



Liebert[®] GXE UPS 6-10kVA

Installer/User Guide

230 V Input, 230 V Output

The information contained in this document is subject to change without notice and may not be suitable for all applications. While every precaution has been taken to ensure the accuracy and completeness of this document, Vertiv assumes no responsibility and disclaims all liability for damages result from use of this information or for any errors or omissions.

Refer to local regulations and building codes relating to the application, installation, and operation of this product. The consulting engineer, installer, and/or end user is responsible for compliance with all applicable laws and regulations relation to the application, installation, and operation of this product.

The products covered by this instruction manual are manufactured and/or sold by Vertiv. This document is the property of Vertiv and contains confidential and proprietary information owned by Vertiv. Any copying, use, or disclosure of it without the written permission of Vertiv is strictly prohibited.

Names of companies and products are trademarks or registered trademarks of the respective companies. Any questions regarding usage of trademark names should be directed to the original manufacturer.

Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit <https://www.vertiv.com/en-us/support/> for additional assistance.

TABLE OF CONTENTS

1 Important Safety Information	1
2 Product Description	3
2.1 UPS Features and Available Models	3
2.2 Front Panels	3
2.3 Rear Panels	4
2.4 Internal Battery Packs	5
2.5 External Battery Cabinet (EBC)	6
2.6 Major Internal Components and Operating Principle	7
2.7 UPS States and Operating Modes	8
2.7.1 Normal Mode	8
2.7.2 Bypass Mode	9
2.7.3 Battery Mode	10
2.7.4 Active ECO Mode	11
2.7.5 Maintenance Bypass Mode	11
3 Installation	13
3.1 Unpacking and Inspection	13
3.2 Pre-installation Preparation	13
3.3 Installing the UPS	14
3.3.1 Tower Installation	14
3.3.2 Rack Installation	14
3.4 Installing External Battery Cabinets	15
3.5 Hardwired Input/Output Connections	15
3.5.1 Branch Circuit Breaker	15
3.5.2 Terminal Block Connections	16
3.5.3 Connecting to Terminal Blocks	17
3.6 Communication Connections	17
3.6.1 Connecting IntelliSlot Communication	17
3.6.2 Connecting to the REPO Port	18
3.6.3 Connecting a USB Cable	18
3.6.4 Connecting RS232	18
4 Operating the UPS	19
4.1 Silencing the Audible Alarm	19
4.2 Starting Up the UPS	19
4.3 Transferring to Battery Mode	19
4.4 Transferring from Normal to Bypass Mode	19
4.5 Transferring from Bypass to Normal Mode	20
4.6 Transferring from Normal to Standby Mode	20

- 4.7 Shutting Down the UPS Completely20
- 4.8 Remote Emergency Power Off (REPO) 20
- 5 Operation and Display Panel 21**
- 5.1 LED Indicators 22
- 5.2 LCD Menu and Screens 23
 - 5.2.1 Startup and Flow Screens 23
 - 5.2.2 Main Menu 23
 - 5.2.3 Status Screen 24
 - 5.2.4 Settings Submenu 26
 - 5.2.5 Control Screen 29
 - 5.2.6 Log Screen 30
 - 5.2.7 About Screen 33
 - 5.2.8 Maintenance Screen 34
- 5.3 Editing Display and Operation Settings 34
 - 5.3.1 Settings Prompts 34
 - 5.3.2 Changing the Password 35
 - 5.3.3 Selecting the Display Language 36
 - 5.3.4 Setting the Date and Time 36
- 6 Maintenance 37**
- 6.1 Replacing Batteries 37
- 6.2 Charging Batteries 40
- 6.3 Checking UPS Operation 40
- 6.4 Cleaning the UPS 40
- 6.5 Firmware Updates 40
- 7 Troubleshooting 41**
- 7.1 Symptoms that Require Troubleshooting 41
- 7.2 Audible Alarm (Buzzer) 41
 - 7.2.1 Faults 41
- 7.3 Troubleshooting UPS Issues 42
- 8 Specifications 43**
- 8.1 Battery Run Times 46
- Appendices 47**
- Appendix A: Technical Support 47
- Appendix B: Open Source Software Legal Notices 49

1 Important Safety Information

IMPORTANT! This manual contains important safety instructions that must be followed during the installation and maintenance of the UPS and batteries. Read this manual thoroughly and the safety and regulatory information, available at <https://www.vertiv.com/ComplianceRegulatoryInfo>, before attempting to install, connect to supply, or operate this UPS.

This page intentionally left blank

2 Product Description

The Vertiv™ Liebert® GXE is a compact, online uninterruptible power system (UPS) that continuously conditions and regulates its output voltage. The Liebert® GXE supplies microcomputers and other sensitive equipment with clean sine wave input power.

Upon generation, AC power is clean and stable. However, during transmission and distribution it is subject to voltage sags, spikes, and complete failure that may interrupt computer operations, cause data loss, and damage equipment.

The Liebert® GXE protects equipment from these disturbances. The Liebert® GXE continuously charges its batteries from the mains, enabling it to supply power to connected loads, even when the mains fail.

2.1 UPS Features and Available Models

The Liebert® GXE includes the following features. **Table 2.1** below, lists the available models and power ratings.

- Enhanced load capacity with an output power factor of 1.
- Optional tower or rack installation to meet varying installation requirements.
- Adapts to areas with unstable power mains supply via high frequency double conversion topology structure, with high input power factor, wide input voltage range, and output immune to grid interference.
- Operation and display panel with model specific color LCD offers simple configuration and control of the UPS.
- ECO power supply mode helps you save the maximum amount of energy.

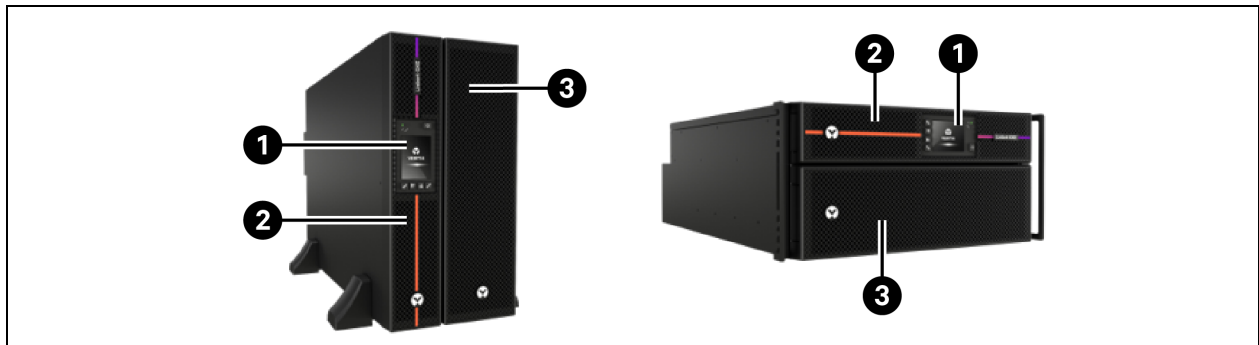
Table 2.1 UPS Models and Power Ratings

Model Number	Nominal Power Rating
GXE3-6000IRT4UXL	6000 VA/6000 W
GXE3-10KIRT5UXL	10,000 VA/10,000 W

2.2 Front Panels

The various Liebert® GXE models have the same general appearance. **Figure 2.1** below shows the 6 kVA and 10 kVA model in a tower and a rack configuration.

Figure 2.1 Front View

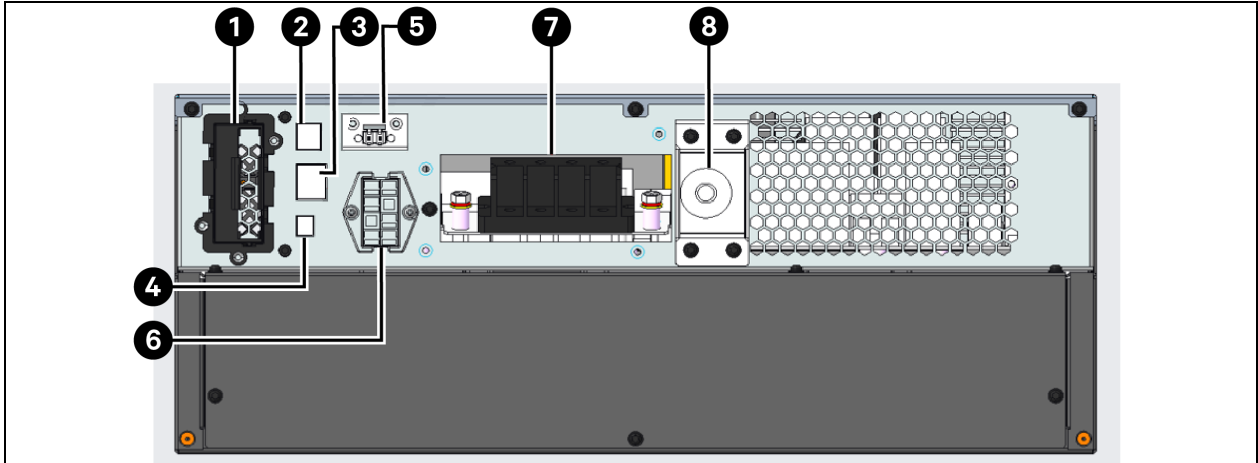


Item	Description	Item	Description
1	Operation/Display panel	3	Lower bezel/Battery access door
2	Upper bezel		

2.3 Rear Panels

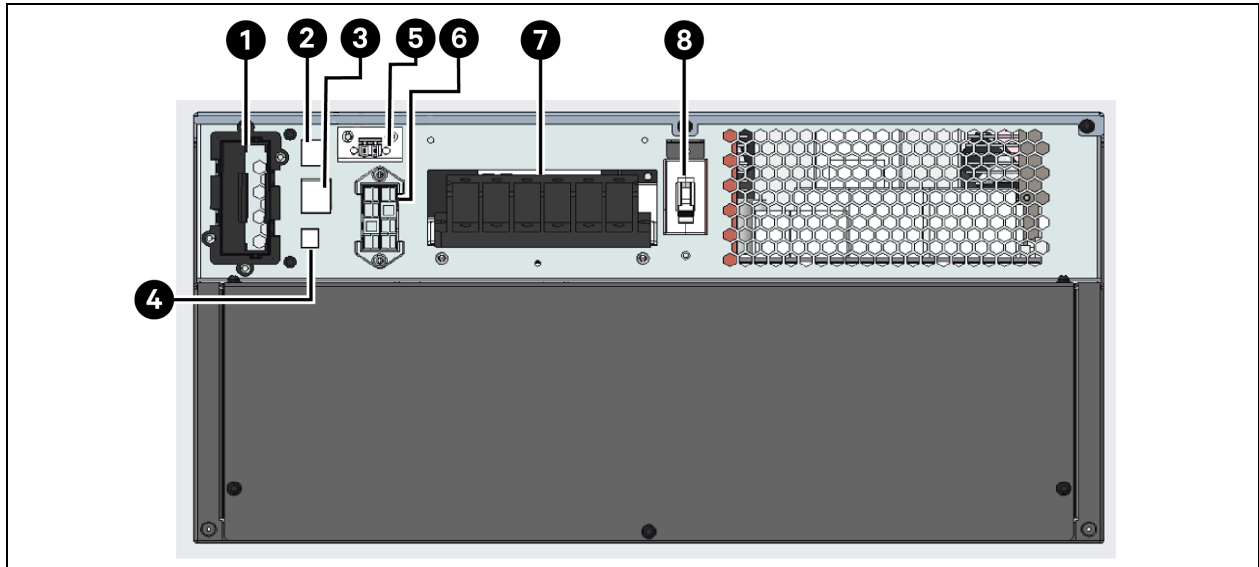
The Figure 2.2 below detail the rear panel features for each Vertiv™ Liebert® GXE model.

Figure 2.2 GXE3-6000IRT4UXL Rear Panel



Item	Description
1	Vertiv™ Liebert® IntelliSlot™ port
2	USB port
3	RS232 port
4	Service terminal block for external maintenance bypass
5	REPO connector
6	External battery cabinet connector
7	AC Input / AC output terminal block for hard wire I/O
8	Input circuit breaker

Figure 2.3 GXE3-10KIRT5UXL Rear Panel



Item	Description
1	Vertiv™ Liebert® IntelliSlot™ port
2	USB port
3	RS232 port
4	Service terminal block external maintenance bypass
5	REPO connector
6	External battery cabinet connector
7	AC Input / AC output terminal block for hard wire I/O
8	Input circuit breaker

2.4 Internal Battery Packs

An example of the Vertiv™ Liebert® GXE internal battery packs is shown in **Figure 2.4** on the next page and **Figure 2.5** on the next page. They are located behind the access door on the front of the UPS. The 6 kVA units have 1 battery pack and the 10 kVA units have 2 battery packs. The battery pack size varies based which unit it is designed for.

