



Liebert[®] GXT5 UPS

Installer/User Guide

208 V Input, 208 V Output, L1-L2-G (HV)

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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.

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1 Important Safety Instructions

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.

Comply with all warnings and operating instructions in this manual strictly. Save this manual and carefully read the following instructions before installing the unit. Do not operate this unit before reading all safety information and operating instructions carefully.

Transportation

Only transport the UPS system in the original packaging to protect against shock and impact.

Preparation

- Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near a heater.
- Do not block ventilation holes in the UPS housing.

Installation

- Do not connect appliances or devices which would overload the UPS system (e.g. laser printers) to the UPS output sockets.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances such as hair dryers to UPS output sockets.
- Connect the UPS system only to an earthed shockproof outlet which must be easily accessible and close to the UPS system.
- Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring shockproof outlet.
- Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.
- When installing the equipment, ensure that the sum of the leakage current of the UPS and the connected devices does not exceed 3.5 mA.

Operation

- Do not disconnect the mains cable on the UPS system or the building wiring shockproof outlet during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal power source (batteries). The UPS output sockets or output terminal blocks may be electrically live even if the UPS system is not connected to the building wiring outlet.
- Prevent fluids and foreign objects from entering the inside of the UPS system.

Maintenance, Service, and Faults

- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.



WARNING! Risk of electric shock. Even after the unit is disconnected from the mains (building wiring outlet), components inside the UPS system are still connected to the battery and electrically live and dangerous.

- Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high energy capacitors such as Bus capacitors.
- Only persons that are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorized persons must be kept well away from the batteries.



WARNING! Risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Before touching, please verify that no voltage is present!

- Batteries may cause electric shock and have a high short circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:
 - Remove wristwatches, rings, and other metal objects.
 - Use only tools with insulated grips and handles.
- When changing batteries, install the same number and same type of batteries.
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Recycle or dispose of batteries properly according to local regulations.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- Please replace fuses only with the same type and amperage in order to avoid fire hazards.
- Do not dismantle the UPS system.

Output Short Circuit Current

Table 1.1 Output Short Circuit Current

Model	Max Peak for AC mode	Max RMS for AC mode
GXT5-10KHVRT5UXLN	224.4 A	81.1 A (Duration: 159.5 ms)

2 Product Description

The Vertiv™ Liebert® GXT5 is a compact, online uninterruptible power system (UPS) that continuously conditions and regulates its output voltage. The Liebert® GXT5 supplies computers 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® GXT5 protects equipment from these disturbances. The Liebert® GXT5 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® GXT5 includes the following features. **Table 2.1** below, lists the available models and power ratings.

- Enhanced load capacity with an output power factor up to 1.
- Optional tower or rack installation to meet varying installation requirements.
- Parallel connection capability for 10 kVA model achieves up to 2 + 1 parallel redundant power.
- 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.
- Programmable output terminals on UPS models protect key devices when load is heavy.
- Operation and display panel with model specific color LCD offers simple configuration and control of the UPS.
- ECO power supply mode and smart sleep mode help you save the maximum amount of energy.

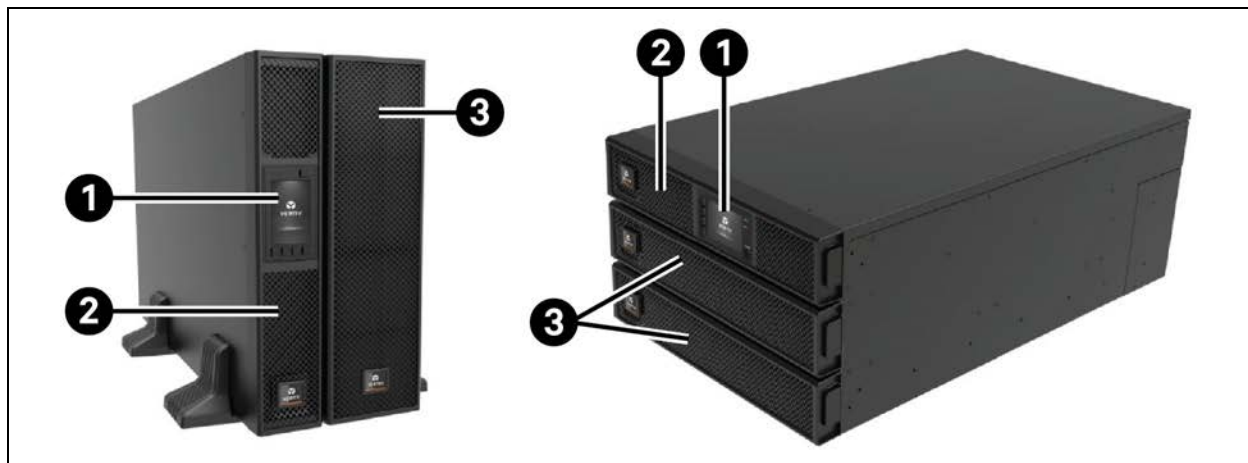
Table 2.1 UPS Models and Power Ratings

Model Number	Nominal Power Rating at 208 V Input
GXT5-3KL620RT2UXL	3000 VA/3000 W
GXT5-3KL630RT2UXL	3000 VA/3000 W
GXT5-5KL630RT3UXLN	4900 VA/4600 W
GXT5-6KL630RT5UXLN	4900 VA/4600 W
GXT5-5000HVRT5UXLN	5000 VA/5000 W
GXT5-8000HVRT5UXLN	8000 VA/8000 W
GXT5-10KHVRT5UXLN	10000 VA/10000 W

2.2 Front Panels

The various Vertiv™ Liebert® GXT5 models have the same general appearance, with the main difference being the receptacle types on the rear panel. **Figure 2.1** below, shows the 5 kVA to 10 kVA model in a tower and a rack configuration.

Figure 2.1 Front View

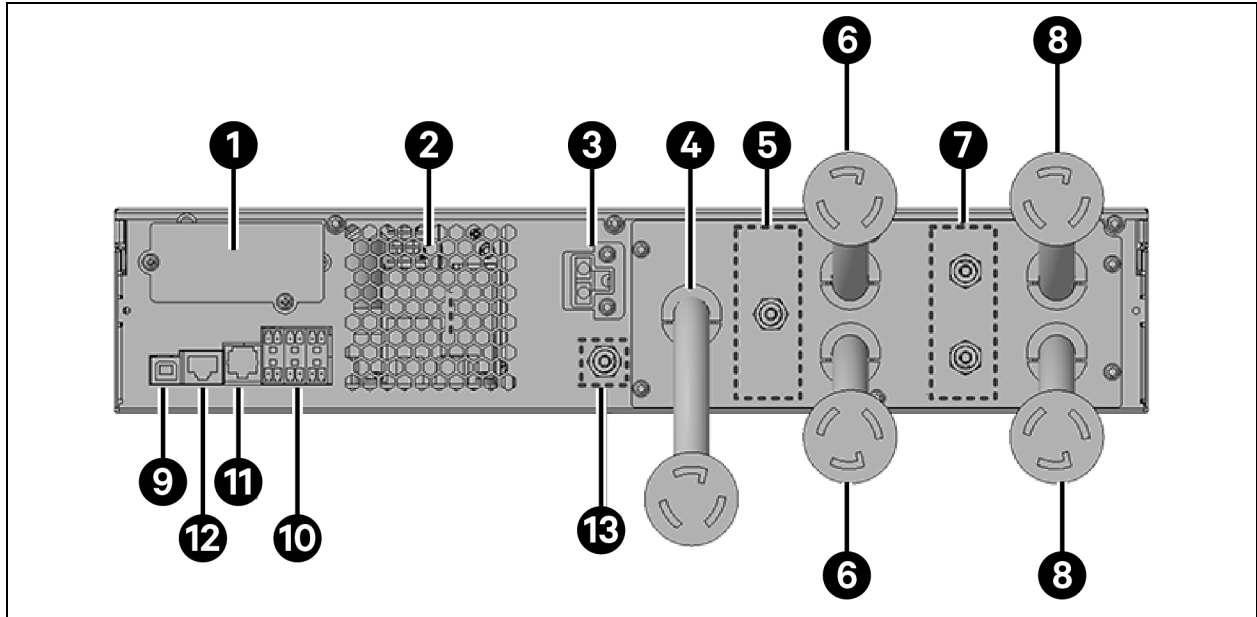


Item	Description
1	Operation/Display panel
2	Upper bezel
3	Lower bezel/battery access door

2.3 Rear Panels

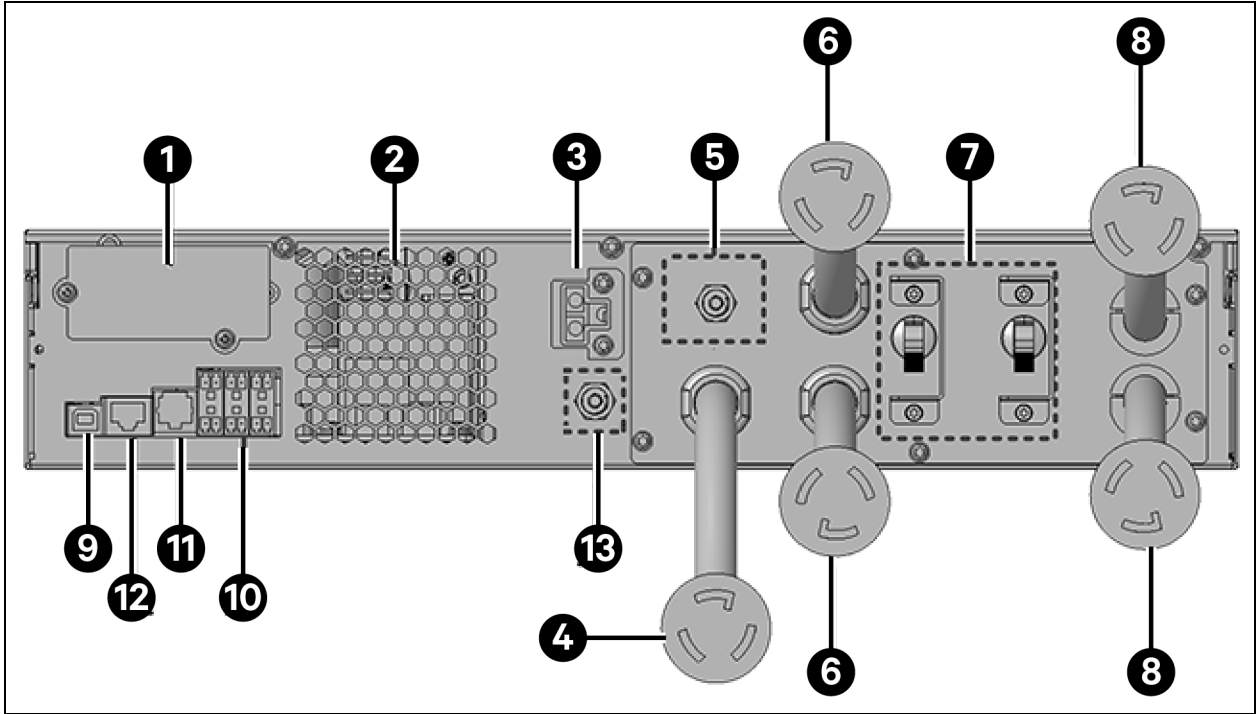
The following figures detail the rear panel features for each Vertiv™ Liebert® GXT5 model.

Figure 2.2 GXT5-3KL620RT2UXL Rear Panel



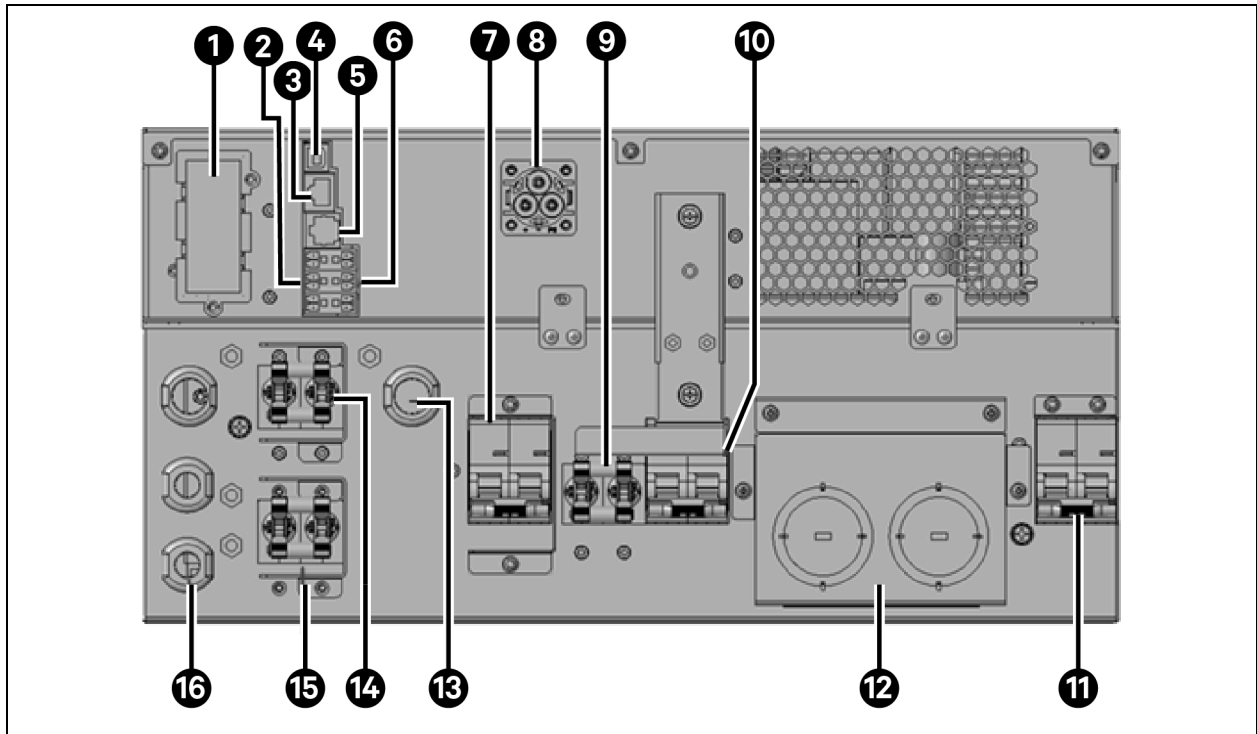
Item	Description
1	Vertiv™ Liebert® IntelliSlot™ port
2	Ventilation hole
3	External battery cabinet (EBC) connector
4	Input power cable, L6-20P
5	Output circuit breaker reset button, 20 A
6	Output cable, L6-20R
7	Output circuit breaker reset buttons, 15 A
8	Output cables, L6-15R
9	USB port
10	Terminal-block communication ports
11	RS-232 port - RJ-45/RJ-11 connection used for command line interface
12	RS-485 port - RJ-45 connection used for external temperature sensors
13	Input breaker, 20 A

Figure 2.3 GXT5-3KL630RT2UXL Rear Panel



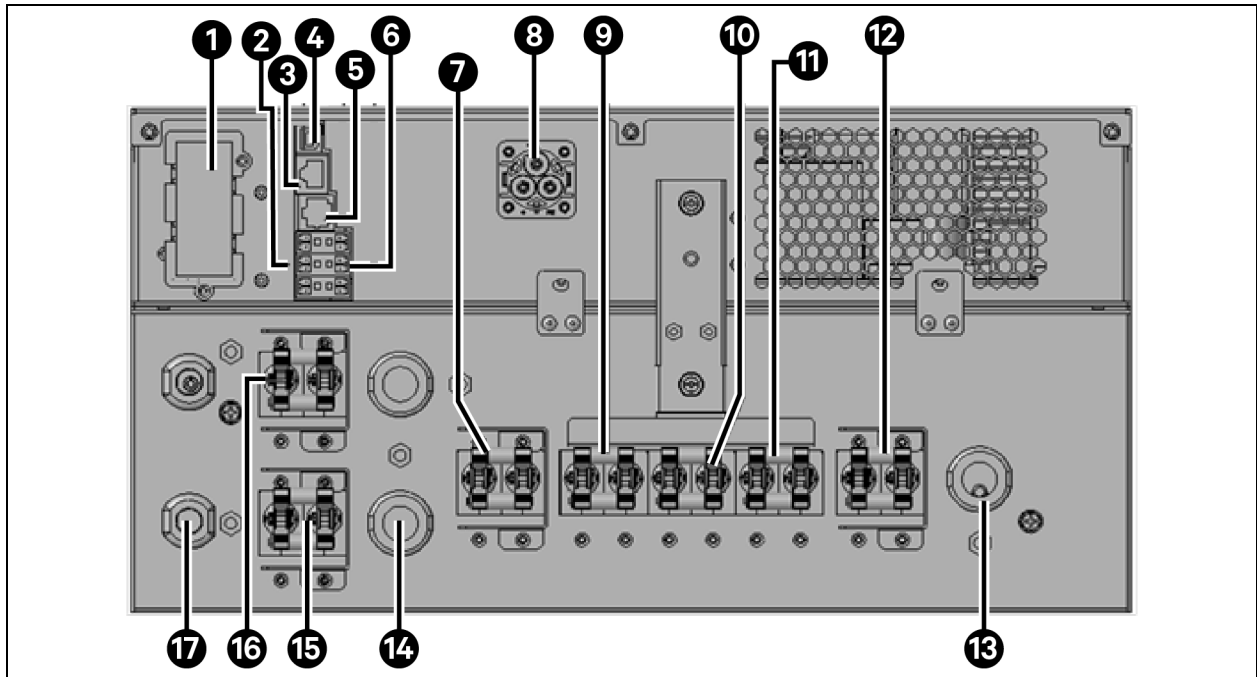
Item	Description
1	Vertiv™ Liebert® IntelliSlot™ port
2	Ventilation hole
3	EBC connector
4	Input power cable, L6-30P
5	Output circuit breaker reset button, 20 A
6	Output cable, L6-30R
7	Output circuit breakers, 15 A
8	Output cables, L6-15R
9	USB port
10	Terminal-block communication ports
11	RS-232 port - RJ-45/RJ-11 connection used for command line interface
12	RS-485 port - RJ-45 connection used for external temperature sensors
13	Input breaker, 20 A

