

Galaxy 300i with integrated Transformer

10-40 kVA 3:3 and 3:1

Installation

01/2016



Legal Information

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

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

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

Table of Contents

| | |
|--|----|
| Important Safety Information | 5 |
| Safety Precautions | 6 |
| Electrical Safety | 8 |
| Battery Safety | 9 |
| Specifications | 11 |
| AC Input Specifications | 11 |
| 3:3 and 3:1 UPS | 11 |
| Galaxy 300i AC Bypass Input Specifications | 11 |
| 3:3 UPS | 11 |
| 3:1 UPS | 12 |
| Galaxy 300i AC Output Specifications | 12 |
| 3:3 UPS | 12 |
| 3:1 UPS | 13 |
| Battery Specifications | 13 |
| Galaxy 300i Heat Dissipation | 14 |
| 3:3 UPS | 14 |
| 3:1 UPS | 14 |
| Recommended Cable Sizes | 15 |
| Overcurrent Protection | 16 |
| Recommended Upstream Protection | 16 |
| Recommended Downstream Protection | 16 |
| Torque Specifications | 17 |
| UPS Product Overview | 18 |
| Prepare for Installation | 22 |
| Prepare UPS for Cables | 22 |
| Connect the Power Cables | 24 |
| Connect the UPS Power Cables | 24 |
| Connect the UPS Power Cables for Standby Redundancy System | 27 |
| Install Backfeed Protection | 30 |
| Install External Backfeed Protection in System with Single Mains | 30 |
| Install External Backfeed Protection in System with Dual Mains | 31 |
| Install Battery Solution | 33 |
| Battery Cabinet Product Overview | 34 |
| Galaxy 300 Battery Cabinet (1300 mm) | 34 |
| Galaxy 1900 mm Battery Cabinet | 35 |
| Battery Cabinet Clearance | 36 |
| Install a Galaxy 300 Battery Cabinet (1300 mm) | 37 |
| Prepare Galaxy 300 Battery Cabinet (1300 mm) for Cables | 37 |
| Connect Battery Cables from UPS to the Galaxy 300 Battery Cabinet (1300 mm) | 40 |
| Connect External Battery Temperature (ATIZ) and External Battery Breaker Signal between the UPS and the Galaxy 300 Battery Cabinet (1300 mm) | 41 |
| Connect Battery and Signal Cables from the Galaxy 300 Battery Cabinet (1300 mm) to a Running UPS | 43 |
| Install a Galaxy 1900 mm Battery Cabinet | 46 |
| Prepare Galaxy 1900 mm Battery Cabinet for Cables | 46 |

| | |
|--|----|
| Connect Battery Cables from the UPS to the Galaxy 1900 mm Battery Cabinet | 49 |
| Install External Battery Temperature (ATIZ) and External Battery Breaker Signal between the UPS and the Galaxy 1900 mm Battery Cabinet | 50 |
| Connect Battery and Signal Cables to Third Party Battery Solution | 53 |
| Connect the UPS Signal Cables | 56 |
| Connect the Signal Cables to the UPS | 56 |
| Connect the EPO Cable to the UPS | 59 |
| Connect the Optional Signal Cables | 60 |
| Checklist after Installation | 62 |

Important Safety Information

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

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. Startup 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.

⚠ WARNING**HAZARD 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 death, serious injury, or equipment damage.

⚠ WARNING**HAZARD 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 death, serious injury, or equipment damage.

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

- Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
- The UPS system must be installed in a room with restricted access (qualified personnel only).
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Turn off all power supplying the UPS system before working on or inside the equipment.
- Before working on the UPS system, check for hazardous voltage between all terminals including the protective earth.
- The UPS contains an internal energy source. Hazardous voltage can be present even when disconnected from the utility/mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that utility/mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- A disconnection device (e.g. disconnection circuit breaker or switch) must be installed to enable isolation of the system from upstream power sources in accordance with local regulations. This disconnection device must be easily accessible and visible.
- The UPS must be properly earthed/grounded and due to a high leakage current, the earthing/grounding conductor must be connected first.

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

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

In systems where backfeed protection is not part of the standard design, an automatic isolation device (backfeed protection option or other device meeting the requirements of IEC/EN 62040-1 or UL 1778 4th Edition – depending on which of the two standards apply to your local area) must be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must open within 15 seconds after the upstream power supply fails and must be rated according to the specifications.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

⚠ CAUTION**RISK OF EQUIPMENT DAMAGE**

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

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

Specifications

AC Input Specifications

3:3 and 3:1 UPS

| | 10 kVA | | | 15 kVA | | | 20 kVA | | |
|---|----------------------|------|------|--------|------|------|--------|-----|-----|
| Voltage | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 |
| Connection type | 3PH + N + PE | | | | | | | | |
| Input frequency (Hz) | 45–65 | | | | | | | | |
| THDI | < 9% at full load | | | | | | | | |
| Nom. input current (A) ¹ | 13 | 12.5 | 12 | 20 | 19 | 18 | 26 | 25 | 24 |
| Max. input current (A) ² | 15.5 | 15 | 14.5 | 22.5 | 21.5 | 20.5 | 29 | 28 | 27 |
| Input current limitation (A) ³ | 17.5 | 17 | 16 | 25 | 24 | 22.5 | 32 | 31 | 30 |
| Input power factor correction | > 0.97 at load > 50% | | | | | | | | |

| | 30 kVA | | | 40 kVA ⁴ | | |
|---|----------------------|------|------|---------------------|-----|-----|
| Voltage | 380 | 400 | 415 | 380 | 400 | 415 |
| Connection type | 3PH + N + PE | | | | | |
| Input frequency (Hz) | 45–65 | | | | | |
| THDI | < 9% at full load | | | | | |
| Nom. input current (A) ¹ | 39.5 | 38 | 36 | 53 | 50 | 48 |
| Max. input current (A) ² | 42 | 40.5 | 38.5 | 56 | 53 | 51 |
| Input current limitation (A) ³ | 47 | 45 | 42.5 | 61 | 59 | 56 |
| Input power factor correction | > 0.97 at load > 50% | | | | | |

Galaxy 300i AC Bypass Input Specifications

3:3 UPS

| | 10 kVA | | | 15 kVA | | | 20 kVA | | |
|---|--------------|-----|-----|--------|-----|-----|--------|------|-----|
| Voltage | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 |
| Connection type | 3PH + N + PE | | | | | | | | |
| Input frequency (Hz) | 50/60 ±8% | | | | | | | | |
| Nom. bypass current for UPS with integrated transformer (A) | 15.5 | 15 | 14 | 23 | 22 | 21 | 31 | 29.5 | 28 |

| | 30 kVA | | | 40 kVA | | |
|-----------------|--------------|-----|-----|--------|-----|-----|
| Voltage | 380 | 400 | 415 | 380 | 400 | 415 |
| Connection type | 3PH + N + PE | | | | | |

1. Input current based on rated load and batteries fully charged.
2. Input current based on full battery recharge, nominal voltage, and rated load.
3. Current limitation through electronic current limiting is based on full battery recharge and -15% input voltage.
4. Only available in 3:3 versions.

| | 30 kVA | | | 40 kVA | | |
|---|----------------|-----|------|--------|-----|------|
| Voltage | 380 | 400 | 415 | 380 | 400 | 415 |
| Input frequency (Hz) | 50/60 \pm 8% | | | | | |
| Nom. bypass current for UPS with integrated transformer (A) | 46 | 44 | 42.5 | 61.5 | 59 | 56.5 |

3:1 UPS

| | 10 kVA | | | 15 kVA | | |
|---|----------------|-----|------|--------|------|------|
| Voltage | 220 | 230 | 240 | 220 | 230 | 240 |
| Connection type | 1PH + N + PE | | | | | |
| Input frequency (Hz) | 50/60 \pm 8% | | | | | |
| Nom. bypass current for UPS with integrated transformer (A) | 46 | 44 | 42.5 | 69.5 | 66.5 | 63.5 |

| | 20 kVA | | | 30 kVA | | |
|---|----------------|------|-----|--------|-------|-----|
| Voltage | 220 | 230 | 240 | 220 | 230 | 240 |
| Connection type | 1PH + N + PE | | | | | |
| Input frequency (Hz) | 50/60 \pm 8% | | | | | |
| Nom. bypass current for UPS with integrated transformer (A) | 92.5 | 88.5 | 85 | 139 | 132.5 | 127 |

Galaxy 300i AC Output Specifications

3:3 UPS

| | 10 kVA | | | 15 kVA | | | 20 kVA | | | 30 kVA | | | 40 kVA | | |
|--------------------------------------|---|------|-----|--------|-----|-----|--------|-----|-----|--------|-----|------|--------|-----|-----|
| Voltage (V) | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 |
| Connection type | 3PH + N + PE | | | | | | | | | | | | | | |
| Output overload capacity | Bypass transformer: ≤125% for 2 minutes ≤150% for 10 seconds | | | | | | | | | | | | | | |
| Voltage tolerance | ±2% | | | | | | | | | | | | | | |
| Nom. output current (A) | 15 | 14.5 | 14 | 23 | 22 | 21 | 30 | 29 | 27 | 45 | 43 | 41.5 | 60 | 58 | 55 |
| Output frequency (Hz)(sync to mains) | 50/60 | | | | | | | | | | | | | | |
| Slew rate (Hz/Sec) | Default: 2 Hz/s. Unitary: Can be configured as 1 Hz/s. Parallel: Keep the default setting. Standby Redundancy: Set as 1 Hz/s for backup UPS and keep the default setting for main UPS. | | | | | | | | | | | | | | |
| THDU | < 3.0% linear loads 6.5% @ full RCD load/50Hz | | | | | | | | | | | | | | |
| Output power factor | From 0.5 leading to 0.5 lagging. | | | | | | | | | | | | | | |

| | 10 kVA | | | 15 kVA | | | 20 kVA | | | 30 kVA | | | 40 kVA | | |
|---------------------------|--------|-----|-----|--------|-----|-----|--------|-----|-----|--------|-----|-----|--------|-----|-----|
| Voltage (V) | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 | 380 | 400 | 415 |
| Dynamic load response | ±5% | | | | | | | | | | | | | | |
| Output voltage regulation | ±2.5% | | | | | | | | | | | | | | |

3:1 UPS

| | 10 kVA | | | 15 kVA | | | 20 kVA | | | 30 kVA | | |
|---------------------------------------|---|-----|-----|--------|-----|-----|--------|-----|-----|--------|-----|-----|
| Voltage (V) | 220 | 230 | 240 | 220 | 230 | 240 | 220 | 230 | 240 | 220 | 230 | 240 |
| Connection type | 1PH + N + PE | | | | | | | | | | | |
| Output overload capacity | Bypass transformer: ≤125% for 2 minutes ≤150% for 10 seconds | | | | | | | | | | | |
| Voltage tolerance | ±2.5% | | | | | | | | | | | |
| Nom. output current (A) | 45 | 43 | 42 | 68 | 65 | 62 | 90 | 87 | 83 | 136 | 130 | 125 |
| Output frequency (Hz) (sync to mains) | 50/60 | | | | | | | | | | | |
| Slew rate (Hz/Sec) | Default: 2 Hz/s. Unitary: Can be configured as 1 Hz/s. Parallel: Keep the default setting. Standby Redundancy: Set as 1 Hz/s for backup UPS and keep the default setting for main UPS. | | | | | | | | | | | |
| THDU | < 3.0% linear loads 6.5% @ full RCD load/50Hz | | | | | | | | | | | |
| Output power factor | From 0.5 leading to 0.5 lagging. | | | | | | | | | | | |
| Dynamic load response | ±5% | | | | | | | | | | | |
| Output voltage regulation | ±2.5% | | | | | | | | | | | |

Battery Specifications

| | 10 kVA | 15 kVA | 20 kVA | 30 kVA | 40 kVA |
|---|--|--------|--------|--------|--------|
| Type | VRLA (Valve-Regulated Lead Acid) Battery | | | | |
| Nom. voltage (16 blocks/15 blocks) (VDC) | ± 192 / ±180 | | | | |
| Float voltage (16 blocks/15 blocks) (VDC) | ± 218 / ±204 | | | | |

| | 10 kVA | 15 kVA | 20 kVA | 30 kVA | 40 kVA |
|---|---|--------|--------|--------|--------|
| End of discharge voltage (VDC) at 100% load | $\pm 158 / \pm 148$ | | | | |
| Max. charging power for UPS with standard charger (may drop to lower values at low AC input) ⁵ | 10-40 kVA: 1744 W | | | | |
| Max. charging power for UPS with CLA charger (may drop to lower values at low AC input) ⁶ | 3052 W | 3052 W | 3052 W | 6104 W | 6104 W |
| Typical recharge time | Internal charger: (for integrated battery configuration) 10 hours - to 90% $\pm 5\%$ capacity after full discharge at min. Config. CLA: (for external battery configuration) 24 hours - to 90% $\pm 5\%$ capacity after full discharge at min. Config. | | | | |
| Nom. voltage (V) | 12 V/block | | | | |
| End voltage (V) | 9.9 V/block (varies from 11.4 V to 9.9 V corresponding to load percentage from low to high) | | | | |
| I_{Nom} discharge ⁷ (A) (15 blocks) | 25 | 37 | 50 | 74 | 99 |
| I_{Max} discharge ⁸ (A) (15 blocks) | 30 | 45 | 60 | 90 | 120 |

Galaxy 300i Heat Dissipation

3:3 UPS

| Heat dissipation ⁹ | 10 kVA | | | 15 kVA | | | 20 kVA | | |
|-------------------------------|--------|-----|-----|--------|------|-----|--------|------|-----|
| Load (%) | 100 | 75 | 50 | 100 | 75 | 50 | 100 | 75 | 50 |
| Heat dissipation (Watt) | 970 | 764 | 596 | 1336 | 1064 | 750 | 1702 | 1336 | 942 |

| Heat dissipation ⁹ | 30 kVA | | | 40 kVA | | |
|-------------------------------|--------|------|------|--------|------|------|
| Load (%) | 100 | 75 | 50 | 100 | 75 | 50 |
| Heat dissipation (Watt) | 2601 | 2007 | 1414 | 3363 | 2601 | 1763 |

3:1 UPS

| Heat dissipation ⁹ | 10 kVA | | | 15 kVA | | |
|-------------------------------|--------|-----|-----|--------|------|-----|
| Load (%) | 100 | 75 | 50 | 100 | 75 | 50 |
| Heat dissipation (Watt) | 948 | 766 | 624 | 1379 | 1067 | 815 |

5. UPS with standard charger is to be used with internal batteries ONLY.

6. UPS with CLA charger is to be used with external batteries ONLY.

7. Nominal battery discharge current based on rated load and nominal battery voltage.

8. Maximum battery discharge current based on rated load at the end of the discharge.

9. Batteries fully charged

| Heat dissipation ¹⁰ | 20 kVA | | | 30 kVA | | |
|--------------------------------|--------|------|-----|--------|------|------|
| Load (%) | 100 | 75 | 50 | 100 | 75 | 50 |
| Heat dissipation (Watt) | 1653 | 1259 | 924 | 2594 | 1977 | 1501 |

Recommended Cable Sizes

All wiring must comply with all applicable national and/or electrical codes. The below specifications are recommendations only.

AC cable sizes are determined for:

- the TNS system for copper, single-core cables, type U1000 R02V, 100 m long with a line voltage drop <3%, installed on perforated cable trays, XLPE-type insulation, single-layer trefoil formation, THDI between 15% and 33%, 35° C at 400 V, grouped in four touching cables.

Battery cable sizes are determined for:

- copper, single-core cables, type U1000 R02V, maximum length 25 m with a line voltage drop <1%.

3:3 UPS

| 3:3 UPS – Single mains | 10 kVA | | 15 kVA | | 20 kVA | | 30 kVA | | 40 kVA | |
|--|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|
| | min | max | min | max | min | max | min | max | min | max |
| Mains input (mm ²) | 10 | 35 | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 |
| AC output (mm ²) | 10 | 35 | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 |
| Battery input (mm ²) 70° C | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 | 35 | 35 |

| 3:3 UPS – Dual mains | 10 kVA | | 15 kVA | | 20 kVA | | 30 kVA | | 40 kVA | |
|--|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|
| | min | max | min | max | min | max | min | max | min | max |
| Mains input (mm ²) | 10 | 35 | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 |
| AC output (mm ²) | 10 | 35 | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 |
| Battery input (mm ²) 70° C | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 | 35 | 35 |
| Bypass (mm ²) | 10 | 35 | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 |

3:1 UPS

| 3:1 UPS – Single mains | 10 kVA | | 15 kVA | | 20 kVA | | 30 kVA | |
|--|--------|-----|--------|-----|--------|-----|--------|-----|
| | min | max | min | max | min | max | min | max |
| Mains input (mm ²) | 16 | 35 | 25 | 35 | 35 | 90 | 70 | 90 |
| AC output (mm ²) | 16 | 35 | 25 | 35 | 35 | 90 | 70 | 90 |
| Battery input (mm ²) 70° C | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 |

| 3:1 UPS – Dual mains | 10 kVA | | 15 kVA | | 20 kVA | | 30 kVA | |
|--|--------|-----|--------|-----|--------|-----|--------|-----|
| | min | max | min | max | min | max | min | max |
| Mains input (mm ²) | 10 | 35 | 10 | 35 | 35 | 90 | 35 | 90 |
| AC output (mm ²) | 16 | 35 | 25 | 35 | 35 | 90 | 70 | 90 |
| Battery input (mm ²) 70° C | 10 | 35 | 10 | 35 | 16 | 35 | 25 | 35 |
| Bypass (mm ²) | 16 | 35 | 25 | 35 | 35 | 90 | 70 | 90 |

¹⁰ Batteries fully charged

Overcurrent Protection

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The recommended minimum residual current protection is 3A, provided the conditions defined in IEC60364-4-41 are respected.