Figure 2.4 GXE-6000IRT4UXL Internal Battery Pack

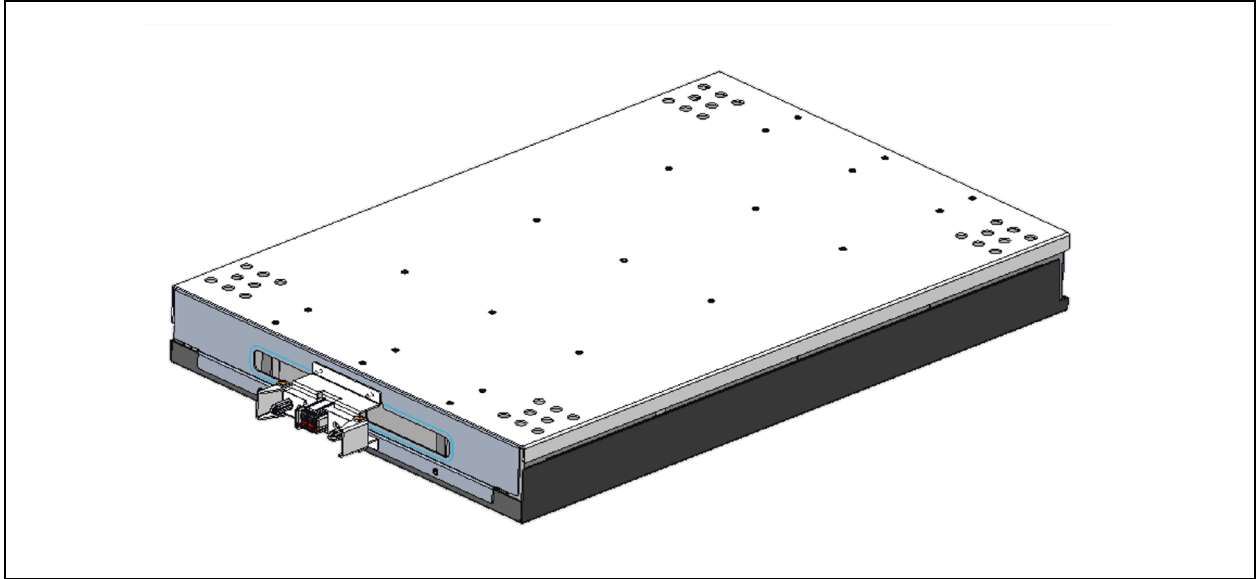
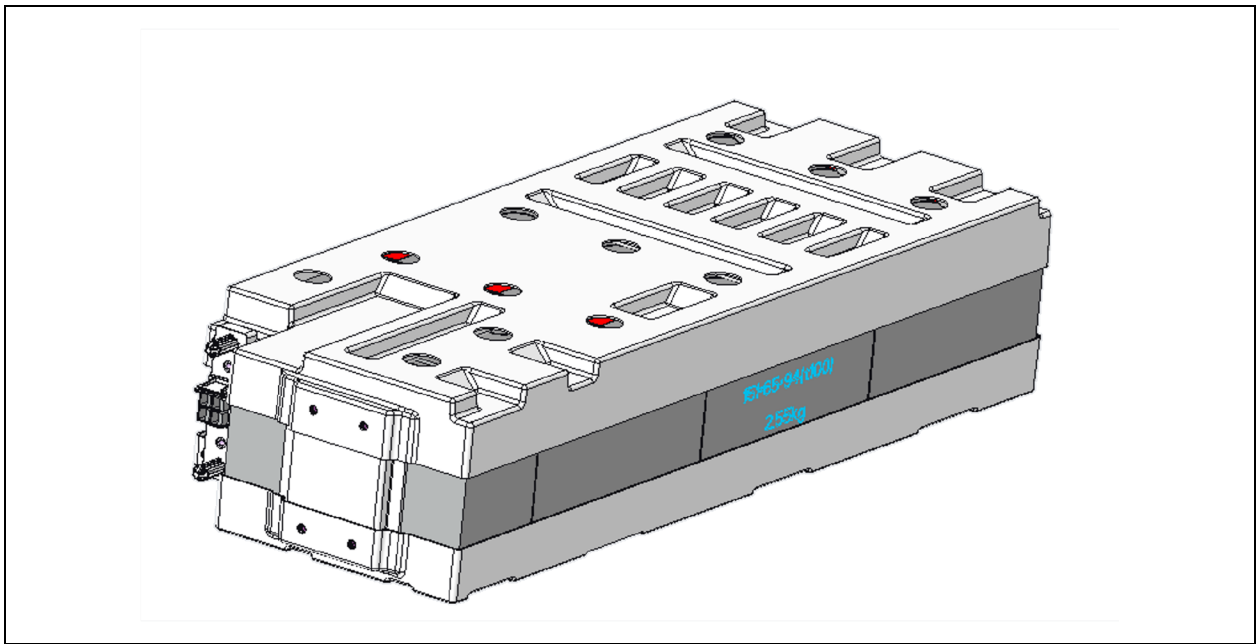


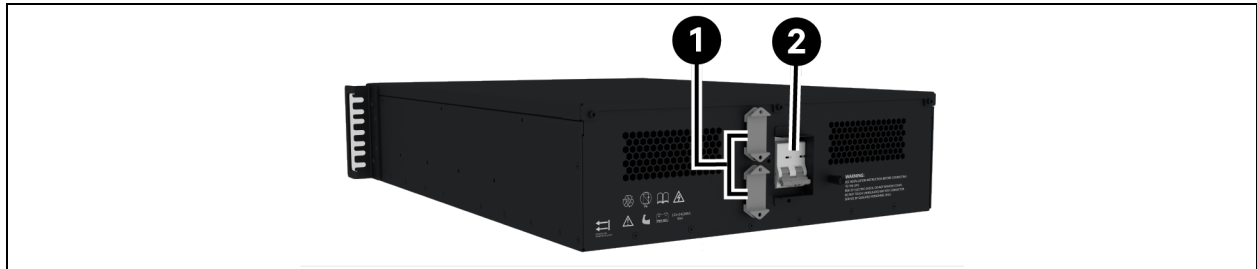
Figure 2.5 GXE-10KIRT5UXL Internal Battery Pack (2 required)



2.5 External Battery Cabinet (EBC)

Optional external battery cabinets are available for the UPS and include a single battery cable. Up to 4 EBCs may be connected to the UPS. See [External Battery Cabinet Specifications](#) on page 45 for the EBC specifications. For approximate battery run times with additional EBCs, see [Battery Run Times](#) on page 46. See [Installing External Battery Cabinets](#) on page 15, to connect the cabinets.

Figure 2.6 Battery Cabinet



Item	Description
1	Battery connectors
2	Isolation breaker

2.6 Major Internal Components and Operating Principle

Figure 2.7 below, shows the UPS operating principle. Table 2.2 below describes the function of the major components in the UPS.

NOTE: Figure 2.7 below, is one example of basic operation. The actual I/O connections for the various models may be divided into different types. See [Hardwired Input/Output Connections](#) on page 15.

Figure 2.7 Basic Operating Principal Diagram

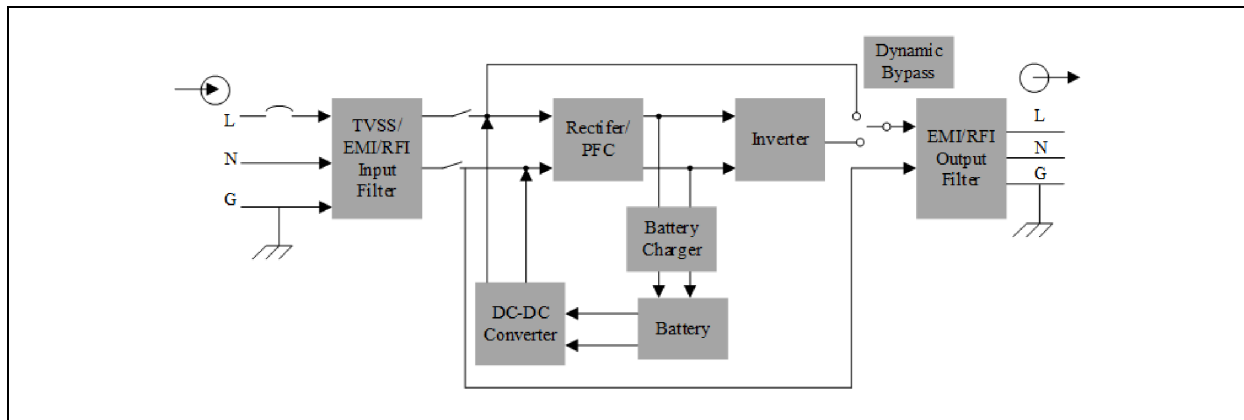


Table 2.2 Major Components

Component	Operation/Function
Transient Voltage Surge Suppression (TVSS) and EMI/RFI Filters	TVSS provides surge and lightning protection. EMI/RFI filters Electromagnetic Interference (EMI) and radio Frequency Interference (RFI). Minimize surges and interference present in the utility power and protect other devices connected on the same branch as the UPS.
Battery Charger	Further regulates the DC power from the rectifier/PFC to continuously charge the batteries. Batteries are charged when the UPS is plugged in, even when not powered on.
Batteries	Valve regulated, non-spillable, lead acid batteries. NOTE: To maintain optimal battery design life, operate the UPS in an ambient temperature of 20 to 25 °C (68 to 77 °F).

Table 2.2 Major Components (continued)

Component	Operation/Function
DC to DC Converter	Raises the DC voltage from the battery voltage to the optimum operating voltage for the rectifier/PFC that powers the inverter continuously at its optimum voltage for increased efficiency, thus increasing reliability.
Rectifier/Power Factor Correction (PFC) Circuit	In normal operation, converts utility AC power to regulated DC power for use by the inverter while ensuring that the wave shape of the input current used by the UPS is near ideal. Extracting this sine wave input current ensures efficient use of utility power and reduces reflected harmonic distortion making cleaner power available to devices that are not protected by the UPS.
Inverter	In normal operation, inverts the DC output of the PFC circuit into precise, regulated sine wave AC power. When utility power fails, the inverter continues to receive DC power from the battery through the DC to DC converter and rectifier/PFC without interruption. In either operating mode, the UPS inverter remains online, generating clean, precise, regulated AC output power.
Internal Bypass	In the unlikely event of UPS failure or if the UPS output is overloaded the connected equipment is automatically transferred to bypass. To manually transfer from inverter to bypass, see Transferring from Normal to Bypass Mode on page 19 .

NOTE: The bypass power path does not protect the connected equipment from disturbances in the mains power supply.

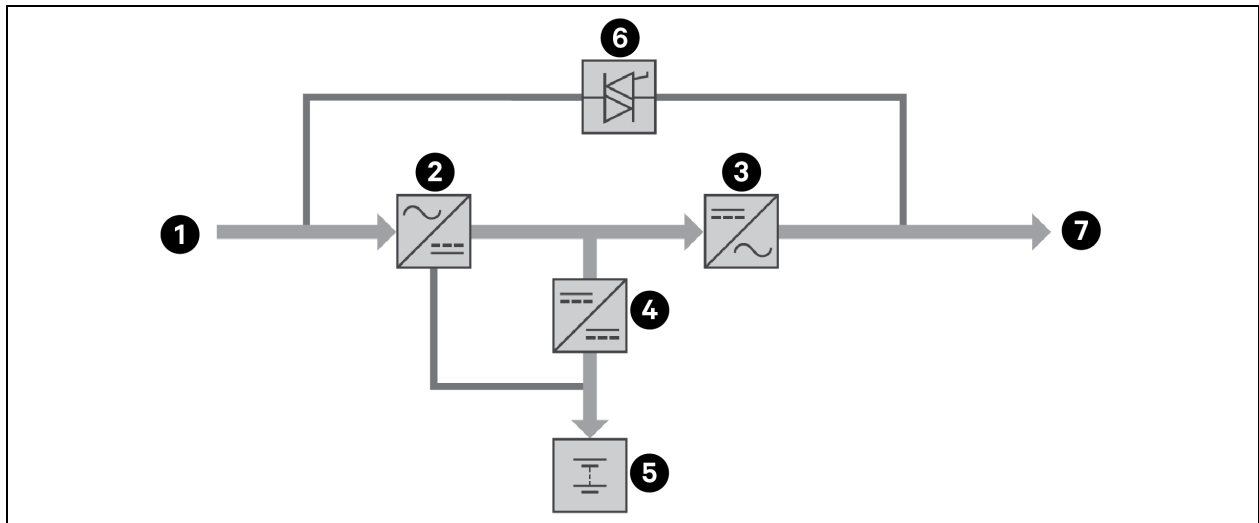
2.7 UPS States and Operating Modes

NOTE: See [LED Indicators](#) on page 22 , for description of the run indicator and alarm indicator LEDs mentioned in this section.

2.7.1 Normal Mode

When utility power is within input operating range, the UPS will operate in Normal mode (double conversion) that employs the rectifier and inverter to provide stabilized voltage and frequency power to the connected equipment. The battery charger will recharge or maintain the battery at full capacity. On the front panel display, the run indicator (green) is ON, the alarm indicator is OFF, and the buzzer is silent. **Figure 28** on the facing page shows the diagram of normal mode.

Figure 2.8 Normal Mode Operation



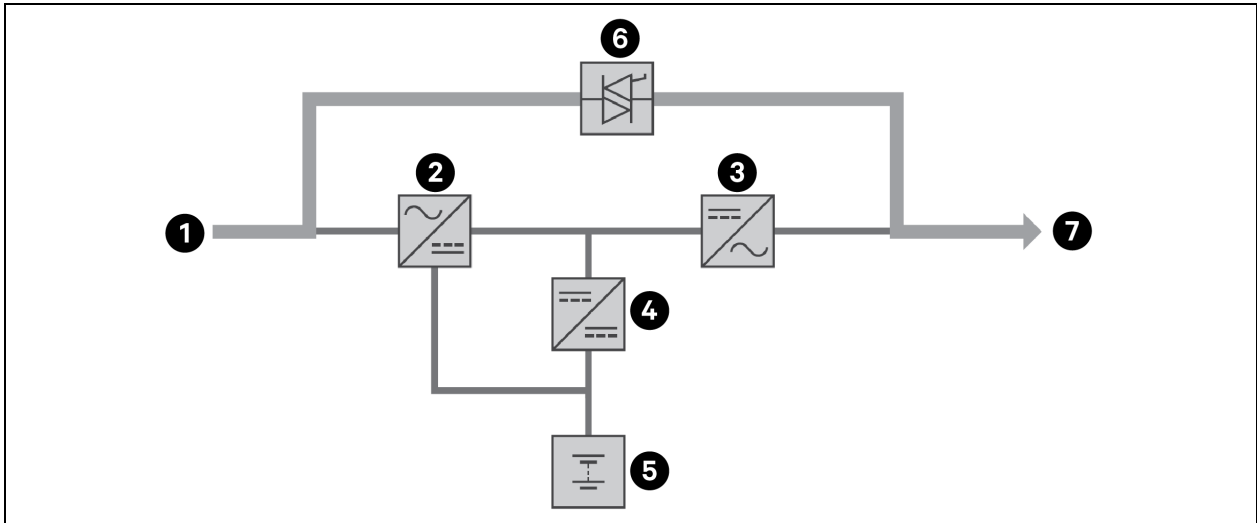
Item	Description	Item	Description
1	Mains input (and bypass input)	5	Battery
2	Rectifier/PFC	6	Dynamic bypass switch
3	Inverter	7	UPS output
4	Battery charger		

2.7.2 Bypass Mode

Bypass mode supplies power to the load from the input source (mains power) if an overload or fault occurs during normal operation. On the front panel display, the run indicator (green) is ON, the alarm indicator (yellow) is ON, and the buzzer beeps once each second. The LCD *Flow* screen displays *On Bypass*. **Figure 2.9** on the next page shows the diagram of bypass mode.

NOTE: If mains power fails or if the mains voltage goes outside of the permissible range during bypass mode operation, the UPS shuts down and no output is supplied to the connected equipment.

