs a number of tests on the batteries, such as fuse-blown check and weak battery detection. The test will discharge the batteries and use about 10% of the total runtime capacity. Example: If you have 10 minutes of runtime, the test will run for 1 minute. The battery test can be scheduled to run automatically in different time intervals (from weekly and up to once a year).

1. Select **Maintenance > Battery > Start test**.
2. Tap **OK** on the confirmation screen.

Stop a Battery Test

1. Tap the menu button on the home screen.
2. Select **Maintenance > Battery > Stop test**.
3. Tap **OK** on the confirmation screen.

Maintenance

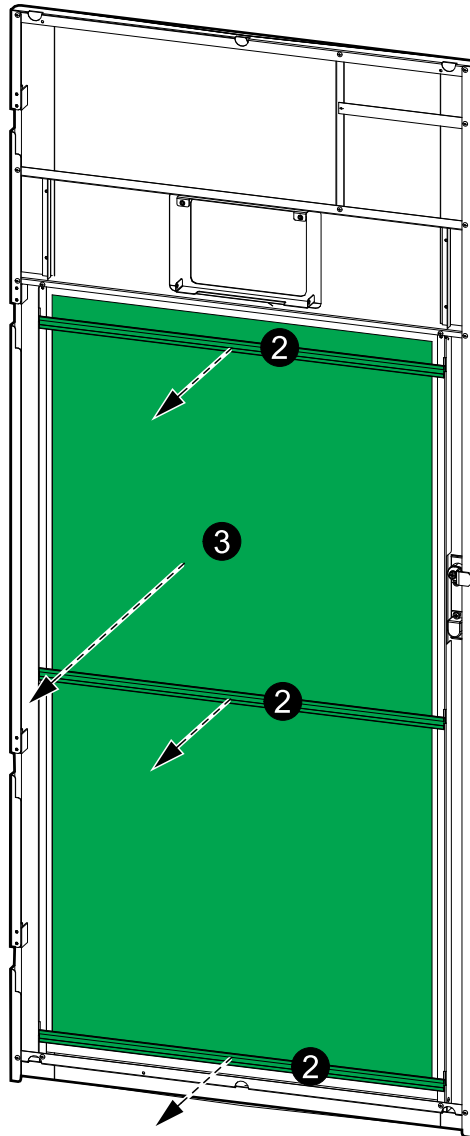
Connect Temperature/Humidity Sensor (Option)

Temperature/humidity sensor (AP9335T or AP9335TH) can be connected to the network management card.

1. Connect the temperature/humidity sensor to the universal I/O port of the network management card.
2. Set up the temperature/humidity sensor via the network management interface, see [Access a Configured Network Management Interface](#), page 39.
3. To see the temperature/humidity measurements, tap **Status > Temperature**.

Replace the Air Filter (GVLOPT001)

1. Open the front door.
2. Remove the three horizontal brackets.
3. Remove the old air filter and install the new air filter.



4. Reinstall the three horizontal brackets.
5. Close the front door.
6. Reset the air filter counter, see [Configure the Air Filter Reminder](#), page 32.

Live Swap: Add, Remove, or Replace a Power Module

NOTE: This UPS has been designed and evaluated for power module insertion and removal in any operation mode: **Live Swap**. This page specifies manufacturer's instructions for how to perform **Live Swap**.

NOTE: Incident energy is $<1.2 \text{ cal/cm}^2$ when installed and first startup commissioned in accordance with product instructions. Incident energy is measured 200 mm (8 in) from cabinet front.