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

NOTE: These protection systems ensure protection on all of the output circuits connected to the unit. If the recommended downstream protection is not installed, the result may be breaks in the supply of power longer than 20 milliseconds on all the other output circuits.

NOTE: When the bypass source is within tolerance, the load is instantaneously transferred to the bypass input and the upstream and downstream protection devices ensures system protection.

NOTE: The short-circuit current of the installation must be less than the maximum current of the downstream circuit breaker.

Recommended Upstream Protection

3:3 UPS

| Single mains | 10 kVA | 15 kVA | 20 kVA | 30 kVA | 40 kVA |
|--------------|------------------------------|--------|--------|----------------|-----------------|
| CB on input | C65H-D-4P-63A/ C60H-D-4P-63A | | | C120H-D-4P-80A | C120H-D-4P-125A |
| Duals mains | 10 kVA | 15 kVA | 20 kVA | 30 kVA | 40 kVA |
| CB on input | C65H-D-4P-50A/ C60H-D-4P-50A | | | C120H-D-4P-80A | C120H-D-4P-100A |
| CB on bypass | C65H-D-4P-63A/ C60H-D-4P-63A | | | C120H-D-4P-80A | C120H-D-4P-125A |

3:1 UPS

| Single mains | 10 kVA | 15 kVA | 20 kVA | 30 kVA |
|--------------|------------------------------|------------------------------|------------------------------|-------------------|
| CB on input | C120H-D-4P-80A | C120H-D-4P-125A | NSX250F TM200D 4P | NSX250F TM250D 4P |
| Duals mains | 10 kVA | 15 kVA | 20 kVA | 30 kVA |
| CB on input | C65H-D-4P-50A/ C60H-D-4P-50A | C65H-D-4P-50A/ C60H-D-4P-50A | C65H-D-4P-50A/ C60H-D-4P-50A | C120H-D-4P-80A |
| CB on bypass | C120H-D-2P-80A | C120H-D-2P-125A | NSX250F TM200D 3P | NSX250F TM250D 3P |

Recommended Downstream Protection

NOTE: The circuit breakers C65 and C60 are the same but applicable in different regions. The C65 series must be used in China and the C60 series must be used in all other countries.

3:3 UPS

| | 10 kVA | 15 kVA | 20 kVA | 30 kVA | 40 kVA |
|---------------|---|--------|--------|--|--|
| Downstream CB | C65N-B-4P-10A/C60N-B-4P-10A C65N-B-4P-10A/C60N-C-4P-6A | | | C65N-B-4P-16A/ C60N-B-4P-16A C65N-C-4P-10A/ C60N-C-4P-10A | C65N-B-4P-20A/ C60N-B-4P-20A C65N-C-4P-10A/ C60N-C-4P-10A |

3:1 UPS

| | 10 kVA | 15 kVA | 20 kVA | 30 kVA |
|----------------------|--|--------|--|--|
| Downstream CB | C65N-B-2P-25A/C60N-B-2P-25A C65N-C-2P-10A/C60N-C-2P-10A | | C65N-B-2P-32A/C60N-B-2P-32A C65N-C-2P-16A/C60N-C-2P-16A | C65N-B-2P-50A/C60N-B-2P-50A C65N-C-2P-25A/C60N-C-2P-25A |

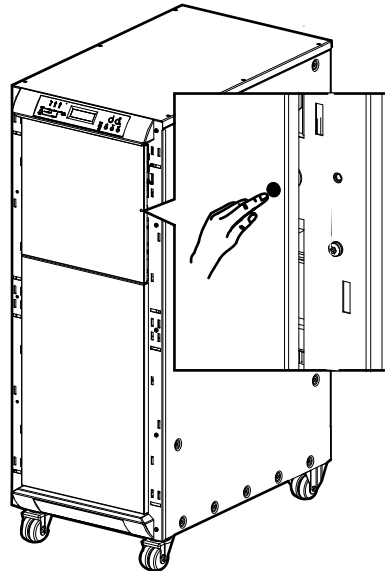
Torque Specifications

| Bolt size | Torque |
|--|-----------------|
| M3 | 1 Nm |
| M4 | 1.2 Nm – 2 Nm |
| M5 | 3.5 Nm – 4.5 Nm |
| M6 | 4.5 Nm – 6 Nm |
| For batteries: Use the torque recommended by Schneider Electric or by the third party battery vendor. | |

UPS Product Overview

The communication board, network management card, and breakers are located behind the front door and accessed by pushing against the white dot on the right side of the door. The transformer is located at the bottom of the UPS. The connectors and power terminals are accessed from the rear.

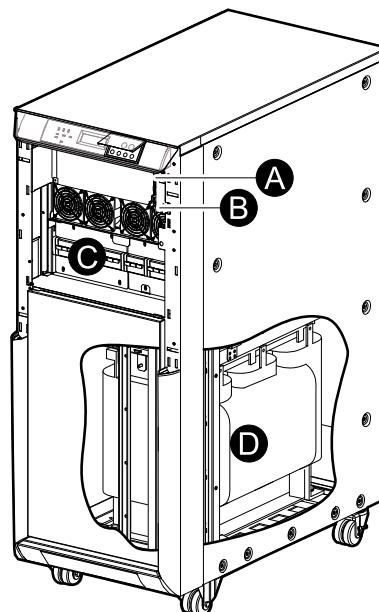
Front View



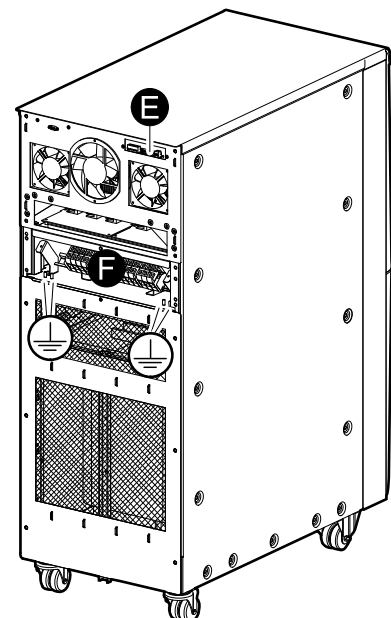
Galaxy 300i 30 kVA/40 kVA 3:3

- A. Communication board
- B. Network management card
- C. Breakers
- D. Transformer
- E. Dry contact terminal, EPO, external battery breaker signal, and external battery temperature (ATIZ)
- F. Power terminals

Front View



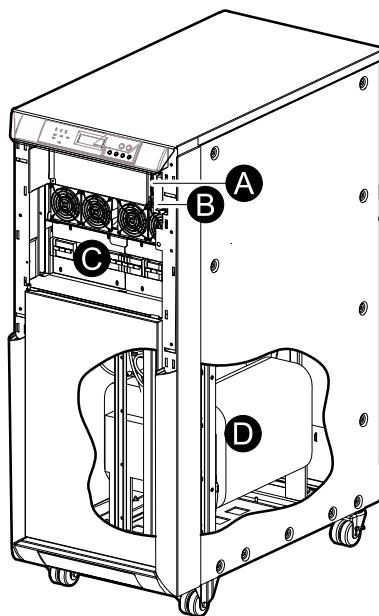
Rear View



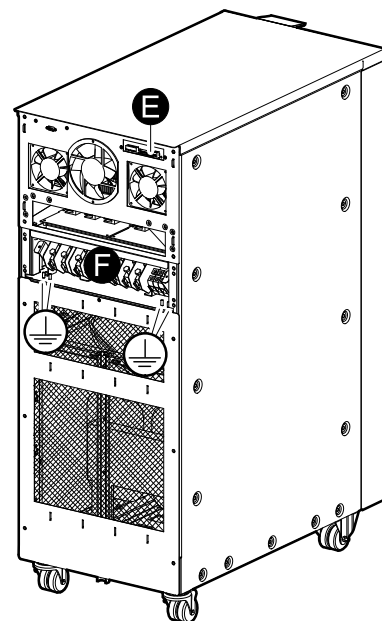
Galaxy 300i 30 kVA 3:1

- A. Communication board
- B. Network management card
- C. Breakers
- D. Transformer
- E. Dry contact terminal, EPO, external battery breaker signal, and external battery temperature (ATIZ)
- F. Power terminals

Front View



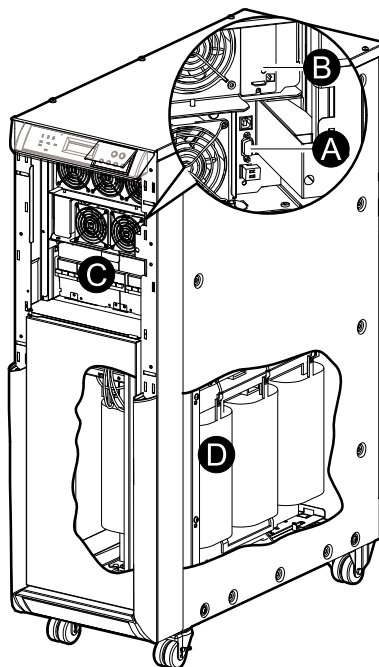
Rear View



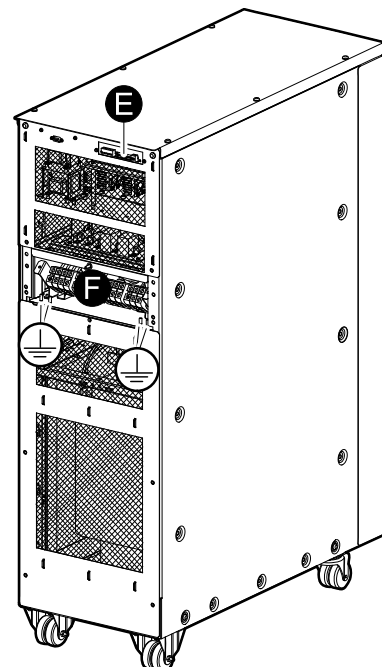
Galaxy 300i 10 kVA/15 kVA/20 kVA 3:3

- A. Communication board
- B. Network management card
- C. Breakers
- D. Transformer
- E. Dry contact terminal, EPO, external battery breaker signal, and external battery temperature (ATIZ)
- F. Power terminals

Front View



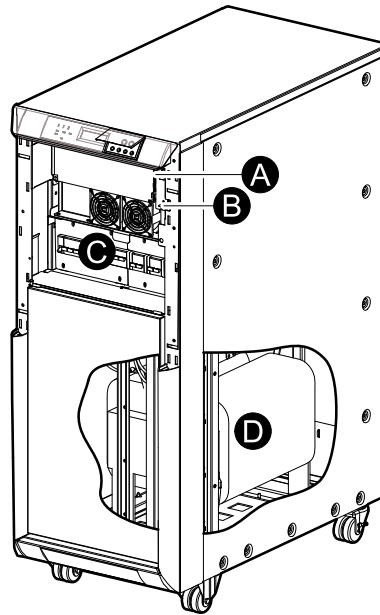
Rear View



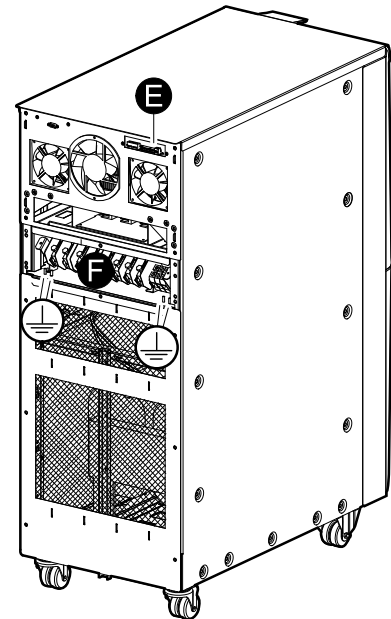
Galaxy 300i 20 kVA 3:1

- A. Communication board
- B. Network management card
- C. Breakers
- D. Transformer
- E. Dry contact terminal, EPO, external battery breaker signal, and external battery temperature (ATIZ)
- F. Power terminals

Front View



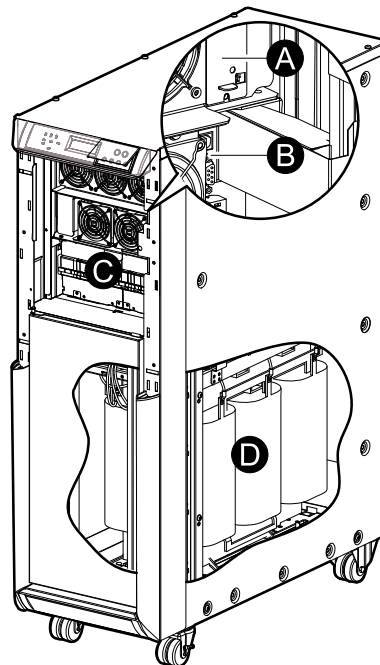
Rear View



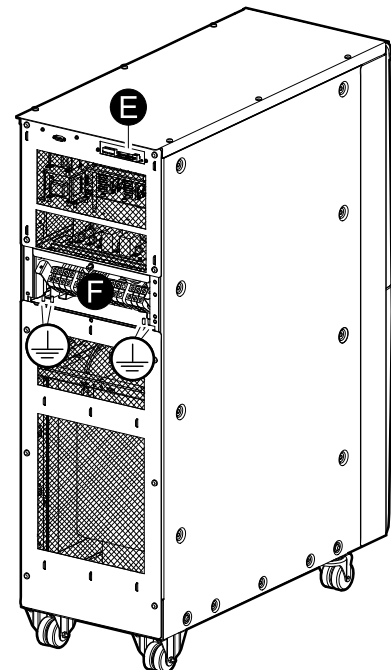
Galaxy 300i 10 kVA/15 kVA 3:1

- A. Communication board
- B. Network management card
- C. Breakers
- D. Transformer
- E. Dry contact terminal, EPO, external battery breaker signal, and external battery temperature (ATIZ)
- F. Power terminals

Front View



Rear View



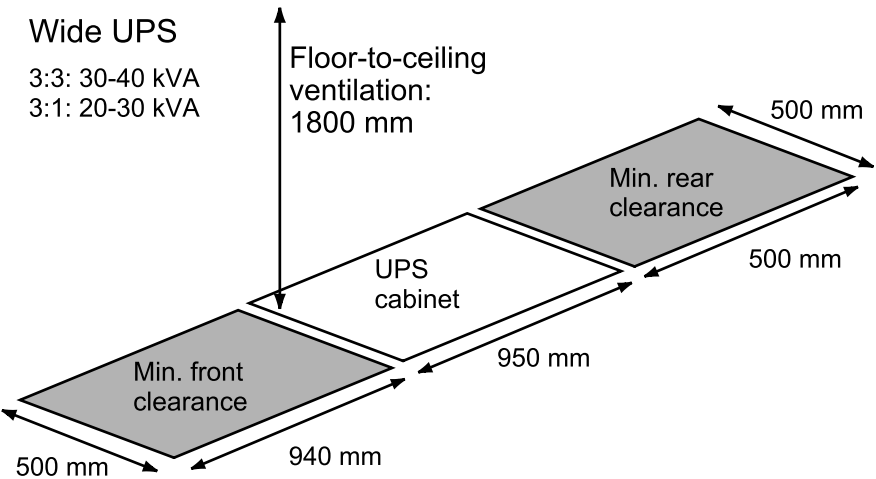
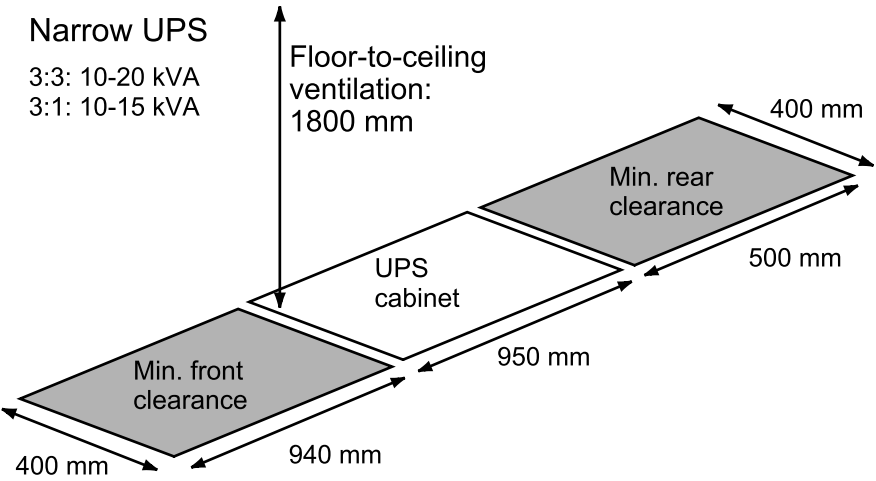
Parallel System

The Galaxy 300i can be installed in parallel with a maximum of two UPS units. Install both UPS units separately as instructed in this manual. The parallel connection between the two UPS units can only be carried out by a Schneider Electric Field Service Engineer using the parallel kit bought separately.