Figure 2.9 Bypass Mode Operation



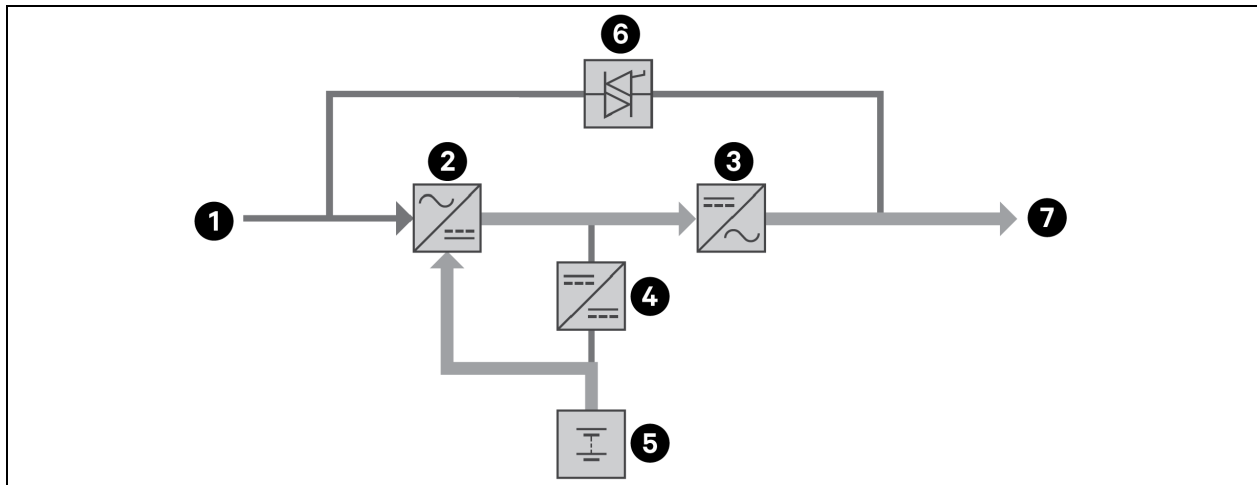
Item	Description	Item	Description
1	Mains input (and bypass input)	5	Battery
2	Rectifier/PFC	6	Dynamic bypass switch
3	Inverter	7	UPS output
4	Battery charger		

2.7.3 Battery Mode

Battery mode supplies battery power as the power source to the UPS should mains power fails or if the voltage or frequency goes outside of the permissible range. On the front panel display, the run indicator (green) is ON, the alarm indicator (yellow) is ON, and the buzzer beeps once each second. The LCD *Flow* screen displays *On Battery*. **Figure 2.10** on the facing page shows the diagram of battery mode.

NOTE: The batteries are fully charged before shipment; however, transportation and storage inevitably cause some loss of capacity. To ensure adequate back up time, it is recommended to charge the batteries for at least 3 hours before connecting equipment.

Figure 2.10 Battery Mode Operation



Item	Description	Item	Description
1	Mains input (and bypass input)	5	Battery
2	Rectifier/PFC	6	Dynamic bypass switch
3	Inverter	7	UPS output
4	Battery charger		

2.7.4 Active ECO Mode

The energy saving Active ECO mode reduces power consumption by powering the connected equipment via bypass while the bypass voltage and frequency is stable and within the user defined operational settings. Active ECO mode keeps the rectifier/PFC and inverter operating to maintain synchronization to the bypass. This allows seamless transfers to inverter power when the input mains power falls outside of those thresholds.

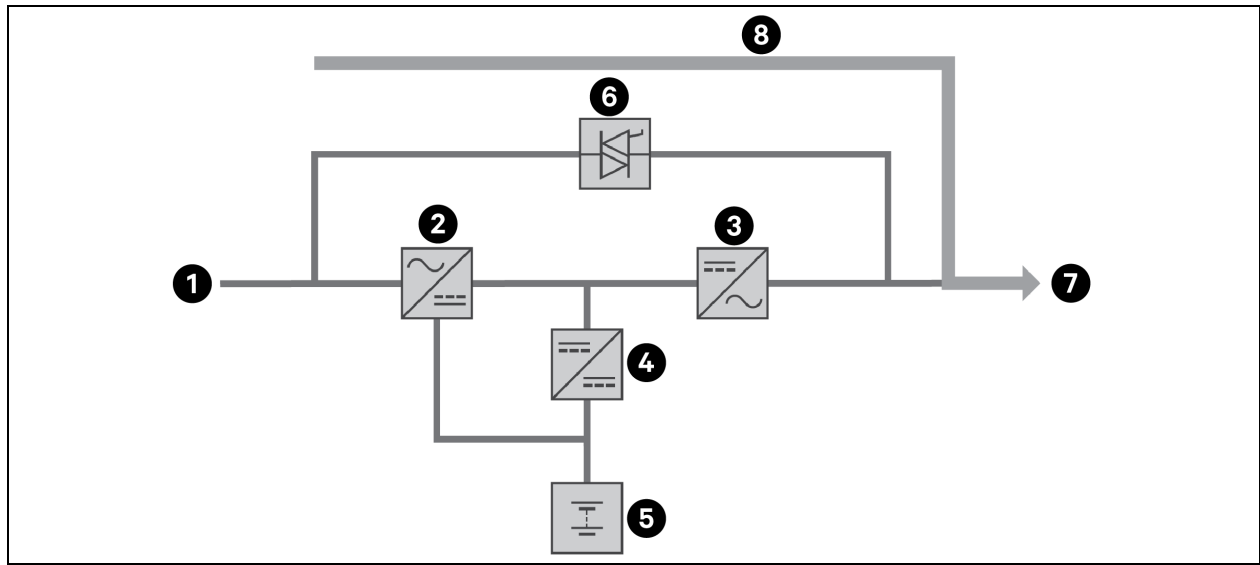
Vertiv recommends using ECO mode to power equipment that is not sensitive to power grid quality to reduce mains power consumption.

2.7.5 Maintenance Bypass Mode

Optional external maintenance bypass cabinets are available for use with the Vertiv™ Liebert® GXE UPS models. These are recommended to maintain power to the connected equipment should the UPS require maintenance or repair or replacement. Maintenance bypass mode powers the connected equipment with mains power while electrically isolating the UPS.

NOTE: The UPS has no user serviceable parts, other than the internal battery. If the UPS malfunctions and requires service, visit <http://www.Vertiv.com/en-us/support//emea/support/> or contact your local Vertiv representative.

Figure 2.11 Maintenance Bypass Mode Operation



Item	Description	Item	Description
1	Mains/Utility input (bypass input)	5	Battery
2	Rectifier/PFC	6	Bypass switch
3	Inverter	7	UPS output
4	Battery charger	8	Maintenance bypass

3 Installation

Do not start the UPS until after the installation is finished, the system is commissioned by an authorized engineer, and the external input circuit breakers are closed.



WARNING! Risk of electric shock can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked out and tagged appropriately to prevent activation during the installation, verify with a voltmeter that power is Off and wear appropriate Personal Protective Equipment (PPE) local codes. Failure to comply can cause serious injury or death. Before proceeding with installation, read all instructions. Follow all local codes.

What's Included

- UPS and internal battery.
- Rack mounting hardware, including screws, front ears, mounting 4-post rail kit.
- One USB cable, 2 m (6-1/2ft) long.
- Two plastic tower stand support base sets (four pieces).
- Printed quick installation guide, safety sheet, and other documents.
- Metal lugs for I/O terminals, and the cable glands.

3.1 Unpacking and Inspection

Unpack the UPS and conduct the following checks:

- Inspect the UPS for shipping damage. If any shipping damage is found, report it to the carrier and your local Vertiv representative immediately.
- Check the accessories included against the packing list. If there is any discrepancy, contact your local Vertiv representative immediately.



CAUTION: The UPS and battery are heavy (see [Specifications](#) on page 43 for the weight). Take proper precautions when lifting or moving the unit.

3.2 Pre-installation Preparation

- Install the UPS indoors in a controlled environment, where it cannot be accidentally turned Off. The installation environment should meet the specifications listed in [Specifications](#) on page 43.
- Place the UPS in an area of unrestricted air flow around the unit, away from water, flammable liquids, gases, corrosives, and conductive contaminants. Avoid direct sunlight.



CAUTION: Operating the UPS in temperatures above 25 °C (77 °F) reduces battery life.

Installation Clearances

Maintain at least 100 mm clearance in the front and rear of the UPS. Do not obstruct the air inlets on the front panel and rear panel of the UPS. Blocking the air inlets reduces ventilation and heat dissipation, shortening the service life of the unit.

3.3 Installing the UPS

The UPS may be installed as a tower or in a rack, depending on available space and use considerations. Determine the type of installation and follow the appropriate instructions. See [Tower Installation](#) below or [Rack Installation](#) below .

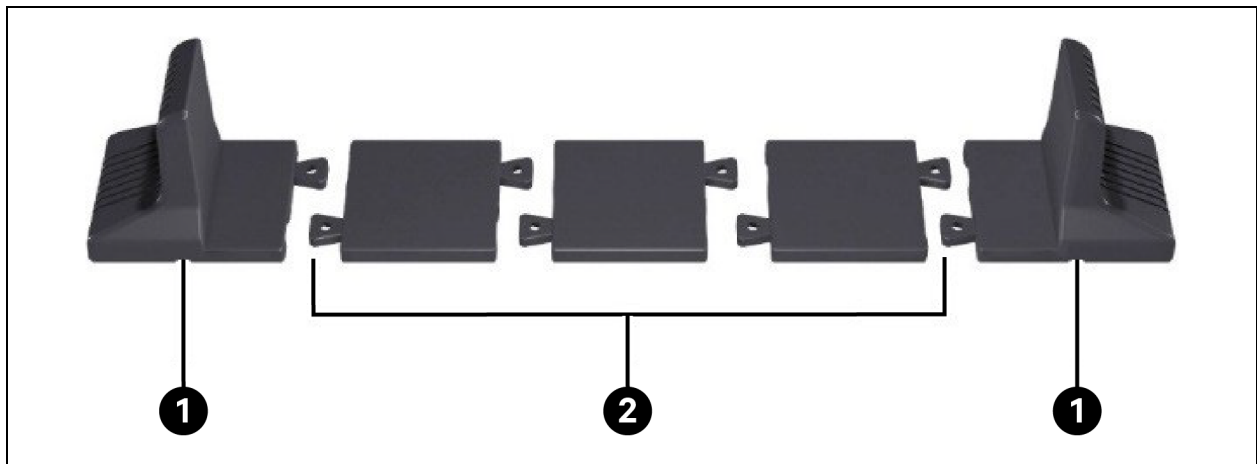
NOTE: When installing the UPS or making input and output connections, comply with all relevant safety codes and standards.

3.3.1 Tower Installation

To install the UPS as a tower:

1. Take the support bases out of the accessories box.

Figure 3.1 Support Bases



Item	Description
1	Support bases
2	Spacers with connectors

2. If optional, Vertiv™ Liebert® external battery cabinets will be connected, take out the spacers shipped with the battery cabinet.
3. Connect the spacers and the support bases as shown in **Figure 3.1** above . Each Vertiv™ Liebert® GXE requires 2 support bases, one on the front and one on the rear side of the unit.
4. Place the Liebert® GXE and any battery cabinets on the 2 support bases.

3.3.2 Rack Installation

When installed in a rack enclosure, the Liebert® GXE UPS and external battery cabinets (EBC) must be supported by a shelf or rack mount rails. Because different rack mount options install in various ways, refer to the installation instructions provided with the rack mount kit.

3.4 Installing External Battery Cabinets

Optional external battery cabinets (EBC) may be connected in parallel to the UPS to provide additional battery run time. For approximate battery run times with additional EBCs, see [Battery Run Times](#) on page 46. External battery cabinets are placed on one side of the UPS in a tower configuration or stacked beneath the UPS in a rack configuration. Up to 4 EBCs may be connected to the UPS.



WARNING! Risk of electric shock can cause injury or death. Disconnect all local and remote electric power supplies before working with the UPS. Ensure that the unit is shut down and power has been disconnected before beginning any maintenance.



CAUTION: The external battery cabinets are heavy, see [Specifications](#) on page 43. Take proper precautions when lifting them.

To install the EBCs:

1. Inspect the EBC for freight damage. Report damage to the carrier and your local dealer or Vertiv representative
2. For tower installation:
 - An additional set of support base extensions ships with each EBC.
 - See the steps in [Tower Installation](#) on the previous page, to connect the support extenders and install the bases.
 - or -
3. For rack installation:
 - Rack mount hardware ships with the EBC.
 - Refer to the instructions included with the rack mount kit to install.

NOTE: Optional slide rails and securing hardware are sold separately. Please contact your Vertiv representative for options and Vertiv Technical Support for assistance.

4. Verify that the EBC breaker is in the *Off* position.
5. Connect the supplied EBC cables to the rear of the cabinet, then to the rear of the UPS. For connection details see QIG (SL-70998 Vertiv™ Liebert® GXE EBC 6-10 kVA I; GXE3-EBC192VRT2U / GXE3-EBC240VRT3U).
6. Turn the EBC breaker to the *On* position.
7. Verify the circuit breaker on the EBC is in the *On* position. The additional backup run time is now enabled.

NOTE: When removing an EBC, turn off the circuit breaker on the rear of the cabinet before disconnecting the cable.

NOTE: If shipping or storing the UPS for an extended time, disconnect the EBCs to minimize standby current drain on the batteries and help maintain design life.

3.5 Hardwired Input/Output Connections

3.5.1 Branch Circuit Breaker

The installer must provide an upstream branch circuit breaker, see [Table 3.1](#) on the next page, for the ratings observe the following guidelines and specifications when making the hard wire input and output connections:

- Provide circuit breaker protection according to local codes. The mains disconnect should be within sight of the UPS or have an appropriate lock out.
- We recommend using a Class D circuit breaker.
- Maintain service space around the UPS or use flexible conduit.
- Provide output distributions panels, circuit breaker protection, or emergency disconnects according to local codes.
- Do not install input and output wiring in the same conduit.

Table 3.1 Branch Circuit Breaker Rating

Unit Rating	Recommended Breaker Rating
6 kVA	40 A
10 kVA	63 A

3.5.2 Terminal Block Connections

On 6 kVA to 10 kVA models, the hard wire connections to the terminal blocks are made through knockouts on the power output distribution (POD) attached to the rear of the unit. Models below 3000 VA use input cords with plugs instead of terminal block connections.

Table 3.2 Terminal Block Electrical Specifications

UPS Model	Recommended External Over Current Protection	Recommended Wire Size (90 °C Copper Wire)	Maximum Wire Size Accepted by Terminal Block	Terminal Block Tightening Torque
GXE3-6000IRT4UXL	40 A	6 mm ² (8 AWG)	6 AWG	20 lb-in (2.26 Nm)
GXE3-10KIRT5UXL	63 A	16 mm ² (6 AWG)	6 AWG	20 lb-in (2.26 Nm)

To make the terminal block connections:

- Loosen the screws from the cable entry glands and conduit box cover, and pull the cables through the knockout leaving some slack for connection.
- Referring to the appropriate terminal block connection instructions, connect the cables to the corresponding input/output terminals and use a torque wrench to turn the screw clockwise until tightened as specified in **Table 3.2** above .
- Reinstall the cable entry glands and conduit box cover and then tighten the screws.