Figure 2.4 GXT5-5000HVRT5UXLN Rear Panel



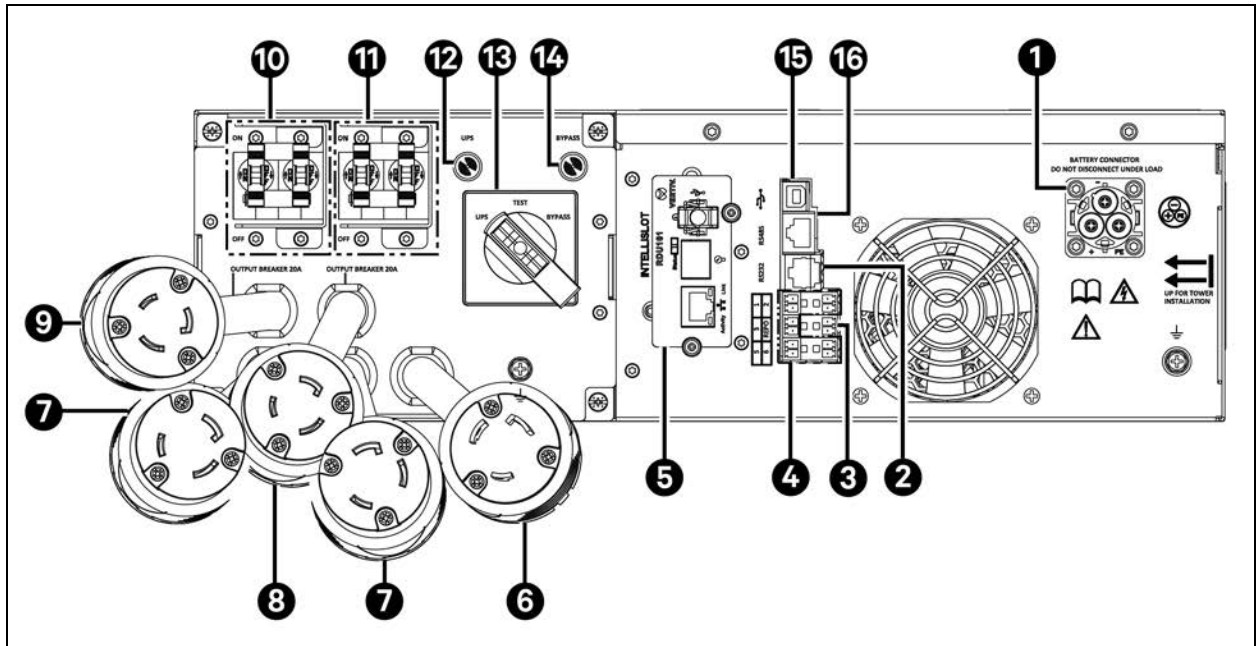
Item	Description
1	Liebert® IntelliSlot™ port
2	Terminal-block communication connectors
3	RS-485 port - RJ-45 connection used for external temperature sensors
4	USB port
5	RS-232 port - RJ-45/RJ-11 connection used for command line interface
6	REPO connector
7	Output circuit breaker
8	EBC connector
9	Programmable outlet maintenance bypass breaker
10	Maintenance bypass breaker
11	Input circuit breaker
12	Removable junction box with knockouts for hardwire I/O
13	L6-30R output receptacle (2x)
14	L6-30R output breaker
15	Programmable L6-20R output breaker
16	Programmable L6-20R output receptacle (2x)

Figure 2.5 GXT5-6KL630RT5UXLN Rear Panel



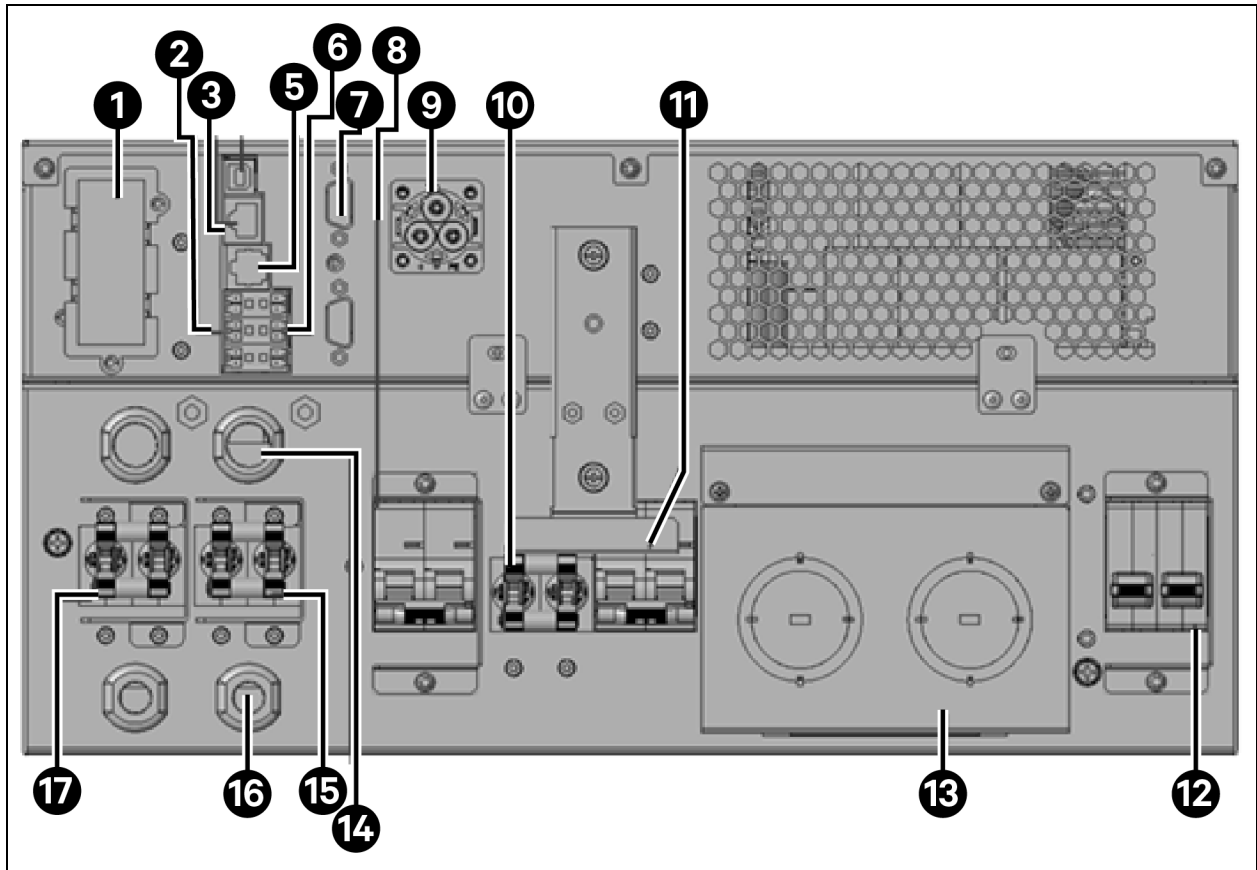
Item	Description
1	Liebert® IntelliSlot™ port
2	Terminal-block communication connectors
3	RS-485 port - RJ-45 connection used for external temperature sensors
4	USB port
5	RS-232 port - RJ-45/RJ-11 connection used for command line interface
6	REPO connector
7	Output circuit breaker
8	EBC connector
9	Programmable outlet maintenance bypass breaker
10	Programmable outlet maintenance bypass breaker
11	Maintenance bypass breaker
12	Input circuit breaker
13	L6-30P input plug
14	L6-30R output receptacle (2x)
15	Programmable L6-20R output breaker
16	Programmable L6-20R output breaker
17	Programmable L6-20R output receptacle (2x)

Figure 2.6 GXT5-5KL630RT3UXLN Rear Panel



Item	Description
1	External battery connector
2	RS-232 port
3	REPO connector
4	Terminal-block/Dry-contact communication connectors
5	Factory installed network card
6	L6-30P input plug
7	L6-30R output receptacle
8	L6-20R controllable output receptacle B
9	L6-20R controllable output receptacle A
10	Controllable output Breaker A
11	Controllable output Breaker B
12	Green light UPS available
13	Rotary switch
14	Amber light maintenance bypass available
15	USB port
16	Communication port (RS-485)

Figure 2.7 GXT5-8000/10KHVRT5UXLN Rear Panel



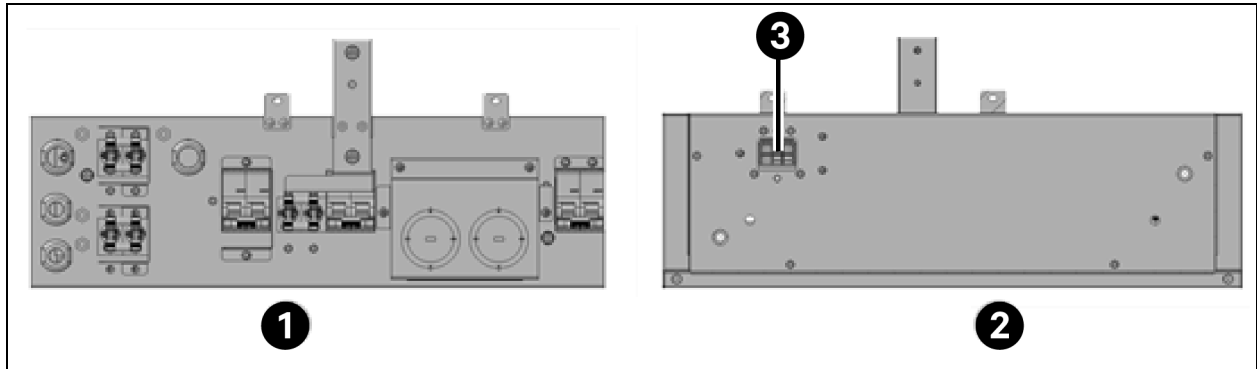
Item	Description	Item	Description
1	Liebert® IntelliSlot™ port	10	Programmable outlet maintenance bypass breaker
2	Terminal-block communication connectors	11	Maintenance bypass breaker
3	RS-485 port - RJ-45 connection used for external temperature sensors	12	Input circuit breaker
4	USB port	13	Removable junction box with knockouts for hardwire I/O
5	RS-232 port - RJ-45/RJ-11 connection used for command line interface	14	L6-30R output receptacle (2x)
6	REPO connector	15	Programmable L6-20R output breaker
7	DB9 ports - Used for communication when operating in a parallel system, see Installing a Parallel System on page 1.	16	Programmable L6-20R output receptacle (2x)
8	Output circuit breaker	17	L6-30R output breaker
9	EBC connector		

2.4 Removable Power Output Distribution (POD)

The 5 kVA and 10 kVA models ship with the POD installed. The features for each POD are detailed in the following figures.

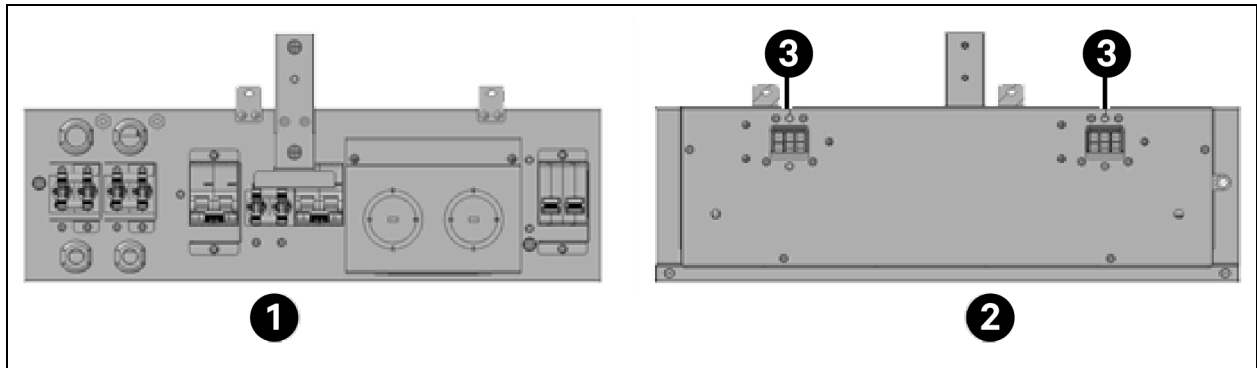
2.4.1 Standard PODs

Figure 2.8 PD5-CE6HDWRMBSU for GXT5-5000HVRT5UXLN



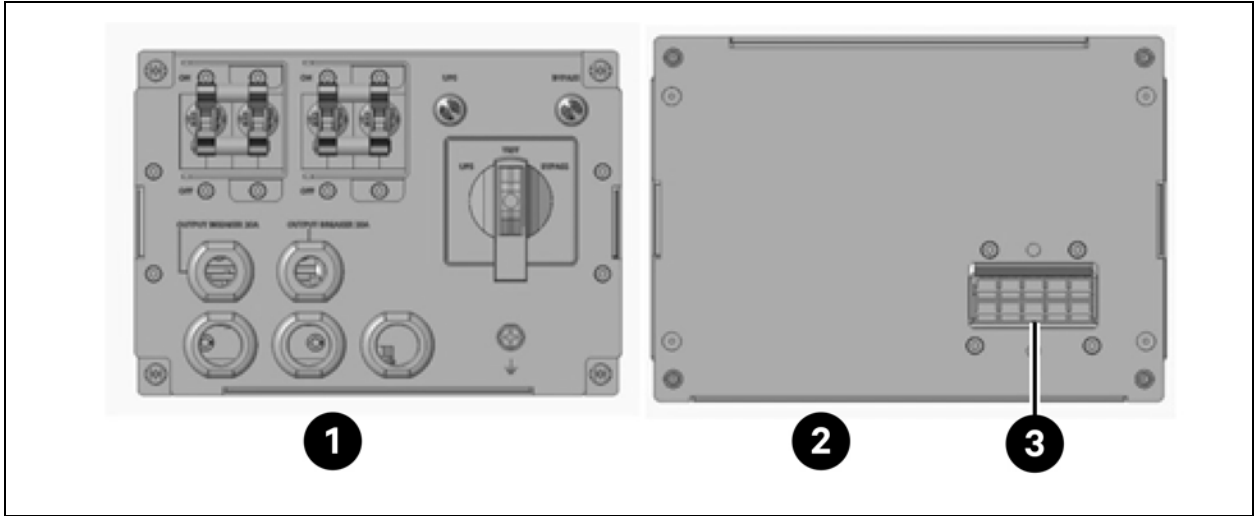
Item	Description
1	POD Panel view (on rear of unit)
2	POD inner-surface view
3	Quick connect

Figure 2.9 PD5-CE10HDWRMBSU for GXT5-8000/10KHVRT5UXLN



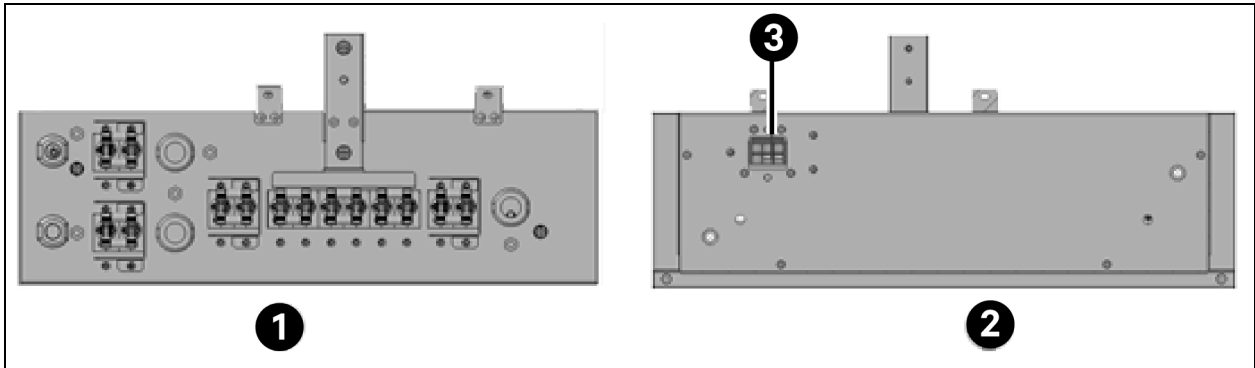
Item	Description
1	POD Panel view (on rear of unit)
2	POD inner-surface view
3	Quick connect

Figure 2.10 PD5-5KL630 for GXT5-5KL630RT3UXLN



Item	Description
1	POD Panel view (on rear of unit)
2	POD inner-surface view
3	Quick connect

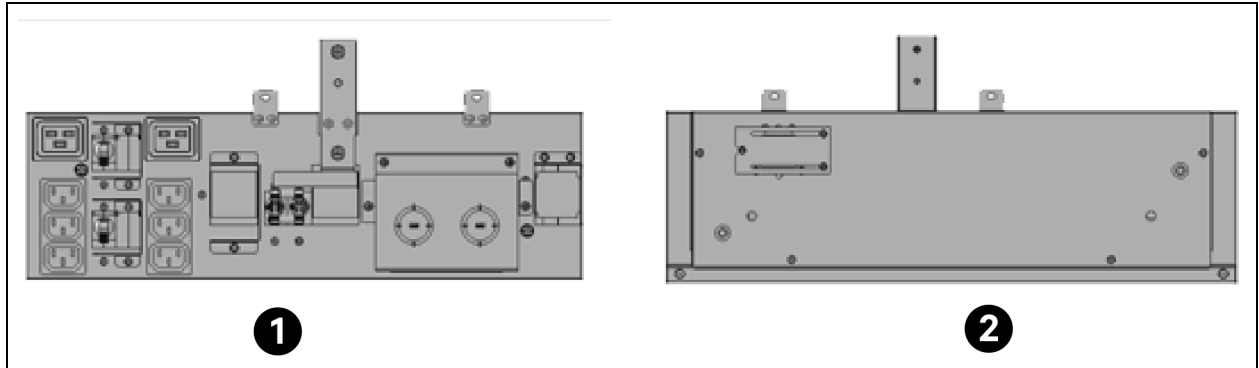
Figure 2.11 PD5-L630 for GXT5-6KL630RT5UXLN



Item	Description
1	POD Panel view (on rear of unit)
2	POD inner-surface view
3	Quick connect

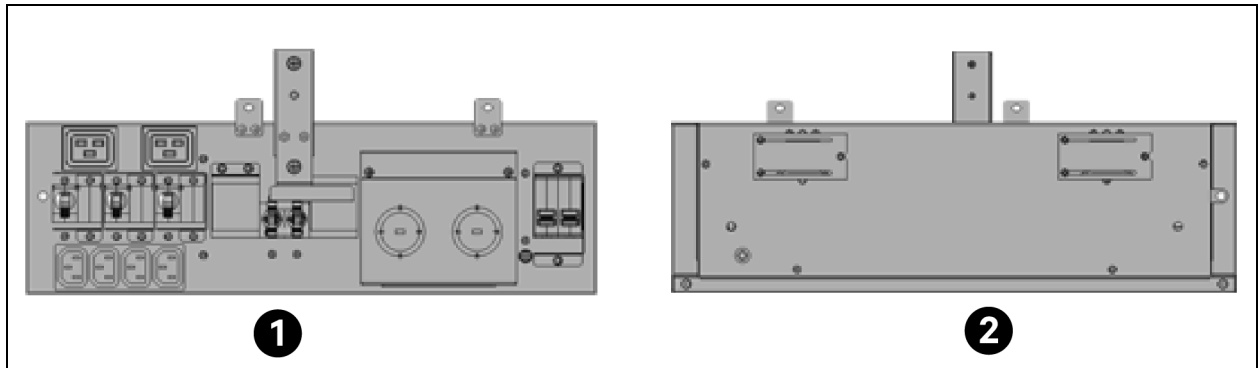
2.4.2 Optional PODs

Figure 2.12 PD5-201 for GXT5-5000/6000HVRT5UXLN



Item	Description
1	POD Panel View (front)
2	POD Panel View (Rear)