UPS Cabinet Clearance

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

NOTE: 500 mm rear service clearance is recommended.

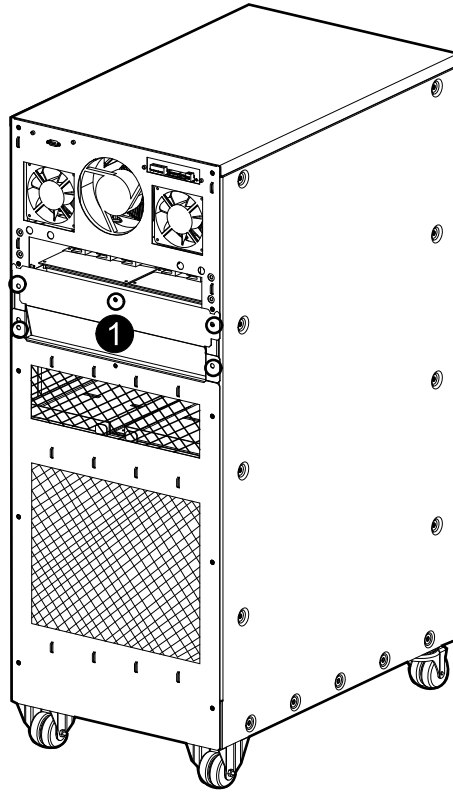


Prepare for Installation

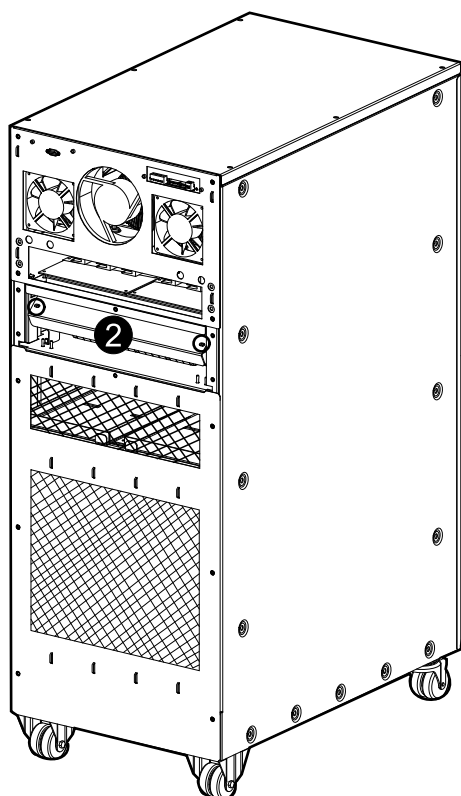
Prepare UPS for Cables

1. Loosen the five screws and remove the I/O sheet metal cover.

Rear view



2. Loosen the two screws and remove the I/O plastic cover.

Rear view

Connect the Power Cables

NOTE: For installation of backfeed protection, see *Install Backfeed Protection*, page 30.

Connect the UPS Power Cables

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

In frequency converter operation mode the maintenance bypass breaker (Q3BP) and the static bypass breaker (QM2) must be in the OFF (opened) position.

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

NOTICE

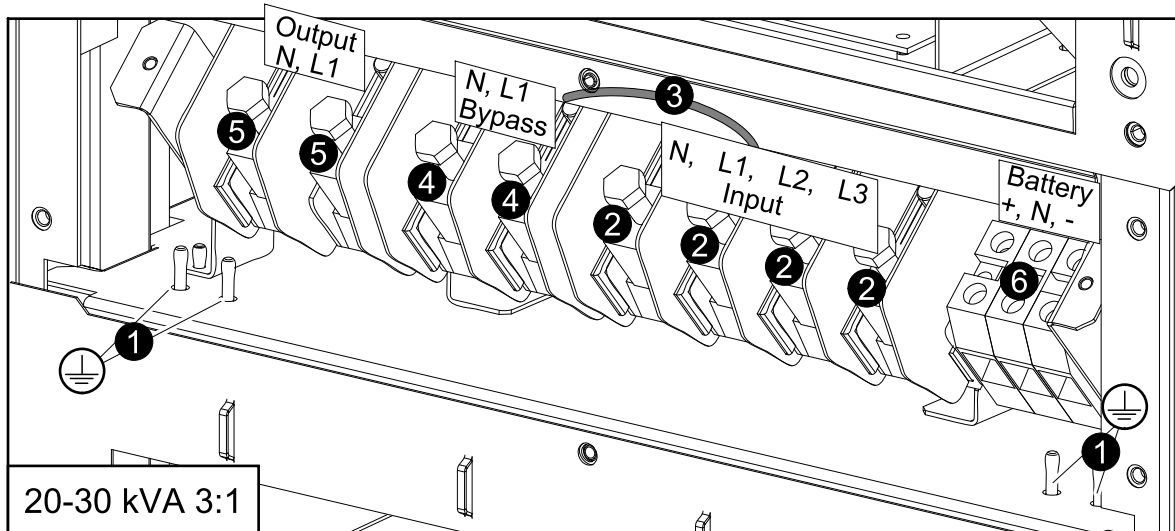
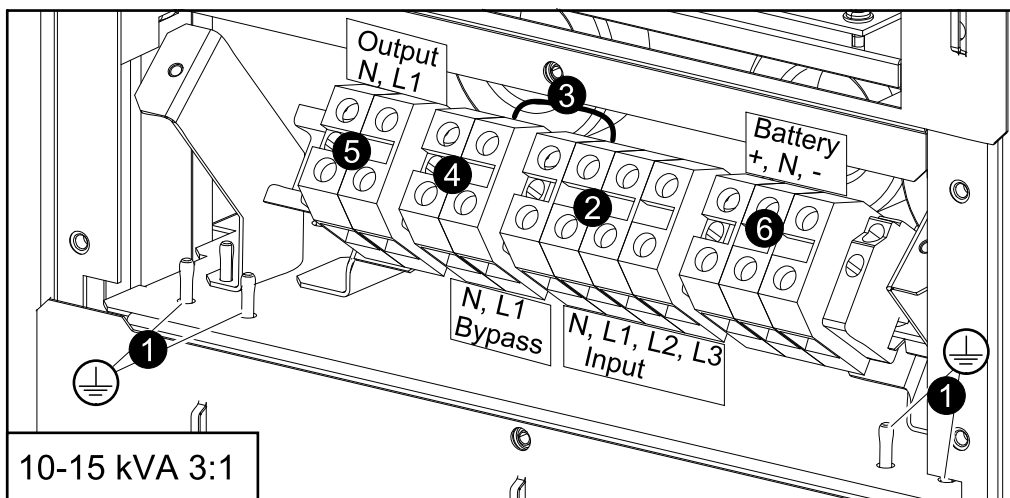
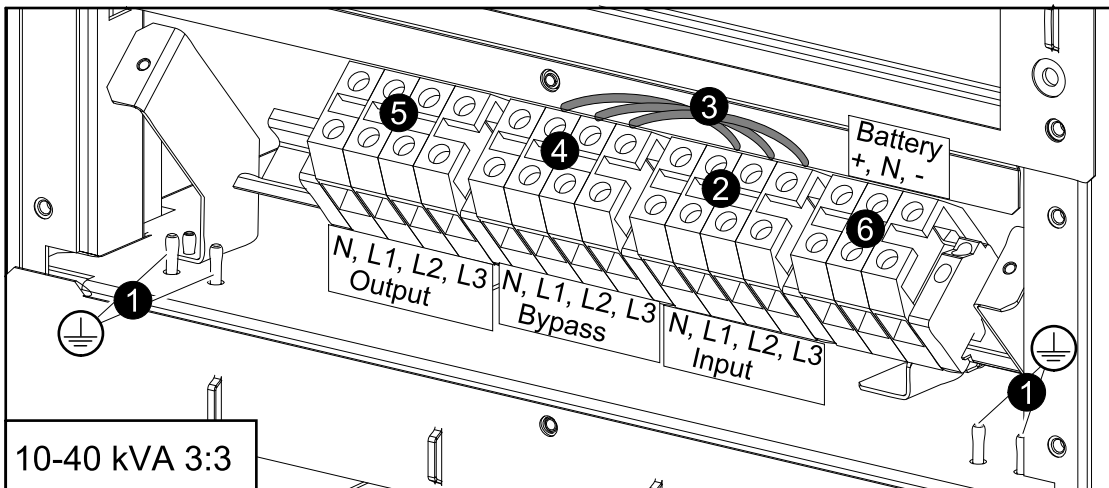
RISK OF ERRATIC SYSTEM OPERATION

If the neutral line connection is not reliable, the system will work abnormally.

Failure to follow these instructions can result in equipment damage.

NOTE: A padlock is available from Schneider Electric and is advisable for the frequency converter mode (padlock catalog number: 26970).

Rear View of UPS



1. Connect the PE cables for input, for bypass, and for the load.
 2. Connect the input cables (N, L1, L2, L3) to the input terminals starting with N.
- NOTE:** For single mains systems, move to step 5.
3. **Dual mains systems only:** Remove the cable(s) between the bypass and the input terminals.

4. **Dual mains systems only:** If you want the option of turning the UPS into frequency converter operation (as described in the operation manual), you must ignore this step and move to step 5. Otherwise, you must connect the bypass cables to the bypass terminals. 3:3 (N, L1, L2, L3), 3:1 (N, L1).
5. Connect the cables from the critical load to the output terminals. 3:3 (N, L1, L2, L3), 3:1 (N and L1).
6. **External battery solution only:** Connect the battery cables (BAT+, N, BAT-) to the battery terminals. The battery cables will be connected to the external battery solution later.
7. Reinstall the plastic cover and the I/O sheet metal cover removed in *Prepare UPS for Cables*, page 22.

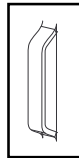
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The I/O sheet metal cover must be fixed in the lowest position for safety reasons.

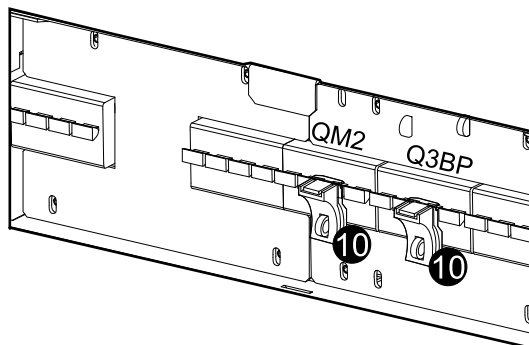
Failure to follow these instructions will result in death or serious injury.

8. Bundle the input cables, the bypass cables, the battery cables (if present), and the output cables as four separate groups of cables.
9. Attach all cables to the fixtures (shown below) with cable ties.

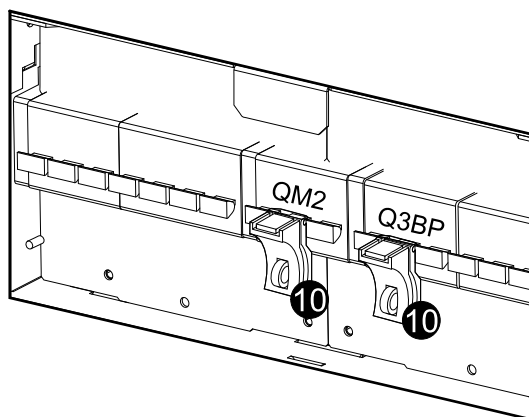


10. If the frequency converter option was made available by ignoring step 4, a padlock from Schneider Electric must now be installed on the static bypass breaker (**QM2**) and the maintenance bypass breaker (**Q3BP**) in the **OFF** (**opened**) position.

Front View of 3:3 30–40 kVA, and 3:1 20–30 kVA



Front View of 3:3 10–20 kVA and 3:1 10–15 kVA



Connect the UPS Power Cables for Standby Redundancy System

NOTICE

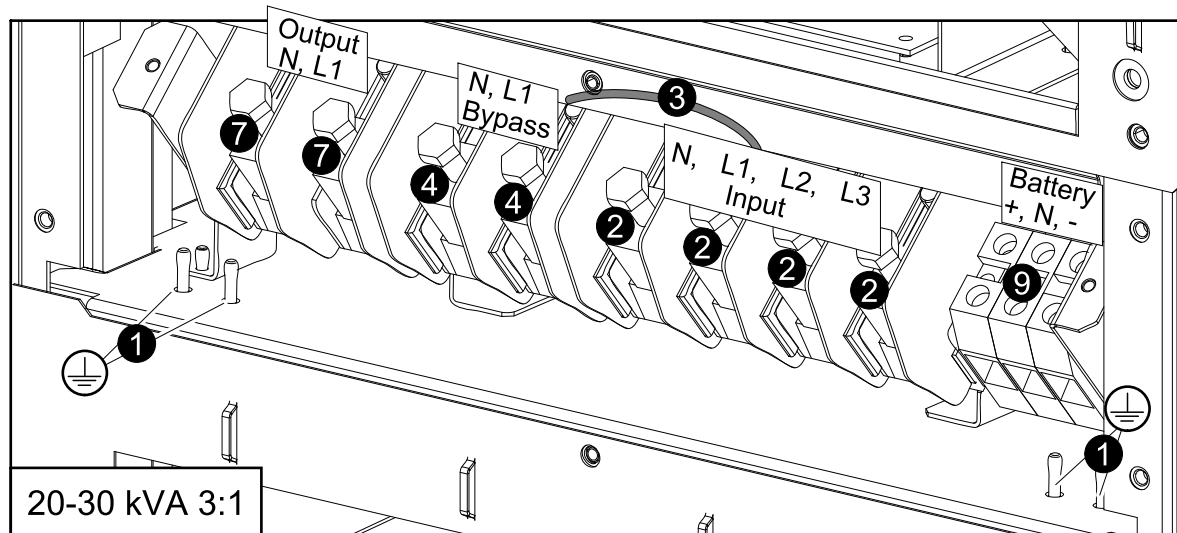
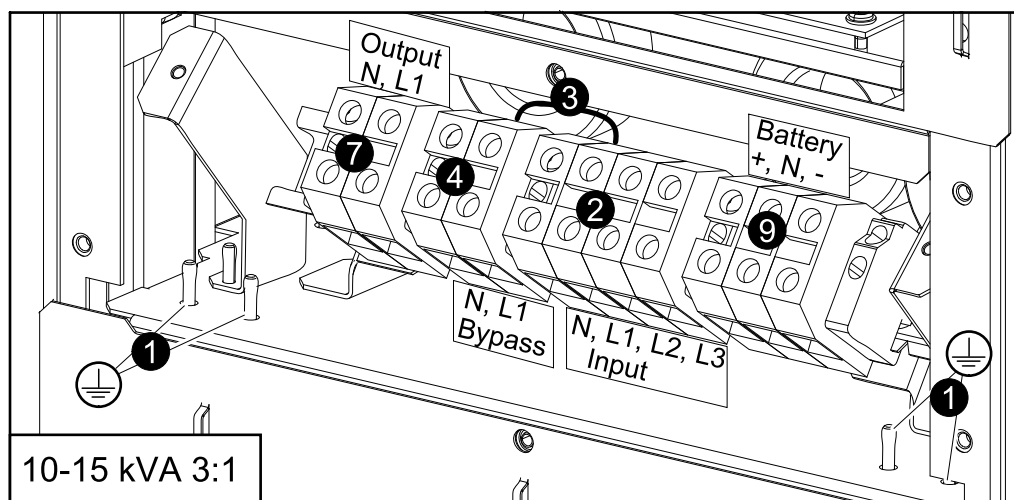
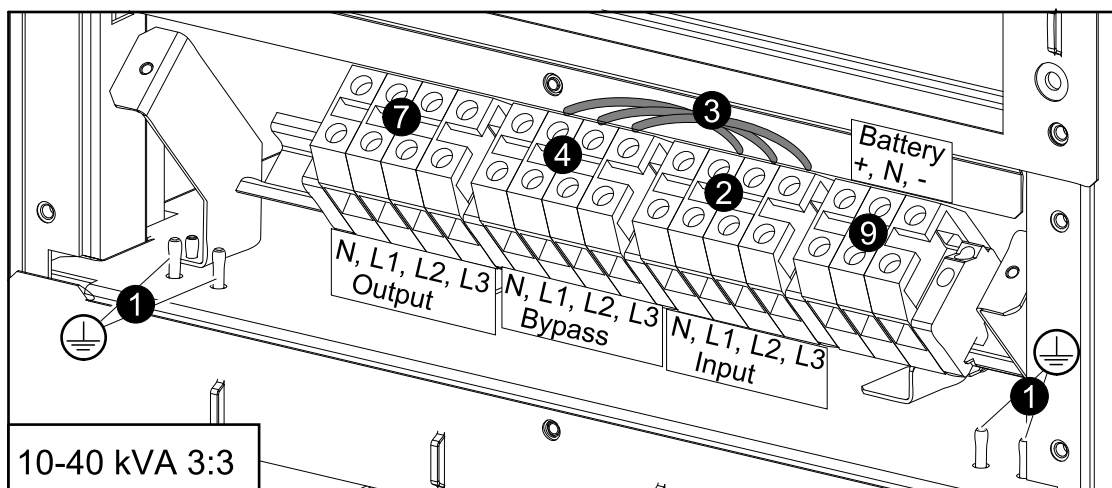
RISK OF ERRATIC SYSTEM OPERATION

If the neutral line connection is not reliable, the system will work abnormally.