3.5.3 Connecting to Terminal Blocks

Figure 3.2 GXE3-6000IRT4UXL

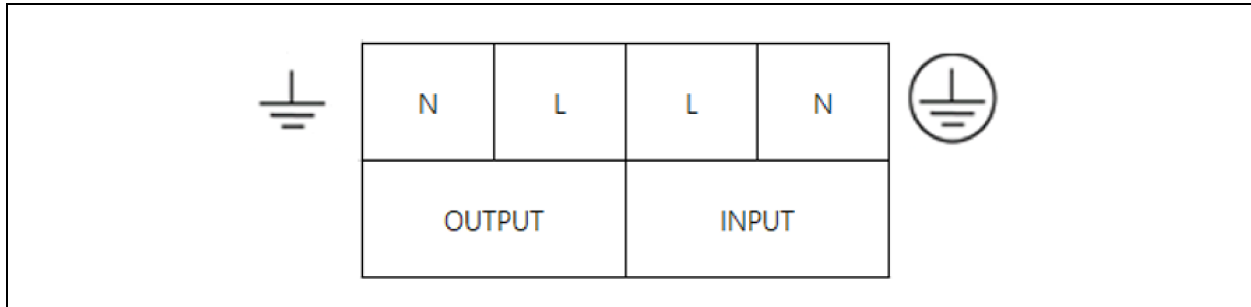
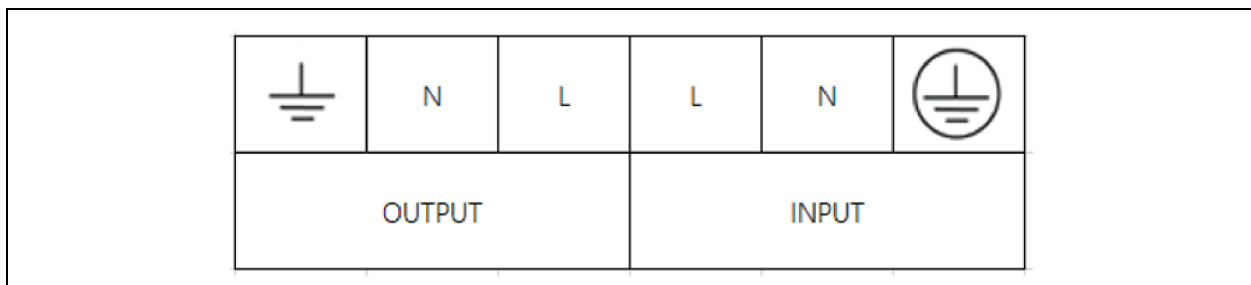


Figure 3.3 GXE3-10KIRT5UXL



3.6 Communication Connections

The UPS offers several communication interfaces and ports.

NOTE: We recommend that signal cable lengths be less than 10 ft (3 m), and are kept away from power cabling.

3.6.1 Connecting IntelliSlot Communication

The optional Vertiv™ Liebert® IntelliSlot™ IS-UNITY-SNMP provides SNMP only while the IS-UNITY-DP provides SNMP and RS-485 (Modbus IP or BACnet) monitoring of the UPS across the network or building management system.

See the appropriate figure for your model in [Rear Panels](#) on page 4, for the location of the card port.

To install an IntelliSlot Card:

1. Remove the screws from the slot cover plate and remove the plate.
2. Insert the card into the slot, and secure with the screws that held the cover plate.

To make connections to the card, refer to the Installer/User Guide for the appropriate IntelliSlot card available at www.Vertiv.com.

3.6.2 Connecting to the REPO Port

The UPS includes an EPO connection. See the appropriate figure for your model in [Rear Panels](#) on page 4 for the location of the port.

UPS ships with a REPO jumper installed, allowing the UPS to operate as a normally closed switch system (fail safe). Opening the circuit disables the UPS. To connect a REPO switch that opens the circuit to shut down the rectifier and inverter and power off the UPS, use a cable from the remote switch to plug into the REPO-port on the UPS.

NOTE: The Emergency Power Off (EPO) action of the UPS shuts off the rectifier and inverter and disables the internal bypass, but it cannot disconnect the UPS mains input. To completely disconnect the UPS, disconnect the upstream input circuit breaker when generating the EPO.

3.6.3 Connecting a USB Cable

The UPS includes a USB type-B connector. See the appropriate figure for your model in [Rear Panels](#) on page 4, for the location of the port.

The USB port connects the UPS to a network server or other computer system. The USB port supports HID & CDC protocols. The CDC protocol is reserved for service software. To use the HID protocol for monitoring, download Power Assist from www.Vertiv.com/Power-Assist.

3.6.4 Connecting RS232

The UPS supports the Vertiv™ Avocent® ACS and other third party monitoring protocols. The RJ-45 port (labeled RS-232) is used for connection. See the appropriate figure for your model in [Rear Panels](#) on page 4, for the location of the port. **Table 3.3** below is consistent with the ACS pin out.

Table 3.3 ACS Pin Out

Item	Description
1	NC
2	NC
3	TXD (out)
4	GND
5	NC
6	RXD (in)
7	NC
8	NC

4 Operating the UPS

4.1 Silencing the Audible Alarm

The audible alarm may sound during UPS operation. To silence the alarm, press and hold the *ESC* button for 2 seconds. The button is located on the front panel display, see [Operation and Display Panel](#) on page 21 .

4.2 Starting Up the UPS

IMPORTANT! Do not start the UPS until after the installation is finished, the system is commissioned by an authorized engineer, and the external input circuit breakers are closed.



CAUTION: Starting the UPS applies mains/utility power to the output terminals. Make sure that the load power is safe and ready to accept power. If the load is not ready, isolate the load with the output terminal.

The UPS starts in normal mode.

To start the UPS:

- Ensure that the REPO connector on the rear of the unit has a jumper installed or that it is properly wired to an emergency power off circuit (normally closed).
- Make sure the breaker supplying power to the UPS is closed and close the input breaker on the rear of the UPS if included on your UPS model or if necessary press the input circuit breaker reset buttons at the rear of the UPS.
- Close all output breakers in an external panel board, if used.
- If external battery cabinets are attached, close the breakers on the rear of each cabinet.
- Power on the UPS by pressing and holding the power button on the operation and display panel until the confirmation dialog appears. Use the *Up/Down* arrows to select *YES*, then press *Enter*.

For detailed description of UPS display functions and settings, see [Operation and Display Panel](#) on page 21 .

4.3 Transferring to Battery Mode

The UPS operates in Normal mode unless the mains/utility power fails or it is performing a battery self test, then it automatically transfers to Battery mode for the backup time available or the mains/utility power is restored. Once input power is restored, the UPS returns to Normal mode.

NOTE: Battery backup run times are listed in [Battery Run Times](#) on page 46 .

4.4 Transferring from Normal to Bypass Mode

Press and hold the *Power* button for 2 seconds.

If the bypass power is within normal operating range, the option to continue to *Turn on* or *Turn off* the UPS displays:

1. Use the *Arrow* buttons to select *Turn to Bypass* or *Turn off UPS*, and press *Enter*.
2. Use the *Arrow* buttons to select *No* or *Yes*, then press *Enter* to confirm.
3. If the bypass power is outside normal operating range, the option *Turn off* the UPS displays. Use the arrow buttons to select *No* or *Yes*, then press *Enter* to confirm.

4.5 Transferring from Bypass to Normal Mode

Press and hold the power button for 2 seconds.

If the UPS is operating normally, without faults, the option to continue to *turn on* or *turn off* the UPS displays:

- Use the arrow buttons to select *Turn on UPS* or *Turn off UPS*, and press *Enter*.
- Use the arrow buttons to select *No* or *Yes*, then press *Enter* to confirm.

NOTE: The UPS automatically switches back to normal mode after an overheated or overloaded fault is cleared and normal power is restored.

4.6 Transferring from Normal to Standby Mode

NOTE: Transferring to Standby Mode will turn off the UPS output to the load.

Press and hold the power button for 2 seconds.

If the UPS is operating normally, without faults, the option to continue to turn on or turn off the UPS displays:

1. Use the arrow buttons to select *Turn off output*, and press *Enter*.
2. Use the arrow buttons to select *No* or *Yes*, then press *Enter* to confirm.

4.7 Shutting Down the UPS Completely



WARNING! Risk of electric shock. Can cause injury or death. Disconnect all local and remote electric power supplies before working with the UPS. Ensure that the unit is shut down and power has been disconnected before beginning any maintenance.

Press and hold the power button for 2 seconds.

If the UPS is operating normally, without faults, the option to continue to turn on or turn off the UPS displays:

1. Use the arrow buttons to select *Turn off UPS*, and press *Enter*.
2. Use the arrow buttons to select *No* or *Yes*, then press *Enter* to confirm.
3. Follow the on-screen instructions to disconnect input power to the UPS.
4. The UPS will show *Shutdown in Process* for approximately 1 minute until the shutdown procedure is complete.

4.8 Remote Emergency Power Off (REPO)

REPO turns off the UPS in emergency conditions such as fire or flood. When an emergency occurs, the REPO switch turns off the rectifier and inverter and stops powering the load immediately. The battery stops charging and disables discharging.

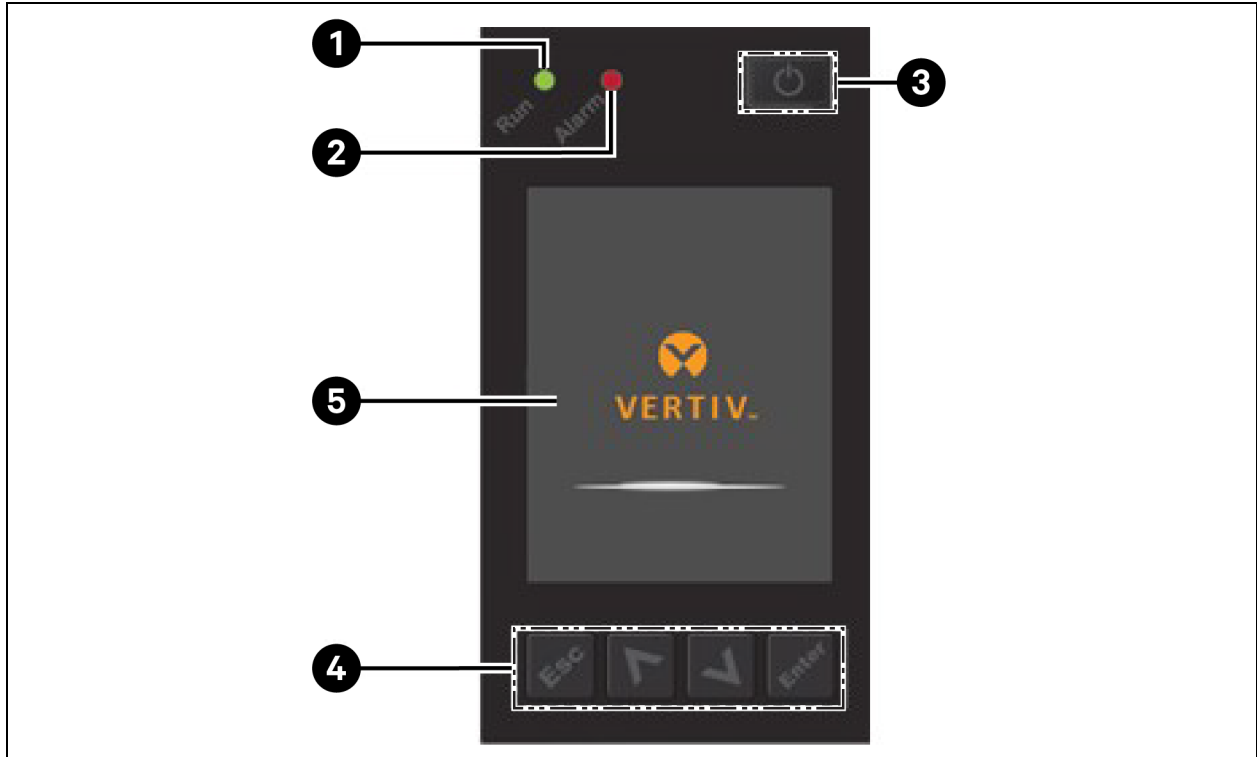
To manually power off in an emergency, disconnect the terminal connecting the REPO port on the rear of the UPS.

If mains/utility power is present, the UPS control circuit remains active even though output power is disabled. To remove all mains/utility power, disconnect the external main input circuit breaker.

5 Operation and Display Panel

The operation/display panel includes LED indicators, function keys, and an LCD interface to configure and control UPS operation.

Figure 5.1 UPS Front Panel Display





Item	Description
1	Run indicator LED, see LED Indicators on the next page.
2	Alarm indicator LED, see LED Indicators on the next page.
3	Power button, see Table 5.1 below on the next page.
4	Menu keys, see Table 5.1 below on the next page.
5	LCD panel

Table 5.1 Display Panel Button Functions and Descriptions

Button	Functions	Description
	Enter	Confirm or enter selection.
	Up	Move to previous page, increase value, move left.
	Down	Move to next page, decrease value, move right.

Table 5.1 Display Panel Button Functions and Descriptions (continued)

Button	Functions	Description
	Escape	Go back.
	Power	Power on the UPS, power off the UPS, transfer to Bypass Mode.

NOTE: While the UPS is operating, the LCD will dim and display a screen saver if there is no active alarm or user interaction for two minutes, see **Figure 5.2** below . After 4 minutes of inactivity, the display will blank to conserve power. If an alarm or fault occurs or if any button is pressed, the UPS flow screen displays.

Figure 5.2 LCD Screen Saver



5.1 LED Indicators

The LEDs on the front panel display indicate operation and alarm statuses of the UPS.

NOTE: When an alarm is indicated, an alarm message is **Table 5.4** on page 30 , describes the alarm messages you may see. When a fault is indicated, the front panel display will list the fault. Faults are described in **Table 7.2** on page 41 .

Table 5.2 LED Functions

Indicator	LED Color	LED State	Indicates
Run indicator	Green	On	UPS output on
		Blinking	Inverter is starting
		Off	UPS has no output
Alarm indicator	Yellow	On	Alarm occurs
	Red	On	Fault occurs
	None	Off	No alarm, no fault

5.2 LCD Menu and Screens

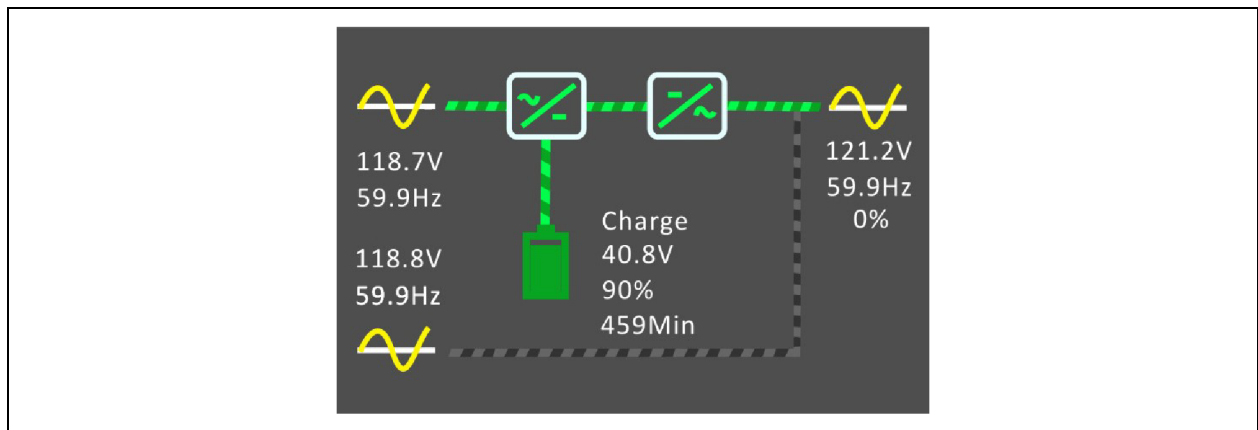
The menu driven LCD user interface lets you browse the UPS status, view operating parameters, customize settings, control operation, and view alarm/event history. Use the function keys to navigate through the menu, and view statuses or select settings in the screens.