DISCLAIMER:

- Electrical equipment should be installed, operated, serviced, maintained, replaced, or have similar work carried out on it only by suitably qualified, trained, experienced, and competent personnel who hold any necessary authorizations (e.g. licenses, permits or certifications) to perform such work. All work must be carried out in a way that does not give rise to danger and using appropriate personal protective equipment (PPE).
- User must ensure compliance with the manufacturer's instructions and user manual and with all applicable laws, regulations, standards, and guidance when using this equipment and carrying out work or permitting work to be carried out on or near electrical equipment.
- Neither Schneider Electric nor any of its affiliates shall be liable for any claims, costs, losses, damages, death, or injuries arising out of the improper use of this equipment or any failure to comply with any of the above requirements.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Verify that the UPS has the **Live Swap** label present.
- If no **Live Swap** label is present on the UPS, then the UPS must be transferred to maintenance bypass operation or turned off before a power module can be inserted or removed.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Insertion or removal of power modules must only be performed by qualified personnel knowledgeable of electrical work and the required precautions. Keep unqualified personnel away.
- This procedure requires opening the front door. All other doors and covers must remain closed and secured during this procedure.
- Verify that the UPS is secured against movement before performing this procedure.
- If evidence of poor maintenance or poor installation is observed, do not proceed with this procedure.
- Do not install power modules which have been accidentally dropped, broken, flooded, contaminated, infested, or damaged in any way.
- Do not install power modules which are of unknown operational state.
- Keep a minimum distance of 200 mm (8 in) from the cabinet front while the system is energized.
- Do not use any tools inside the empty power module slot.
- Do not reach into the empty power module slot.

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

⚠ 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.

⚠ 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.

NOTICE**RISK OF INSTALLATION OVERLOAD**

Check and verify that the installation is correctly sized for the increase in power rating before installing more power modules in the UPS. Incorrect sizing of the installation can result in an installation overload. See the installation manual for requirements for upstream and downstream protection, cable sizes, etc.

Failure to follow these instructions can result in equipment damage.

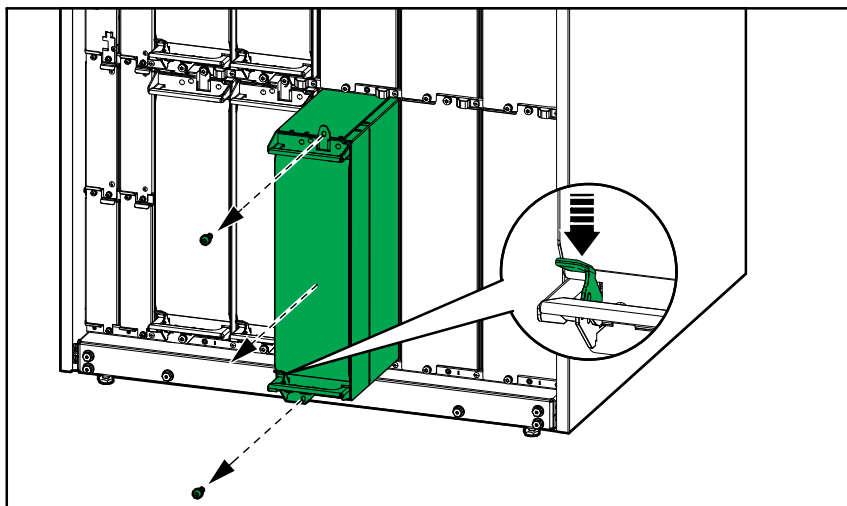
NOTICE**RISK OF LOAD DROP**

Check and verify that the remaining power modules can support the load before removing a power module from the UPS.

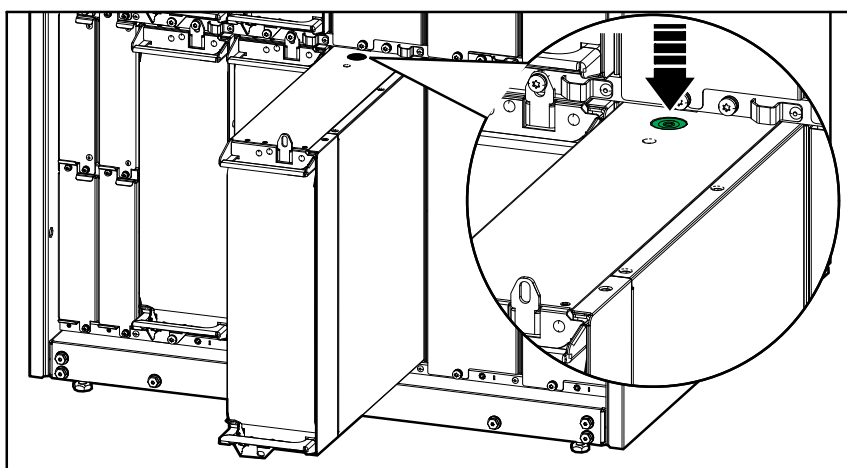
Failure to follow these instructions can result in equipment damage.