Failure to follow these instructions can result in equipment damage.

NOTE: Only two UPS units can be installed in a standby redundancy system. Both units must have the same power rating and topology (both 3:3 or both 3:1).

Rear View of the UPS



1. Connect the PE cables for input, for bypass, and for the load.
2. Connect the input cables (N, L1, L2, L3) to the input terminals starting with N on UPS 1.
3. **For Dual mains systems only:** Remove the cable(s) between the input and the bypass terminals on UPS 1.
4. **For Dual mains systems only:** Connect the bypass cables to the bypass terminals (3:3 (N, L1, L2, L3), 3:1 (N, L1)) on UPS 1.
5. Connect input cables on UPS 2.

6. Remove the cable(s) between input and bypass terminals on UPS 2.
7. Connect output (3:3 (N, L1, L2, L3), 3:1 (N and L1)) from UPS 1 to the bypass on UPS 2.
8. Connect the cables from the critical load to the output terminals (3:3 (N, L1, L2, L3), 3:1 (N and L1)) on UPS 2.
9. **External battery solution only:** Connect the battery cables (BAT+, N, BAT-) to the battery terminals. The battery cables will be connected to the external battery solution later.
10. Reinstall the plastic cover and the I/O sheet metal cover removed while preparing the UPS for cables.

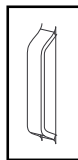
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The I/O sheet metal cover must be fixed in the lowest position for safety reasons.

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

11. Bundle the input cables, the bypass cables, the battery cables (if present), and the output cables as four separate groups of cables.
12. Attach all cables to the fixtures (shown below) with cable ties.



Install Backfeed Protection

NOTE: The presence of a backfeed on each input mains (Input and Bypass input), is mandatory according to IEC 62040-1.

An additional external isolation device must be installed in the UPS system. A magnetic contactor or a circuit breaker with UVR (Under Voltage Release) functionality can be used for this purpose. In the shown examples, the isolation device is a magnetic contactor (marked with a **C1** for single feed configurations and marked with a **C1** and **C2** for dual feed configurations).

The isolation device must be able to carry the UPS input current, check with the relevant input current of the UPS specifications.

NOTE: The 24 V source should be generated from the input source in single mains configurations and from the bypass source in dual mains configurations.

NOTE: The examples shown in the backfeed protection instructions are for TN earthing systems. For other earthing systems, the external isolation device schematics are similar; refer to Galaxy 300 Earthing Manual. In case of an IT earthing system installation, where the upstream protection is a 4 pole device, the external isolation device must also be 4 pole.

If the UPS is fed by single mains, connect the backfeed protection as instructed in *Install External Backfeed Protection in System with Single Mains, page 30*.

If the UPS is fed by dual mains only, connect the backfeed protection as instructed in *Install External Backfeed Protection in System with Dual Mains, page 31*.

Install External Backfeed Protection in System with Single Mains

1. Connect UPS backfeed dry contact CNR04-1 with an external +24 VDC supply pole "+" (the UPS backfeed dry contact CNR04-1 CNR04-2 is connected later with the other signal cables).
2. Connect UPS backfeed dry contact CNR04-2 with a terminal of the relay R coil.
3. Connect the other terminal of the relay R coil with +24 VDC supply pole "-"(M).
4. Serial-connect the fuse (F1), the auxiliary contact of relay R and the coil of C1 as shown in the illustration below.
5. Connect C1 (L1, L2, L3) to UPS input (L1, L2, L3) as shown in the illustration below.
6. Connect C1 (L1, L2, L3) to input feeding (L1, L2, L3) in distribution switchgear as shown in the illustration below.

7. Connect UPS input (N), PE to input feeding (N), PE in distribution switchgear.

Illustration 1 for Single Mains 3:3 UPS and External Isolation Device

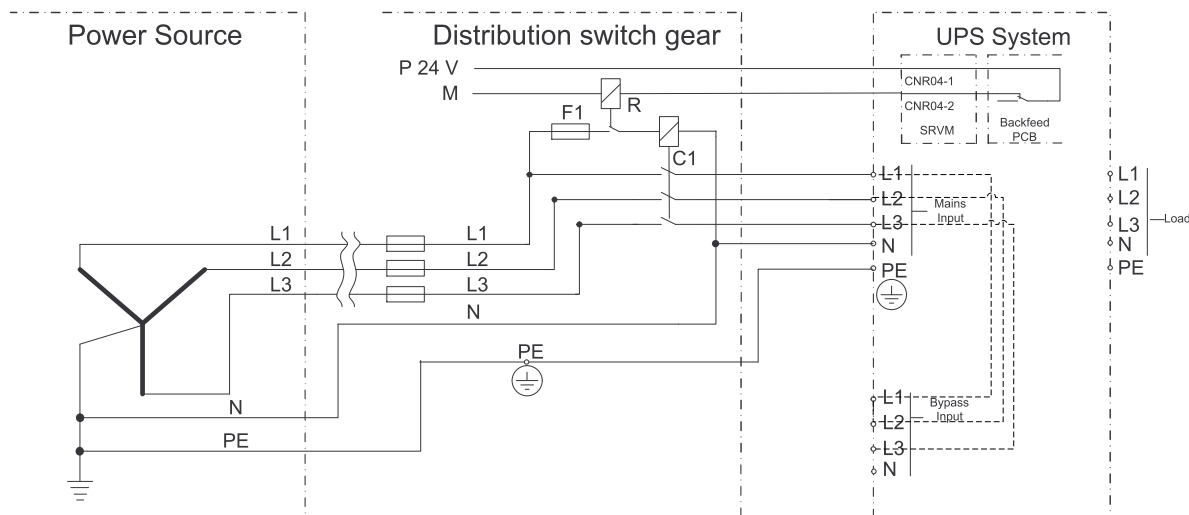
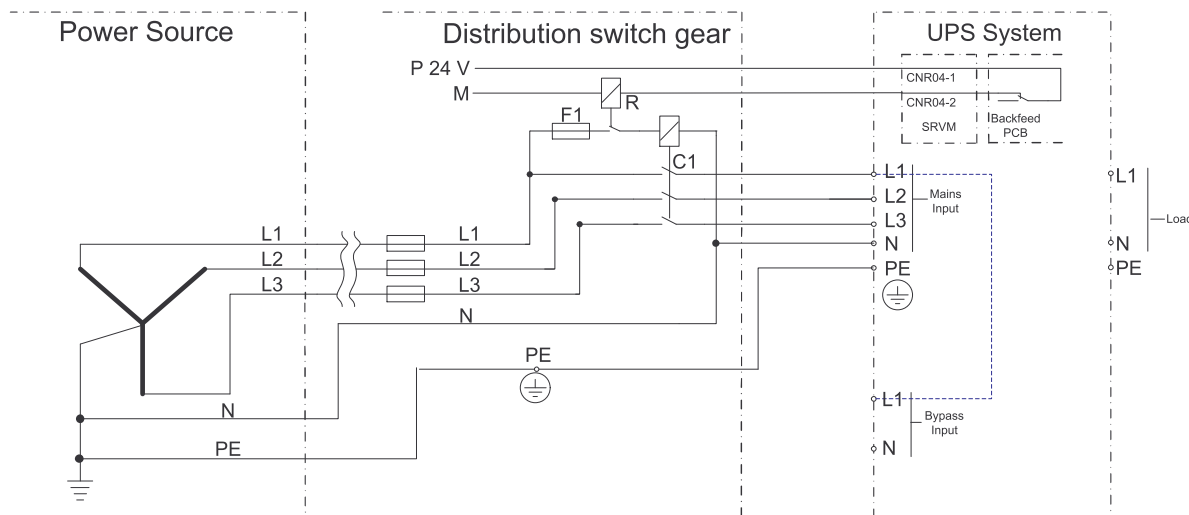


Illustration 2 for Single Mains 3:1 UPS and External Isolation Device



Install External Backfeed Protection in System with Dual Mains

1. Remove the internal cable connection between bypass and input terminals on the UPS.
2. Connect UPS backfeed dry contact CNR04-1 with an external +24 VDC supply pole "+" (the UPS backfeed dry contact CNR04-1 CNR04-2 is connected later with the other signal cables).
3. Connect UPS backfeed dry contact CNR04-2 with a terminal of the relay R coil.
4. Connect the other terminal of the relay R coil with +24 VDC supply pole "-"(M).
5. Serial-connect the fuse (F1), the auxiliary contact of relay R and the coil of C1 as shown in the illustration below.
6. Connect C1 (L1, L2, L3) to UPS input (L1, L2, L3) as the shown in the illustration below.
7. Connect C1 (L1, L2, L3) to input feeding (L1, L2, L3) in customer's distribution switchgear as shown in the illustration below.
8. Connect UPS input (N), PE to input feeding (N), PE in customer's distribution switchgear.
9. Connect the other fuse (F2), the other auxiliary contact of relay R and the coil of C2 as shown in the illustration below.

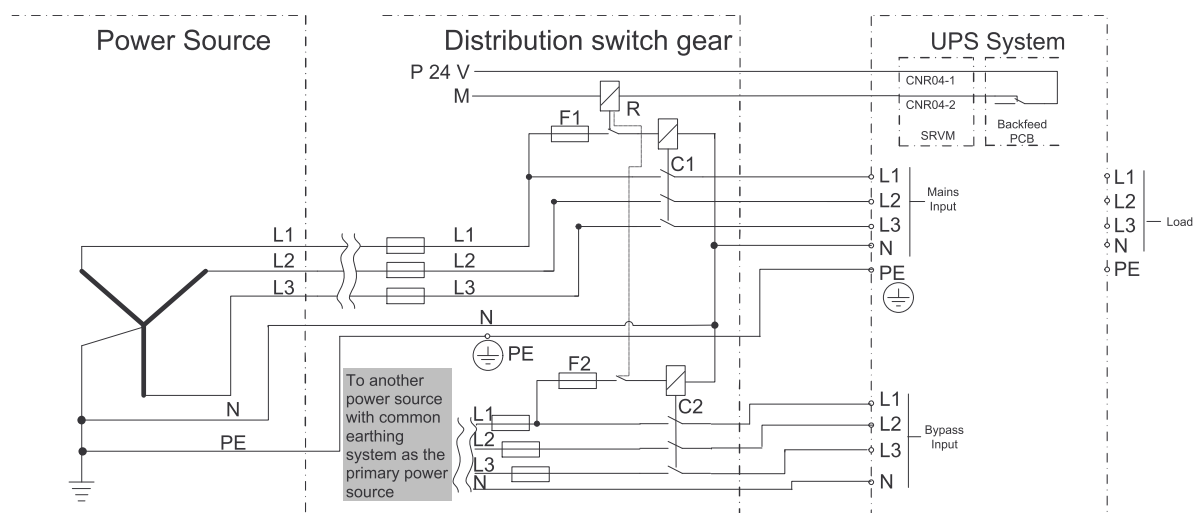
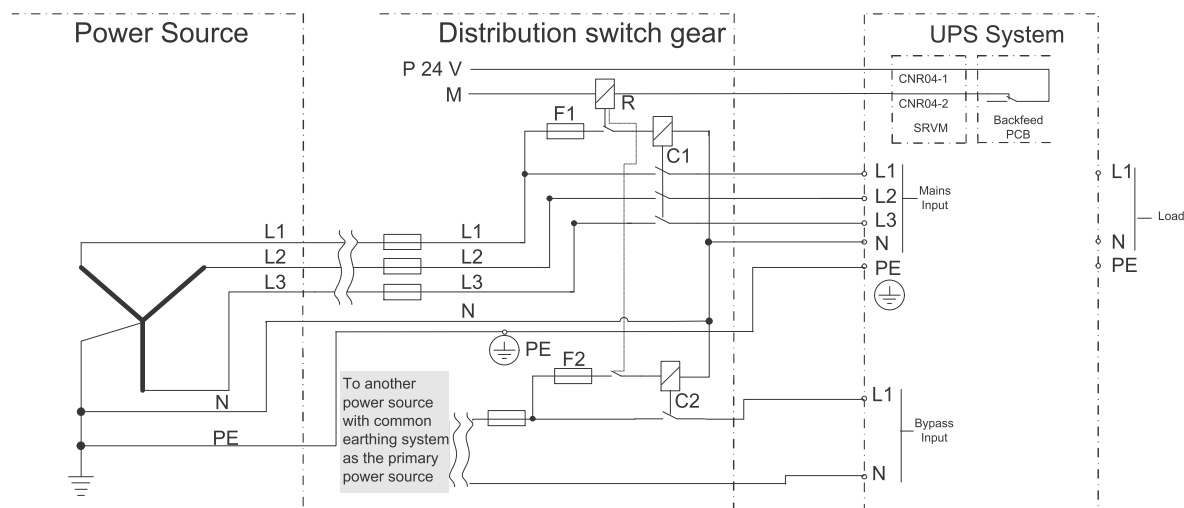
10.

- a. For 3:3: Connect C2 (L1, L2, L3) with UPS bypass input (L1, L2, L3) as the illustration 3 below.
- b. For 3:1: Connect C2 (only L1) with UPS bypass input (only L1) as shown in illustration 4 below.

11.

- a. For 3:3: Connect C1 (L1, L2, L3) with the input feeding (L1, L2, L3) in distribution switchgear as shown in illustration 3 below.
- b. For 3:1: Connect C1 (L1, L2, L3) with the input feeding (L1, L2, L3) in distribution switchgear as shown in illustration 4 below.

12. Connect bypass input (N) with mains feeding (N) in distribution switchgear.

Illustration 3 for Dual Mains 3:3 UPS and External Isolation Device**Illustration 4 for Dual Mains 3:1 UPS and External Isolation Device**

Install Battery Solution

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Make sure that the battery breaker is open before starting.
- Check the DC voltages with a DC voltage multimeter versus the battery voltage before continuing.

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

Depending on your chosen battery solution, follow one of these procedures to install the battery and signal cables between the battery solution and the UPS:

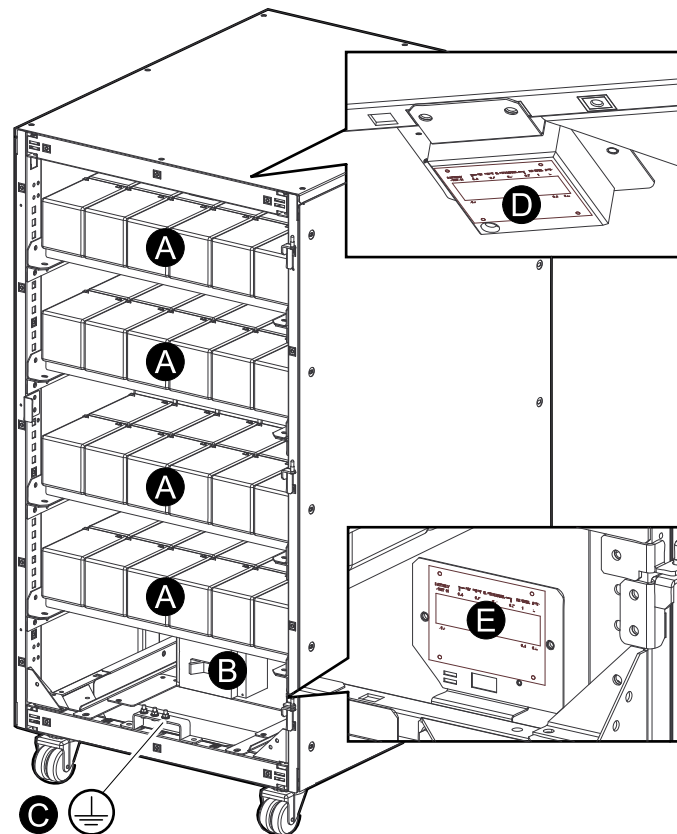
- **Galaxy 300 battery cabinet (1300 mm)** – See *Install a Galaxy 300 Battery Cabinet (1300 mm)*, page 37.
- **Galaxy 1900 mm battery cabinet** – See *Install a Galaxy 1900 mm Battery Cabinet*, page 46.
- **Third party battery solution** – See *Connect Battery and Signal Cables to Third Party Battery Solution*, page 53

Battery Cabinet Product Overview

Galaxy 300 Battery Cabinet (1300 mm)

- A. Battery shelves
- B. Battery circuit breaker
- C. Ground cable connection (from the UPS)
- D. Battery temperature sensor (ATIZ)
- E. Connection terminal (for ATIZ, circuit breaker detection and power supply)