5.2.1 Startup and Flow Screens

At startup, the UPS executes a system test and displays the Vertiv logo screen for about 10 seconds, shown in **Figure 5.1** on page 21 . After the test completes, an overview screen shows status information, the active (green) power path, and the inactive power path (gray).

NOTE: Figure 5.3 below is an example flow screen and does not reflect the actual values that you may see on your unit.

Figure 5.3 UPS Flow Screen



5.2.2 Main Menu

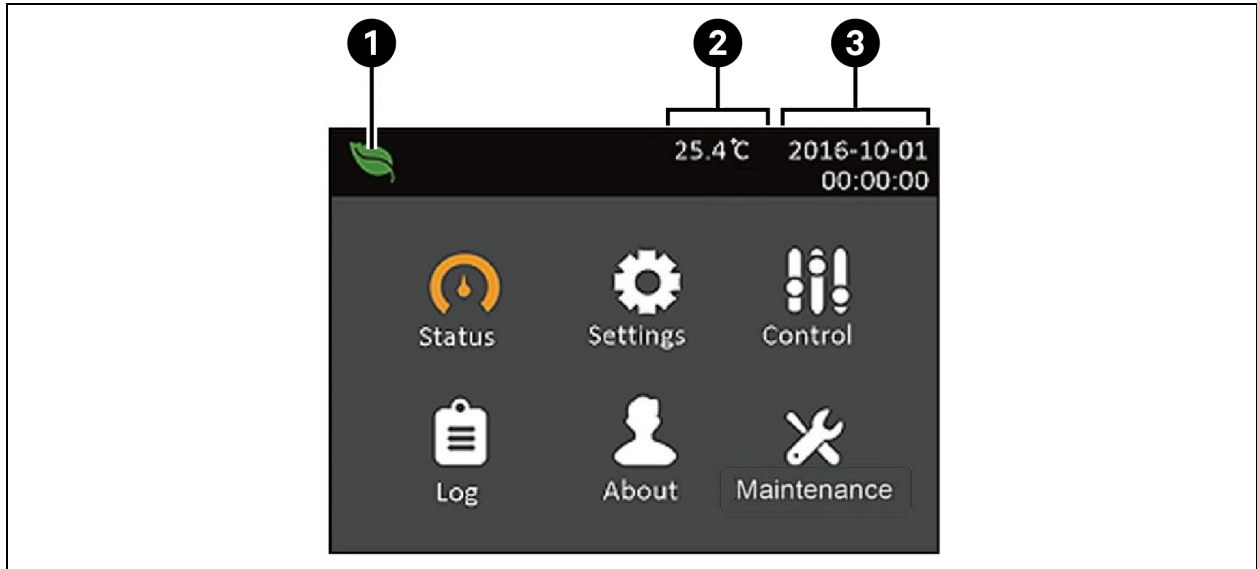
To access the main menu, press *Enter* while at the flow screen. **Table 5.3** below , describes the menu options, and **Figure 5.4** on the next page , describes the display.

Use the *arrow* buttons to select the submenu options, and press *Enter* to open the sub menu. Press *ESC* to return to the flow

Table 5.3 Menu Options

Sub Menu	Description
Status	Voltage, current, frequency, and parameters for UPS components, see Status Screen on the next page .
Settings	Display and system parameter settings, see Settings Submenu on page 26 .
Control	UPS controls, see Control Screen on page 29 .
Log	Current alarms and event history, see Log Screen on page 30 .
About	Product and network information, see About Screen on page 33 .
Maintenance	Service only, service password protected page for use only by Vertiv service representatives.

Figure 5.4 Main Menu



Item	Description
1	ECO mode indicator
2	Ambient temperature
3	Date and time

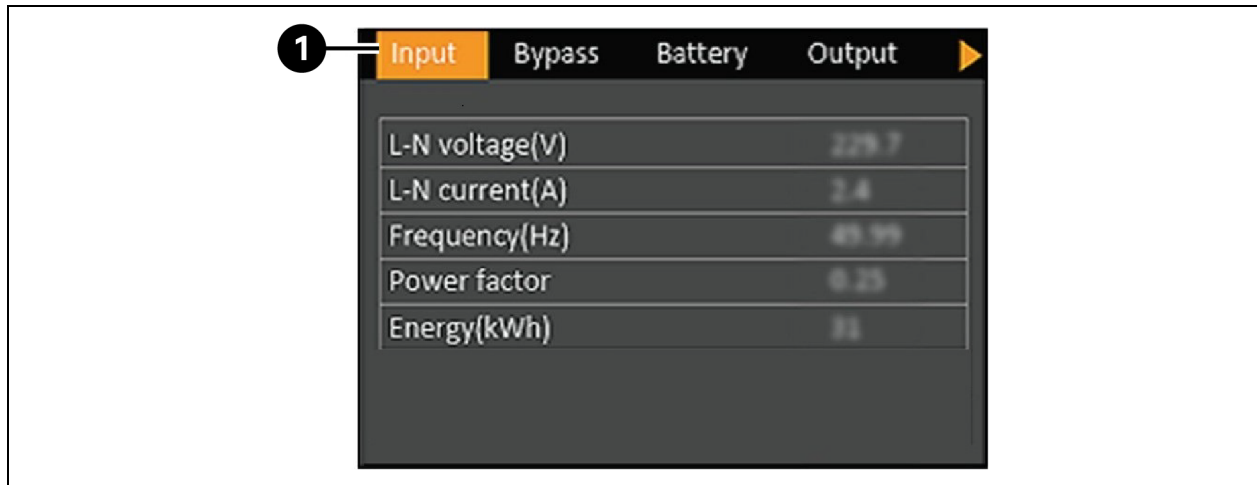
5.2.3 Status Screen

The status screen displays voltages, currents, frequencies, and parameters on individual tabs for input, bypass, battery, output, and load status.

To view the UPS status information:

1. At the main menu, select the *Status* icon, and press *Enter*.
2. Use the *arrow* buttons to move the cursor left/right and select a tab, then press *Enter* to display the status information for the selected tab.

Figure 5.5 Status Screen Tabs



Item	Description
1	Screen tabs with Input tab selected

Input Status Options

- **L-N voltage (V):** Line-neutral voltage of input power.
- **L-N current (A):** Line neutral current of input power.
- **Frequency (Hz):** Frequency of input of input power.
- **Power Factor:** Power factor of the input power.
- **Energy (kWh):** Input power.

Bypass Status Options

- **L-N voltage (V):** Line neutral voltage of bypass power.
- **Frequency (Hz):** Frequency of bypass power.

Battery Status Options

- **Battery status:** Current battery state: charging, discharging, or fully charged.
- **Battery voltage (V):** Voltage of battery power.
- **Battery current (A):** Current of battery power.
- **Backup time (Min):** Amount of backup time remaining for battery.
- **Remaining capacity (%):** Percent of capacity remaining for battery.
- **Discharge count:** Number of discharges for the battery module
- **External battery cabinet group No:** Number of external battery cabinets connected.
- **Battery running time (Day):** Number of days the batteries have been in operation.

Output Status Options

- **L-N voltage (V):** Line neutral voltage of output power.
- **L-N Current (A):** Line neutral current of output power.
- **Frequency (Hz):** Frequency of output power.

Load Status Options

- **Sout (kVA):** Apparent output power.
- **Pout (kW):** Active output power.
- **Power Factor:** Power factor of output power.
- **Load percent (%):** Percentage of recent power rated to output power.

5.2.4 Settings Submenu

The settings screen consists of tabs that list UPS settings for configuration and adjusting parameters with tabs for:

- Output
- Battery
- Monitor
- System

To modify UPS settings:

1. At the main menu, select the *Settings* icon, and press *Enter*.
2. A password prompt screen will appear. Enter the default password, which is six ones (111111). Then press *Enter*.
3. Use the *Arrow* buttons to move the cursor left/right and select a tab, then press *Enter* to display the parameter list for the selected tab.

Output Parameter Options

Voltage selection: Nominal voltage setting. Set the nominal system voltage to match the input voltage of the UPS.

- 220 V
- 230 V
- 240 V
- Autodetect (default)

Startup on bypass: Allows the UPS to startup in bypass mode.

- Enable - Start the UPS in bypass mode.
- Disable - Start the UPS in normal mode (default).

Bypass voltage upper limit : Sets the percentage that the input voltage may be above the selected output voltage setting and remain in Bypass mode.

- +10% (default)
- +15%
- +20%

Bypass voltage lower limit : Sets the percentage that the input voltage may be below the selected output voltage setting and remain in Bypass mode.

- -10% (default)
- -15%
- -20%

Run mode: Selects Normal or ECO operation for the UPS.

- Normal - Connected load is always powered through the UPS inverter. ECO mode is disabled.
- ECO mode - ECO mode is enabled. The UPS inverter is bypassed, and the connected load is powered by utility/mains power within the selected ECO voltage and frequency tolerances.

Battery Parameter Options

External battery cabinet group number: This setting is used to display and report the battery run time remaining. The number of connected EBCs must be set manually from the LCD display.

- 0-4

Low battery time: Sounds an alarm when the selected amount of time remaining for the UPS to operate in Battery mode.

- 2-30 minutes (default is 2)

Battery Replaced Time

Battery test interval: Sets the length of time between periodic tests.

- 8, 12, 16, 20, or 26 weeks (default is 8)

Battery periodic test weekday: Sets the day of the week that the battery periodic test is performed.

- Sunday-Saturday (Wednesday is default)

Battery periodic test time: Sets the time that the battery periodic test is performed.

- 00:00-23:59 (default is 00:00)

Discharge protect time: Sets the maximum discharge time for the UPS. The default setting is the maximum allowing the battery to fully discharge. This can be set lower to limit the amount of time the UPS will provide battery protection after which it will shut down. If the discharge time remaining on the battery is lower than the setting value, it will have no effect.

- 1-4320 minutes (default of 4320)

Equal charge enable: Sets the charge mode of the battery. Equalize charge mode is a quick charge mode that can reduce the amount of time needed to charge the battery. Float charge mode will have a longer battery life.

- Enable - Equalize charge mode
- Disable - Float charge mode (default)

Temp compensation: When enabled, the UPS will adjust the charging voltage of the batteries based on temperature to optimize the battery life. It will increase the voltage if the UPS is operating in a cold environment. It will decrease the voltage if the UPS is operating in a warm environment.

- Enable (default)
- Disable

Max chg curr: Sets the maximum charge current for the battery. A higher charge current will charge the battery more quickly but can shorten battery life. A lower value will lengthen the battery charge time and can increase battery life. The load is always prioritized, and the charge current will be decreased internally if necessary to support the load.

- 0.9-4 A (default of 2)

Battery Reminder

Replace battery: Activates newly installed battery packs after replacement and reset all battery statistics for new battery packs.

- Provides a confirmation window with Yes/No options to confirm replacement of batteries.

Monitor Settings Options

Language: Selects the language of the display, see [Selecting the Display Language](#) on page 36 .

- English (default)
- Italian
- French
- Portuguese
- Spanish
- Chinese
- German
- Russian

Date: Selects the current date for the UPS display, YYYY-MM-DD. See [Setting the Date and Time](#) on page 36 .

Time: Select the current time for the UPS display, HH:MM:SS. See [Setting the Date and Time](#) on page 36 .

Display orientation: Selects the orientation of the display for use in rack or tower configuration.

- Auto-rotate - Automatically rotates based on the detected orientation of the UPS.
- Horizontal - Screen rotated for rack use.
- Vertical - Screen rotated for tower use.

Audible alarm: If enabled, the UPS will beep when an alarm is generated, If disabled, it will be silent. See [Audible Alarm \(Buzzer\)](#) on page 41 .

- Enable (default)
- Disable

Change settings password: Opens the dialog to change the password used to access and update the UPS parameter settings, see [Changing the Password](#) on page 35 .

System Parameter Options

Auto restart: Allows the automatic restart of the UPS when input power is restored after a complete shutdown of the UPS system due to end of battery discharge.

- Enable - The UPS will restart automatically when the input power is restored (default).
- Disable - The UPS will require manual restart.

Auto restart delay: Length of time to elapse before an automatic restart after input power is restored.

- 0-999 seconds (default 0)

Guaranteed shutdown: Forces a continued shutdown of the UPS after the Low Battery alarm threshold is reached, even if input power is restored during this time. This can be used to ensure connected equipment shuts down completely after receiving a signal to shut down from an external monitoring device before power is re-applied.

- Enable
- Disable (default)

Remote control: Allows the UPS to be controlled remotely via the UNITY card.

- Enable (default)
- Disable

Remote power on delay: Sets a delay time to have the UPS restart from a remote signal to turn on.

- 0-999 seconds (default 0)

Remote shutdown delay: Sets a delay time to have the UPS shutdown from a remote signal to turn off.

- 0-999 seconds (default 0)

IT system compatibility: When this option is enabled, the *Input phase reversed* and *Input ground lost* alarms are disabled.

- Enable
- Disable (default)

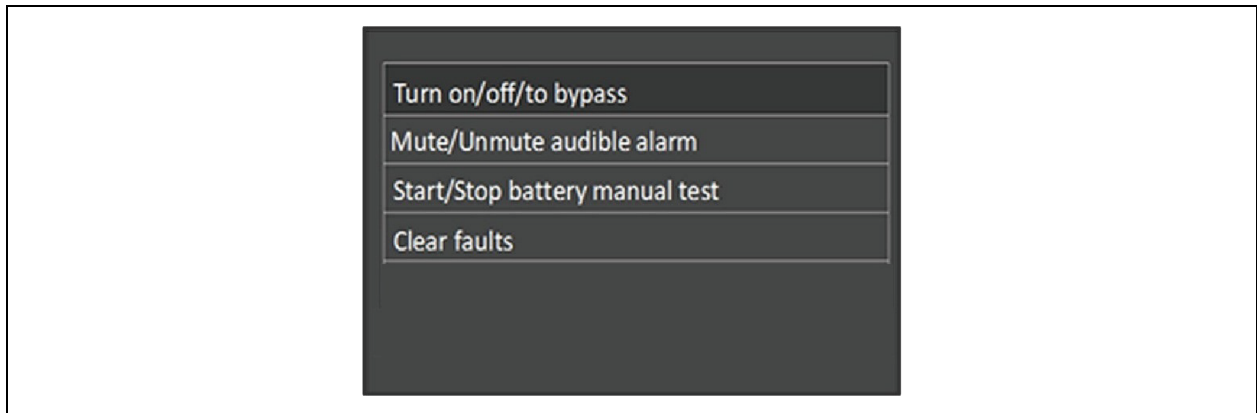
5.2.5 Control Screen

The Control screen offers UPS control options.