Figure 2.13 PD5-202 for GXT5-8000/10KHVRT5UXLN

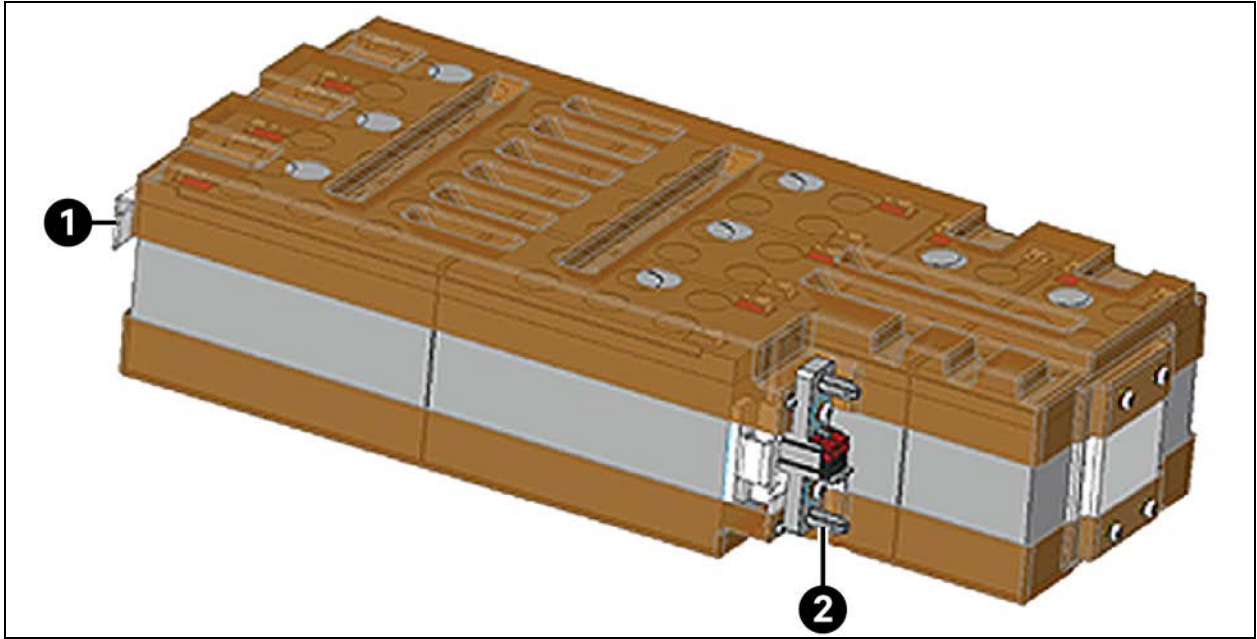


Item	Description
1	POD Panel View (front)
2	POD Panel View (Rear)

2.5 Internal Battery Packs

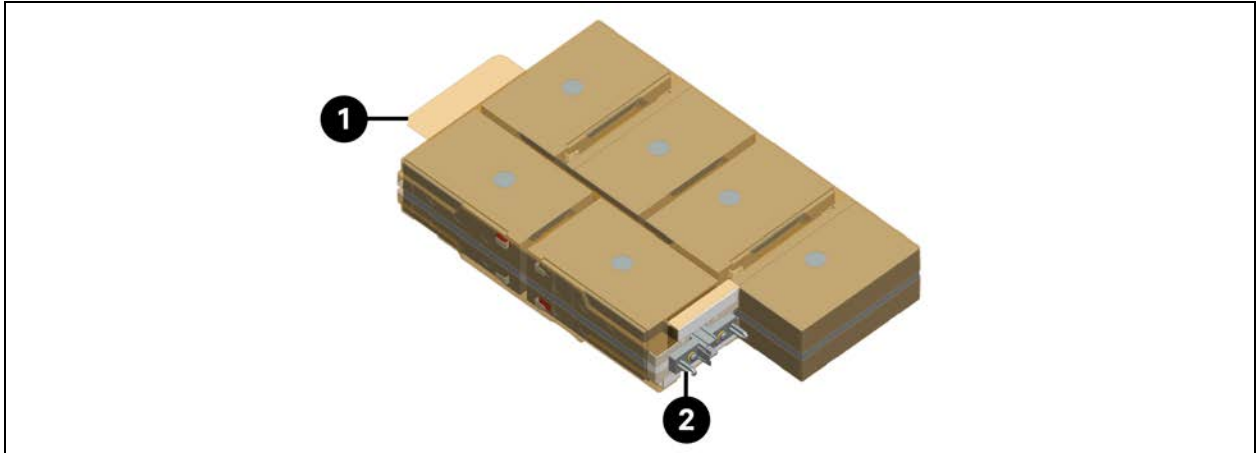
The internal battery packs are located behind the access door on the front of the UPS. Refer **Figure 2.14** below, **Figure 2.15** on the facing page and **Figure 2.16** on the facing page for the internal battery pack view.

Figure 2.14 Internal Battery Pack—5 to 10kVA



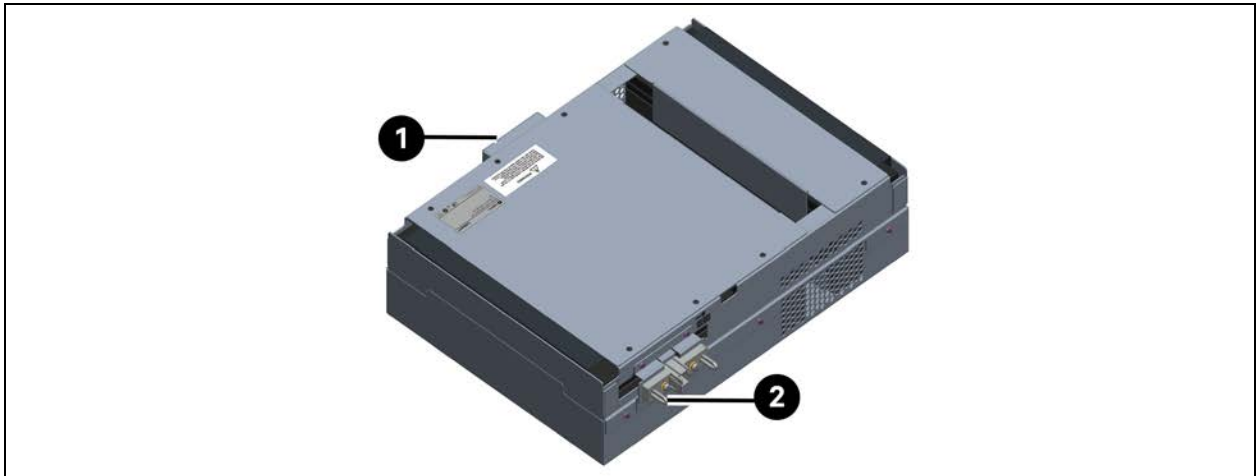
Item	Description
1	Handle
2	Connector

Figure 2.15 Internal Battery Pack—GXT5-3KL630RT2UXL



Item	Description
1	Handle
2	Connector

Figure 2.16 Internal Battery Pack—GXT5-5KL630RT3UXL



Item	Description
1	Handle
2	Connector

2.6 Major Internal Components and Operating Principle

Figure 2.17 below, shows the UPS operating principle. Figure 2.17 below, describes the function of the major components in the UPS.

NOTE: Figure 2.17 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 27.

Figure 2.17 Basic Operating Principle Diagram

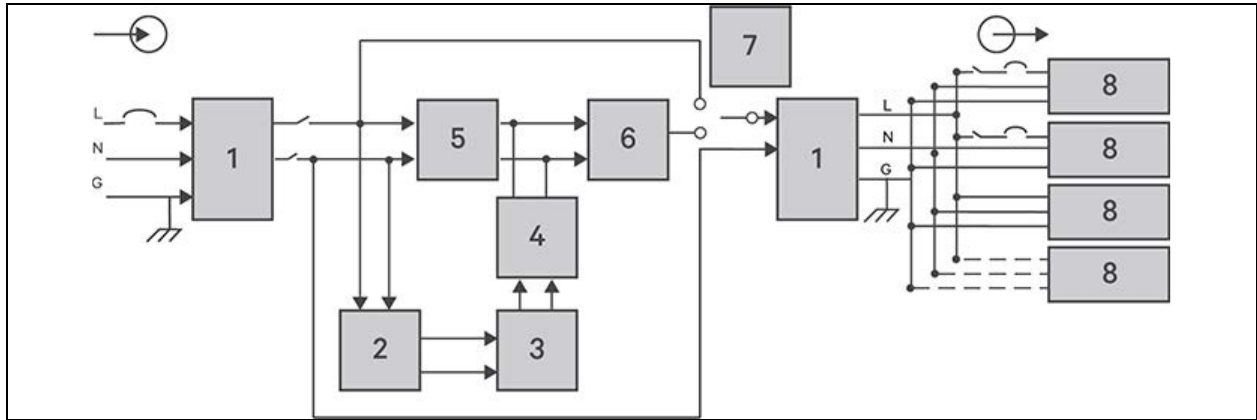


Table 2.2 Major Components

Item	Component	Operation/Function
1	Transient Voltage Surge Suppression (TVSS) and EMI/RFI Filters	Provide surge protection. Filter electromagnetic interference (EMI) and radio frequency interference (RFI). Minimize surges or interference present in the utility power and protect devices connected on the same branch as the UPS.
2	Battery Charger	Regulates input AC power to continuously float-charge the batteries. Batteries are charged when the UPS is plugged in, even when not powered-on.
3	Batteries	Valve-regulated, non-spillable, lead-acid batteries. NOTE: To maintain battery design life, operate the UPS in an ambient temperature of 59 °F to 77 °F (15 °C to 25 °C).
4	DC-to-DC Converter	Raises the DC voltage from the battery to the optimum operating voltage for the inverter. This allows the inverter to operate continuously at its optimum efficiency and voltage, thus increasing reliability
5	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.
6	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 receives DC power from the DC-to-DC converter. In either operating mode, the UPS inverter remains on-line, generating clean, precise, regulated AC-output power.
7	Internal Bypass	In the unlikely event of UPS failure such as overload or over temperature, automatically transfers the connected load to bypass. To manually transfer the connected load from inverter to bypass, see Transferring from Normal to Bypass Mode on page 36.
8	Outlet group	Output receptacles.

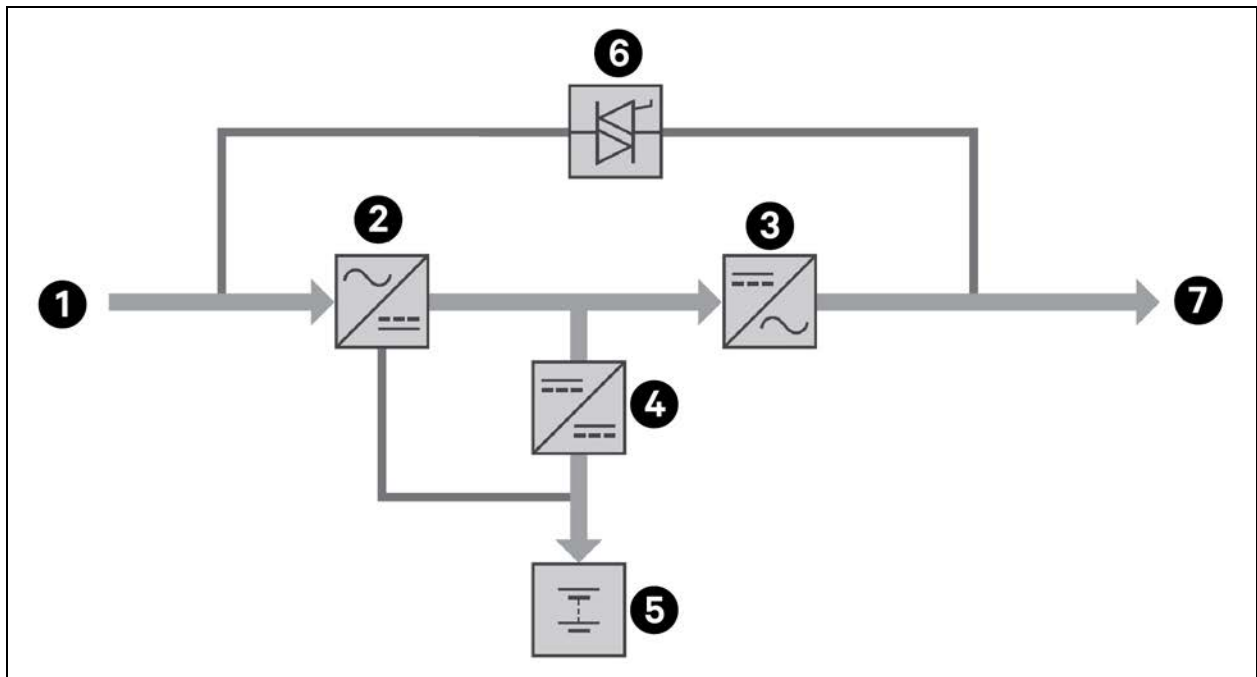
2.7 UPS States and Operating Modes

NOTE: LED Indicators , for description of the run-indicator and alarm-indicator LEDs mentioned in this section.

2.7.1 Normal Mode

When utility power is normal, Normal mode employs the rectifier and inverter to provide voltage and frequency stabilized power to the load. The charger charges the battery in normal mode. On the front panel display, the run-indicator (green) is ON, the alarm indicator is OFF, and the buzzer is silent. **Figure 2.18** below shows the diagram of normal mode.

Figure 2.18 Normal Mode Operation



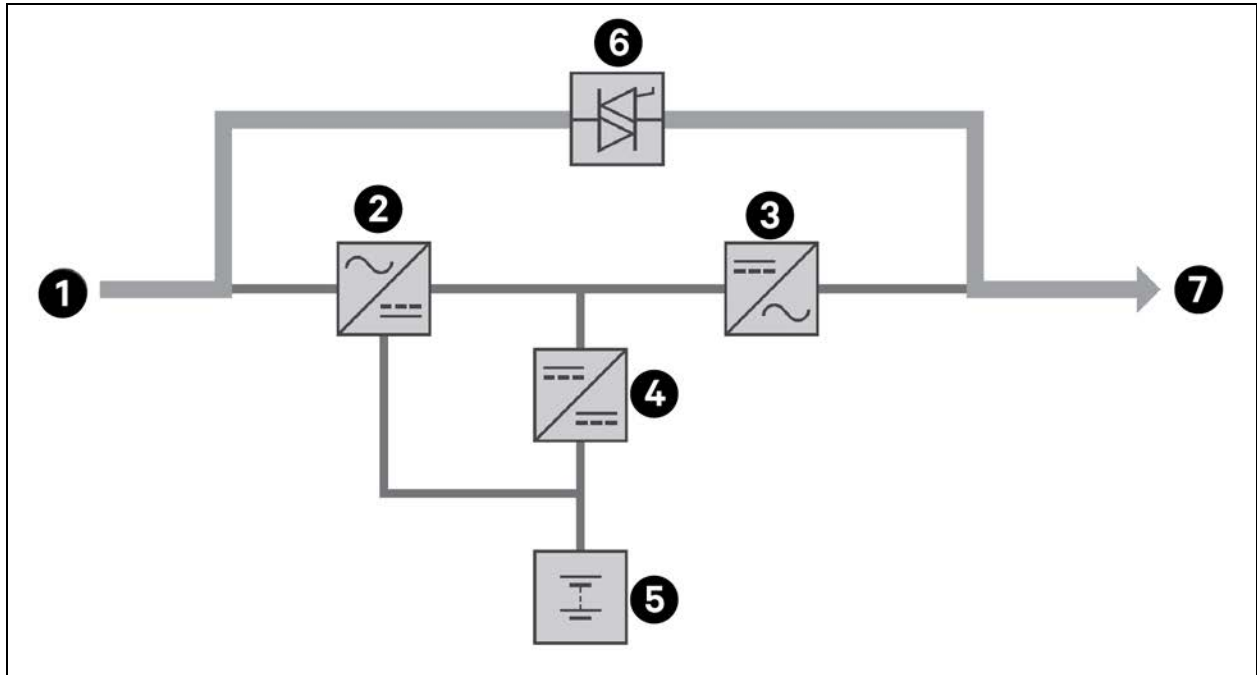
Item	Description
1	Mains/Utility input (by-pass input)
2	Rectifier/PFC
3	Inverter
4	Battery charger
5	Battery
6	Bypass static switch
7	UPS output

2.7.2 Bypass Mode

Bypass mode supplies power to the load from the bypass source (utility 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 every two seconds. The LCD *Flow* screen displays *On Bypass*. **Figure 2.19** below shows the diagram of bypass mode.

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

Figure 2.19 Bypass Mode Operation



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

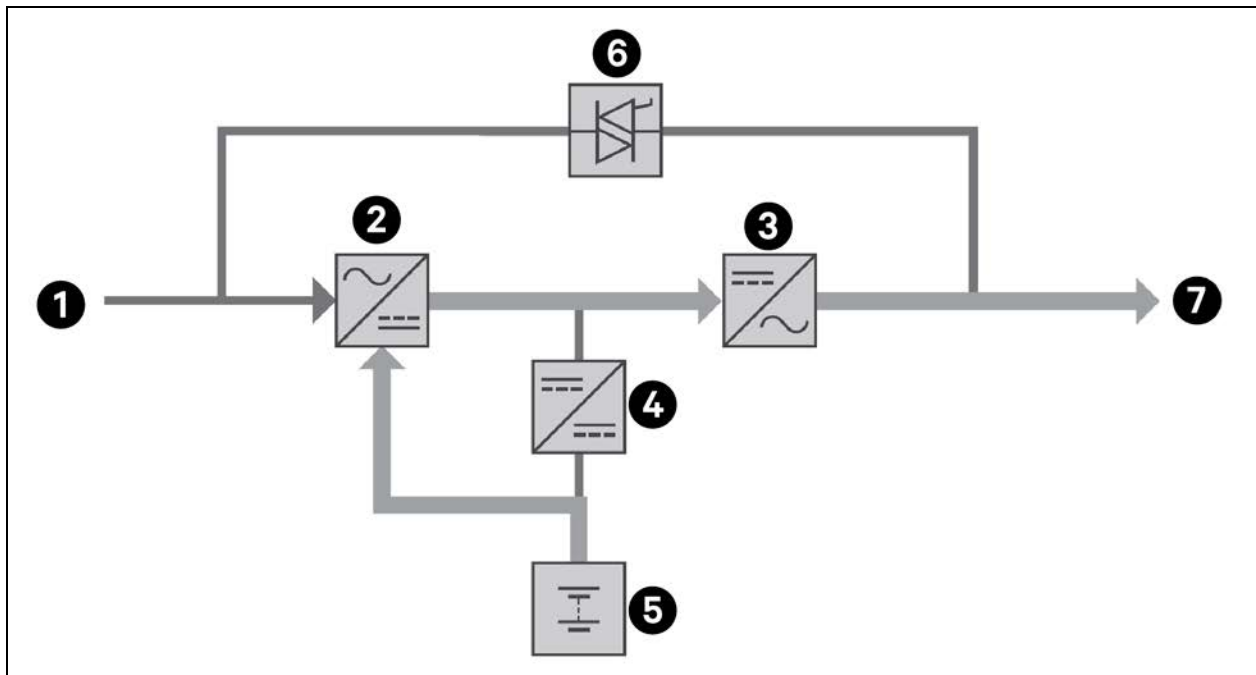
2.7.3 Battery Mode

Battery mode supplies battery power to the load if utility power fails or if the utility voltage 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 2.20** below 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 8 hours before first start-up.