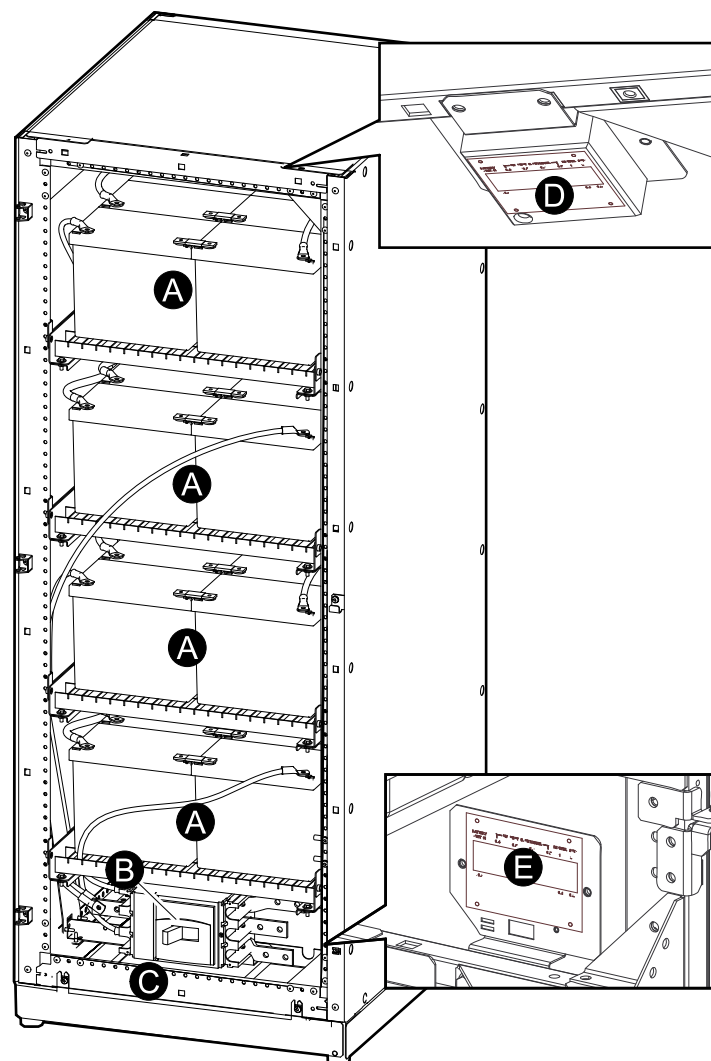
Front View



Galaxy 1900 mm Battery Cabinet

- A. Battery shelves
- B. Battery circuit breaker
- C. Ground cable connection (from the UPS)
- D. Battery temperature sensor (ATIZ board)
- E. Cable terminal board (for ATIZ, circuit breaker detection and power supply)

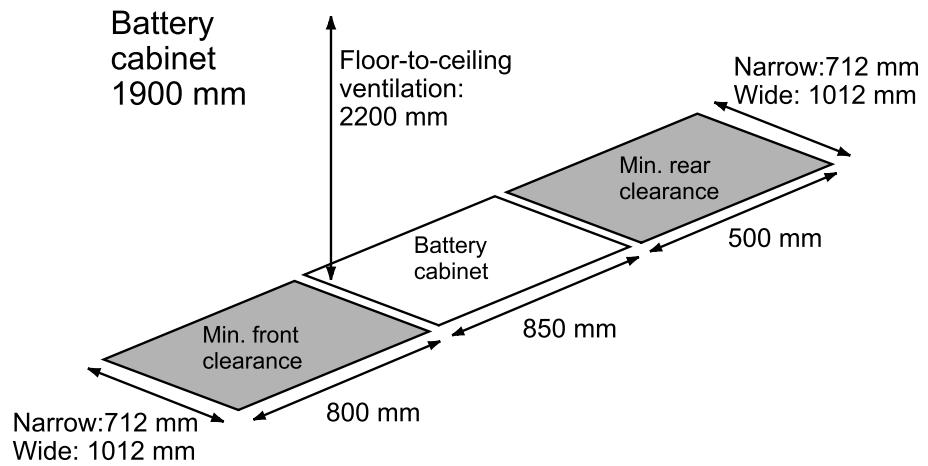
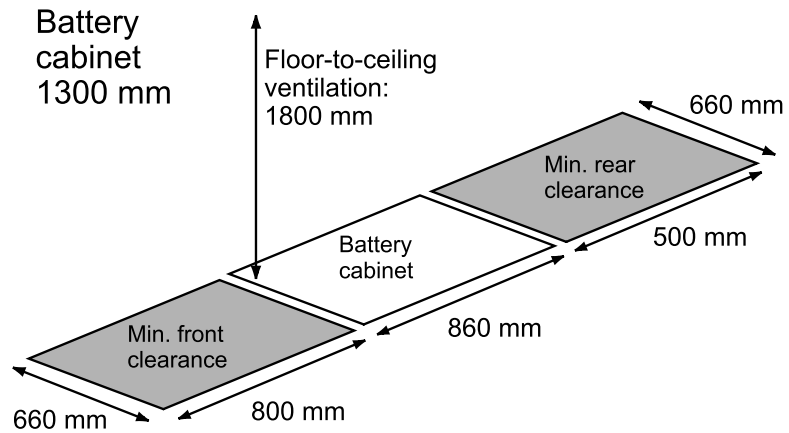
Front View



Battery Cabinet Clearance

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

NOTE: 500 mm rear service clearance is recommended.



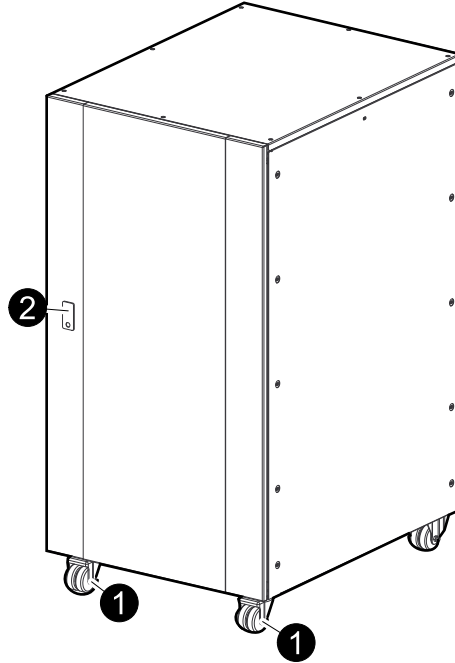
Install a Galaxy 300 Battery Cabinet (1300 mm)

Prepare Galaxy 300 Battery Cabinet (1300 mm) for Cables

1. Lock the two front wheels by tightening the screws.
2. Open the unlocked front door.

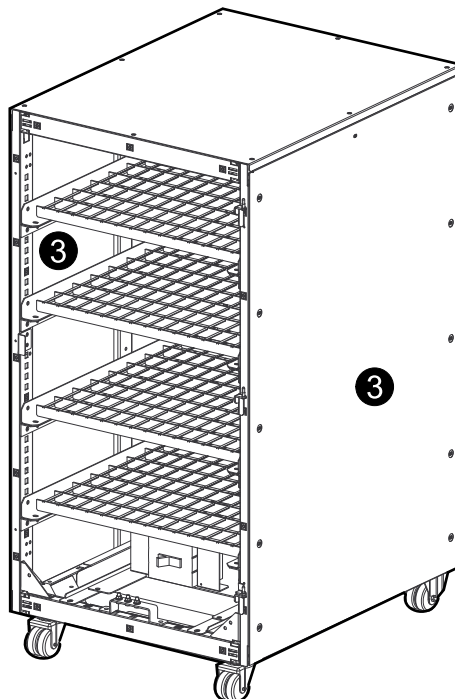
NOTE: The key to the door can be found in the accessories package located in the cabinet.

Front View



3. Remove both side panels.

Front View



Connect Internal Cables in Galaxy 300 Battery Cabinet (1300 mm) with Pre-Installed Batteries

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

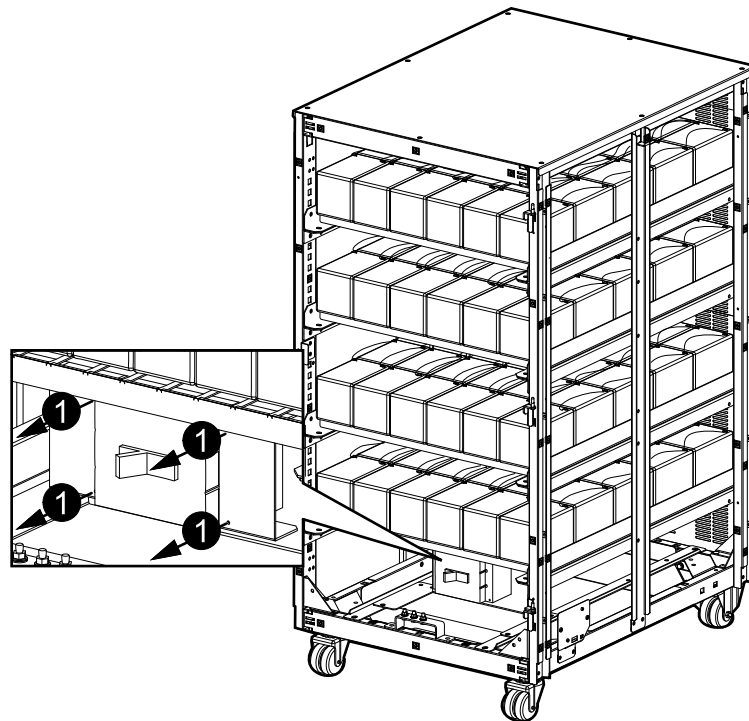
Remove all cardboard pieces, which are used to protect the batteries during transport. Make sure that cables and copper busbars are separated.

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

NOTE: A maximum of two battery cabinets can be connected to the UPS (one battery cabinet with a circuit breaker plus one cabinet without a circuit breaker) by a batch cable between the UPS and the circuit breaker in the battery cabinet.

1. Remove the left and right plastic cover from the battery breaker by removing the four screws (two on each plastic cover).

Front View

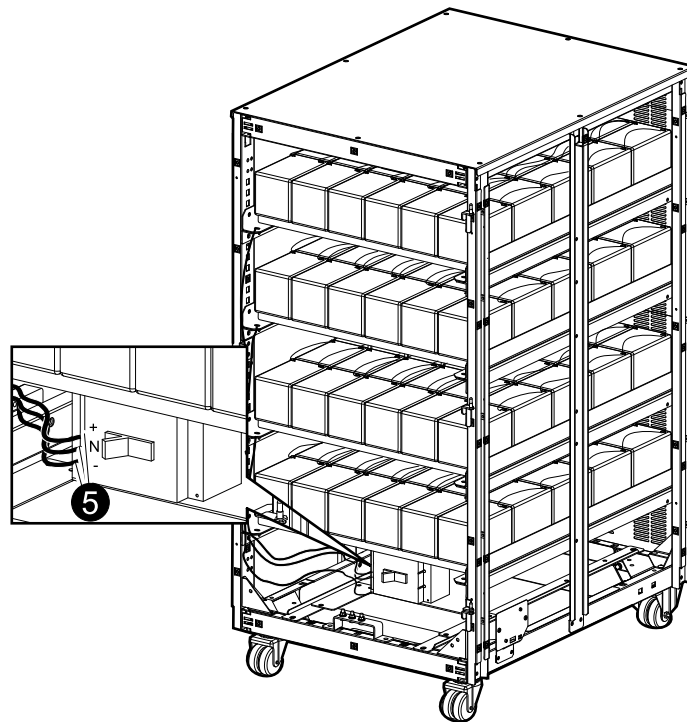


2. Cut off the belts to remove the carton paper.
3. Run the cables inside each shelf and connect to the batteries.
4. Run the cables between the shelves.

5. Run the cables between the shelves and the circuit breaker.

NOTE: If the cables have more than one terminal, then the unconnected terminals must be isolated with insulation tape before connecting the other terminal.

Front View



Connect Internal Cables in Galaxy 300 Battery Cabinet (1300 mm) without Pre-Installed Batteries

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Schneider Electric is not responsible for the wiring of external third party batteries. Follow the instructions from the battery manufacturer.

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Remove all cardboard pieces, which are used to protect the batteries during transport. Make sure that cables and copper busbars are separated.

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

NOTE: Before the installation of batteries, you must select and follow the diagrams inside the battery cabinet which apply to your configuration.

NOTE: The maximum load capacity of each battery shelf is 155 kg.

NOTE: A maximum of four battery shelves can be installed.

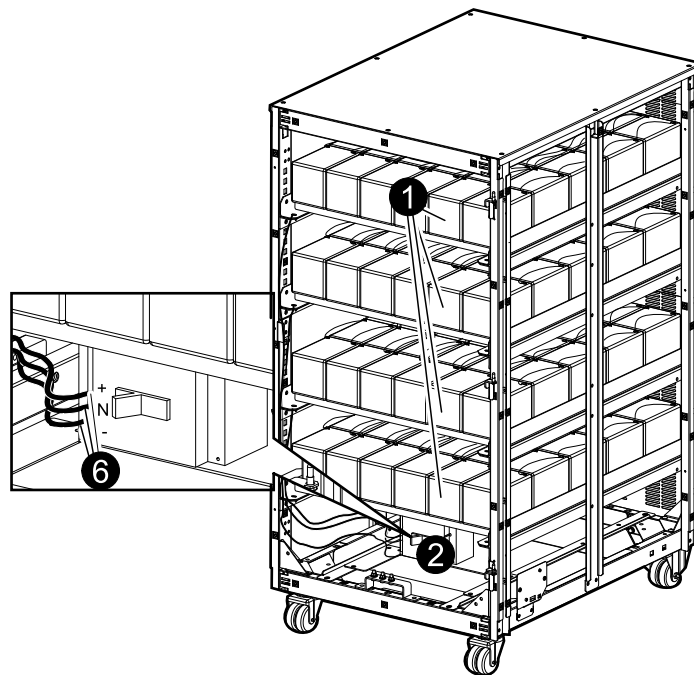
NOTE: A maximum of two battery cabinets can be connected to the UPS (one battery cabinet with a circuit breaker plus one cabinet without a circuit breaker) by a batch cable between the UPS and the circuit breaker in the battery cabinet.

1. Insert the batteries on the shelves starting from the bottom according to the relevant diagram inside the battery cabinet.

2. Install a battery breaker.
3. Cut off the belts to remove the carton paper.
4. Run the cables inside each shelf and connect to the batteries.
5. Run the cables between the shelves.
6. Run the cables between the shelves and the circuit breaker.

NOTE: If the cables have more than one terminal, then the unconnected terminals must be isolated with insulation tape before connecting the other terminal.

Front View

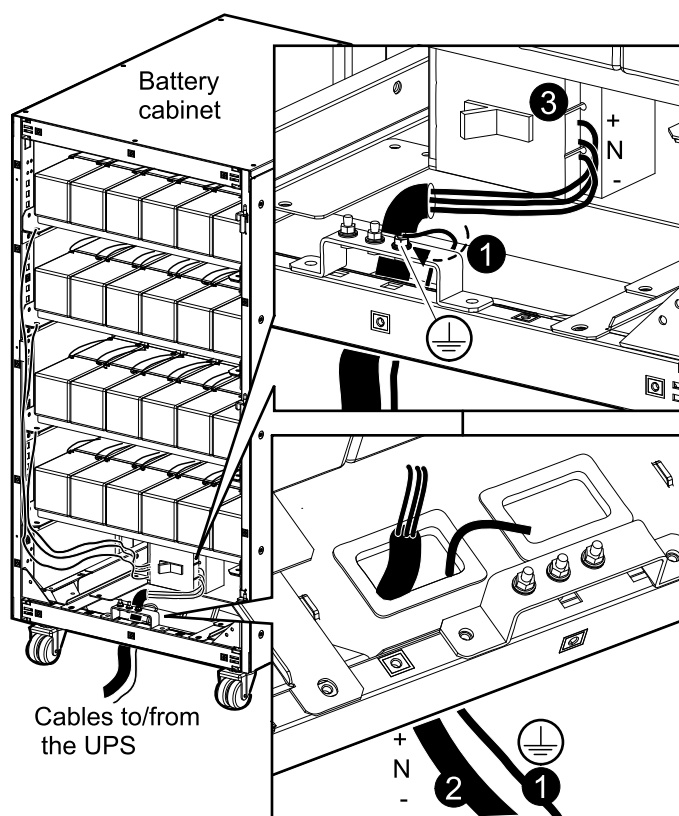


Connect Battery Cables from UPS to the Galaxy 300 Battery Cabinet (1300 mm)

1. Run the Protective Earth (PE) cable from the UPS up through the bottom front hole of the battery cabinet and connect it to the busbar.
2. Run the battery cables (BAT+, N, and BAT-) from the UPS up through the bottom front hole.
3. Attach the cables to the right side of the battery breaker.

4. Reinstall the side panels.

Front View



Connect External Battery Temperature (ATIZ) and External Battery Breaker Signal between the UPS and the Galaxy 300 Battery Cabinet (1300 mm)

NOTE: The ATIZ cable is for the external battery temperature detection signal (cable is pre-installed).