1. To remove an installed power module:

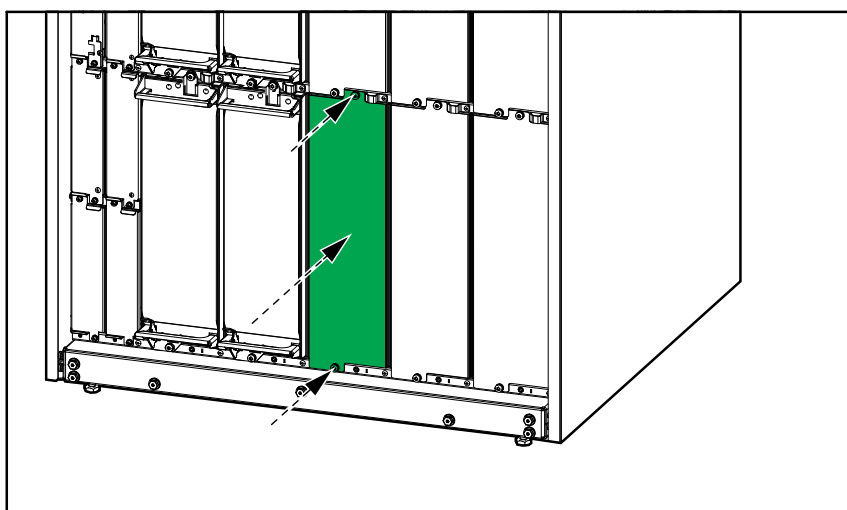
- a. Remove the screws in the top and bottom of the power module and push the unlock switch.



- 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.

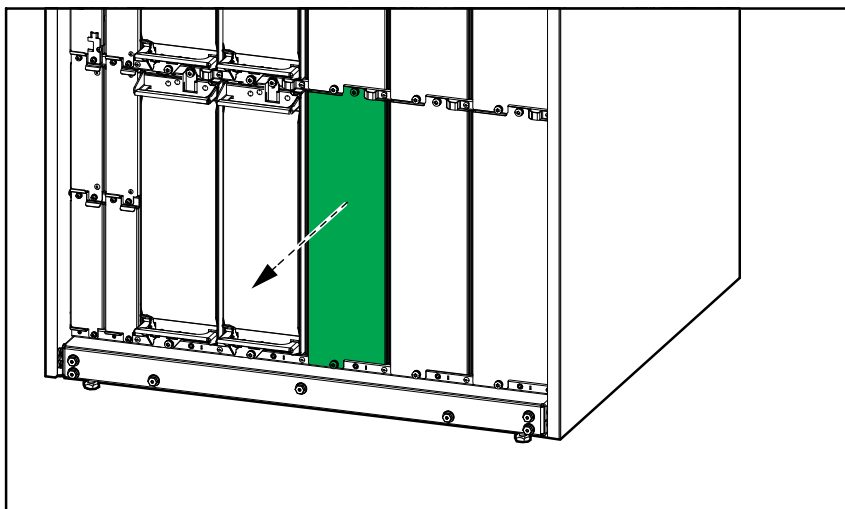


- d. If no replacement power module will be installed: Install a filler plate in front of the empty power module slot.