NOTE: If utility power fails and the batteries are charged, you may cold-start the UPS in battery mode and use battery power to extend system availability for a time.

Figure 2.20 Battery Mode Operation



Item	Description
1	Mains/Utility input (by-pass input)
2	Rectifier/PFC
3	Inverter
4	Battery charger
5	Battery
6	Bypass static switch
7	UPS output

2.7.4 ECO Mode

The energy-saving ECO mode reduces power consumption by powering the load via bypass if the bypass voltage is normal or by powering the load via the inverter when the bypass voltage is abnormal. You can use ECO mode to power equipment that is not sensitive to power grid quality to via bypass and reduce power consumption.

NOTE: During ECO mode, if a bypass-failure or abnormal-bypass-voltage notification appears when the output is not overloaded, the UPS will transfer to Normal Mode. However, if a notification showing bypass failure or abnormal bypass voltage appears when the output is overloaded, the UPS will shut down the bypass and therefore the load will shut down.

2.7.5 Maintenance Bypass Mode

NOTE: 5 kVA to 10 kVA models include a circuit breaker to switch the load to maintenance bypass.

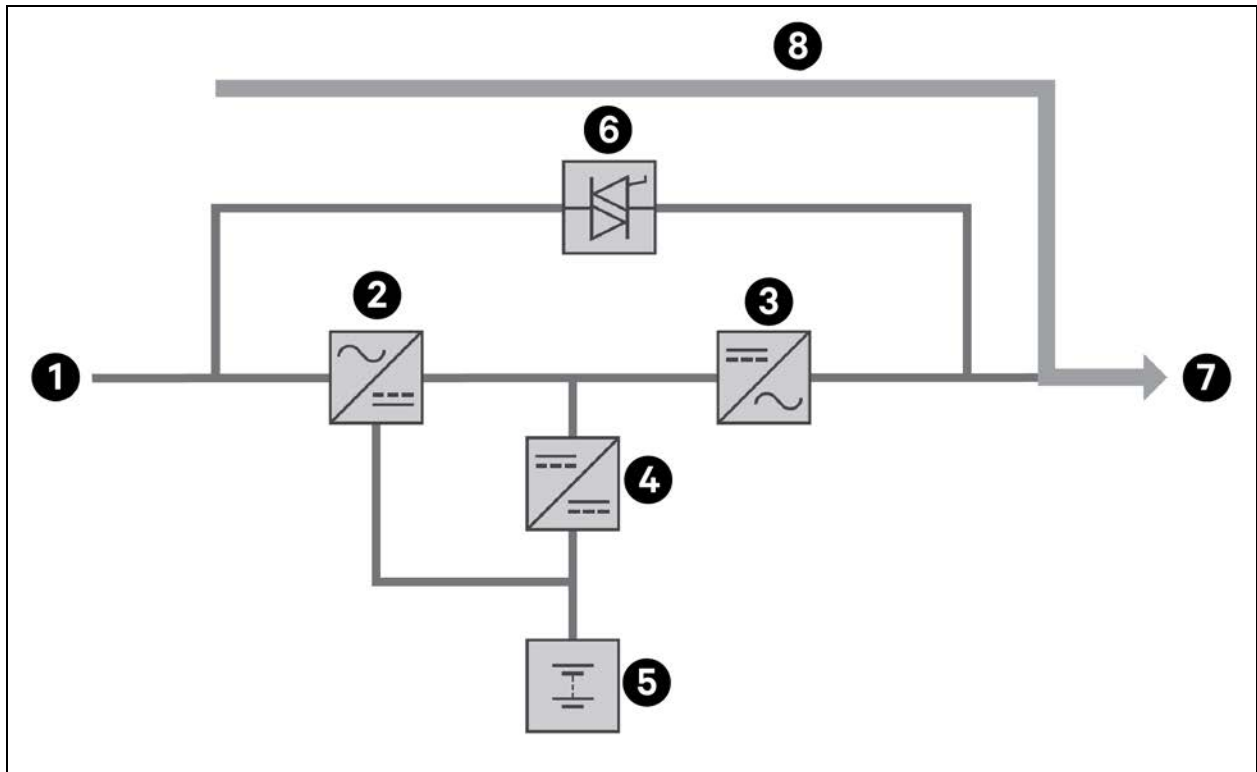
Used in the unlikely event that the UPS requires maintenance or repair, maintenance bypass mode powers the connected equipment with utility power while electrically isolating the internal UPS components.

NOTICE

- Risk of power interruption. Can damage the connected equipment.
- If utility power fails or if its quality is out of range while the UPS is in Maintenance Bypass Mode, the UPS may shut down without notice and shut-off output power to the load.

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

Figure 2.21 Maintenance Bypass Mode Operation



Item	Description
1	Mains/Utility input (by-pass input)
2	Rectifier/PFC
3	Inverter
4	Battery charger
5	Battery
6	Bypass static switch
7	UPS output
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, OSHA approved personal protective equipment (PPE) per NFPA 70E. Failure to comply can cause serious injury or death. Before proceeding with installation, read all instructions. Follow all local codes.

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 is heavy (see [Specifications](#) on page 69, 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 69.

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.

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

3.2.1 Installation Clearances

Maintain at least 4 in. (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](#) on the next page or [Rack Installation](#) on the next page.

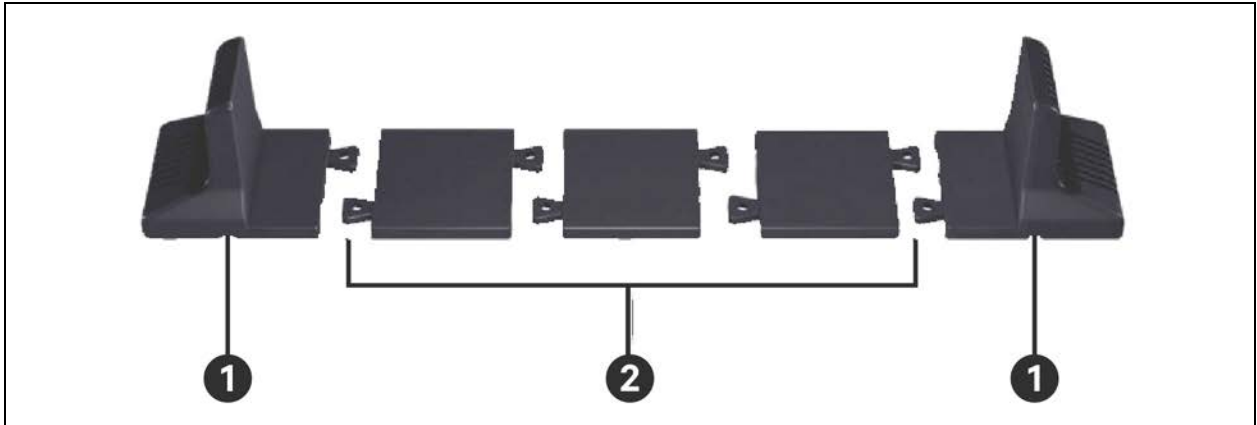
NOTE: When installing the UPS or making input and output connections, comply with all relevant safety codes and standards.

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, 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® GXT5 requires 2 support bases, one in the front and one in the rear.
4. Place the Liebert® GXT5 and any battery cabinets on the 2 support bases.

3.3.2 Rack Installation

When installed in a rack enclosure, the Liebert® GXT5 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.



CAUTION: The Liebert GXT5 is heavy. The UPS must be installed as near the bottom of a rack as possible. If placed too high, it can make the rack top heavy and prone to tipping over. For unit weights, see [Specifications](#) on page 69.

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 74. 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 10 EBCs may be connected to the UPS, and up to 6 may be detected using EBC auto-detection.

For applications where the number of EBCs exceeds 6 or for legacy applications where EBC auto-detection is not possible, please contact Vertiv service for assistance.



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 [Table 8.4](#) on page 73. 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.

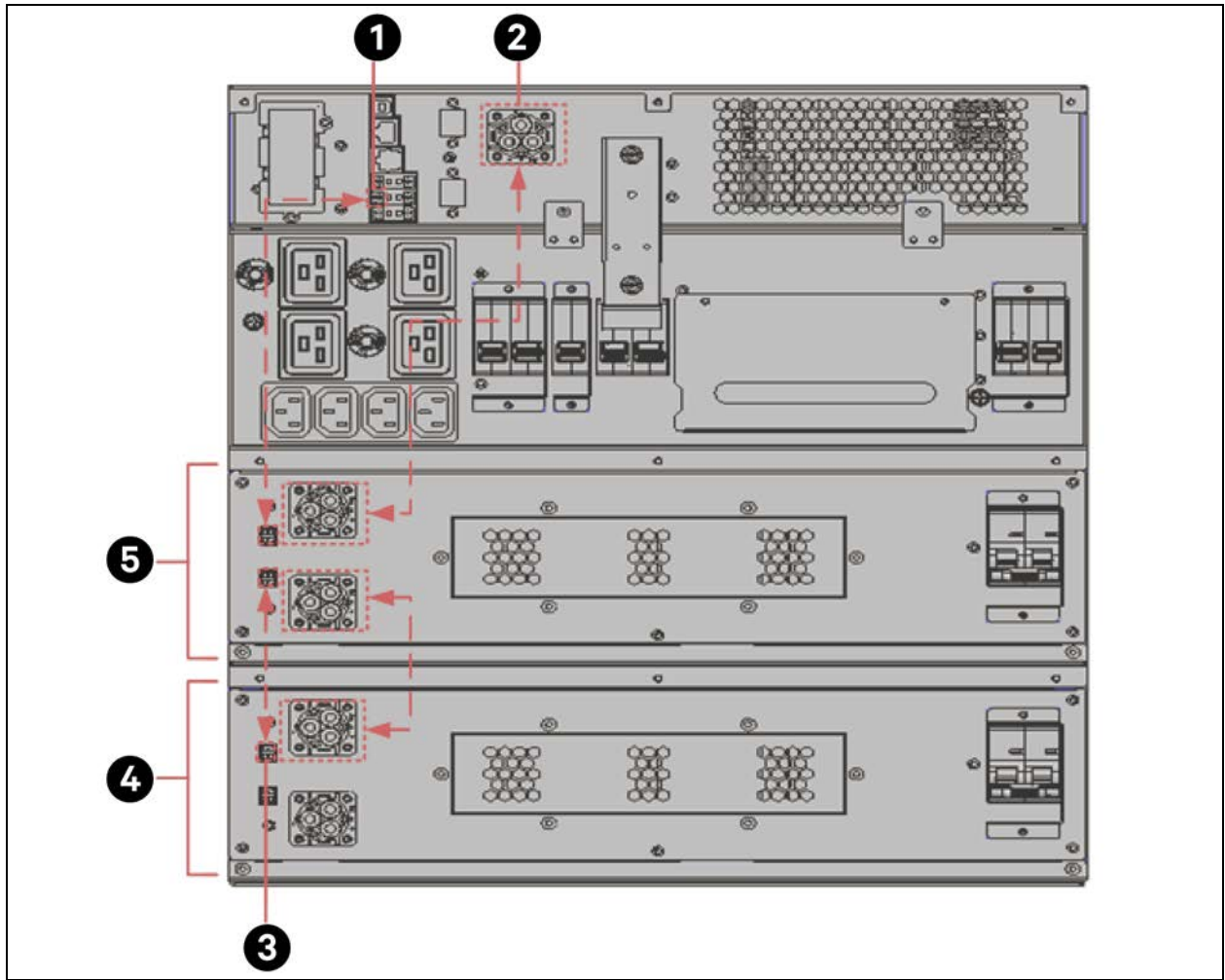
4. Verify that the EBC breaker is in the *Off* position.
5. Connect the supplied EBC cables to the rear of the cabinet, then to the rear of the UPS, see [Figure 3.2](#) on the next page.
6. Turn the EBC breaker to the *On* position.
7. Verify the circuit breaker on the EBC is in the *On* position.

The additional back-up 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 stand-by current drain on the batteries and help maintain design life.

Figure 3.2 EBCs Connected to the UPS



Item	Description
1	EBC detection dry contact port (See Table 3.2 on page 29, for details.)
2	EBC connector
3	EBC detection port
4	External battery cabinet
5	External battery cabinet

3.5 Installing a Power Output Distribution (POD)



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, OSHA approved personal protective equipment (PPE) per NFPA 70E. Failure to comply can cause serious injury or death. Before proceeding with installation, read all instructions. Follow all local codes.

The 5 kVA to 10 kVA models ship with a removable POD installed, see [Terminal Block Connections](#) on page 29, to make the electrical connections to the UPS. For removal, see the appropriate procedures in [Maintenance](#) on page 59.

NOTE: Do not operate the UPS with the POD removed. To shut off all power to the POD and to the load, utility input power must be disconnected.

3.6 Hardwired Input/Output Connections



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, OSHA approved personal protective equipment (PPE) per NFPA 70E. Failure to comply can cause serious injury or death. Before proceeding with installation, read all instructions. Follow all local codes.

Observe the following guidelines and specifications when making the hard-wire input and output connections:

- We recommend installing a Class D UL489 approved breaker upstream of unit.
- Provide circuit breaker protection according to local codes. The mains disconnect should be within sight of the UPS or have an appropriate lock-out.
- 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.

3.6.1 Branch Circuit Breaker

The installer must provide an upstream branch circuit breaker, see **Table 3.2** on page 29, for the ratings. The input circuit breaker on the distribution box and the output circuit breaker on the rear of the POD disconnect all power between the main cabinet and the distribution box. **Figure 3.3** on the next page, shows a diagram of the circuit breakers.

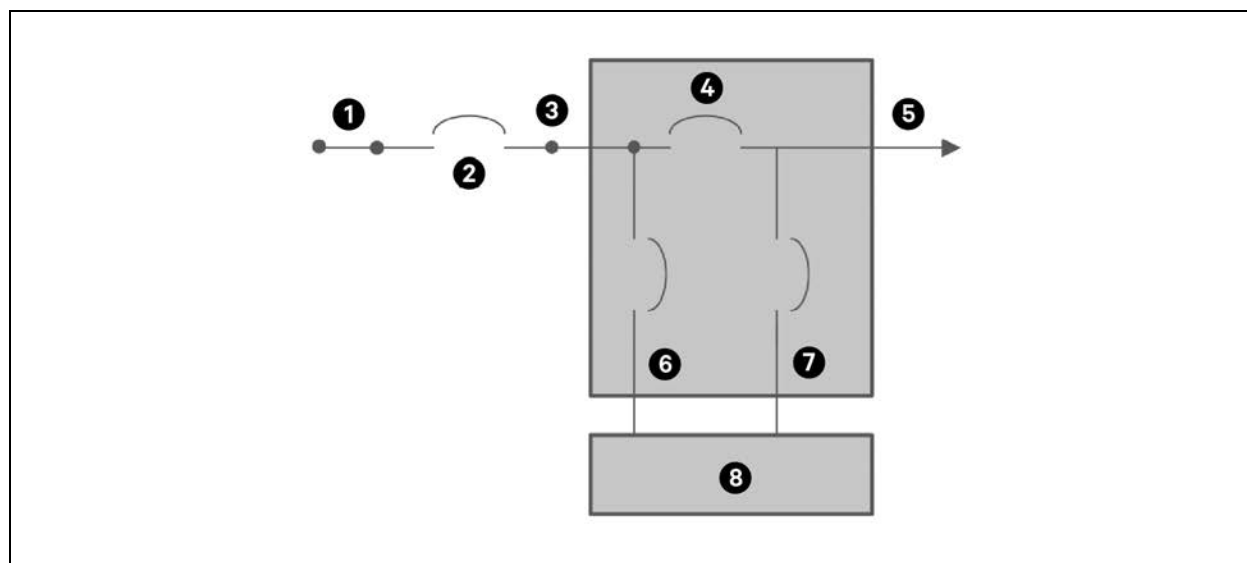
Observe the following guidelines and specifications when making the hard-wire input and output connections:

- Provide circuit breaker protection according to local codes. The mains disconnect should be within sight of the UPS or have an appropriate lock-out.
- 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
3KL620	20 A
3KL630	30 A
5KL630	30 A
6KL630	30 A
5 kVA	50 A
8 kVA	60 A
10 kVA	70 A

Figure 3.3 Circuit Breakers Diagram



Item	Description
1	Mains/Utility
2	External branch Circuit Breaker
3	Input
4	Maintenance Bypass Circuit Breaker
5	Output
6	Input Circuit Breaker
7	Output Circuit Breaker
8	UPS-PFC, battery inverter

3.6.2 Terminal Block Connections

On 5 kVA and 10 kVA models, the hard wire connections to the terminal blocks are made through knockouts on the POD attached to the rear of the unit. See [Removable Power Output Distribution \(POD\)](#) on page 11, for the location of the input/output knockouts on your Vertiv™ Liebert® GXT5 model.

Table 3.2 below details the electrical connection specifications.

Table 3.2 Terminal Block Electrical Specifications

UPS Model	Recommended External Circuit Breaker	Recommended Wire Size (Including Ground Wire) (75°C Copper Wire)	Maximum Wire Size Accepted by Terminal Block	Terminal Tightening Torque
GXT5-5000HVRT5UXLN	50 A	8 AWG	6 AWG	20 in.-lb (2.26 Nm)
GXT5-8000HVRTUXLN	60 A	6 AWG		
GXT5-10KHVRT5UXLN	70 A			

To make the terminal-block connections:

- Loosen the screws from the cable-entry/conduit box cover and pull the cables through the knockout leaving some slack for connection.