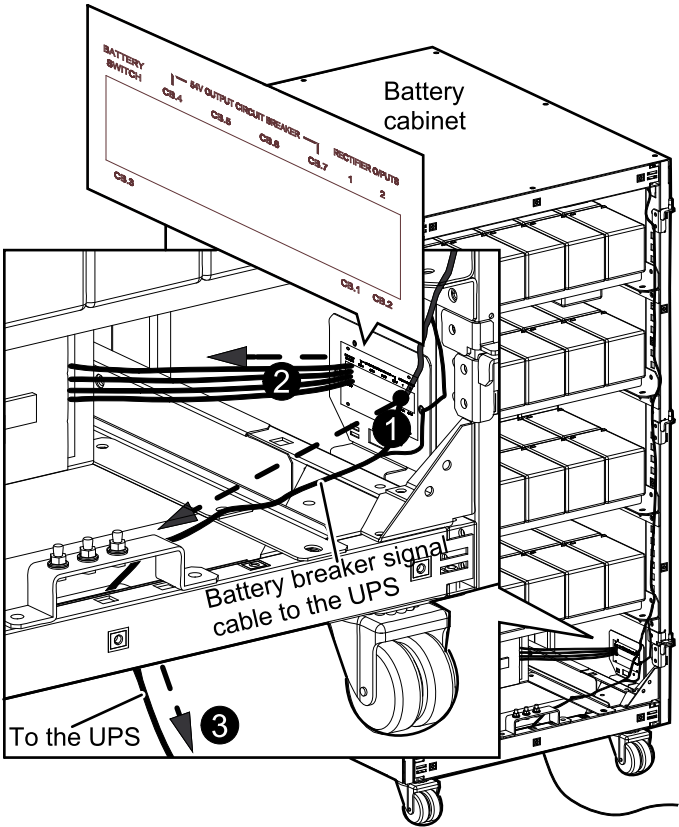
NOTE: The battery cable is for the external battery breaker signal (cable is pre-installed).

NOTE: The connection of signal cables is only applicable between the UPS and battery cabinet 1.

1. Run the combined battery breaker and ATIZ signal cable from the connection terminal on the battery cabinet to the UPS.
2. Run the four cables from the connection terminal to the battery breaker on the battery cabinet (see the below table for cable description).

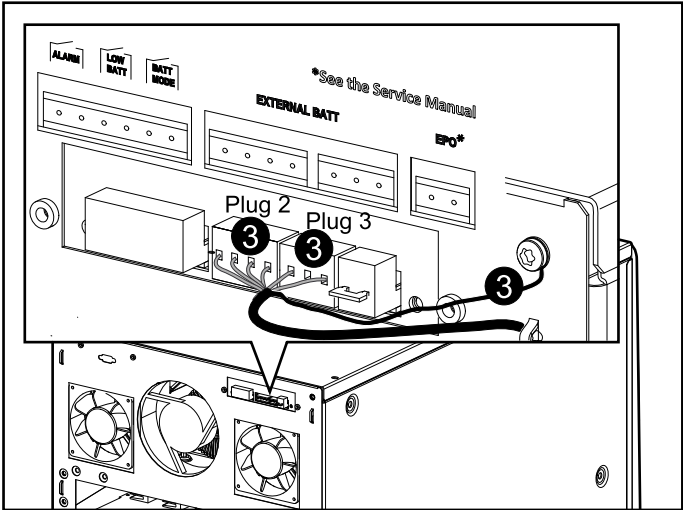
3. Connect the combined battery breaker and ATIZ signal cable to the UPS as shown and make sure to connect the cable with shielded layer to the screw on the UPS.

Front View of Battery Cabinet (1300 mm)



| Cable description | | | |
|-------------------|-------------|--------------------|--|
| Cable color | Cable label | Description | |
| Yellow | QB OF-11 | CB contact signal | – to the auxiliary contact (normally closed) |
| White | QB OF-14 | CB contact signal | |
| Red | QB OF-D4 | +12 V power supply | – to the coil terminal |
| Black | QB OF-D1 | -12 V power supply | |

Rear View of the UPS



NOTE: The cable(s) is routed the same way as the EPO cable.

Connect Battery and Signal Cables from the Galaxy 300 Battery Cabinet (1300 mm) to a Running UPS

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

This procedure describes how to connect a battery cabinet to a UPS running in normal operation. Do not connect a battery cabinet to a running UPS with internal batteries – Remove all internal batteries first.

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

NOTE: A maximum of two battery cabinets can be connected to the UPS (one battery cabinet with a circuit breaker plus one cabinet without a circuit breaker) by a batch cable between the UPS and the circuit breaker in the battery cabinet.

NOTE: Before carrying out the below procedure, make sure that the UPS is running in normal operation with no internal UPS faults displayed. In normal operation four breakers (**QM1,QFB,QM2,QOP**) must be in the **ON (closed)** position and two breakers (**Q3BP,QB**) must be in the **OFF (opened)** position.

1. Turn the UPS into maintenance bypass operation:
 - a. Press the **Inverter OFF** button for three seconds and then turn the input breaker (**QM1**) to the **OFF (opened)** position.
 - b. Turn the maintenance bypass breaker (**Q3BP**) to the **ON (closed)** position.
 - c. Turn the static bypass breaker (**QM2**) to the **OFF (opened)** position.
 - d. Turn the output breaker (**QOP**) to the **OFF (opened)** position.
2. Isolate the batteries by turning the UPS battery cabinet breaker (**QFB**) to the **OFF (opened)** position.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

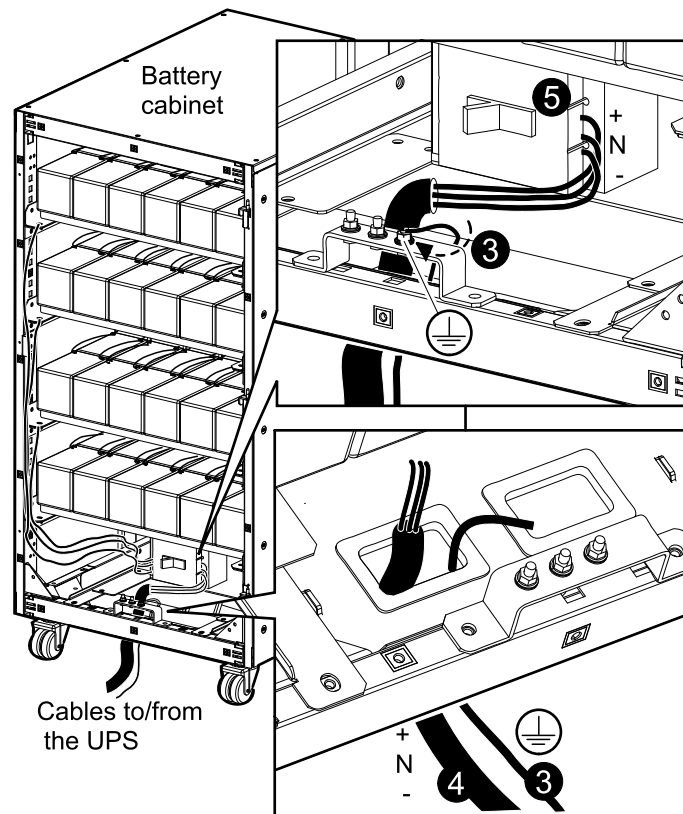
Check the DC voltages with a DC voltage multimeter versus the battery voltage before continuing.

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

3. Run a Protective Earth (PE) cable from the UPS up through the bottom front hole of the battery cabinet and connect it to the busbar.
4. Run the battery cables (BAT+, N, and BAT-) from the UPS up through the bottom front hole.
5. Attach the cables to the right side of the battery breaker.

6. Reinstall the side panels.

Front View of Battery Cabinet (1300 mm)



7. Reinstall the plastic cover and the I/O sheet metal cover removed on the UPS – these covers were removed while preparing the UPS for cables.

! DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

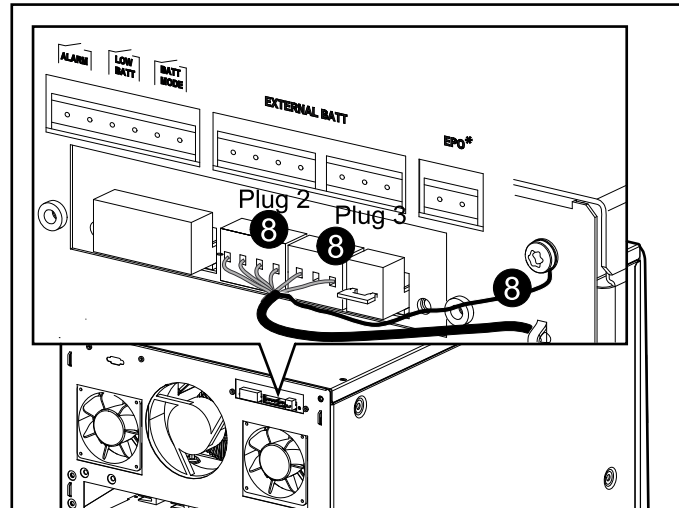
The I/O sheet metal cover must be fixed in the lowest position for safety reasons.

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

8. Connect the combined battery breaker and ATIZ signal cable to the UPS as shown and make sure to connect the cable with shielded layer to the screw on the UPS.

NOTE: See *Connect External Battery Temperature (ATIZ) and External Battery Breaker Signal between the UPS and the Galaxy 300 Battery Cabinet (1300 mm)*, page 41 for information on how to route the cable(s)

Rear View of the UPS



9. Turn the UPS back into normal operation:
 - a. Turn the output breaker (**QOP**) to the **ON (closed)** position.
 - b. Turn the static bypass breaker (**QM2**) to the **ON (closed)** position.
 - c. Wait a minute for the static bypass breaker LED and the output breaker LED to turn green.
 - d. Turn the maintenance bypass breaker (**Q3BP**) to the **OFF (opened)** position.
 - e. Turn the battery cabinet breaker (**QFB**) to the **ON (closed)** position.
 - f. Turn the input breaker (**QM1**) to the **ON (closed)** position.
 - g. When the soft start has finished, press the INVERTER ON button.
10. Check the LEDs to see if the UPS is running in normal operation:
 - PFC LED: green
 - INVERTER LED: green
 - LOAD LED: green
 - LOAD PROTECTED LED: green
 - Other LEDs: **OFF**

Install a Galaxy 1900 mm Battery Cabinet

Prepare Galaxy 1900 mm Battery Cabinet for Cables

Install Shelves in Galaxy 1900 mm Battery Cabinet

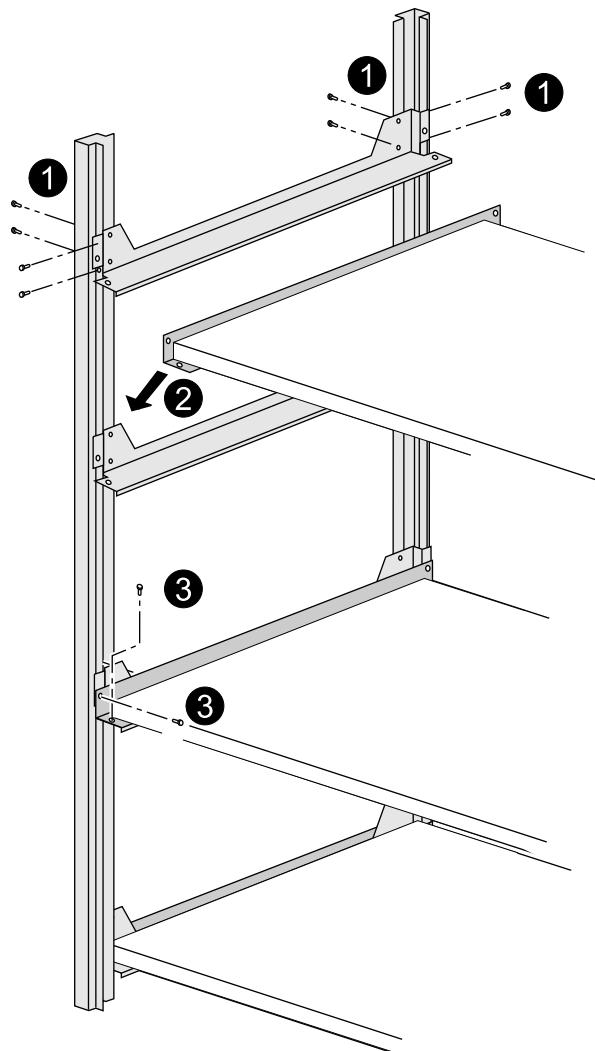
⚠ CAUTION

HAZARD OF INJURY OR EQUIPMENT DAMAGE


Assembly of the battery cabinet must be carried out by certified personnel (standard EN 50091-1-2). The minimum clearance between the top of the battery cells and the next shelf above them is 150 mm.

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

1. Secure the angle supports (6 screws per support).
2. Position each shelf.
3. Secure each shelf with two screws in each angle.



Install Battery Circuit Breaker Kit in Galaxy 1900 mm Battery Cabinet

 **DANGER**

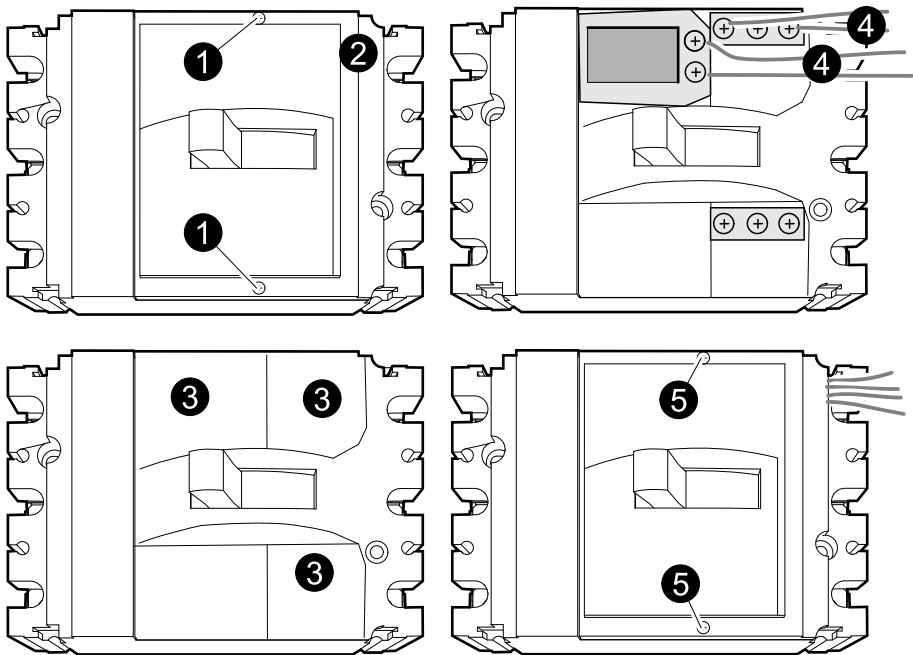
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

It is mandatory to protect the battery circuit with a circuit breaker equipped with a coil terminal and an auxiliary contact (min. 24 VDC).

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

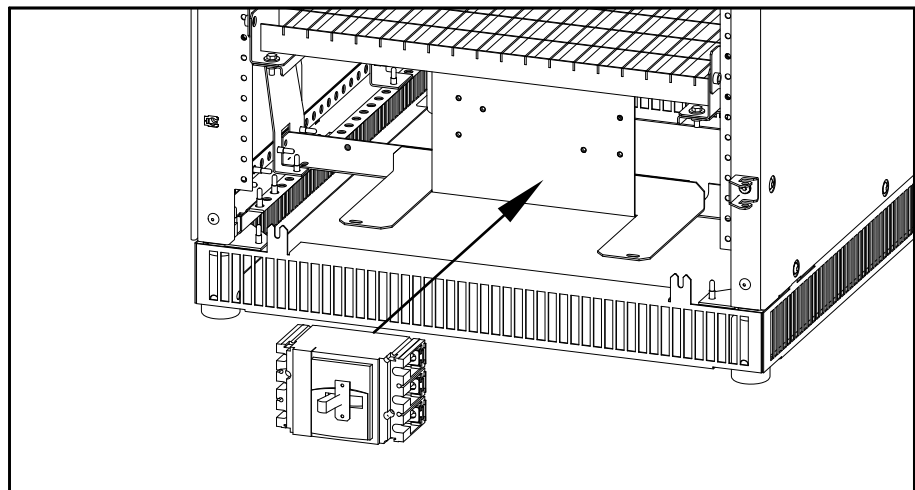
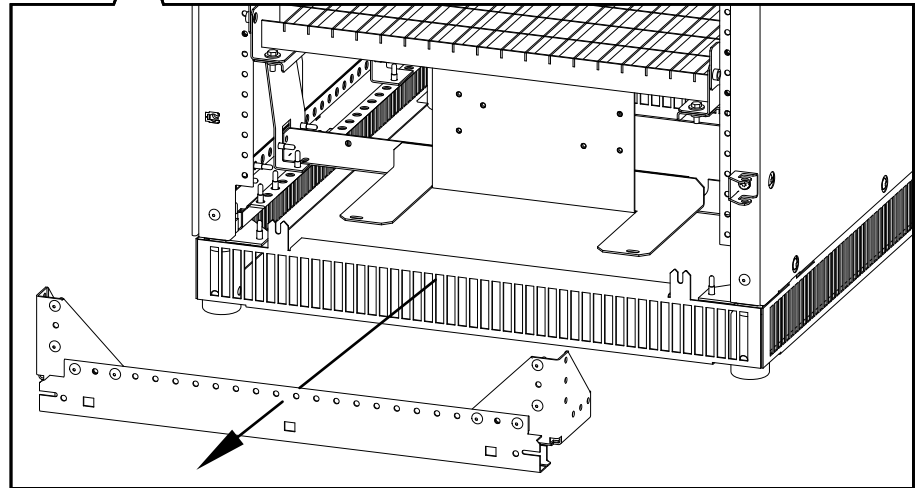
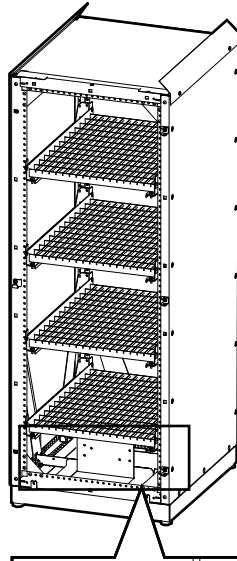
NOTE: For several battery cabinets installed, only one battery circuit breaker is necessary. Temperature sensors must be installed to obtain battery warranty and to optimize battery lifetime.