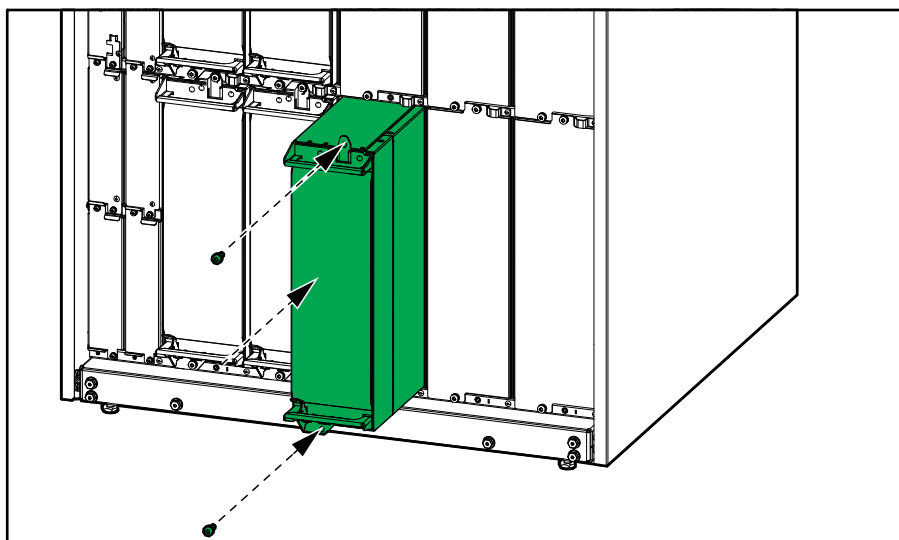


2. To install a new power module:

- a. If this is an additional power module that is being installed: Remove the filler plate from the empty power module slot. Save the filler plate for future use.



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



The power module will perform a self-test, automatically upgrade the firmware according to the system, and then go online.

⚡ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All power module slots must have either a power module or a filler plate installed.

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

Determine if you need a Replacement Part

To determine if you need a replacement part, contact Schneider Electric and follow the procedure below so that the representative can assist you promptly:

1. In the event of an alarm condition, scroll through the alarm lists, record the information, and provide it to the representative.
2. Write down the serial number of the unit so that you will have it easily accessible when you contact Schneider Electric.
3. If possible, call Schneider Electric from a telephone that is within reach of the display so that you can gather and report additional information to the representative.
4. Be prepared to provide a detailed description of the problem. A representative will help you solve the problem over the telephone, if possible, or will assign a return material authorization (RMA) number to you. If a module is returned to Schneider Electric, this RMA number must be clearly printed on the outside of the package.
5. If the unit is within the warranty period and has been started up by Schneider Electric, repairs or replacements will be performed free of charge. If it is not within the warranty period, there will be a charge.
6. If the unit is covered by a Schneider Electric service contract, have the contract available to provide information to the representative.

Return Parts to Schneider Electric

To return an inoperable part to Schneider Electric, contact Schneider Electric customer support to obtain an RMA number.

Pack the part in the original shipping materials, and return it by insured, prepaid carrier. The customer support representative will provide the destination address. If you no longer have the original shipping materials, ask the representative about obtaining a new set.

- Pack the part properly to avoid damage in transit. Never use styrofoam beads or other loose packaging materials when shipping a part. The part may settle in transit and become damaged.
- Enclose a letter in the package with your name, RMA number, address, a copy of the sales receipt, description of the problem, a phone number, and a confirmation for payment (if necessary).

NOTE: Damages sustained in transit are not covered under warranty.

Troubleshooting

Status LED Lighting per UPS Operation Mode

If the display becomes inoperable, you can see the UPS operation mode via the status LEDs behind the front panel.

- Green LED means function active.
- Off LED means function inactive.
- Red LED means function inoperable or in alarm condition.