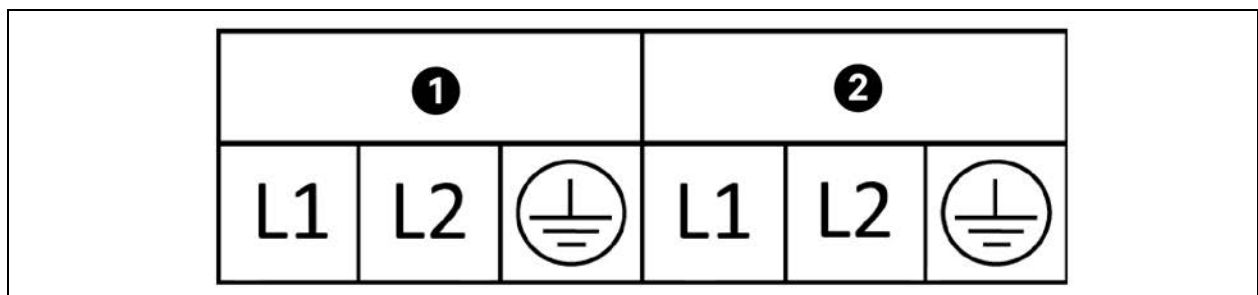
NOTE: We recommend using the knockouts to install input and output wiring in separate conduit. You must use a suitable cable gland or risk electric shock.

- 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. Refer [Connecting to Terminal Blocks on 5 kVA, 8 kVA, and 10 kVA models](#) below.
- Re-install the cable-entry/conduit-box cover and tighten the screws.

3.6.3 Connecting to Terminal Blocks on 5 kVA, 8 kVA, and 10 kVA models

These models offer a single type of I/O connection, 1-in 1-out common source. **Figure 3.4** below, shows the terminal block. Refer to the details in [Terminal Block Connections](#) above, when making the connections.

Figure 3.4 Terminal Block 5 kVA, 8 kVA, and 10 kVA Models



Item	Description
1	Output
2	Input

3.7 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.

3.7.1 Connecting IntelliSlot Communication

The Vertiv™ Liebert® IntelliSlot™ RDU101 provides SNMP monitoring of the UPS across the network and/or building management system.

See the appropriate figure for your model in [Rear Panels](#) on page 5, 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.

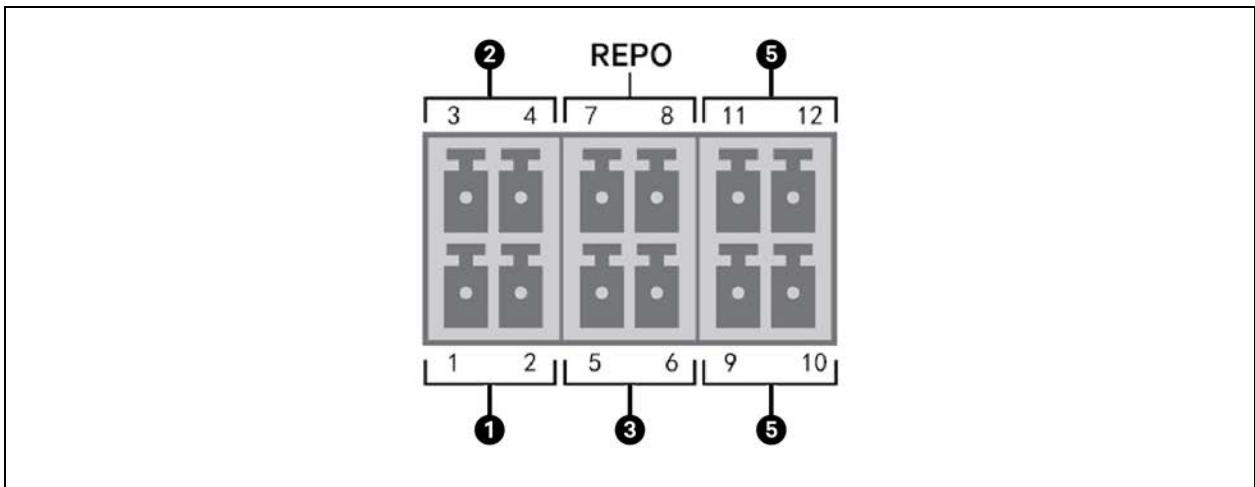
To make connections to the card, refer to the Installer/User Guide for the appropriate IntelliSlot card available at www.vertiv.com.

3.7.2 Connecting to the Dry contact Port

The UPS includes a dry contact port. See the appropriate figure for your model in [Rear Panels](#) on page 5, for the location of the port. **Figure 3.5** below, shows the ports and **Table 3.3** on the facing page describes each port.

The I/O dry contact port ratings are 125 VAC, 0.5 A; 30 VDC, 1 A.

Figure 3.5 Dry Contact Port and Pin Layout



NOTE: Pins 7 and 8 are shorted before delivery.

NOTE: The emergency power off (EPO) action of the UPS closes the rectifier, inverter and static bypass, but it cannot disconnect the UPS mains input inside. To completely disconnect the UPS, disconnect the upstream input circuit breaker when generating the EPO. For details on REPO connection and operation, see [Connecting a Remote Emergency Power Off \(REPO\) Switch](#) on page 32.

Table 3.3 Dry Contact Connection and Pin-out Descriptions

Port No.	Port Name	Pin No.	Pin Name	Description
1	Input 1	1	Remote Comms Shutdown 1	User configurable dry contact input that can be set to trigger the events below. The user can also select the dry contact as either NO or NC. (See System Parameter Options on page 47) When NO, Pins 1 and 2 are shorted to trigger the event. When NC, Pins 1 and 2 are opened to trigger the event. Options are: <ul style="list-style-type: none"> • Disable (default) • Battery mode shutdown - If the UPS is running on batteries and this input is triggered, the UPS shuts down • Any mode shutdown - If this input is triggered, the UPS shuts down regardless of current operating mode
		2	Signal Ground	Signal Ground
2	Input 2	3	Remote Comms Shutdown 2	User configurable dry contact input that can be set to trigger the events below. The user can also select the dry contact as either NO or NC. (See System Parameter Options on page 47) When NO, Pins 3 and 4 are shorted to trigger the event. When NC, Pins 3 and 4 are opened to trigger the event. Options are: <ul style="list-style-type: none"> • Disable (default) • Battery mode shutdown - If the UPS is running on batteries and this input is triggered, the UPS shuts down • Any mode shutdown - If this input is triggered, the UPS shuts down regardless of current operating mode
		4	Signal Ground	Signal Ground
3	Battery Detection	5, 6	EBC Detection	Automatically detects number of external battery cabinets when pins 5 and 6 are connected to the detection port, see Installing External Battery Cabinets on page 25.
REPO	REPO Input	7	+5V	REPO power supply, 5 VDC 100 mA
		8	REPO Coil -NC	NC, activated when Pin 7 and Pin 8 is open NOTE: For details on REPO connection and operation, see Connecting a Remote Emergency Power Off (REPO) Switch on the next page.
5	Output 5	9, 10	Remote Fault Alert 5	User configurable dry contact output that can be set to alert the user to the faults below. The user can also select the dry contact as either NO or NC. (See System Parameter Options on page 47) When NO, Pins 9 and 10 are shorted when the fault occurs. When NC, Pins 9 and 10 are opened when the fault occurs. Options are: <ul style="list-style-type: none"> • Low battery (default) • On battery • On bypass • UPS fault
6	Output 6	11, 12	Remote Fault Alert 6	User configurable dry contact output that can be set to alert the user to the faults below. The user can also select the dry contact as either NO or NC. (See System Parameter Options on page 47) When NO, Pins 11 and 12 are shorted when the fault occurs. When NC, Pins 11 and 12 are opened when the fault occurs. Options are: <ul style="list-style-type: none"> • Low battery • On battery • On bypass • UPS fault (default)

3.7.3 Connecting a Remote Emergency Power Off (REPO) Switch

The UPS includes an EPO connection in the dry contact port. See the appropriate figure for your model in [Rear Panels](#) on page 5, 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.

In normal conditions, the REPO switch cannot cut off the UPS input power. When the REPO switch trips, the UPS generates an alarm and immediately cuts-off output power. When the emergency condition is resolved, the UPS will not return to normal operation until you reset the REPO switch and manually power on the UPS.

To make the cable for the REPO connection:

Figure 3.6 below, shows the cable required to make the connection. We recommend using 18 AWG to 22 AWG (0.82 mm² to 0.33 mm²) copper core cable.

1. Remove the insulation from the end of two wire.
2. Insert the stripped end into the plug terminals 1 and 2 respectively, then screw down the terminals. Make sure that the cables are secure in the plug to prevent failure because of loose contact.

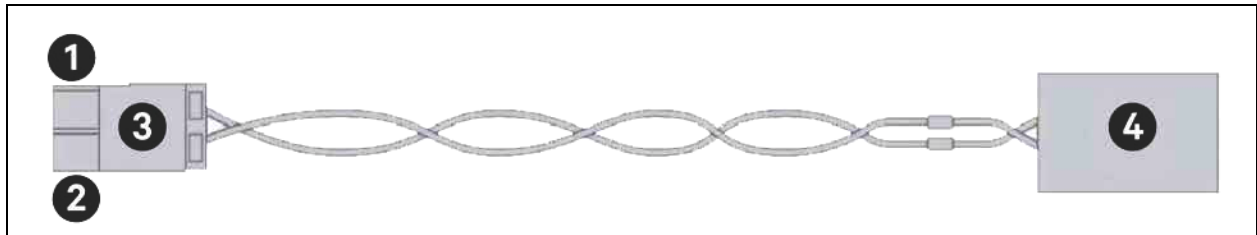
To connect a UPS to the REPO switch.



CAUTION: To maintain safety (SELV) barriers and electromagnetic compatibility, signal cables should be shielded and run separately from power cables.

1. Connect one end of the cable to the remote switch, see **Figure 3.6** below.
2. Remove the factory installed jumper from pins 7 and 8 of the dry contact port on the UPS
3. Connect the plug to pins 7 and 8.

Figure 3.6 Cable/Plug for Connecting REPO Switch to UPS REPO Port



Item	Description
1	Terminal 1
2	Terminal 2
4	Plug (connects to REPO port on UPS)
4	REPO switch

3.7.4 Connecting a USB Cable

The UPS includes a USB connector. See the appropriate figure for your model in [Rear Panels](#) on page 5, for the location of the port.

The standard, B-type USB port connects the UPS to a network server or other computer system. The USB port supports HID/CDC protocol. The CDC protocol is reserved for service software. To use the HID protocol for monitoring, get Power Assist from www.vertiv.com/PowerAssist.

3.7.5 Connecting CLI Communication Cables

The UPS supports the Vertiv command line interface for operation with Vertiv ACS and other third-party monitoring protocols. The RJ-45 port (labeled “R232”) is used for CLI connection. See the appropriate figure for your model in [Rear Panels](#) on page 5, for the location of the port. The pin-out, described in below table is consistent with the ACS pin-out.

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

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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 39.

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:

1. If included on your UPS model, make sure the maintenance bypass switch is in the open (off) position and that the guard is secured in place.
2. Ensure that the REPO connector on the rear of the unit has a jumper between pins 7 to 8 or that it is properly wired to an Emergency Power Off circuit (normally closed).
3. Make sure the breaker supplying power to the UPS is closed, and if necessary, press the input circuit breaker reset buttons at the rear of the UPS.
4. Close all output breakers on the rear of the UPS (or in an external panel board, if used).
5. If external battery cabinets are attached, close the breakers on the rear of each cabinet.
6. 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**.
7. If this is the first time start-up of the UPS, the Start-up Guidance wizard opens to set the basic parameters of the UPS. Follow the prompts.

For detailed description of UPS display functions and settings, see [Operation and Display Panel](#) on page 39.

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 back-up time available or the mains/utility power is restored. Once input power is restored, the UPS returns to Normal mode.

NOTE: Battery back-up run times are listed in [Battery Run Times](#) on page 74.

4.4 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:

- a. Use the arrow buttons to select Turn on UPS or Turn off UPS, and press **Enter**.
- b. 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.

4.5 Transferring from Normal to Bypass Mode

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

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

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

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.

4.6 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.

For 5 kVA to 10 kVA models, transfer to Bypass mode, see [Transferring from Normal to Bypass Mode](#) above. Then, if power to the load is not needed, open the input circuit breaker.

For systems with direct power distribution, isolate the UPS from AC power by disconnecting the external input circuit breaker.

If the main and bypass are independently powered, open the two input circuit breakers.

4.7 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 discharging.

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

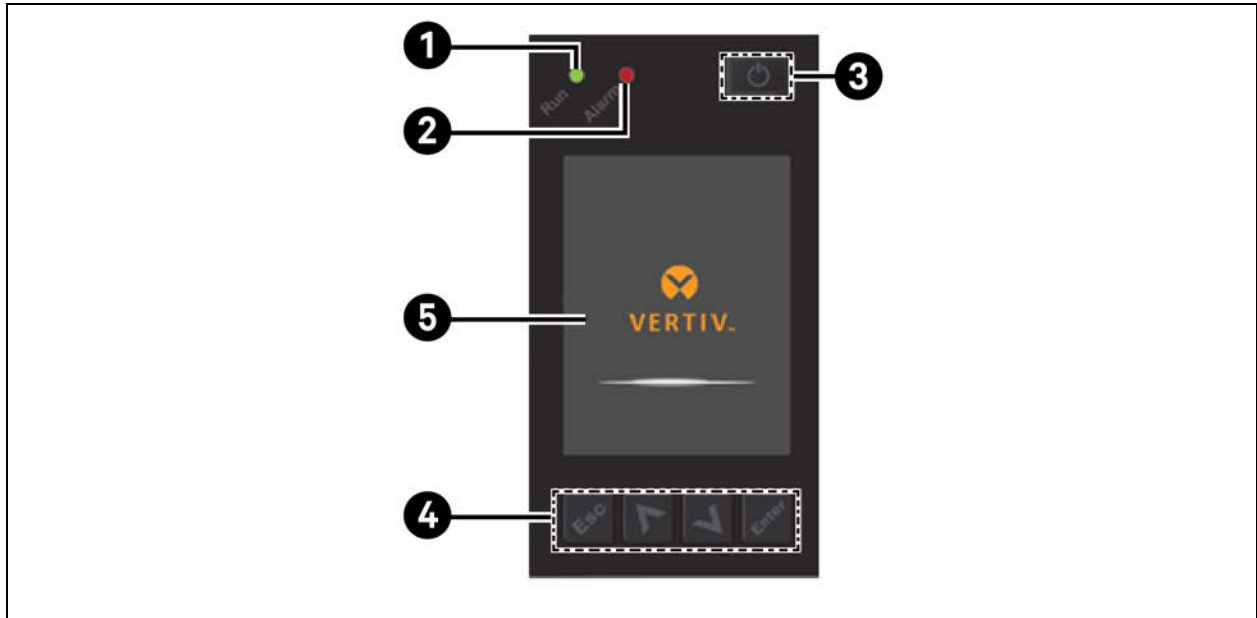
If mains/utility power is present, the UPS control circuit remains active even though output power is disabled. To remove all mains/utility power, disconnect the external input circuit breaker.

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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.
4	Menu keys, see Table 5.1 below.
5	LCD panel.

Table 5.1 Display Panel Button Functions and Descriptions






Button	Function	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	Function	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 logged in **Table 5.4** on page 51, 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** on page 67.

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

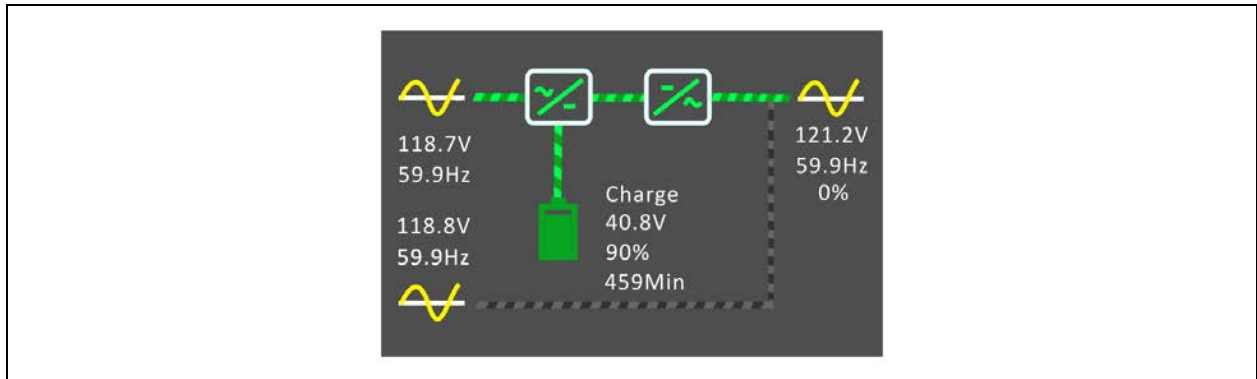
The menu-driven LCD user interface lets you browse the UPS status, view operating parameters, customize settings, control operation, and view alarm/event history. Use the function keys to navigate through the menu, and view statuses or select settings in the screens.

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 39. 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

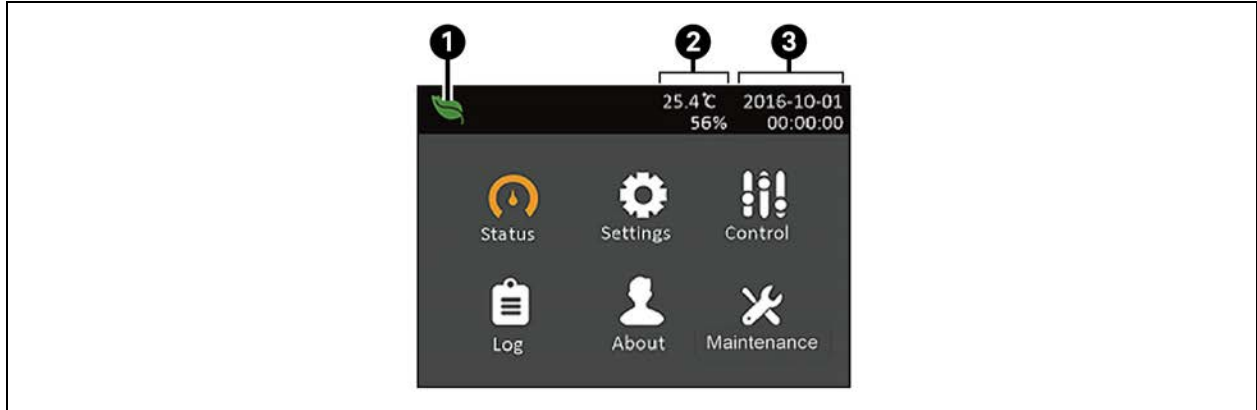
To access the main menu, press **Enter** while at the flow screen. **Table 5.3** below, describes the menu options, and **Figure 5.4** on the next page, describes the display.