1. Loosen the two screws on the battery circuit breaker and remove the top cover (save the two screws for later).
2. Cut a hole in the plastic cover for cable access.
3. Install the battery circuit breaker auxiliary parts 530-2213 and 540-0274.
4. Connect the white, yellow, black, and red ATIZ cables to the terminals on the auxiliary parts and note the mark and color of the cables.
5. Reinstall the plastic cover on the battery circuit breaker with the two screws.

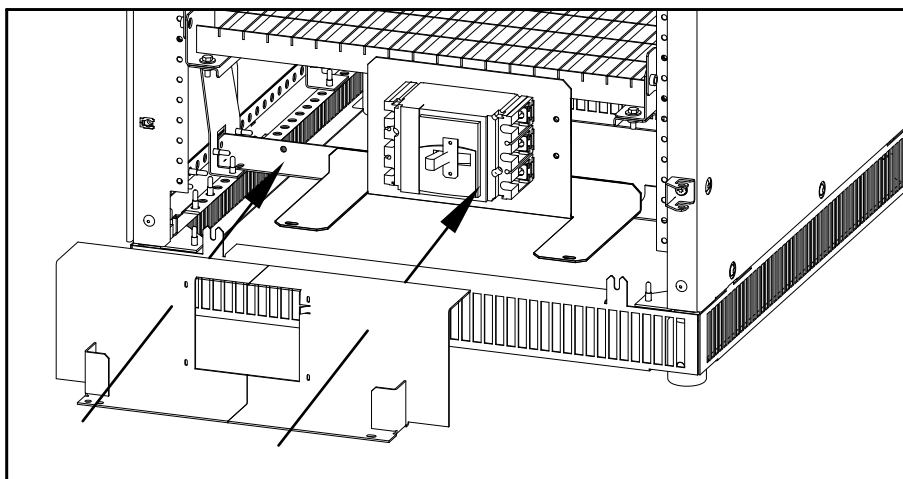


| Cable description | | | |
|-------------------|-------------|--------------------|--|
| Cable color | Cable label | Description | |
| Yellow | QB OF-11 | CB contact signal | – to the auxiliary contact (normally closed) |
| White | QB OF-14 | CB contact signal | |
| Red | QB OF-D4 | +12 V power supply | – to the coil terminal |
| Black | QB OF-D1 | -12 V power supply | |

6. Install the battery circuit breaker on the preinstalled plate in the bottom of the battery cabinet. The front metal plate and the corner triangles can be removed for easy access.



7. Install the two protection covers over the battery circuit breaker.



8. Reinstall the front metal plate and the corner triangles if removed earlier.

Connect Battery Cables from the UPS to the Galaxy 1900 mm Battery Cabinet

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Make sure that there are no internal batteries in the UPS before connecting a battery cabinet to the system.
- Make sure that the battery breaker is open before starting.
- Check the DC voltages with a DC voltage multimeter versus the battery voltage before continuing.

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK

The battery cabinet(s) and the UPS must be earthed properly.

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

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

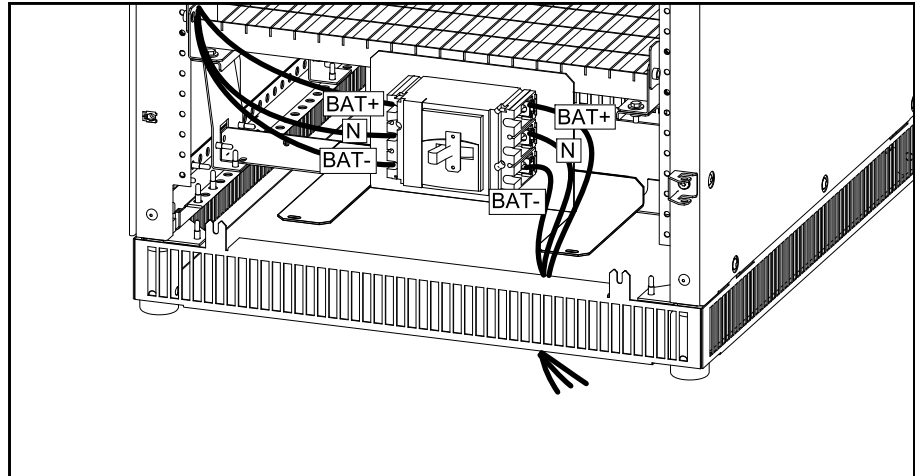
- Battery circuit breakers must be installed according to the specifications and requirements as defined by Schneider Electric.
- Servicing of batteries must only be performed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Turn the battery circuit breakers OFF before connecting cables to the terminals.

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

1. Connect the Protective Earth (PE) cable between the battery cabinet(s) and the UPS.
2. Install the battery cells on each shelf and secure and interconnect them per shelf.

3. Interconnect all the battery shelves and then connect the battery cables (BAT+, BAT-, N) from the overall battery assembly to the battery circuit breaker in the battery cabinet as shown in the illustration.
4. **If more than one battery cabinet is installed:** Connect the BAT+, BAT-, and N cables (not provided) between the battery cabinets in a daisy chain.
5. Connect the battery cables (BAT+, BAT-, N) from the UPS to the battery circuit breaker in the battery cabinet that will be connected to the UPS.

Front View of the Battery Cabinet



Install External Battery Temperature (ATIZ) and External Battery Breaker Signal between the UPS and the Galaxy 1900 mm Battery Cabinet

NOTE: The ATIZ cable is for the external battery temperature detection signal.

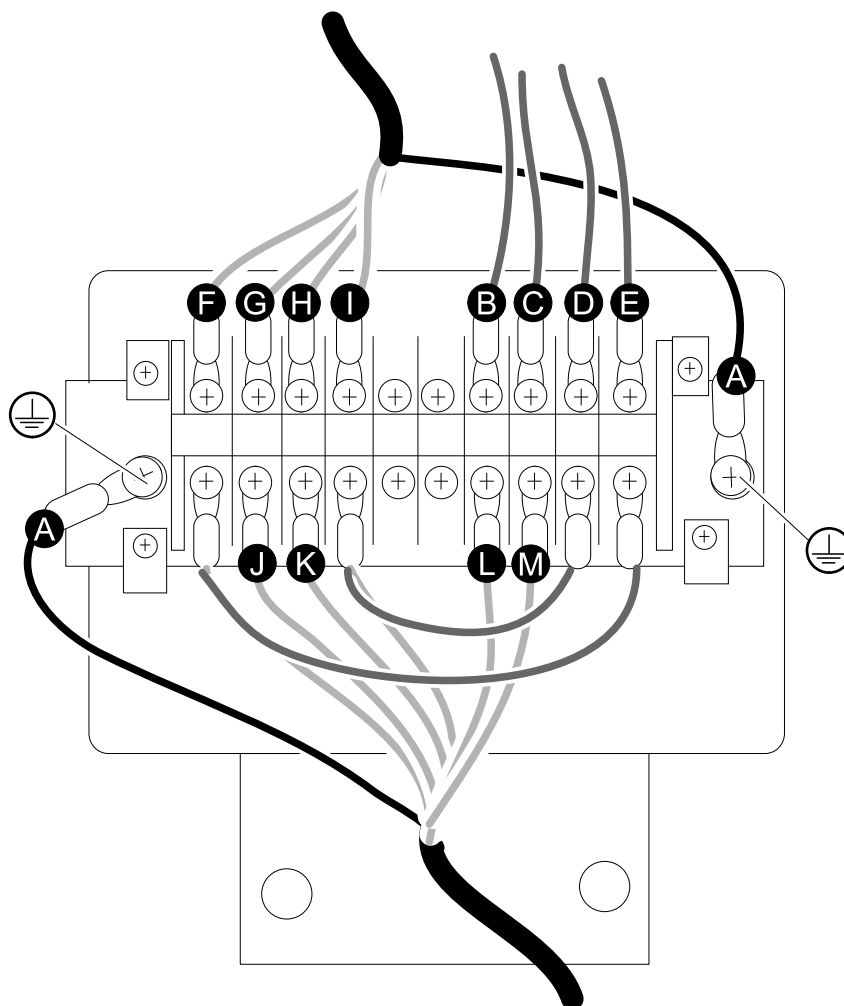
NOTE: The battery cable is for the external battery breaker signal.

NOTE: The connection of signal cables is only applicable between the UPS and battery cabinet 1.

1. Remove the right bottom protection cover on the classic battery cabinet.
2. Connect the cable terminal board to the supplied support sheet metal plate.

3. Install the cable terminal board in the bottom right side of the battery cabinet with two screws

Cable Connection on the Cable Terminal Board



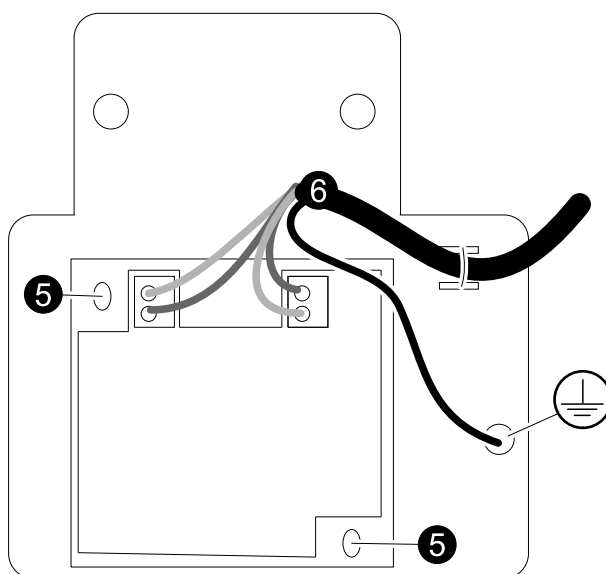
- A. PE cables
- B. Cable from auxiliary parts in battery circuit breaker (yellow)
- C. Cable from auxiliary parts in battery circuit breaker (white)
- D. Cable from auxiliary parts in battery circuit breaker (red)
- E. Cable from auxiliary parts in battery circuit breaker (black)
- F. Cable connected to UPS (black)
- G. Cable connected to UPS (white)
- H. Cable connected to UPS (green)
- I. Cable connected to UPS (red)
- J. Cable connected to ATIZ box (white)
- K. Cable connected to ATIZ box (green)
- L. Cable connected to ATIZ box (yellow)
- M. Cable connected to ATIZ box (black)

4. Connect the four cables from the two auxiliary parts in the circuit breaker to the cable terminal board.

| Cable description | | | |
|-------------------|-------------|--------------------|--|
| Cable color | Cable label | Description | |
| Yellow | QB OF-11 | CB contact signal | – to the auxiliary contact (normally closed) |
| White | QB OF-14 | CB contact signal | |
| Red | QB OF-D4 | +12 V power supply | – to the coil terminal |
| Black | QB OF-D1 | -12 V power supply | |

5. Open the ATIZ board box and install it on the supplied support sheet metal plate with two screws.
6. Connect the four cables and the PE-cable from the cable terminal board to the ATIZ board. Secure the joining cable with a cable tie.

Cable Connection in the ATIZ Board Box

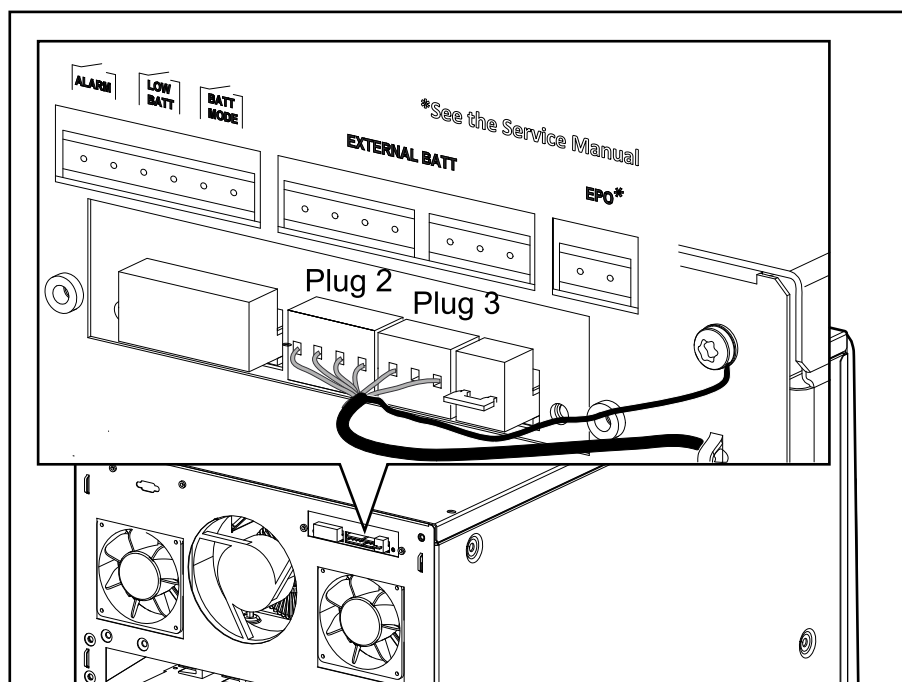


7. Close the ATIZ board box.
8. Install the ATIZ board box in the top right side of the battery cabinet with two screws and secure the cable with cable ties down along the inside of the battery cabinet.
9. Run the combined battery breaker and ATIZ signal cable from the cable terminal board in the battery cabinet to the UPS.

10. Connect the combined battery breaker and ATIZ signal cable to the UPS as shown and make sure to connect the cable with shielded layer to the screw on the UPS.

NOTE: The cable(s) is routed the same way as the EPO cable.

Rear View of the UPS



11. Reinstall the right bottom protection cover on the battery cabinet.

Connect Battery and Signal Cables to Third Party Battery Solution

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- You must only use the UPS unit version intended for external batteries. A third party battery solution must **ONLY** be used for a UPS configured with long backup time charger (CLA).
- Before carrying out any of the below steps, you must make sure that the UPS unit and battery unit are powered off. See the operation manual (990-3619) shipped with the UPS unit on how to power off the UPS via the display.
- The external battery temperature detection kit (ATIZ) and the breaker signal must be installed to ensure that the battery works normally. If the ATIZ kit is not installed, the UPS will report a temperature fault with a permanent alarm. Only a Schneider Electric field service engineer can disable this alarm. The consequence of not installing the ATIZ kit is that the unit does not have a temperature compensation function, and this will also affect the battery life, if the battery is installed in a room that is not appropriately air-cooled.
- The cables must have shielded layer, and they must be connected to the UPS and the external third party battery solution. If not, the unit will face EMC and shutdown problems.
- The battery breaker must be equipped with a coil terminal and an auxiliary contact (min. 24 VDC).
- Schneider Electric is not responsible for the wiring of external third party batteries.

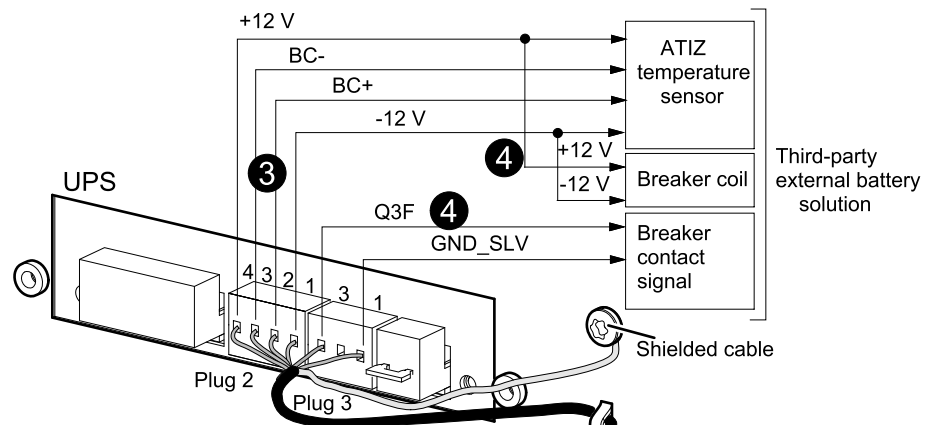
Failure to follow these instructions will result in death or serious injury.