To adjust the UPS controls:

1. At the main menu, select the *Control* icon, and press *Enter*.
2. Use the arrow buttons to move the cursor to the option, then press *Enter* to select the control.

Figure 5.6 Control Screen



Control Options

- **Turn on/off/to bypass** : Opens the dialog to change operating modes, see [Operation and Display Panel](#) on page 21 .
- **Mute/Unmute audible alarm** : Silences or unsilences the audible alarm, see [Silencing the Audible Alarm](#) on page 19 .

- **Start/Stop battery manual test** : Starts the battery self test manually. If the manual self test is already running, stop the self test.
- **Clear faults** : Clears displayed faults after the issue causing the fault is resolved, see **Table 7.2** on page 41 , for a description of the faults.

5.2.6 Log Screen

The Log Screen offers tabs that list the current alarms and the alarm/event history **Table 5.4** below , describes the alarm messages you may see in the logs.

To view the logs:

1. At the main menu, select the *Log* icon, and press *Enter*.
2. Use the *arrow* buttons to move the cursor left/right and select a tab, then press *Enter* to display the log for the selected tab.

Figure 5.7 Current and History Log Tabs

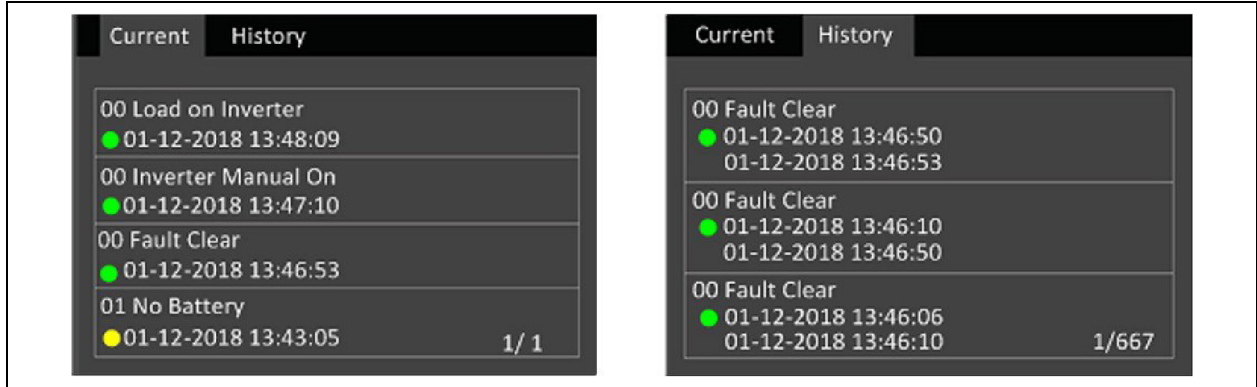


Table 5.4 Alarm Messages

Message	Description
Aux power fault	UPS internal auxiliary power voltage fault Contact Vertiv Technical Support.
Battery cabinet connect abnormal	More than 4 external battery cabinets are connected to the UPS. Disconnect excess battery cabinets to ensure proper charging.
Battery EOD	The battery has reached the end of discharge and mains/utility power is unavailable. Restore the mains power. The UPS will power off if it is not restored.
Battery low pre- warning	This alarm occurs when the battery approaches the EOD. After the pre-warning, the battery capacity allows two minutes discharge at full load. The user can set the time with the Low Battery Time setting in Battery settings from 2-30 minutes, (2 minutes by default). This allows for any loads to be shut down before the system powers off if utility power cannot be restored.
Battery mode	The UPS operating in battery mode. The alarm will clear when utility power is restored.
Battery overtemp	Battery ambient temperature too high. Ensure that the battery ambient temperature is not higher than setting value 40 to 60 °C (104 to 140 °F). The default value is 50 °C (122 °F).
Battery replacement timeout	The system time is past the time set for the batteries to be replaced. If you have disabled the <i>Batt note duration</i> or have no batteries installed, the alarm will not occur.
Battery reversed	The battery positive and negative are reversed. Reconnect the battery and check the battery cable connections.

Table 5.4 Alarm Messages (continued)

Message	Description
Battery test fail	The voltage of the battery was low when the periodic or manual self test was run. Battery replacement is recommended.
Battery test started	The battery periodic self test or manual self test was started. This will display in the log whenever the event occurs.
Battery test stopped	The battery periodic self test or manual self test has finished. This will display in the log whenever the event occurs.
Battery to utility transition	The UPS has transferred the load to the mains power from the battery. This will display in the log whenever the event occurs.
Battery voltage abnormal	The battery voltage exceeds the normal range. Check if the battery terminal voltage exceeds the normal range.
Bypass abnormal	May be caused by bypass voltage and frequency outside of range, bypass power off and incorrect bypass cables connection. Check that the bypass voltage and frequency are within the setting range. Check the bypass cables connection.
Bypass abnormal in ECO mode	May be caused by ECO bypass voltage and frequency outside of range, ECO bypass power off, and incorrect ECO bypass cables connection. Check that the ECO bypass voltage and frequency are within the setting range. Check the bypass cable connection.
Bypass mode	The UPS is on bypass. This will clear when the UPS returns to Normal mode.
Bypass over-current	The load is drawing more current than the UPS is rated to supply in bypass mode. Reduce the load.
Charger fault	The charger output voltage is abnormal, and the charger is off. Contact Vertiv Technical Support.
Communication fail	Internal communication is abnormal. Check that the communication cables are connected correctly.
DC bus abnormal	The inverter is off due to DC bus voltage out of acceptable range. The load will transfer to bypass if the bypass is available because the bus voltage is outside of the acceptable range.
DC/DC fault	The discharger is faulty, because the bus voltage exceeds the range when the discharger starts. Contact Vertiv Technical Support.
EOD turn off	The inverter is off due to EOD. Check the mains power off state and recover the mains in time.
Fan fault	At least one fan is faulty. Check if the fan is blocked.
Faults cleared	The faults have been cleared using <i>Settings > Controls > Clear faults</i> . This will display in the log whenever the event occurs.
Guaranteed shutdown	The battery has finished discharging, then system shuts down because Guaranteed Shutdown is enabled (see Settings Submenu on page 26). This alarm will clear when the UPS is turned on again.
Input abnormal	The rectifier and charger are off due to the mains voltage and frequency exceeding normal range. Check that the rectifier input phase voltage and frequency exceed the normal range or that the mains has power off.
Input ground lost	Check that the PE line is well connected and that the alarm can be cleared at the display.
Input neutral lost	The mains input neutral is not detected. The alarm will clear when the neutral connection has been restored.
Input phase reversed	The mains input line and neutral are reversed. Shut off external input breaker and connect the lines correctly.
Insufficient capacity to start	The UPS is on bypass and is started with a load greater than 105% of the rated capacity. Reduce the load to the rated capacity or below to start the unit.
Inverter fault	The inverter is turned off when the inverter output voltage or current exceed the ranges set. If bypass is available, the UPS will transfer to bypass mode, otherwise the system will power off. Contact Vertiv Technical Support.

Table 5.4 Alarm Messages (continued)

Message	Description
Inverter overload	Inverter load capacity is larger than the rated value, overload delay time is up, inverter shuts down. If bypass is available, the system will transfer to the bypass mode, otherwise the system will power off. Check the output load. If overloaded, reduce the load, and the system will transfer to the inverter mode after five seconds with no alarm.
Inverter relay welded	The inverter relay is shorted. Contact Vertiv Technical Support.
Load off due to output short	A short has occurred on the output. Check the output cables and for any equipment that may have shorted.
Load off due to shutdown on battery	The system was shut down in battery mode. This will clear when the system is turned back on.
Manual power-on	The system was turned on via the display panel. This will display in the log whenever the event occurs.
Manual shutdown	The system was shut down via the display panel. This will display in the log whenever the event occurs.
No battery	No battery detected. Check the battery and battery cable connections.
On maintenance bypass	The UPS is operating in maintenance bypass mode. This will display in the log whenever the event occurs.
Operating on inverter	The UPS output is being powered by the inverter. This will display in the log whenever the event occurs.
Output disabled	The system is in standby state, and the dry contact shutdown is enabled. Check if the shutdown dry contact is enabled.
Output off due to bypass abnormal	The bypass voltage or frequency is outside the acceptable range, and the bypass is in standby mode. Check that the input is normal.
Output off due to overload & bypass abnormal	The output is off due to an overload of the UPS output, and the bypass voltage or frequency is outside the acceptable range. Check that the input is normal.
Output off, voltage is not zero	This occurs when the output is off and the system detects that there is still voltage on the output. Check output equipment for backfeeds or contact Vertiv Technical Support.
Output pending	Remote shutdown has been initiated, and the system will turn off shortly.
Output short	A short has occurred on the output. Check the output cables and for any equipment that may have shorted.
Rectifier fault	The rectifier is off because the bus voltage is out of the acceptable range when the rectifier starts. Contact Vertiv Technical Support.
Rectifier overload	The output power is larger than the rectifier overload point. Check that the input voltage meets the output load, mains input 176 V ~ 100 V, the load 100% ~ 50% linear derating.
Remote power-on	The UPS was powered on remotely. This will display in the log whenever the event occurs.
Remote shut-off	The UPS was powered off remotely. This will display in the log whenever the event occurs.
Remote shutdown	Any mode shutdown was initiated by the dry contact input. This will display in the log whenever the event occurs.
REPO	Shutdown caused by the REPO terminal normally closed contact input opening. This will display in the log whenever the event occurs.
Restore factory defaults	On the Maintenance page, <i>Restore Factory Defaults</i> has been set while the UPS is in the standby state. This will return settings to their factory settings.
Shutdown due to over temp	During the UPS operation, the system checks if the heat sink temperature exceeds the setting range. If an overtemperature occurs, check if: <ol style="list-style-type: none"> 1. The ambient temperature is too high. 2. Dust is blocking any of the UPS vents.

Table 5.4 Alarm Messages (continued)

Message	Description
	3. A fan fault has occurred.
System over temp	The internal heat sink temperature is too high, and the inverter is off. The alarm can only be silenced if the heat sink temperature is lower than the alarm setting. The system can automatically start after overtemperature fault is corrected. If an overtemperature occurs, check if: <ol style="list-style-type: none"> 1. The ambient temperature is too high. 2. Dust is blocking any of the UPS vents. 3. A fan fault has occurred.
Turn on fail	The UPS does not start because there is no mains/utility power or it is outside of the range of the voltage required to supply the full load. Check the AC input power.
UPS has no output	Both Inverter and Bypass are not supplying power due to the UPS output being turned off remotely or via the LCD, or are unavailable due to no input power or input power out of range. Check that UPS is on and input power is available.

5.2.7 About Screen

The About screen provides information about the product in two tabs.

- The Product tab shows UPS identification information, firmware versions, and information about the communication card (when the card is installed).
- The Battery age tab shows the curve of the percent State-of-Health (SOH) of the installed battery versus time. The UPS calculates one value per week and plots it on the graph. The values are based on the battery temperature, age, and the actual amount of energy discharged from the battery if the battery has been discharged fully.

To view the product, efficiency, and battery age information:

1. At the main menu, select the *About* icon, and press *Enter*.
2. Use the arrow buttons to move the cursor left/right and select a tab, then press *Enter* to display the information for the selected tab.

Product Information

- **Product Type** : UPS model number.
- **Serial number** : UPS serial number.
- **Time since startup** : Elapsed time since startup of the UPS.
- **Boot FW version** : Version of MCU boot firmware on the monitor board.
- **Monitor FW version** : Version of MCU application firmware on the monitor board.
- **DSP FW version** : Version of DSP firmware on the UPS power module.
- **MAC address** : Shows the MAC address of the IS-UNITY card. This is only shown when the IS-UNITY card is installed.
- **IPv4 address** : Shows the IPv4 address of the IS-UNITY card. This is only shown when the IS-UNITY card is installed.

Battery Age Tab

- **Battery recommended replacement date:** This shows the date that it is recommend to replace the battery. It is 5 years from the time the battery was installed.
- **SOH (%):** This shows the current SOH percentage in graphical form.

5.2.8 Maintenance Screen

This screen is reserved for Vertiv Service personnel. It requires a password that is not the same as the setting password and cannot be changed.

5.3 Editing Display and Operation Settings

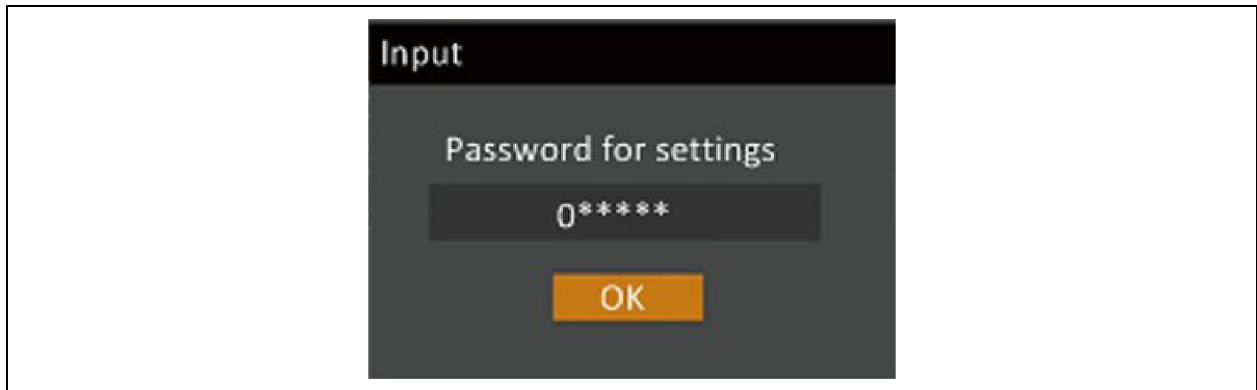
You may adjust the display settings and UPS configuration via the LCD. The display and operation settings are password protected. The default password is 111111 (six ones).

We recommend that you change the password to protect your system and equipment and record the new password and store it in an accessible location for later retrieval. See [Changing the Password](#) on the facing page .

To enter the password:

1. Press the *Up* arrow button to change the digit shown, then press the *Down* arrow button to move to the next digit.
2. Repeat to select each digit, and press *Enter* to submit the password.

Figure 5.8 Password Prompt



5.3.1 Settings Prompts

While using the operation and display panel, prompts display to alert you to specific conditions or require confirmation of commands or settings. **Table 5.5** on the facing page shows lists the prompts and their meaning.