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

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 45.
Control	UPS controls, see Control Screen on page 50.
Log	Current alarms and event history, see Log Screen on page 51.
About	Product and network information, see About Screen on page 54.
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

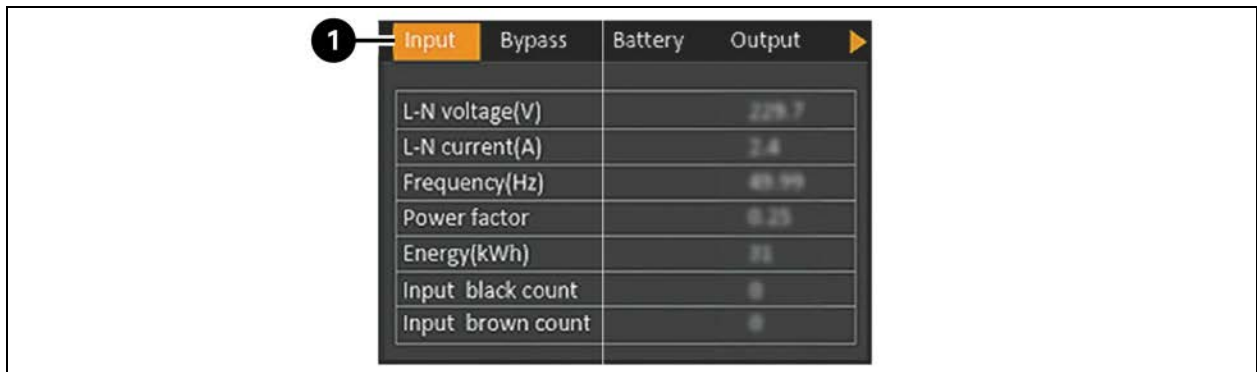
5.2.3 Status Screen

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

NOTE: Multiple phases are shown in multiple columns. For example, a unit with 3-phase input will display 3 columns of status data.

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.

Input black count

The number times that the input voltage was lost or dropped below 60 VAC (black out). Resets to 0 when UPS is powered down.

Input brown count

The number of times that the input voltage was too low to support the load and the UPS was forced to switch to battery power (brown out). Resets to 0 when the UPS is powered down.

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 back-up time remaining for battery.

Remaining capacity (%)

Percent of capacity remaining for battery.

Discharge count

Number of discharges for the battery module.

Total discharge time (Min)

Number of minutes until battery is fully discharged.

Battery running time (Day)

Number of days the batteries have been in operation.

Battery replacement time

Date of last time battery was replaced.

External battery cabinet group No.

Number of external battery cabinets connected.

Battery average temp (°C)

Average temperature of the battery.

Battery highest temp (°C)

Highest temperature battery has reached.

Battery lowest temp (°C)

Lowest temperature battery has reached.

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.

Energy (kWh)

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

NOTE: Do not change parameter settings or reset to factory defaults when powering-off the UPS.

To modify UPS settings:

1. At the main menu, select the Settings 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 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.

- 200 V
- 208 V
- 220 V
- 230 V
- 240 V
- Autodetect

Startup on bypass

Allows the UPS to start-up in bypass mode.

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

Frequency selection

Selects the frequency of the output.

- Auto, Bypass enabled — Automatically detects frequency of utility/mains power and sets the nominal frequency to match and bypass mode is enabled (default).
- Auto, Bypass disabled — Automatically detects frequency of utility/mains power and sets the nominal frequency to match and bypass mode is disabled.

- Frequency converter 50 Hz — Bypass mode is disabled and the UPS provides 50-Hz output from any qualified utility/mains power.
- Frequency converter 60 Hz — Bypass mode is disabled and the UPS provides 60-Hz output from any qualified utility/mains power.

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%
- -15% (default)
- -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 (default)
- 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

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)

Batt. note duration (month)

Sets the length of time after the batteries are replaced to generate an alarm to remind the user to replace the batteries.

- Disable (default)
- 1 - 72 months

Dischg 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)

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 58.

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

Date

Selects the current date for the UPS display, YYYY-MM-DD. See [Setting the Date and Time](#) on page 58.

Time

Select the current time for the UPS display, HH:MM:SS. See [Setting the Date and Time](#) on page 58.

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. (default)
- 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 67.

- 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 57.

System Parameter Options**Auto restart**

Allows the automatic restart of the UPS when input power is restored after a complete shutdown of the UPS due to battery end of discharge (EOD).

- Enable — The UPS will restart automatically when the input power is restored after EOD. (Default)
- Disable — The UPS will not restart automatically

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 shutdown from an external monitoring device before power is re-applied. This ensures that once the equipment begins to shut down, it is brought down completely before power is applied again.

- Enable
- Disable (default)

Start with no battery

Allows the UPS to start when the battery is not installed or is not functional due to damage. This can be used to turn on the UPS and power the attached load without battery protection when utility power is available but battery backup is not.

- Enable
- Disable (default)

Remote control

Allows the UPS to be controlled remotely via the CLI or RDU101 card.

- Enable (default)
- Disable

Any mode shutdown auto restart enable

Automatically restart the UPS after an *Any mode shutdown* signal is received. When the UPS is shut down via dry contact inputs 1 or 2, it will restart automatically if this option is enabled.

- Enable
- Disable (default)

Output contact NO/NC

Selects the states of the dry contact outputs 5 and 6.

- Normally open (default)
- Normally closed

Input contact NO/NC

Selects the states of the dry contact inputs 1 and 2.

- Normally open (default)
- Normally closed.

Dry contact 5 (Output)

Selects the output of dry contact 5.

- Low battery — The contacts switch when the UPS reaches the amount of time left on battery configurable from *Low battery time* (default)
- On bypass — The contacts switch when the UPS is running in bypass mode
- On battery — The contacts switch when the UPS is running on battery
- UPS fault — The contacts switch when a UPS fault has occurred

Dry contact 6 (Output)

Selects the output of dry contact 6.

- Low battery — The contacts switch when the UPS reaches the amount of time left on battery configurable from *Low battery time*.
- On bypass — The contacts switch when the UPS is running in bypass mode
- On battery — The contacts switch when the UPS is running on battery
- UPS fault — The contacts switch when a UPS fault has occurred (default)

Dry contact 1 (Input)

Selects the action taken by the UPS when the input of dry contact 1 is triggered.

- Disable (default)
- Battery mode shutdown — If the UPS is running on batteries and this input is triggered, the UPS shuts down
- Any mode shutdown — If this input is triggered, the UPS shuts down regardless of current operating mode

Dry contact 2 (Input)

Selects the action taken by the UPS when the input of dry contact 2 is triggered.

- Disable (default)
- Battery mode shutdown — If the UPS is running on batteries and this input is triggered, the UPS shuts down
- Any mode shutdown — If this input is triggered, the UPS shuts down regardless of current operating mode

Sleep mode

Allows the UPS to turn off the output on a weekly schedule. For instance, turn on every Monday at 1:00 and off every Friday at 23:00.

- Enable
- Disable (default)

Sleep mode cycle time

Sets the amount of weeks that the UPS will sleep. If set to 52, the UPS will sleep every week permanently without stopping after 52 weeks. This option is only shown when sleep mode is enabled.

- 0 - 52 (default of 0)

Power on day of week

Sets the day of week to turn on the UPS. This option is only shown when sleep mode is enabled.

- Sunday-Saturday (default Monday)

Power on time

Sets the time of day to power on the UPS on the selected day. This option is only shown when sleep mode is enabled.

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

Power off day of week

Sets the day of week to turn off the UPS. This option is only shown when sleep mode is enabled.

- Sunday-Saturday (default Friday)

Power off time

Sets the time of day to power off the UPS on the selected day. This option is only shown when sleep mode is enabled.

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

IT system compatibility

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

- Enable
- Disable (default)

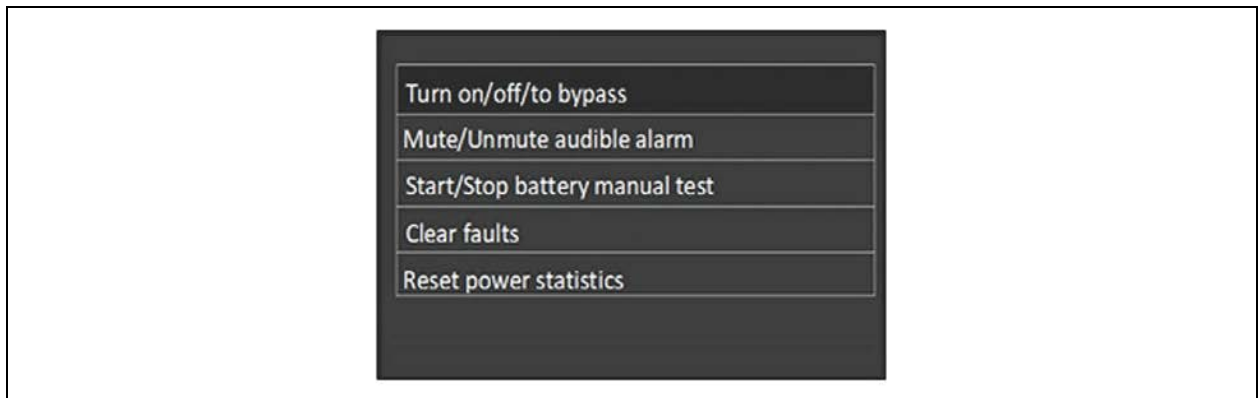
5.2.5 Control Screen

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**.

Figure 5.6 Control Screen



Control Options

Turn on/off/to bypass

Opens the dialog to change operating modes, see [Operating the UPS](#) on page 35.

Mute/Unmute audible alarm

Silences or un-silences the audible alarm, see [Silencing the Audible Alarm](#) on page 35.

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 67, for a description of the faults.

Reset power statistics

Resets the values tracked to calculate the Efficiency graph, see [About Screen](#) on page 54.

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

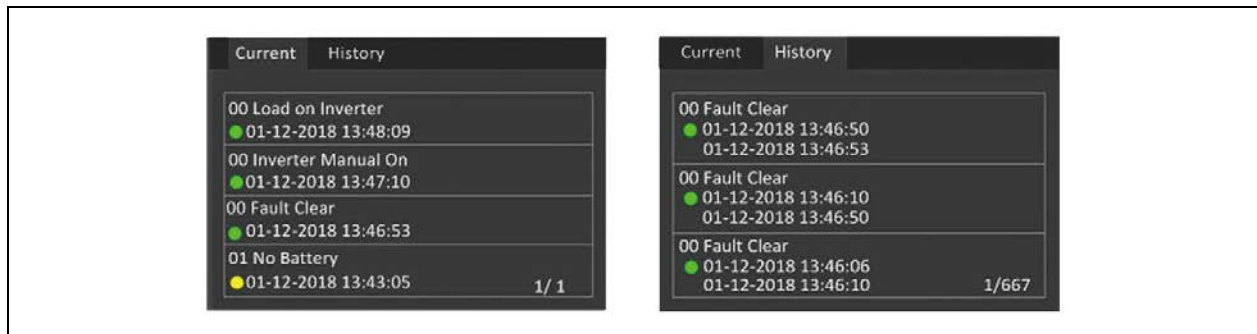


Table 5.4 Alarm Messages

Message	Description
Aux. power fault	UPS internal auxiliary power voltage fault. Contact Vertiv Technical Support.
Battery cabinet connect abnormal	More than 6 external battery cabinets are connected to the UPS with the auto-detect feature in use. Contact Vertiv service if using more than 6 EBCs.
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 min - 30 min, (2 min by default). This allows for any loads to be shut down before the system powers off if utility power cannot be restored.

Table 5.4 Alarm Messages (continued)

Message	Description
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 ~ 60 °C (default: 50 °C)
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.
Battery test fail	The remaining energy at the end of the periodic or manual self-test was deemed lower than acceptable. 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 wiring.
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 or the cable connection is loose.
Faults cleared	The faults have been cleared using Settings > Controls > Clear faults. 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 Guaranteed shutdown on page 48). 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 if the input voltage and frequency are within the normal range or if the mains input has gone down.
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.

Table 5.4 Alarm Messages (continued)

Message	Description
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.
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 stand-by mode. Check that the input is normal.
Output off due to overload and 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, if the mains input falls to 176 V - 100 V, the load is derated linearly from 100% - 50%.
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 stand-by state. This will return settings to their factory settings.
Shutdown due to over temp	During the UPS operation, the system checks that the heat sink temperature exceeds the setting range. If over temperature, please check:

Table 5.4 Alarm Messages (continued)

Message	Description
	<ul style="list-style-type: none"> Ambient temperature too high or not Dust is blocked or not Fan fault or not
System over temp	<p>Internal heat sink temperature 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 over temperature fault is solved. If over temperature, please check:</p> <ul style="list-style-type: none"> Ambient temperature too high or not Dust is blocked or not Fan fault or not
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

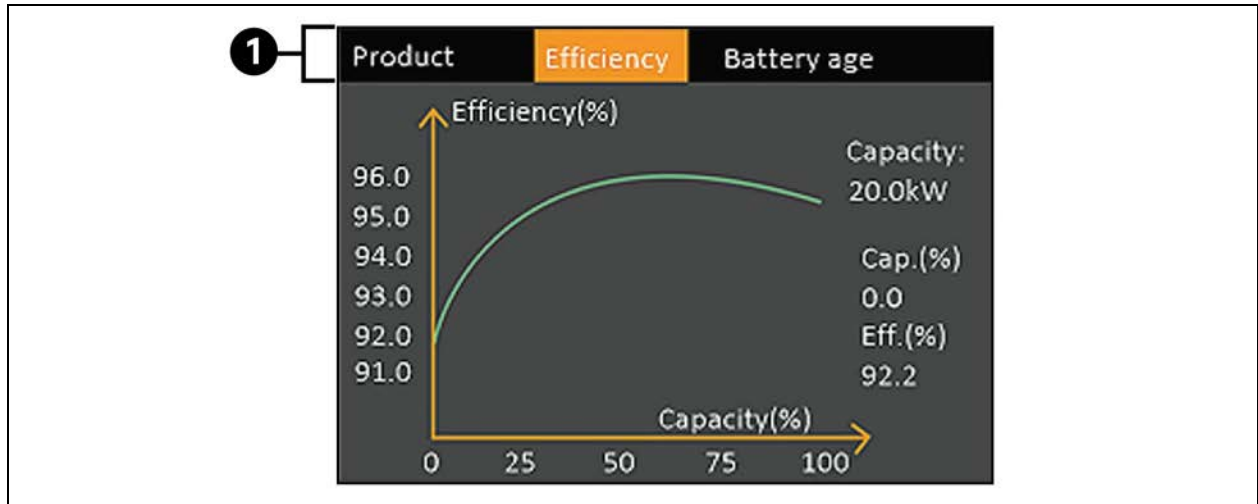
The About screen offers tabs that list information about the product.

- Product tab - shows UPS identification information, firmware versions, and information about the communication card (when the card is installed).
- Efficiency tab - shows a curve of the efficiency of your UPS model vs the load capacity used.
- 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:

- At the main menu, select the About icon, and press **Enter**.
- 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.

Figure 5.8 About Screen Tabs



Item	Description
1	About screen tabs with Efficiency tab selected. NOTE: The tab shown in the figure is an example of the graph and does not represent the actual capacity values for your UPS model.

Product Information

Product Type

UPS model number.

Serial number

UPS serial number.

Time since startup

Elapsed time since start-up 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 RDU101 card. This is only shown when the RDU101 card is installed.

IPv4 address

Shows the IPv4 address of the RDU101 card. This is only shown when the RDU101 card is installed.

Subnet mask

Shows the subnet mask of the RDU101 card. This is only shown when the RDU101 card is installed.

Gateway address

Shows the gateway address of the RDU101 card. This is only shown when the RDU101 card is installed.

Efficiency Tab

Capacity

This shows the maximum capacity of your UPS model.

Cap. (%)

This shows the percentage of the maximum capacity your UPS is currently using.

Eff. (%)

This shows the efficiency the UPS is currently operating at based on the Cap. (%) value.

Battery Age

This page also displays the following values:

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.

5.3 Editing Display and Operation Settings

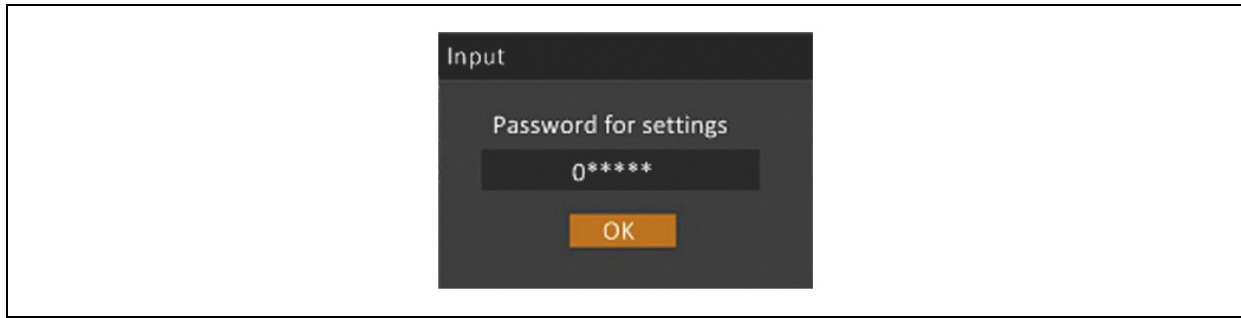
You may adjust the display settings and UPS configuration via the LCD. The display and operation settings are password protected. The default password is 111111 (six ones).

NOTE: 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 5.9 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** below lists the prompts and their meaning.

Table 5.5 Display Prompts and Meanings

Prompt	Meaning
Cannot set this online, please shut down output	Cannot set this on line, please unplug REPO.
Incorrect password, please input again	Appears when the Settings password is input incorrectly.
Operation failed, condition is not met	Appears when attempting to execute an 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 'Turn on delay' or 'Turn off delay' 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 Turn on/Turn off/to Bypass on the LCD panel Control 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.

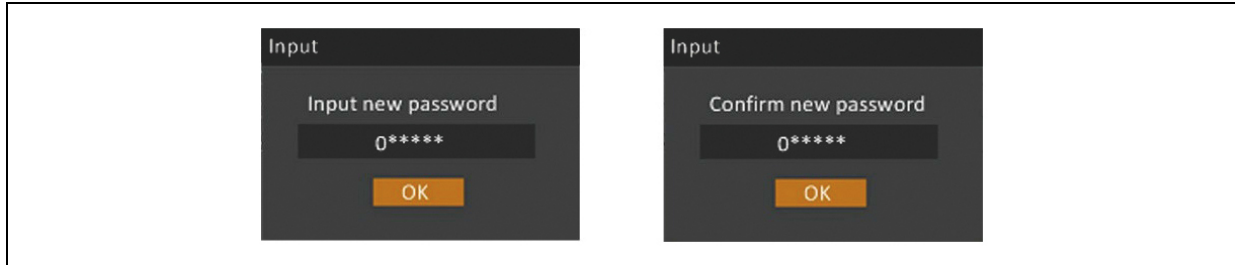
The Input new password dialog opens, see **Figure 5.10** below.

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 5.10 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, Japanese, 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.

6.1 Replacing Batteries



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.



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! 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.



WARNING! Risk of explosion. 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** on the next page, and contact your local dealer or Vertiv representative.