NOTE: A maximum of two battery cabinets can be connected to the UPS (one battery cabinet with a circuit breaker plus one cabinet without a circuit breaker, as only one breaker is supported) by a batch cable between the UPS and the circuit breaker in the battery cabinet.

1. Prepare one or two shielded cables with 4 twisted pairs for the ATIZ contact and the battery circuit breaker. All shielded cables must be wound three times around a High permeability NiZn Ferrite placed as close to the UPS as possible.

NOTE: +/-12 V power supply is common for ATIZ and the auxiliary coil of the battery circuit breaker.

Rear View of the UPS



2. Install the ATIZ signal board in the third party battery solution.
3. Connect the ATIZ signal cable to the ATIZ board in the third party battery solution (see the below table for cable description).

| Cable description | | | |
|-------------------|-------------|--------------------|-----------------------|
| Cable color | Cable label | Description | |
| Black | -12 | -12 V power supply | – to the ATIZ contact |
| White | BC- | BC- (ATIZ signal) | |
| Green | BC+ | BC+ (ATIZ signal) | |
| Red | +12 | +12 V power supply | |
| Green-yellow | | | Grounding |

NOTE: If a battery breaker has not been installed in the third party battery solution, install one now. The battery breaker must be equipped with a coil terminal and an auxiliary contact (min. 24 VDC). If there is no undervoltage coil terminal in the battery circuit breaker, then the UPS cannot open the battery circuit breaker when necessary (EPO). If there is no auxiliary contact in the battery circuit breaker, then the UPS will report a battery circuit breaker open fault with a permanent alarm.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

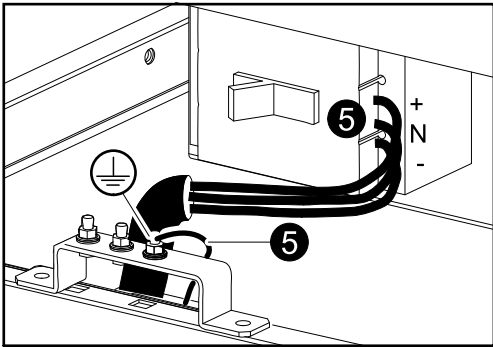
The battery circuit breaker must be open (in the OFF position) before you connect the cables.

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

4. Connect the battery breaker signal cable from the UPS to the battery circuit breaker in the third party battery solution (see the below table for cable description).

| Cable description | | | |
|-------------------|-------------|--------------------|--|
| Cable color | Cable label | Description | |
| Yellow | QB OF-11 | CB contact signal | – to the auxiliary contact (normally closed) |
| White | QB OF-14 | CB contact signal | |
| Red | QB OF-D4 | +12 V power supply | – to the coil terminal |
| Black | QB OF-D1 | -12 V power supply | |

5. Attach Protective Earth (PE) cable from the UPS to the battery solution, and connect the battery cables (BAT+, N, BAT-) from the UPS to the battery circuit breaker in the third party battery solution. See *Recommended Cable Sizes*, page 15.

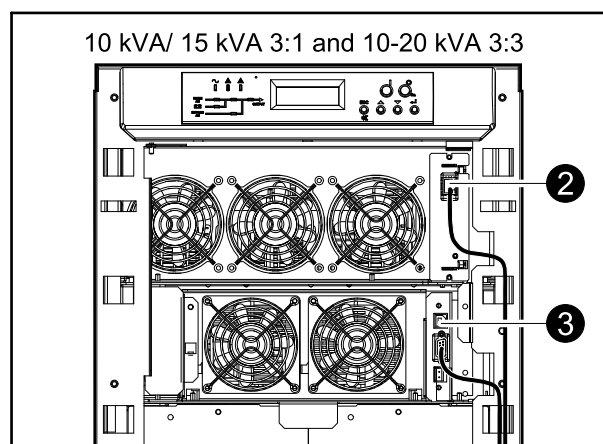
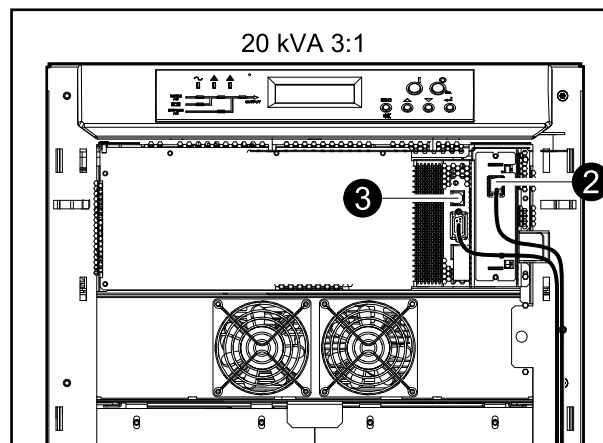
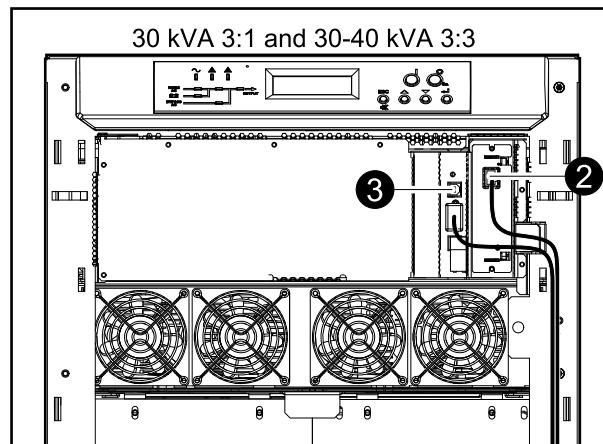


Connect the UPS Signal Cables

Connect the Signal Cables to the UPS

1. Open the front door.
2. Connect the shielded signal cables (optional) to the network management card. Refer to the network management card documentation shipped with the UPS.
3. Connect the UPS backfeed signal CNR04-1 CNR04-2.

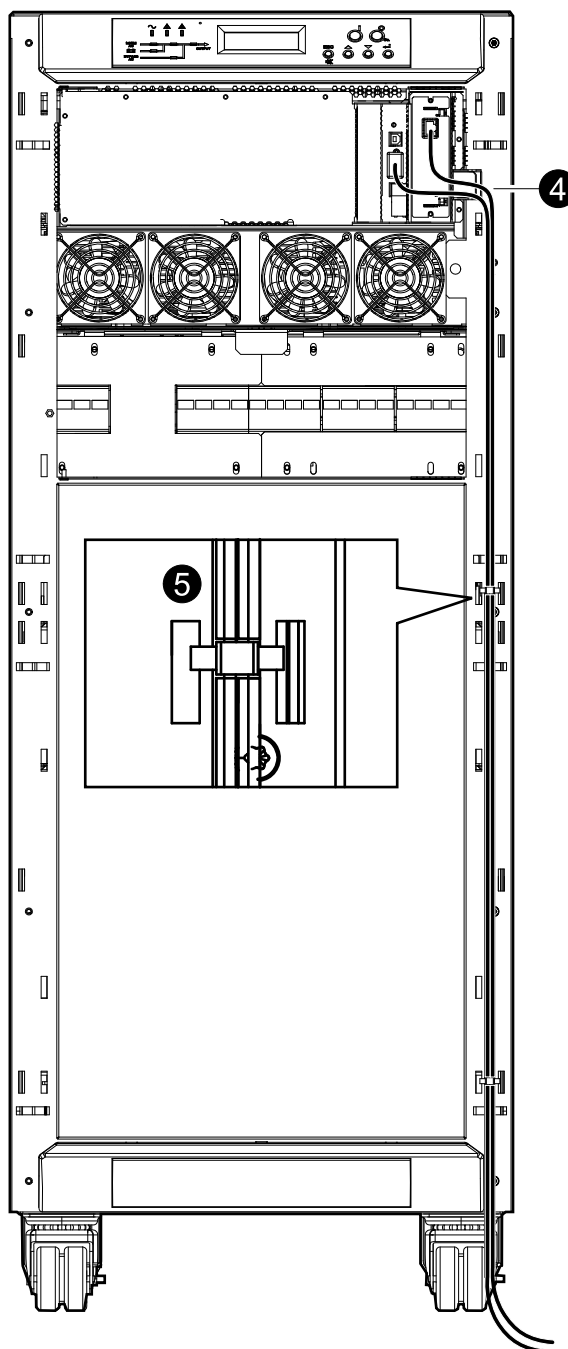
Front View of the UPS



4. Run the cables through the slot (otherwise the door cannot close) and up along the right side of the cabinet.

5. Secure the cables with cable ties.

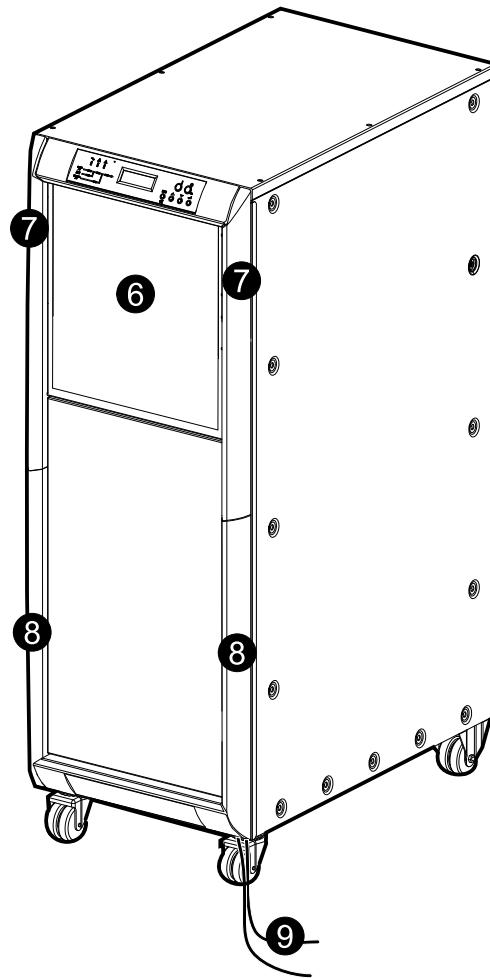
Front View of the UPS



6. Close the upper front door by pushing the door in.
7. Install the two upper side covers with two hands by tipping the covers 10°. Then push down the two clips on the covers (3 mm down) in the rectangular holes on the front panel, and then push in the covers.
8. Install the two bottom side covers in the same way.

9. Connect the cables to your computer interface network.

Front View of the UPS



Connect the EPO Cable to the UPS

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

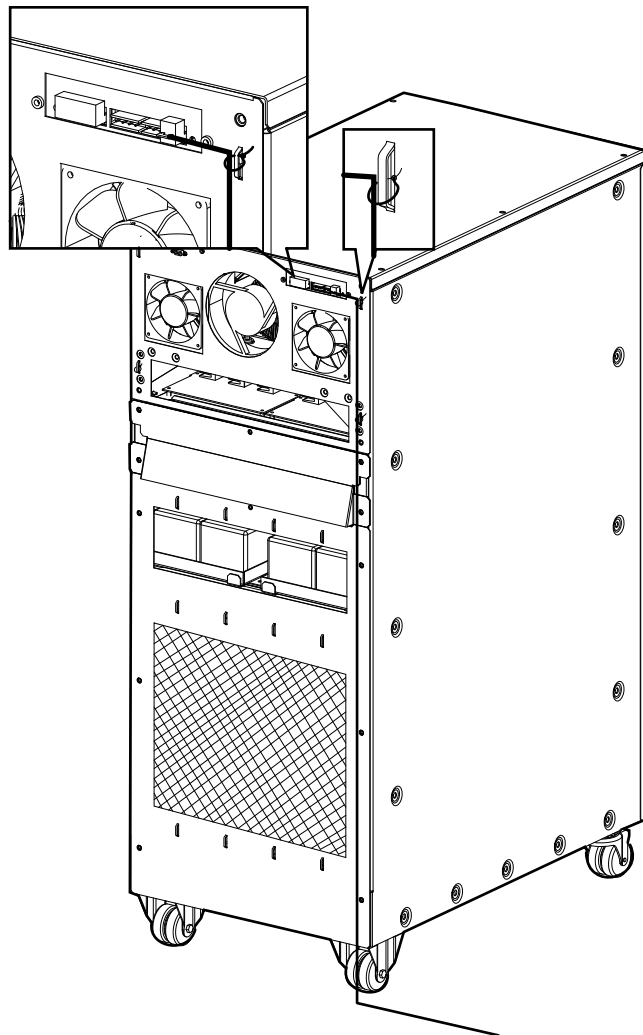
The cables must have a shielded layer, and the shielded layer must be connected to grounding on both the UPS side and the customer side.

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

NOTE: A jumper must be added if no EPO cable is connected.

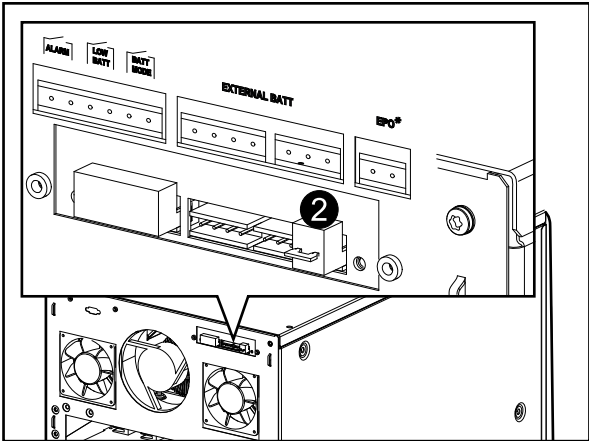
1. Route a shielded EPO cable and optional signal cables.

Rear View



-
2. Connect the Emergency Power Off (EPO) with a shielded cable to the pin (cable not provided). The default connection is closed with two pins.

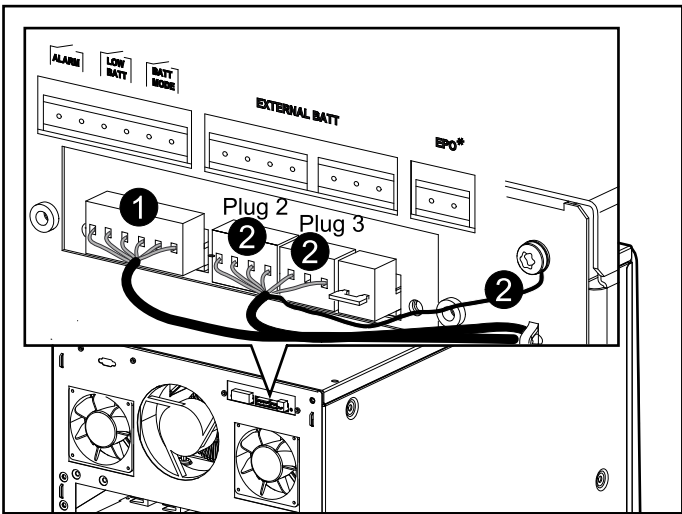
Rear View



Connect the Optional Signal Cables

1. Connect the dry connector with a shielded cable (cable not provided). The dry contacts permit to monitor the UPS from external relay switches regarding general alarms, battery mode, and low battery. Run the cables to an indication instrument such as LEDs, etc.

Rear View of the UPS



| Requirements for dry connector cables | |
|---------------------------------------|-------------------------------|
| Permissible voltage (VDC) | 30 |
| Permissible current (A) | 1 |
| Cable | 4 x 0.93 mm², ø 6.6 ± 0.3 mm. |

2. If external batteries are used, connect the cable for the external battery temperature detection and the external battery circuit breaker signal to signal ports 2 and 3.

NOTE: If the Galaxy 300 battery cabinet (1300 mm) is used, one cable end is pre-installed in this battery cabinet. If a third party battery solution is used, see *Connect Battery and Signal Cables to Third Party Battery Solution*, page 53.

NOTE: Parallel cabling must be carried out by Schneider Electric. Up to two units can run in parallel with a mutual distance of up to 12 m (two cables of 5 and 15 m are provided in the parallel kit).

Checklist after Installation

UPS

- Check that the power wiring is torqued correctly.
- Verify clockwise phase-rotation (L1, L2, L3) and make sure that a neutral connection is present.
- Leave a wiring diagram on site for service personnel.
- Reinstall all wiring access panels.
- Make sure that all battery breakers on the UPS unit are in the **OFF (opened)** position.

Battery Solution

- Check that the power wiring is torqued as recommended by the battery vendor.
- Verify the polarity of battery cable connection (BAT+, N and BAT-).
- Leave a wiring diagram on site for service personnel.
- Reinstall all wiring access panels.
- Make sure that all battery breakers on the battery solution are in the **OFF (opened)** position.
- Install the two protection covers over the battery circuit breaker on the Galaxy 1900 mm battery cabinet.

Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmason
France

+ 33 (0) 1 41 29 70 00

www.schneider-electric.com

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

© 2013 – 2016 Schneider Electric. All rights reserved.

990–5246C–001