Table 5.5 Display Prompts and Meanings

Prompt	Meaning
Cannot set this online, please shut down output	Appears when changing important output settings (output voltage and output frequency).
Incorrect password, please input again	Appears when the Settings password is input incorrectly.
Operation failed, condition is not met	Appears when attempting to execute a operation for which the required conditions are not met.
Password changed OK	Appears upon successful change of the Settings password.
Fail to change password, please try again	Appears when attempting to change the Settings password but the new and confirmation passwords do not match.
The time cannot be earlier than system time	Appears when attempting to set the time of <i>Turn on delay</i> or <i>Turn off delay</i> earlier than the current system time.
Turn on failed, condition is not met	Appears when proper conditions are not met for UPS power on. Applies when using the power button or when execute the command of <i>Turn on/Turn off/to Bypass</i> on the LCD panel <i>Control</i> page).
Cannot set this on line, please unplug REPO	Appears when attempting to change the output phase number while the output is connected.

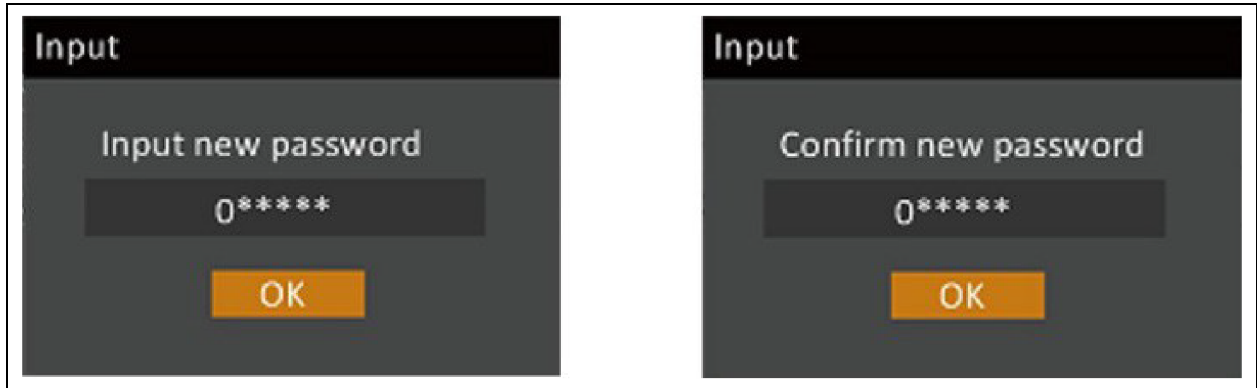
5.3.2 Changing the Password

The default password is 111111 (six ones). You must use the current password to change the password.

NOTE: We recommend that you change the password from the default to protect your system and equipment. Record the new password and store it in an accessible location for later retrieval.

1. At the main menu, select the *Settings* icon, and press *Enter*.
2. At the password prompt, use the *Up* arrow to select the first digit, press the *Down* arrow to move to the next digit, repeat for each digit, then press *Enter* to access the settings.
3. Use the *Arrow* buttons to select the Monitor tab, then press *Enter*.
4. Use the *Down* arrow to highlight Change Settings Password, press *Enter*, and re-enter the current password. The Input new password dialog opens, see **Figure 5.9** on the next page .
5. Enter the new password, then confirm the new password. A confirmation dialog opens to indicate a successful password change.
6. Press *ESC* to return to the settings or main menu.

Figure 5.9 New and Confirm Password Dialogs



5.3.3 Selecting the Display Language

The LCD is multilingual. The available languages are English, French, Portuguese, Spanish, Chinese, German, Italian, and Russian.

To change the language:

1. At the main menu, select the *Settings* icon, and press *Enter*.
2. At the password prompt, use the *Up* arrow to select the first digit, press the *Down* arrow to move to the next digit, repeat for each digit, then press *Enter* to access the settings.
3. Use the *Arrow* buttons to select the *Monitor* tab, then press *Enter*.
4. Use the *Down* arrow to highlight *Language*, then press *Enter*.
5. Use the *Up/Down* arrows to select the language, then press *Enter*. All the LCD elements will now display in the selected language.

5.3.4 Setting the Date and Time

To adjust the date and time:

1. At the main menu, select the *Settings* icon, and press *Enter*.
2. At the password prompt, use the *Up* arrow to select the first digit, press the *Down* arrow to move to the next digit, repeat for each digit, then press *Enter* to access the settings.
3. Use the *Arrow* buttons to select the *Monitor* tab, then press *Enter*.
4. Use the *Down* arrow to highlight *Date* or *Time*, then press *Enter*.
5. Use the *Up/Down* arrows to select the *Date/Time*, then press *Enter* to confirm.
6. Use the *Down* arrow to select the digit to change and the *Up* arrow to select the correct digit. Repeat as needed to set each digit.

6 Maintenance



WARNING! Risk of electric shock. Can cause equipment damage, injury, and death. A battery can present a risk of electrical shock and high short circuit current

Observe the following precautions when working on batteries:

- Remove watches, rings, and other metal objects.
- Use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of batteries.
- Disconnect input power prior to connecting or disconnecting battery terminals.
- If the battery kit is damaged in any way or shows signs of leakage, contact your Vertiv representative immediately.
- Handle, transport, and recycle batteries in accordance with local regulations.
- Determine if the battery is inadvertently grounded. If it is, remove the source of the ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if grounds are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded supply circuit).

6.1 Replacing Batteries



WARNING! Risk of electric shock and explosion Can cause equipment damage, injury and death. Do not dispose of the battery in a fire. The battery may explode. Do not open or damage the battery. Released electrolyte is toxic and is harmful to skin and eyes. If electrolyte comes into contact with the skin, wash the affected area immediately with plenty of clean water and get medical attention.



WARNING! Can cause equipment damage, injury and death. A battery can explode if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions included with the battery pack.

Read all safety cautions before proceeding. A trained user can replace the internal battery pack when the UPS is in a restricted access location (such as a rack or server closet). To obtain the appropriate replacement battery packs, refer to **Table 6.1** below and contact your local dealer or Vertiv representative.

NOTE: EBC batteries are not replaceable. When EBC batteries have aged, please purchase a new EBC of the same part number to replace. Save packaging and return the aged EBCs to Vertiv for recycling or recycle locally.

Table 6.1 Replacement Battery Pack Model Numbers

Ups Model Number	Battery Pack Model Number	Quantity Required
GXE3-6000IRT4UXL	GXE3-192VBATKIT	1
GXE3-10KIRT5UXL	GXE3-240VBATKIT	1

NOTE: The internal battery pack is hot swappable. However, you must exercise caution because during this procedure, the connected equipment is unprotected from disturbances and power outages. Do not replace the battery while the UPS is operating in Battery Mode, this will result in a loss of output power and will shut down the connected equipment.

Refer to Figure 6.1 to **Figure 6.1** below and **Figure 6.2** on the facing page to replace the internal battery pack.

Figure 6.1 GXE3-6000IRT4UXL

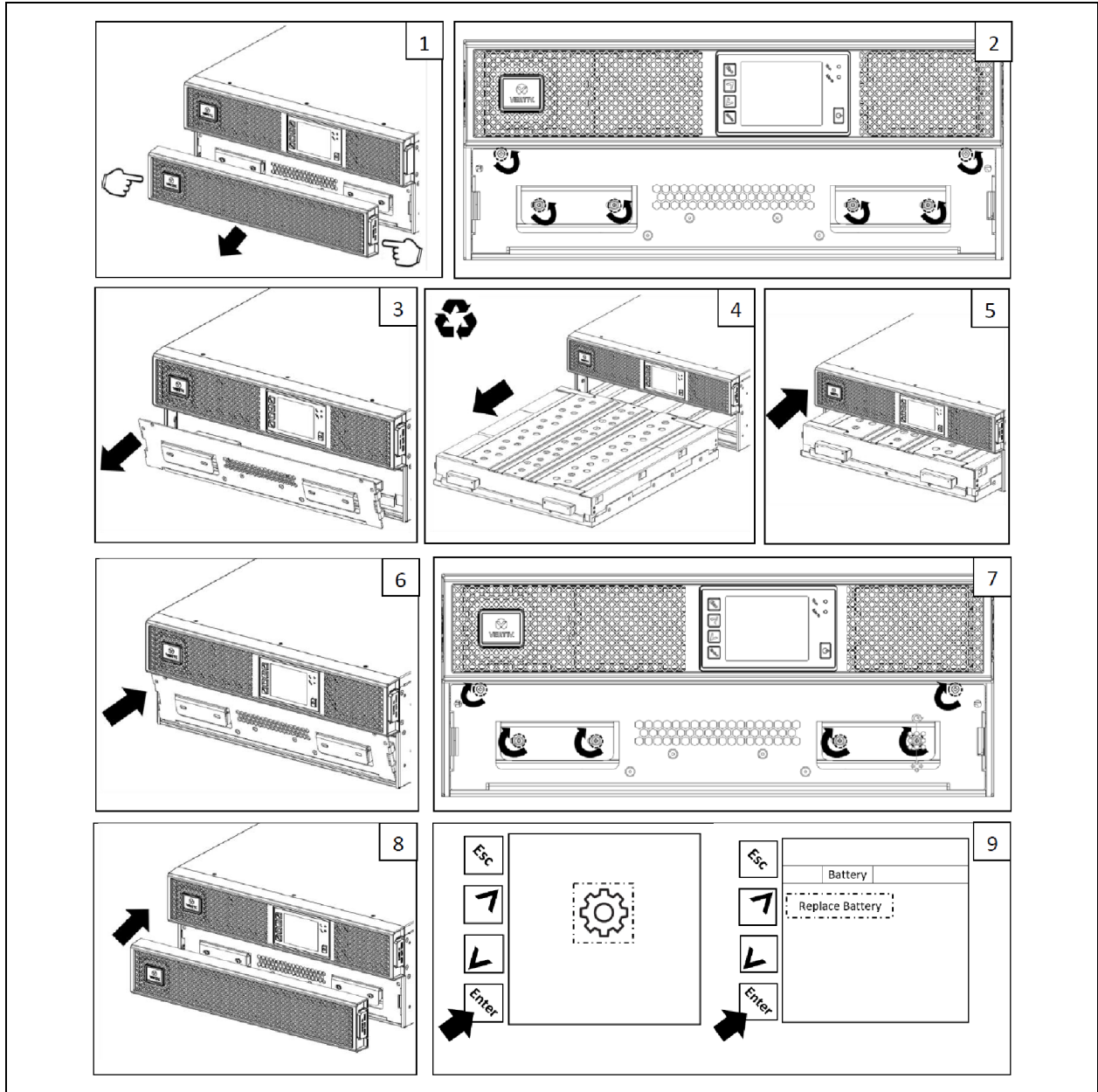
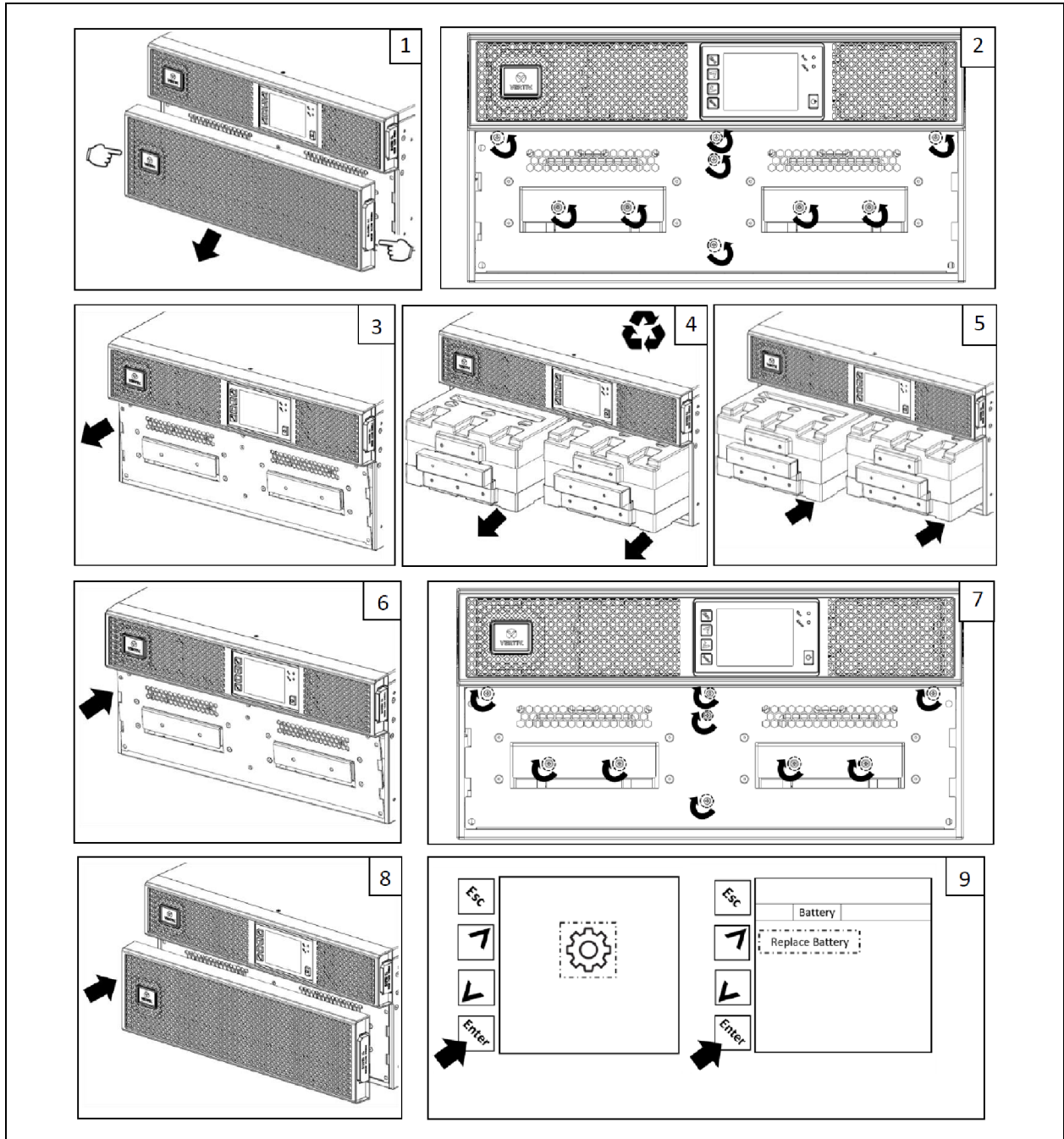


Figure 6.2 GXE3-10KIRT5UXL



6.2 Charging Batteries

The batteries are valve regulated, non-spillable, lead acid batteries and should be kept charged to attain their design life. The UPS charges the batteries continuously when it is connected to the utility input power.

If the UPS and/or EBCs will be stored for an extended time, we recommend connecting the UPS to input power for at least 6 hours every 4 to 6 months to ensure full recharge of the internal batteries. If EBCs are being recharged the recharge time should add 4 hours for each EBC connected to the UPS.