Table 6.1 Replacement Battery Pack Model Numbers

UPS Model Number	Battery Pack Model Number	Quantity Required
GXT5-3KL620RT2UXL	GXT5-72VBATKIT	1
GXT5-3KL630RT2UXL		
GXT5-5KL630RT3UXLN	GXT5-192V5AH3UBKIT	
GXT5-6KL630RT5UXLN	GXT5-192VBATKIT	
GXT5-5000HVRT5UXLN		
GXT5-8000HVRT5UXLN		
GXT5-10KHVRT5UXLN		

To replace a battery pack:

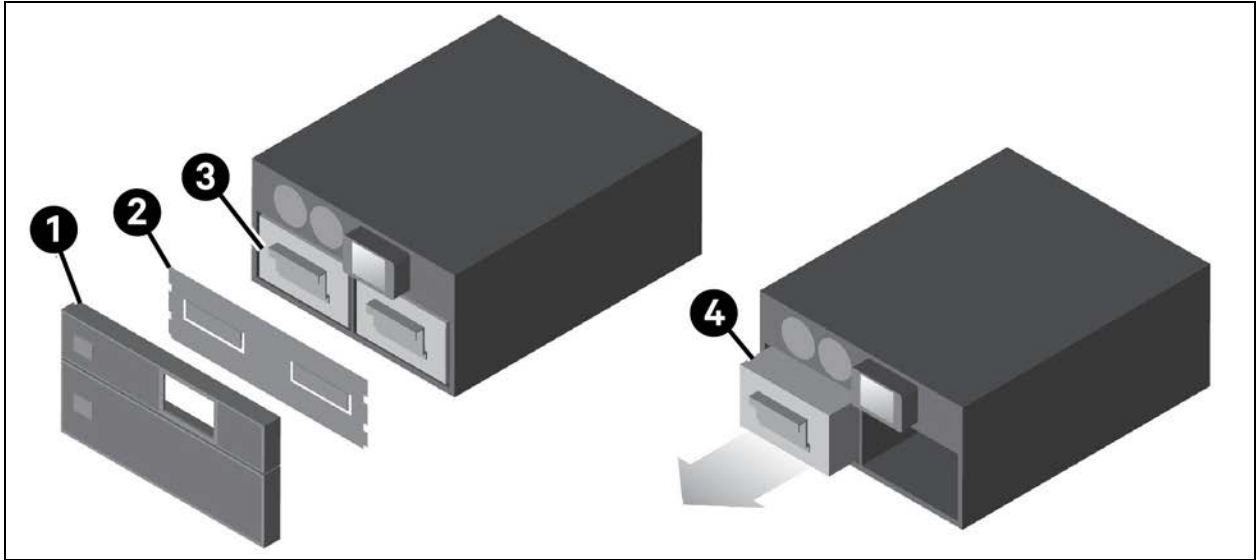
NOTE: The internal battery pack is hot-swappable. However, you must exercise caution because; during this procedure, the load is unprotected from disturbances and power outages. Do not replace the battery while the UPS is operating in Battery Mode. This will result in a loss of output power and will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

1. Press the button on the left-front of the UPS front panel, and pull the panel open, then, loosen and remove the screw from the battery door, see **Figure 6.1** on the facing page.
2. Lay the battery door and screw aside for reassembly.
3. Grasp the battery handle, and pull out the battery pack, see **Figure 6.1** on the facing page.
4. Unpack the replacement battery pack, taking care not to damage the packaging to re-use when disposing of the old battery.
5. Compare the new and old battery pack to make sure they are the same type and model. If so, proceed with step 6. If they are different, stop and contact your Vertiv representative, or Technical Support, <http://www.Vertiv.com/en-us/support/>.
6. Line-up and slowly push in each replacement battery pack until 2/3 of the length is in the bay, then lift up and continue to push smoothly until the battery pack is fully inserted in the bay. The battery is fully inserted if the battery door fits flush against the UPS.
7. Re-attach the battery door with the screw and replace the front cover.
8. Activate the new battery packs using the operating/display panel:

NOTE: The display menus and functions are described in **Operation and Display Panel .**

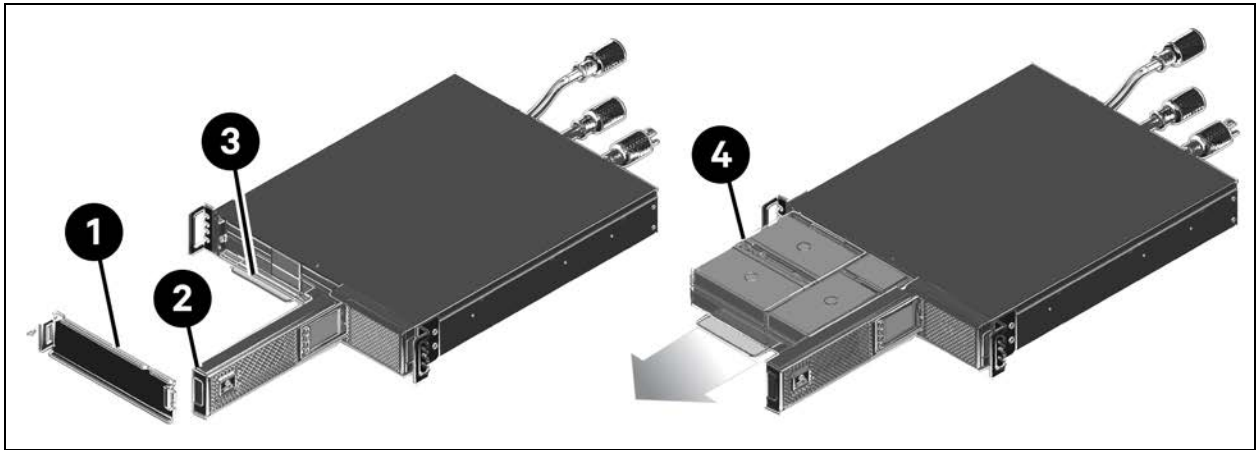
9. From the main menu, select *Settings*, then the *Monitoring* tab and verify that the date and time are correct. If the date or time need correction, see [Setting the Date and Time](#) on page 58.
10. Select the *Battery* tab, use the arrows to select *Replace Battery*, and press **Enter**. The replaced battery packs are activated.
11. Use ESC to return to the main display.

Figure 6.1 Replacing the Battery Pack—5 to 10kVA



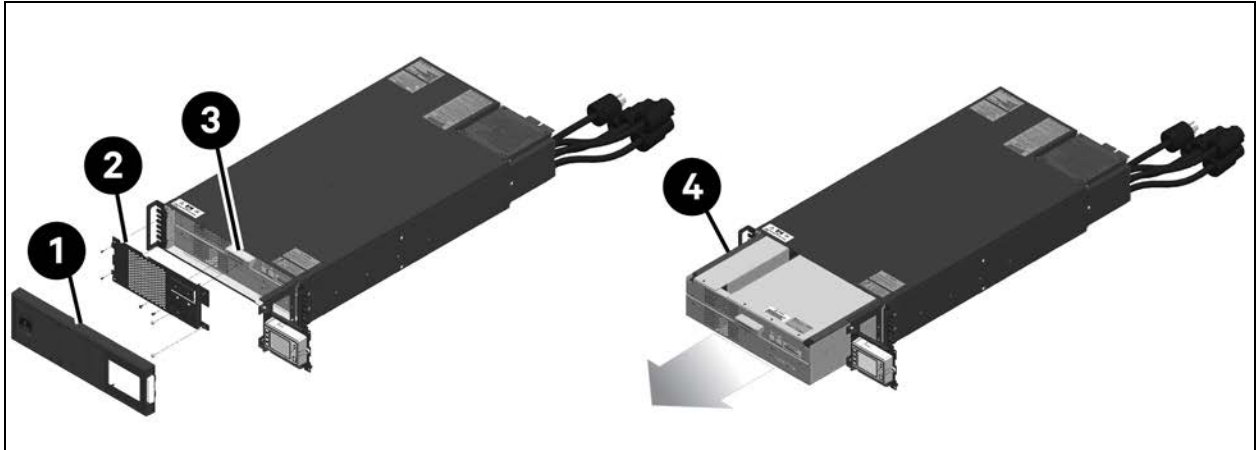
Item	Description
1	Front cover
2	Battery door
3	Battery handle
4	Grasp handle and pull battery out.

Figure 6.2 Replacing the Battery Pack—GXT5-3KL630RT2UXL



Item	Description
1	Front cover
2	Battery door
3	Battery handle
4	Grasp handle and pull battery out.

Figure 6.3 Replacing the Battery Pack—GXT5-5KL630RT3UXL



Item	Description
1	Front cover
2	Battery door
3	Battery handle
4	Grasp handle and pull battery out.

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 will be stored for a long time, we recommend connecting the UPS to input power for at least 24 hours every 4 to 6 months to ensure full recharge of the batteries.

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 39.
2. Check for 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 51.
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 Replacing the UPS Using Maintenance Bypass

Use the following procedures to replace the UPS from POD.



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.

6.5.1 UPS with Rotary Switch for Maintenance Bypass

1. Transfer the connected equipment to bypass mode.
 - a. Confirm that the UPS is operating in bypass mode. If not, then manually transfer the connected equipment to bypass as follows:
 - Press and hold the Power button for 2 seconds.
 - Select Turn to bypass and press **Enter**.
2. Push the Lockout tagout safety pin, see **Figure 6.4** on the next page.
 - a. Check if amber indicator light is on.
 - b. Rotate the handle of rotary switch from UPS to Test.

NOTE: The load is unprotected from disturbances in the power supply while the UPS is on bypass.

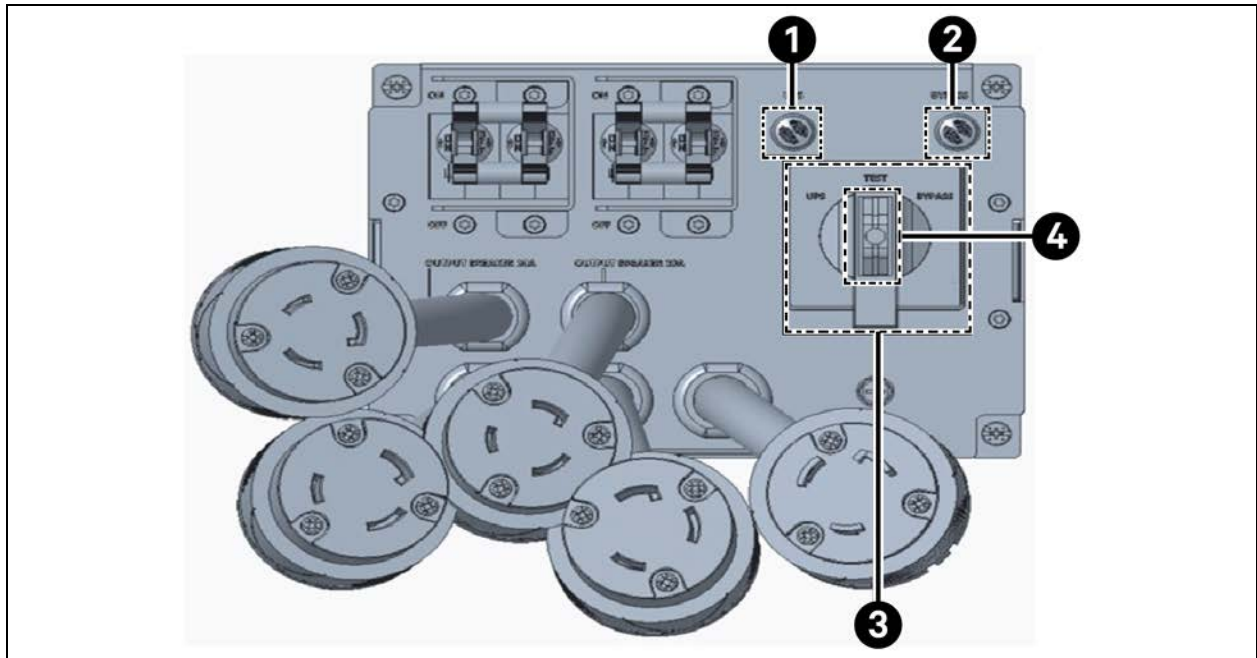
3. Rotate the handle of rotary switch from Test to Bypass.
4. Turn off the UPS with following steps:
 - a. Press and hold the Power button for 2 seconds.
 - b. Select Turn off UPS and press **Enter**.
5. Wait 1 minute if the UPS is working on battery mode, then confirm that the UPS is turned off.

NOTE: The load will continue to be powered through the maintenance bypass breakers. See **Figure 3.3 on page 28 for details.**

6. Loosen screws until the POD is released by the UPS.
7. Remove the UPS from the POD and set it aside.
8. Mount and connect the new UPS to the old POD and secure with the previously removed screws.
9. Rotate the handle of rotary switch from Bypass to Test.
10. Confirm that the UPS is operating in bypass mode. If not, then manually transfer the connected equipment to bypass as follows:

- a. Press and hold the Power button for 2 seconds.
 - b. Select Turn to bypass and press **Enter**.
11. Check if green indicator is on.
 12. Rotate the handle of rotary switch from Test to UPS.
 13. Use the Power button to switch the output to the UPS inverter.
 14. Pull the lockout tagout safety pin.

Figure 6.4 Maintenance Bypass Rotary Switch Cover and Lockout Tagout Pin



Item	Description
1	Green light UPS available
2	Amber light maintenance bypass available
3	Maintenance bypass rotary switch
4	Lockout tagout safety pin

6.5.2 UPS with Breakers for Maintenance Bypass

NOTE: Do not operate the UPS with the POD removed. To shut off all power to the POD and to the load, utility input power must be disconnected.

1. Transfer the connected equipment to bypass mode.

NOTE: The programmable output receptacles are powered-off when transferred to Bypass mode.

- a. Loosen the upper captive screw over the maintenance bypass breaker, see **Figure 6.5** on the next page.
- b. Lift the maintenance bypass breaker cover up and tighten the lower captive screw. The programmable-output receptacles are now powered-off.
2. Confirm that the UPS is operating in bypass mode. If not, then manually transfer the connected equipment to bypass as follows:
 - a. Press and hold the **Power** button for 2 seconds.
 - b. Select Turn to bypass and press **Enter**.

NOTE: The load is unprotected from disturbances in the power supply while the UPS is on bypass.

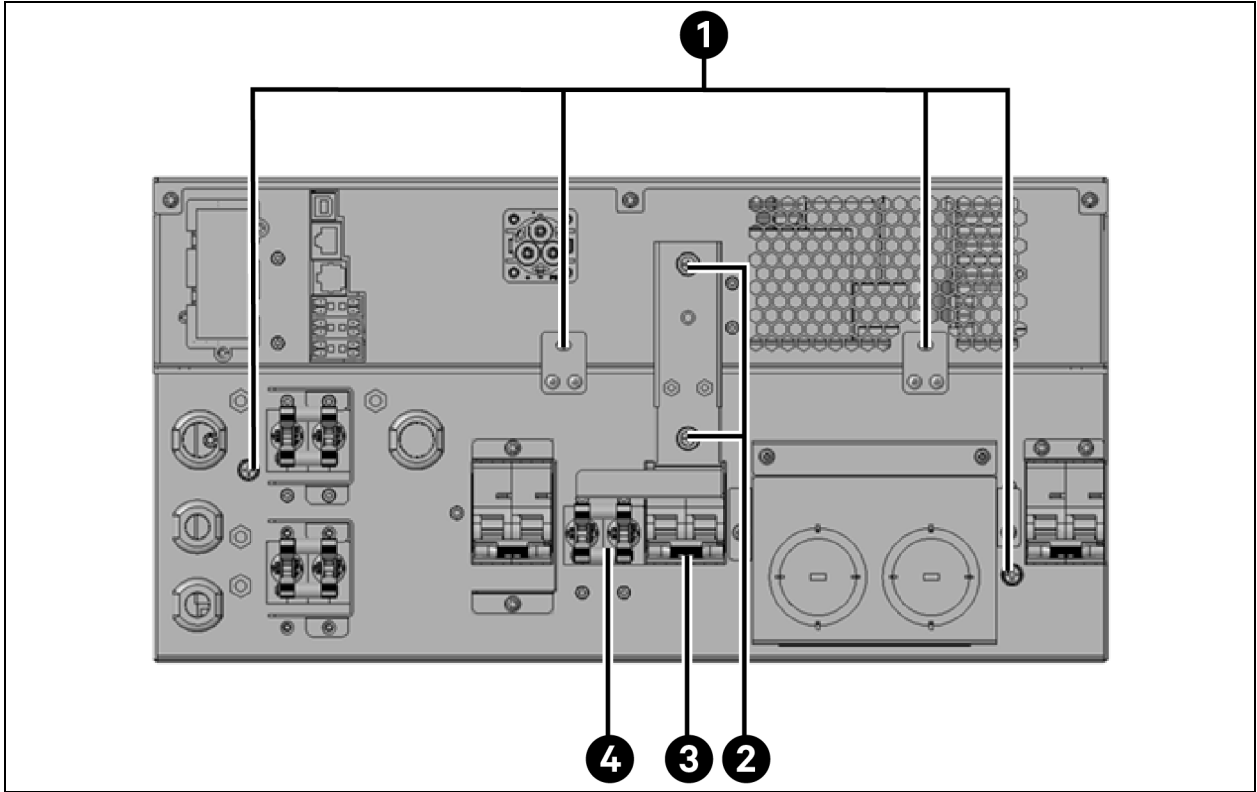
3. Turn the maintenance bypass breakers On.
4. Turn off the UPS with following steps:
 - a. Press and hold the Power button for 2 seconds.
 - b. Select Turn off UPS and press Enter.
5. Wait 1 minute if the UPS is working on battery mode, then confirm that the UPS is turned off.
6. Turn the output and input breakers Off.

NOTE: The load will continue to be powered through the maintenance bypass breakers. See **Figure 3.3 on page 28 for details.**

7. Loosen the remaining screws until the POD is released by the UPS.
8. Remove the UPS from the POD and set it aside.
9. On the rear panel of the new UPS, remove the new POD from the UPS.
10. Mount and connect the new UPS to the old POD and secure with the previously removed screws.
11. Turn ON the input breaker on the rear of the UPS and leave the output breakers OFF. The UPS will begin to startup.
12. Confirm that the UPS is operating in bypass mode. If not, then manually transfer the connected equipment to bypass as follows:
 - a. Press and hold the **Power** button for 2 seconds.
 - b. Select Turn to bypass and press **Enter**.
13. Turn on the output breakers.
14. 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**.
15. Turn OFF the maintenance bypass breaker and replace the upper connector cover screw.
16. Use the **Power** button to switch the output to the UPS inverter.

NOTE: The captive screws and maintenance bypass breaker cover is similar for all models except model number GXT5-5KL630RT3UXLN. **Figure 6.5 on the next page, shows an example on the 5 kVA model.**

Figure 6.5 Maintenance Bypass Breaker Cover and Captive Screws



Item	Description
1	Captive screws for POD
2	Connector cover screws
3	Maintenance bypass breaker
4	Programmable outlet maintenance bypass breaker

6.6 Firmware Updates

Firmware updates are available via the [Vertiv website](#). Firmware update instructions are provided with the firmware download.