Double conversion (normal operation)	INPUT INVERTER OUTPUT BYPASS BATTERY     
Battery operation (in dual mains system with bypass available)	INPUT INVERTER OUTPUT BYPASS BATTERY     
Battery operation (in single mains system or in dual mains system with bypass unavailable)	INPUT INVERTER OUTPUT BYPASS BATTERY     
Requested static bypass operation Forced static bypass operation ECO mode	INPUT INVERTER OUTPUT BYPASS BATTERY     
eConversion mode	INPUT INVERTER OUTPUT BYPASS BATTERY     
Off mode	INPUT INVERTER OUTPUT BYPASS BATTERY     
Static bypass standby operation	INPUT INVERTER OUTPUT BYPASS BATTERY     

Export UPS Report to a USB Device

1. Select **Maintenance > UPS report**.
2. Open the front door.
3. Insert your USB device in the USB port on the system level controller.
4. Tap **Export**.
NOTE: Do not remove the USB device until the export process has finished.
5. Send the UPS report to Schneider Electric customer support.

Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmaison
France

+ 33 (0) 1 41 29 70 00



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

© 2020 – 2023 Schneider Electric. All rights reserved.

990-91379C-001

Submittal Reference Table:

26 33 53		
SD-02 Shop Drawings		
UPS Drawings	1.5.1 – pg. 48	
UPS Installation	1.5.2 – pg. 79	
SD-03 Product Data		
UPS Module	2.5	
	2.5.1 – pg. 6 sect. 2.2	
	2.5.1.1 – pg. 14 sect. 3.6	
	2.5.1.2 – pg. 10 sect 2.4-A	
	2.5.1.2.1 – pg. 8 sect 2.2 & pg. 10 sect 2.4-B	
	2.5.1.2.2 – pg. 10 sect 2.4-A	
	2.5.1.2.3 – pg. 10 sect 2.4-A	
	2.5.1.2.4 – pg. 10 sect 2.4-A	
	2.5.1.2.5 – pg. 10 sect 2.4-A	
	2.5.1.2.6 – pg. 10 sect 2.4-A	
	2.5.1.2.7 – pg. 10 sect 2.4-A	
	2.5.1.2.8 – pg. 10 sect 2.4-D	
	2.5.1.2.9 – pg. 10 sect 2.4-D	
	2.5.2 – pg. 10 sect 2.4-B	
	2.5.2.1 – pg. 9 sect 2.2-C	
	2.5.2.2 – pg. 63	
	2.5.3 – pg. 8 sect 2.2	
	2.5.4 – pg. 8 sect 2.2	
	2.5.5 – pg. 10 sect 2.4-A	
Technical Requirements UPS System	2.4	
	2.4.1 – pg.8 sect 2.2	
	2.4.2 – pg.10 sect 2.4	
	2.4.3 – pg.10 sect 2.4-D	
	2.4.4 – pg.10 sect 2.4-C	
	2.4.5 – pg.8 sect 2.2-A	
	2.4.6 – pg.8 sect 2.2-B	
	2.4.7 – pg.8 sect 2.2-C	
	2.4.8 – pg.8 sect 2.2 & pg.4	
Energy Star Label for Battery Charging Systems and AC-DC/AC-AC Power Supply Products	2.4.9 – pg.69	
SD-06 Test Reports		
Work Plan	1.5.3	To Be Scheduled by Contractor
Factory Test Plan	1.5.4	To Be Scheduled by Contractor
Factory Test Report	1.5.5	To Be Scheduled by Contractor
SD-09 Manufacturer's Field Reports		
Initial Inspection and Tests	3.2.2	To Be Scheduled by Contractor
Performance Tests	3.2.3	To Be Scheduled by Contractor
Performance Test Plan	1.5.6	To Be Scheduled by Contractor
Performance Test Report	1.5.7	To Be Scheduled by Contractor
SD-10 Operation and Maintenance Data		
UPS Operation and Maintenance	1.4.1 – pg.247	
SD-11 Closeout Submittals		
Installation	3.1 – pg.79	



End Of Submittal Package

Prepared By:

Critical Power Solutions, Inc.
985-875-1930
lanny@cps-corp.net
michelle@cps-corp.net
P.O. Box 5189
Abita Springs, LA 70420