6.3 Checking UPS Operation

NOTE: Operation check procedures may interrupt output power supplied to the connected load

We recommend checking the UPS operation once every 6 months. Ensure that output power loss to the connected load will not cause data loss or other errors before conducting the check.

1. Press the *Enter* button to check the indicators and display function see [Operation and Display Panel](#) on page 21 button.
2. Check for any alarm or fault indicators on the operation/display panel.
3. Make sure that there are no audible or silenced alarms. Select the Log, and look at the Current tab for alarm and fault history. See [Log Screen](#) on page 30 .
4. Check the flow screen to ensure the UPS is operating in Normal mode. If the UPS is operating in Bypass mode, contact Vertiv Technical Support.
5. Check the flow screen to see if batteries are discharging (operating in Battery mode) while utility power is normal. If so, contact Vertiv Technical Support.

6.4 Cleaning the UPS



WARNING! Risk of electric shock. Can cause injury or death. Disconnect all local and remote electric power supplies before working with the UPS. Ensure that the unit is shut down and power has been disconnected before beginning any maintenance.

The UPS requires no internal cleaning. If the outside of the UPS becomes dusty, wipe with a dry cloth. Do not use liquid or aerosol cleaners. Do not insert any objects into the ventilation holes or other openings in the UPS.

6.5 Firmware Updates

The UPS has two firmware components:

- DSP is the firmware for the power module.
- MCU is the firmware for the display panel.

Both may be updated through the USB connection the UPS by Vertiv service personnel.

7 Troubleshooting

This section details various UPS symptoms you may encounter and provides a troubleshooting actions to take in the event the UPS develops a problem. Use the following information to determine whether external factors caused the problem and how to remedy the situation.

7.1 Symptoms that Require Troubleshooting

The following symptoms indicate the UPS is malfunctioning:

- The alarm indicator illuminates, indicating the UPS has detected a problem.
- An alarm buzzer sounds, alerting the user that the UPS requires attention.

7.2 Audible Alarm (Buzzer)

An audible alarm accompanies various events during UPS operations. **Table 7.1** below , describes the sounds and their meaning. To silence an alarm, see [Silencing the Audible Alarm](#) on page 19 .

Table 7.1 Audible Alarm Descriptions

Sound	Indications
Continuous beep	Generated when a UPS fault appears, such as a fuse or hardware failure.
One beep every 0.5 seconds	Generated when a UPS critical alarm appears, such as on inverter overload.
One beep every 1 second	Generated when a UPS critical alarm appears, such as on battery low voltage.
One beep every 3.3 seconds	Generated when a UPS general alarm appears.

NOTE: When an alarm is indicated, an alarm message is logged **Table 5.4** on page 30 , describes the alarm messages you may see. When a fault is indicated, front panel display list the fault, which are described in **Table 7.2** below .

7.2.1 Faults

When the fault indicator is illuminated, the LCD displays the fault. The faults are described in **Table 7.2** below .

Table 7.2 Description of Displayed Faults

Displayed Fault	Cause	Corrective Steps
Battery test fail	The battery is bad or weak.	Contact technical support.
Rectifier fault	A rectifier failure occurred.	Contact technical support.
Inverter overload, Bypass overcurrent	The UPS is overloaded, Bypass is over current.	Reduce the load and contact technical support.
Inverter fault	The inverter is faulty.	Contact technical support.
Battery aged	The battery is bad or weak.	Replace the battery.
Output short	The output connection is short-circuited.	Shut-down the equipment and contact technical support.
DC bus fail	The DC bus is faulty.	Contact technical support.

Table 7.2 Description of Displayed Faults (continued)

Displayed Fault	Cause	Corrective Steps
System overtemp	Over-temperature condition in the UPS. The UPS will transfer to bypass mode.	Reduce the load and contact technical support.
Charger fault	The charger is faulty.	Contact technical support.
Fan fault	At least one fan is faulty.	Contact technical support.
DC/DC fault	A DC-DC charger failure occurred.	Contact technical support.

7.3 Troubleshooting UPS Issues

In the event of an issue with the UPS, refer to **Table 7.3** below, to determine the cause and solution. If the fault persists, contact Vertiv Technical Support. Visit the Liebert® Liebert® GXE product page at www.Vertiv.com for contact information.

When reporting a UPS issue to Vertiv, include the UPS model and serial number. These are in several places for your ease of location:

- On the top panel (rack mount orientation).
- The left side (tower orientation).
- The rear panel.
- On the front of the unit behind the front plastic bezel.
- On the LCD select *Main Menu > About*.

Table 7.3 Troubleshooting

Problem	Cause	Solution
UPS fails to start	UPS is short- circuited or overloaded	Ensure UPS is Off. Disconnect all loads and ensure nothing is lodged in output receptacles. Ensure loads are not defective or shorted internally.
	Batteries are not charged enough or not connected	Check to ensure the internal battery is connected. If it is not connected, fully remove, and reinstall the battery, and try to start the unit. If the battery is connected, leave the UPS connected to input power for 24 hours to recharge batteries, then try to start the unit.
UPS has reduced battery backup time	Batteries are not fully charged	Keep UPS plugged in continuously at least 24 hours to recharge batteries.
	UPS is overloaded	Check load level indicator and reduce the load on the UPS.
	Batteries may not be able to hold a full charge due to age	Replace batteries. Contact your Vertiv representative or Vertiv Technical Support for replacement battery kit.

8 Specifications

Table 7.4 UPS Specifications

Model Number	GXE3-6000IRT4UXL	GXE3-10KIRT5UXL
UPS Rating	6000 VA / 6000 W	10,000 VA / 10,000 W
AC Input Parameters		
Operating Voltage Range (100% load)	176-288VAC	
Maximum Allowable Voltage	300 VAC (with no damage to UPS)	
Operating Frequency Range	40-70 Hz (no battery discharge)	
Input Current Distortion (THDI)	≤3% linear loading, ≤5% non-linear loading	
Input Power Factor	0.99	
Surge Immunity	600 Joules	
AC Output Parameters		
Voltage	220 / 230 / 240 VAC (230VAC factory default); User Configurable	
Frequency	50 or 60 Hz (50 Hz factory default); User Configurable	
Waveform	Sinewave	
Voltage Regulation	±1%	
Frequency Regulation	±0.1 Hz; ±3.5 Hz synchronized to bypass	
Frequency Slew Rate	1.0 Hz/second maximum	
Voltage Distortion (THDv)	2% linear loading, 5% non-linear loading	
Voltage Transient (0-100% load step)	±5% of nominal	
Voltage Transient Recovery	Within 60 ms	
Overload Capability	≤ 105%; continuous 106% to 125%, 5 minutes with transfer to bypass 126% to 150%, 1 minute with transfer to bypass >150%, 200ms with transfer to bypass	
AC-AC Efficiency	94% double conversion mode; 98% ECO mode	
Battery Parameters		
Type	Valve Regulated Lead Acid (VRLA); non-spillable	
Quantity	16	20
Battery Voltage / Amp-Hour	12V / 9Ah	
Battery Replacement Type	User replaceable, hot swappable	
Battery Replacement Kit P/N	GXE3-192VBATKIT	GXE3-240VBATKIT
Charger Current	4A maximum	
Recharge time	3 hours to 90% capacity after full discharge into 100% load	

Table 7.4 UPS Specifications (continued)

Model Number	GXE3-6000IRT4UJXL	GXE3-10KIRT5UJXL
UPS Rating	6000 VA / 6000 W	10,000 VA / 10,000 W
Environmental		
Operating Temperature Range (with batteries)	0 to 40 °C (32 to 104 °F), no derating	
Storage Temperature Range	-15 to 40 °C (-4 to 104 °F)	
Relative Humidity	0-95% non-condensing	
Pollution Level	2	
Ingress Protection	IP20	
Operating Elevation	Up to 2000 m above sea level at 25 °C, no derating	
Cooling Type	Forced air with variable speed fans, front to rear	
Audible Noise	<55 dBA	<58 dBA
Agency		
Certification	CE, UKCA	
Safety	IEC/EN62040-1:2013	
EMI/EMC	IEC/EN62040-2	
ESD	IEC/EN61000-4-2, Level 4	
Radiated Susceptibility	IEC/EN61000-4-3, Level 3	
Electrical Fast Transient	IEC/EN61000-4-4, Level 4	
Surge Immunity	IEC/EN61000-4-5, 4kV	
Transportation	ISTA 3E	
Mechanical		
Unit Dimensions (W x D x H), rack orientation	430 x 750 x 173 mm	430 x 700 x 217 mm
Unit Weight	70 kg	80 kg
Shipping Dimensions (W x D x H)	600 x 850 x 480 mm	600 x 800 x 530 mm
Shipping Weight	92 kg	102 kg

Table 7.5 External Battery Cabinet Specifications

Model Number	GXE3-EBC192VRT2U	GXE3-EBC240VRT3U
UPS Compatibility	GXE3-6000IRT4UXL	GXE3-10KIRT5UXL
Battery Parameters		
Type	Valve Regulated Lead Acid (VRLA); non-spillable	
Quantity	16	20
Battery Voltage / Amp-Hour	12V / 9Ah	
Battery Replacement Type	Internal battery not replaceable, replace entire EBC	
Environmental		
Operating Temperature Range	0 to 40°C (32 to 104°F), no derating	
Storage Temperature Range	-15 to 40°C (5 to 104°F)	
Relative Humidity	0-95% non-condensing	
Pollution Level	2	
Ingress Protection	IP20	
Operating Elevation	Up to 2000 m above sea level at 25°C, no derating	
Agency		
Certification	CE, UKCA	
Safety	IEC/EN62040-1:2013	
EMI/EMC	IEC/EN62040-2	
ESD	IEC/EN61000-4-2, Level 4	
Radiated Susceptibility	IEC/EN61000-4-3, Level 3	
Electrical Fast Transient	IEC/EN61000-4-4, Level 4	
Surge Immunity	IEC/EN61000-4-5, 4kV	
Transportation	ISTA 3E	
Mechanical		
Unit Dimensions (W x D x H), rack orientation	430 x 765 x 85 mm	430 x 645 x 130 mm
Unit Weight	58.4 kg	66.9 kg
Shipping Dimensions (W x D x H)	600 x 850 x 405 mm	600 x 800 x 450 mm
Shipping Weight	78 kg	85 kg

8.1 Battery Run Times

NOTE: Run times in these tables are estimates. Run times are based on new, fully charged batteries at a temperature of 25 °C (77 °F) with 100% resistive UPS loading. Run times listed can vary by ±5% due to manufacturing variances of the individual batteries.

Table 7.6 GXE3-6000IRT4UXL Run Times

Load		Internal Battery	Internal Battery + Number of External Battery Cabinets			
%	Watts		1	2	3	4
10	600	99.3	222.8	352.9	483.1	613.2
20	1200	47.8	107.7	173.5	240.5	310.0
30	1800	29.0	69.8	111.5	156.6	201.8
40	2400	19.8	50.6	81.4	114.0	148.4
50	3000	14.6	38.4	63.5	88.1	114.7
60	3600	11.4	30.2	51.2	72.0	92.6
70	4200	9.1	24.4	42.4	60.4	78.2
80	4800	7.6	20.3	35.7	51.6	67.3
90	5400	6.5	17.2	30.5	44.7	58.8
100	6000	5.5	14.9	26.4	39.1	51.8

Table 7.7 GXE3-10KIRT5UXL Run Times

Load		Internal Battery	Internal Battery + Number of External Battery Cabinets			
%	Watts		1	2	3	4
10	1000	76.1	170.9	271.2	374.0	476.9
20	2000	34.5	80.5	129.6	180.7	232.7
30	3000	20.0	51.0	81.9	114.7	149.4
40	4000	13.5	35.5	59.2	82.5	106.8
50	5000	9.8	26.3	45.3	64.2	82.9
60	6000	7.7	20.4	35.9	51.8	67.6
70	7000	6.2	16.4	29.2	42.9	56.6
80	8000	5.0	13.7	24.3	36.1	48.2
90	9000	4.2	11.7	20.6	30.9	41.7
100	10000	3.6	10.1	17.9	26.9	36.5

Appendices

Appendix A: Technical Support

Our Technical Support staff is ready to assist you with any installation or operating issues you may encounter with your Liebert® product.

Please call or email us:

In Europe, Middle East, and Asia

EMEA Multi-language technical support

Email: eoc@vertiv.com

Phone: Toll free 0080011554499

Phone: Toll +39 02 98250222

In the United States

Technical support

Email: liebert.upstech@vertiv.com

Phone: 1-800-222-5877 menu option 1

Monitoring support

Email: liebert.monitoring@vertiv.com

Phone: 1-800-222-5877 menu option 2

Warranty support

Email: microups.warranty@vertiv.com

Phone: 1-800-222-5877 menu option 3

In Latin America:

In Peru:

Email: call.center@vertiv.com/suporte.vertiv2@connectcom.com.br

Phone: 0800 - 77737

In Chile:

Email: callcenter.chile@vertiv.com

Phone: 800 - 395429

In Argentina:

Email: ar.servicios@vertiv.com

Phone: 0800 - 1220869

In Columbia:

Email: CallCenter.Colombia@vertiv.com

Phone: 018000 - 125527

In Mexico:

Email: CallCenter.Mexico@vertiv.com

Phone: 01800 - 2530414

In Central America and Caribbean countries:

CallCenter.CA@vertiv.com

Appendix B: Open Source Software Legal Notices

The Vertiv™ Liebert® GXE product links the FreeRTOS software with Vertiv Group Corporation's proprietary modules that communicate with the FreeRTOS software solely through the FreeRTOS API interface. This use is an exception to the FOSS GPLv2 license. The user is free to redistribute the FreeRTOS software and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation. A copy of the GNU General Public License is located at www.gnu.org/licenses/old-licenses/gpl-2.0.html. A copy of the exception is located at <https://spdx.org/licenses/freertos-exception-2.0.html>. For a period of three (3) years after purchasing the Liebert® GXE product, the purchaser has the right to obtain a copy of the FreeRTOS software that is incorporated in the Liebert® GXE product.

The purchaser can contact Vertiv Technical Support and request the software.

This page intentionally left blank

Connect with Vertiv on Social Media



<https://www.facebook.com/vertiv/>



<https://www.instagram.com/vertiv/>



<https://www.linkedin.com/company/vertiv/>



<https://www.twitter.com/Vertiv/>



Vertiv.com | Vertiv Headquarters, 505 N Cleveland Ave, Westerville, OH 43082 USA

© 2023 Vertiv Group Corp. All rights reserved. Vertiv™ and the Vertiv logo are trademarks or registered trademarks of Vertiv Group Corp. All other names and logos referred to are trade names, trademarks or registered trademarks of their respective owners. While every precaution has been taken to ensure accuracy and completeness here, Vertiv Group Corp. assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions.

SL-71041_REVA_02-23