7 Troubleshooting

This section indicates various UPS symptoms you may encounter and provides a troubleshooting guide 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 indicators illuminate, 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 35.

Table 7.1 Audible Alarm Descriptions

Sound	Indicates
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 51, 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 Vertiv™ Liebert® GXT5 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 located 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, 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 8.1 UPS Specifications, 5 kVA to 10 kVA Models

Model GXT5	5000HVRT5UXLN	8000HVRT5UXLN	10KHVRT5UXLN
Rating	5000 VA/5000 W	8000 VA/8000 W	10000 VA/10000 W
Dimensions, D×W×H, in. (mm)			
Unit	24.8 x 16.9 x 8.5 (630 x 430 x 217)		
Shipping	35.0 x 25.2 x 31.5 (890 x 640 x 800)		
Weight, lb. (kg)			
Unit	156.7 (71.1)	160.7 (72.9)	
Shipping	202.8 (92)	239.3 (108.55)	
Input AC			
Operating Frequency, Nom.	50 or 60 Hz (factory default is 60 Hz)		
Factory default VAC	208 VAC		
User-configurable VAC	200/208/220/230/240 VAC (Adjustable using operation/display configuration options)		
Operating voltage range without battery operation	176 – 288 VAC (100 – 176VAC with power derating)		
Maximum Allowable VAC	288 VAC		
Input Frequency without Battery Operation	40 – 70 Hz		
Input Power Connection	PD5-CE6HDWRMBSU	PD5-CE10HDWRMBSU	
Output AC			
AC-AC Efficiency	94%	95%	
Factory default VAC Frequency	208 VAC, 60 Hz		
Output Power Connection	PD5-CE6HDWRMBSU	PD5-CE10HDWRMBSU	
Waveform	Sine wave		
Normal Mode Overload	> 150% minimum 200 mS 125 – 150% for 60 seconds 105 – 125% for 5 minutes ≤ 105% continuous		
Internal Battery Charger			
Charger Current, A	1.8 A default, maximum 5 A	1.8 A default, maximum 8 A	
Battery Parameters			
Type	Valve-regulated, non-spillable, flame-retardant, lead acid		

Table 8.1 UPS Specifications, 5 kVA to 10 kVA Models (continued)

Model GXT5	5000HVRT5UXLN	8000HVRT5UXLN	10KHVRT5UXLN
Rating	5000 VA/5000 W	8000 VA/8000 W	10000 VA/10000 W
Quantity x Voltage x Rating	16 x 12V x 9.0AH		
Back-up time	See Battery Run Times on page 74.		
Upper-limit selections	+10%, +15%, +20%; default +10%.		
Lower-limit selections	-10%, -15%, -20%; default -15%		
Disable-bypass operation	When the input frequency prevents synchronous operation		
Environmental			
Operating Temperature, °F (°C)	32 to 104 (0 to 40) (no derating)		
Extended Operating Temperature, °F (°C)	32 to 122 (0 to 50); output derated by 1% per 1 °C above 40 °C		
Storage Temperature, °F (°C)	5 to 104 (-15 to 40)		
Relative Humidity	0 – 95% non-condensing		
Operating Elevation	Up to 3,000 m (9,842.5 ft) at 25°C (77°F) without derating		
Audible Noise	<55 dBA, at 1 meter from the front, <50 dBA, at 1 meter from rear or sides		
Agency			
Safety	IEC 62040-1:2017+A1:2021 AS 62040.1:2019 EN IEC 62040-1:2019+A11:2021 BS EN IEC 62040-1:2019+A11:2021, GS mark; UL1778, c-UL listed		
EMI/EMC/C-Tick EMC	IEC/EN/AS 62040-2 2nd Ed (Cat 2 – Table 6); FCC Part 15 (Class A) CISPR22 Class A (RFI)		
ESD	IEC/EN EN61000-4-2, Level 4, Criteria A		
Radiated Susceptibility	IEC/EN EN61000-4-3, Level 3, Criteria A		
Electrical Fast Transient	IEC/EN EN61000-4-4, Level 4, Criteria A		

Table 8.1 UPS Specifications, 5 kVA to 10 kVA Models (continued)

Model GXT5	5000HVRT5UXLN	8000HVRT5UXLN	10KHVRT5UXLN
Rating	5000 VA/5000 W	8000 VA/8000 W	10000 VA/10000 W
Surge Immunity	IEC/EN EN61000-4-5, Level 4, Criteria A; ANSI C62.41 Category B		
Transportation	ISTA Procedure 1E		
*For GXT5-10KHVRT5UXLN — The product fulfills the requirement of IEC 62040-1: 2017+A1:2021, AS 62040.1:2019, EN IEC 62040-1:2019+A11:2021 and BS EN IEC 62040-1:2019+A11:2021.			

Table 8.2 UPS Specifications, 3KL620, 3KL630, 5KL630, and 6KL630 Models

Model GXT5	3KL620RT2UXL	3KL630RT2UXL	5KL630RT3UXL	6KL630RT5UXL
Rating	3000 VA/2700 W	3000 VA/3000 W	4900 VA/4600 W	4900 VA/4600 W
Dimensions, D×W×H, in. (mm)				
Unit	21.3 x 16.9 x 3.4 (540 x 430 x 85)		34 x 16.9 x 5.25 (863 x 430 x 133)	23.6 x 16.9 x 8.5 (600 x 430 x 217)
Shipping	28.2 x 22.4 x 10.3 (717 x 570 x 262)		47 x 39.5 x 25 (1194 x 1003 x 635)	25.4 x 32.1 x 20.5 (646 x 816 x 520)
Weight, lb.(kg)				
Unit	65.1 (29.6)	67.1 (30.5)	122 (55)	149.1 (68)
Shipping	79.2 (36)	80.5 (36.6)	226 (102)	202.8 (92)
Input AC				
Operating Frequency, Nom.	50 or 60 Hz (factory default is 60 Hz)			
Factory default VAC	208 VAC			
User-configurable VAC	200/208/220/230/240 VAC (Adjustable using operation/display configuration options)			
90% ~ 100% loading	182 - 191VAC/288VAC		175 - 280 VAC	
70% ~ 90% loading	164 - 182VAC/288VAC			
28% ~ 70% loading	129 - 164VAC/288VAC			
0% ~ 28% loading	129VAC/288VAC			
Frequency	40 - 70 Hz; auto-sensing			
Input Power Cord	L6-20P	L6-30P	L6-30P Plug (on POD)	
Output AC				
Output Receptacles	2x L6-20R and 2x L6-15R	2x L6-30R and 2x L6-15R	2x L6-20R and 2x L6-30R on 12-in. (300-mm) cords (on POD)	

Table 8.2 UPS Specifications, 3KL620, 3KL630, 5KL630, and 6KL630 Models (continued)

Model GXT5	3KL620RT2UXL	3KL630RT2UXL	5KL630RT3UXL	6KL630RT5UXL
Rating	3000 VA/2700 W	3000 VA/3000 W	4900 VA/4600 W	4900 VA/4600 W
Voltage	208VAC ±3%			
Waveform	Sine wave			
Normal Mode Overload	>200% for 250ms 150-200% for 2 seconds 125-150% for 10 seconds 105-125% 15 seconds ≤105% continuous		105% to 125% for 5 minutes 125% to 150% for 60 seconds >150% (impact load) minimum 20 ms ≤105% continuous	105% to 125% for 5 minutes 125% to 150% for 60 seconds >150% (impact load) minimum 20 ms ≤105% continuous
Internal Charger				
Charging Current	1.8 A (default), maximum 8 A		1 A (default), maximum 5 A	1.8 A (default), maximum 5 A
Battery Parameters				
Type	Valve-regulated, non-spillable, lead acid			
Quantity x Voltage x Rating	6 x 12 V x 9.0 Ah		16 x 12 V x 5.0 Ah	16 x 12 V x 9.0 Ah
Back-up time	See Battery Run Times on page 74.			
Recharge time	3 Hours to 90% capacity after full discharge into 100% load		5 hours to 90% capacity after full discharge into 100% load	
Environmental				
Operating Temperature, °F (°C)	32 to 104 (0 to 40) (no derating)			
Extended Operating Temperature, °F (°C)	32 to 122 (0 to 50); output derated by 1% per 1°C above 40°C			
Storage Temperature, °F (°C)	-4 to 140 (-20 to 60) [batteries are from 5 to 104 (-15 to 40)]			
Relative Humidity	0% – 95% non-condensing			
Operating Elevation	Up to 10,000 ft (3,000 m) at 77°F (25°C) without derating			
Audible Noise	<48 dBA max. at 3 ft (1 m) front and sides, <48 dBA max. at 3 ft (1 m) rear		<50 dBA, at 3 ft (1 m) from the front and sides, <55 dBA, at 3 ft (1 m) from rear	
Agency				
Safety	EN 62040-1:2008+A1:2013 GS mark UL 1778 5th Edition and CSA 22.2 No. 107.1		UL1778, c-UL listed	
EMC	EN 62040-2:2006 EN 61000-3-2:2014 EN 61000-3-3:2013		EN61000-4-2 EN61000-4-3 EN61000-4-4	

Table 8.2 UPS Specifications, 3KL620, 3KL630, 5KL630, and 6KL630 Models (continued)

Model GXT5	3KL620RT2UXL	3KL630RT2UXL	5KL630RT3UXL	6KL630RT5UXL
Rating	3000 VA/2700 W	3000 VA/3000 W	4900 VA/4600 W	4900 VA/4600 W
Transportation	ISTA Procedure 1A		ISTA Procedure 1E	
Surge Immunity	ANSI C62.41 Category B (6kV/3kA) IEC 61000-4-5			
RFI/EMI	CISPR22 Class A		FCC Part 15 (Class A)	

Table 8.3 Power Distribution Specifications

POD Model Number	PD5-5KL630	PD5-L630	PD5-CE6HDWRMBSU	PD5-CE10HDWRMBSU
Associated UPS Model Number	GXT5-5KL630RT3UXLN	GXT5-6KL630RT5UXLN	GXT5-5000/6000HVRT5UXLN	GXT5-8000/10KHVRT5UXLN
Input Branch Circuit Breaker, Supplied by User	30 A		50 A	70 A
POD Input Breaker Rating	None	30 A	50 A	63 A
Input Power Connection	L6-30P		Single-phase (L1-L2-G) hard-wired	
Main Output Power Connection	2x L6-30R		Single-phase (L1-L2-G) hard-wired	
Additional Output Power Connections	2x L6-20R		2x L6-30R, 2x L6-20R	
Integrated Maintenance Bypass Operation	Rotary Switch	Breakers		

Table 8.4 External Battery Specifications

Model Number	GXT5-EBC72VVRT2U	GXT5-EBC192VVRT3U
Used W/UPS MODEL	3000 VA MODELS	5-10 KVA MODELS
Dimensions, D×W×H, in. (mm)		
Unit (with bezel)	23.7 x 16.9 x 3.3 (602 x 430 x 85)	24.8 x 16.9 x 5.1 (630 x 430 x 130)
Shipping	24.3 x 22.4 x 10.3 (617 x 570 x 262)	33 x 26.4 x 18.3 (840 x 670 x 465)
Weight, lb.(Kg)		
Unit	85.8 (39)	127 (57.6)
Shipping	110 (50)	176.4 (80)
Battery		
Type	Valve-regulated, non-spillable, lead acid	
Qty × Voltage	6 × 12 V	16 × 12 V × 9.0 Ah
Backup time	See Battery Run Times on the next page	
Environmental Requirements		
Operating Temperature, °F (°C)	32 to 104 (0 to 40)	
Extended Operating Temperature, °F (°C)	32 to 122 (0 to 50); output derated by 1% per 1°C above 40 °C	

Table 8.4 External Battery Specifications (continued)

Model Number	GXT5-EBC72VRT2U	GXT5-EBC192VRT3U
Used W/UPS MODEL	3000 VA MODELS	5-10 KVA MODELS
Storage Temperature, °F (°C)	5 to 104 (-15 to 40)	
Relative Humidity	0% to 95%, non-condensing	
Operating Elevation	Up to 3,000 m (9,842.5 ft.) at 25°C (77°F)	
Agency		
Safety	EN 62040-1:2008+A1:2013; GS mark; UL 1778 5th Edition and CSA 22.2 No. 107.1	IEC62040-1:2008, GS mark; UL1778, c-UL listed
Transportation	ISTA Procedure 1A	ISTA Procedure 1E

8.1 Battery Run Times

NOTE: Run times in this table are approximate. Times are based on new, fully-charged, standard battery modules at a temperature of 77 °F (25 °C) with 100% resistive UPS loading. Run times listed above can vary by ±5% due to manufacturing variances of the individual batteries.

Table 8.5 Battery Run Time in Minutes Model: GXT5-3KL620RT2UXL and GXT5-3KL630RT2UXL

Load			Internal Battery Only	Number of External Battery Cabinets									
				1	2	3	4	5	6	7	8	9	10
%	VA	W	Minutes										
10	300	300	74	245	431	619	817	1023	1229	1478	1632	1754	1853
20	600	600	35	133	229	330	438	545	648	777	894	1013	1133
30	900	900	21	87	154	219	289	360	435	510	586	655	733
40	1200	1200	14	61	114	165	213	266	320	375	431	487	543
50	1500	1500	10	46	89	131	172	210	253	296	340	385	430
60	1800	1800	8	38	73	108	142	176	208	244	280	317	354
70	2100	2100	6	31	59	89	119	148	178	206	236	267	298
80	2400	2400	5	25	50	78	103	129	154	180	205	231	258
90	2700	2700	4	22	43	67	89	113	136	159	181	203	226
100	3000	3000	3	19	38	57	80	101	121	137	157	177	196

Table 8.6 Battery Run Time in Minutes Model: GXT5-5000HVRT5UXLN

Load			Internal Battery Only	Number of External Battery Cabinets									
				1	2	3	4	5	6	7	8	9	10
%	VA	W	Minutes										
10	500	500	120	272	427	582	737	892	1047	1202	1357	1512	1667
20	1000	1000	59	129	211	294	377	460	543	625	708	791	874
30	1500	1500	36	85	133	189	246	303	359	416	473	530	586
40	2000	2000	25	62	99	136	179	222	266	309	353	396	439
50	2500	2500	18	48	78	107	138	173	208	243	278	313	348
60	3000	3000	14	38	63	88	113	138	168	197	226	256	285
70	3500	3500	11	31	53	74	95	117	139	164	189	214	240
80	4000	4000	9	26	45	64	82	101	120	139	161	183	206
90	4500	4500	8	22	38	55	72	89	105	122	140	159	179
100	5000	5000	7	19	33	49	64	79	94	109	124	140	158

Table 8.7 Battery Run Time in Minutes Model: GXT5-5KL630RT3UXLN

Load			Internal Battery Only	Number of External Battery Cabinets									
				1	2	3	4	5	6	7	8	9	10
%	VA	W	Minutes										
10	490	460	81	165	249	333	417	501	585	669	753	837	921
20	980	920	35	103	171	239	307	375	443	511	579	647	715
30	1470	1380	23	68	113	158	203	248	293	338	383	428	473
40	1960	1840	17	41	65	89	113	137	161	185	209	233	257
50	2450	2300	12	36	60	84	108	132	156	180	204	228	252
60	2940	2760	10	31	52	73	94	115	136	157	178	199	220
70	3430	3220	8	26	44	62	80	98	116	134	152	170	188
80	3920	3680	6	22	38	54	70	86	102	118	134	150	166
90	4410	4140	5	18	31	44	57	70	83	96	109	122	135
100	4900	4600	4.8	16	28	40	52	64	76	88	100	112	124

Table 8.8 Battery Run Time in Minutes Model: GXT5-6KL630RT5UXLN

Load			Internal Battery Only	Number of External Battery Cabinets									
				1	2	3	4	5	6	7	8	9	10
%	VA	W	Minutes										
10	490	460	130	296	463	630	797	964	1131	1298	1465	1632	1799
20	980	920	64	141	231	321	410	500	590	679	769	858	948
30	1470	1380	40	92	146	208	269	330	392	453	514	576	637
40	1960	1840	28	68	108	150	197	244	290	337	384	431	478
50	2450	2300	21	53	85	117	152	191	229	267	305	343	381
60	2940	2760	16	42	69	96	123	153	229	217	249	281	313
70	3430	3220	13	35	58	81	104	128	154	181	209	236	263
80	3920	3680	11	29	50	70	90	110	131	154	178	202	226
90	4410	4140	9	24	43	61	79	97	115	133	155	176	198
100	4900	4600	8	21	37	54	70	86	103	119	136	155	174

Table 8.9 Battery Run Time in Minutes Model: GXT5-8000HVRT5UXLN

Load			Internal Battery Only	Number of External Battery Cabinets									
				1	2	3	4	5	6	7	8	9	10
%	VA	W	Minutes										
10	800	800	75	166	267	369	471	572	674	776	878	979	1081
20	1600	1600	33	79	124	176	229	283	336	390	443	496	550
30	1470	2400	19	50	81	112	145	181	218	254	291	327	364
40	1960	3200	13	35	59	82	105	128	155	183	210	238	265
50	2450	4000	9	26	45	64	82	101	120	139	161	183	206
60	2940	4800	7	20	35	51	67	82	98	114	129	147	166
70	3430	5600	6	16	29	42	56	69	83	96	110	123	137
80	6400	6400	4	13	24	35	48	59	71	83	95	106	118
90	7200	7200	4	11	20	30	41	52	62	73	83	94	104
100	8000	8000	3	9	17	26	36	45	55	64	74	83	93

Table 8.10 Battery Run Time in Minutes Model: GXT5-10KHVRT5UXLN

Load			Internal Battery Only	Number of External Battery Cabinets									
				1	2	3	4	5	6	7	8	9	10
%	VA	W	Minutes										
10	1000	1000	59	129	211	294	377	460	543	625	708	791	874
20	2000	2000	25	62	99	136	179	222	266	309	353	396	439
30	3000	3000	14	38	63	88	113	138	168	197	226	256	285
40	4000	4000	9	26	45	64	82	101	120	139	161	183	206
50	5000	5000	7	19	33	49	64	79	94	109	124	140	158
60	6000	6000	5	14	26	39	51	64	77	89	102	114	127
70	7000	7000	4	12	21	31	42	54	64	75	86	97	107
80	8000	8000	3	9	17	26	36	45	55	64	74	83	93
90	9000	9000	2	8	15	22	30	39	48	56	65	73	81
100	10000	10000	2	7	13	19	26	34	42	50	57	65	72

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Appendices

Appendix A: Technical Support and Contacts

A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2378

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

A.2 Locations

United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH 43082

Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

Asia

7/F, Dah Sing Financial Centre

3108 Gloucester Road, Wanchai

Hong Kong

Appendix B: Open Source Software Legal Notices

The Vertiv™ Liebert® GXT5 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® GXT5 product, the purchaser has the right to obtain a copy of the FreeRTOS software that is incorporated in the Liebert® GXT5 product.

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

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