VERTIV.

Liebert®

GXT5 UPS

208 V Input, 208 V Output, L1-L2-G
HV
Installer/User Guide

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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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Important Safety Information

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

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Chapter 1: GXT5 Description

The Liebert® GXT5 is a compact, online uninterruptible power system (UPS) that continuously conditions and regulates its output voltage. The Liebert® GXT5 supplies microcomputers and other sensitive equipment with clean sine-wave input power.

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

The Liebert® 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.

1.1. UPS Features and Available Models

The GXT5 includes the following features. Table 1-1 below, lists the available models and power ratings.

- Enhanced load capacity with an output power factor of 1.
- Optional tower or rack installation to meet varying installation requirements.
- 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 terminals on 5-kVA to 10-kVA 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.

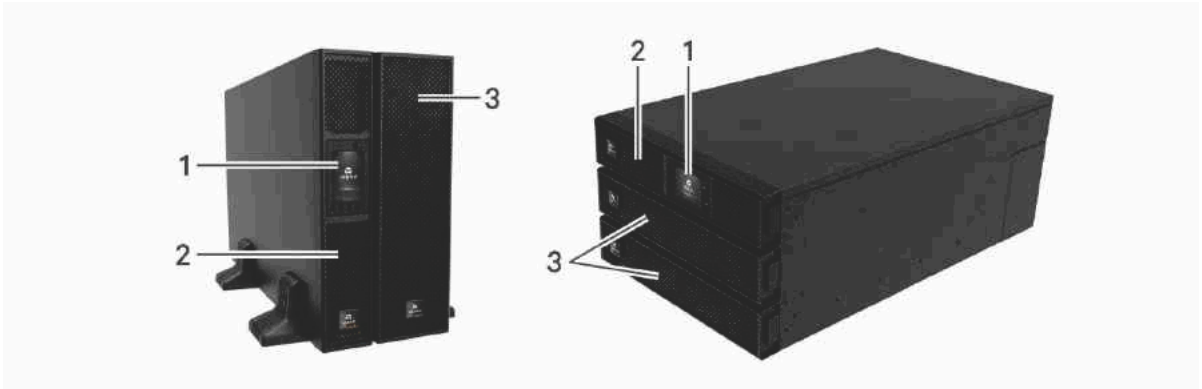
Table 1-1 UPS Models and Power Ratings

MODEL NUMBER	NOMINAL POWER RATING @ 208 V INPUT
GXT5-3KL620RT2UXL	3000 VA/2700 W
GXT5-3KL630RT2UXL	3000 VA/3000 W
GXT5-6KL630RT5UXLN	4900 VA/4900 W
GXT5-5000HVRT5UXLN	5000 VA/5000 W
GXT5-8000HVRT5UXLN	8000 VA/8000 W
GXT5-10KHVRT5UXLN	10000 VA/10000 W

1.2. Front Panels

The various GXT5 models have the same general appearance, with the main difference being the receptacle types on the rear panel. Figure 1-1 below, shows the 5-kVA to 10-kVA model in a tower and a rack configuration.

Figure 1-1 Front View

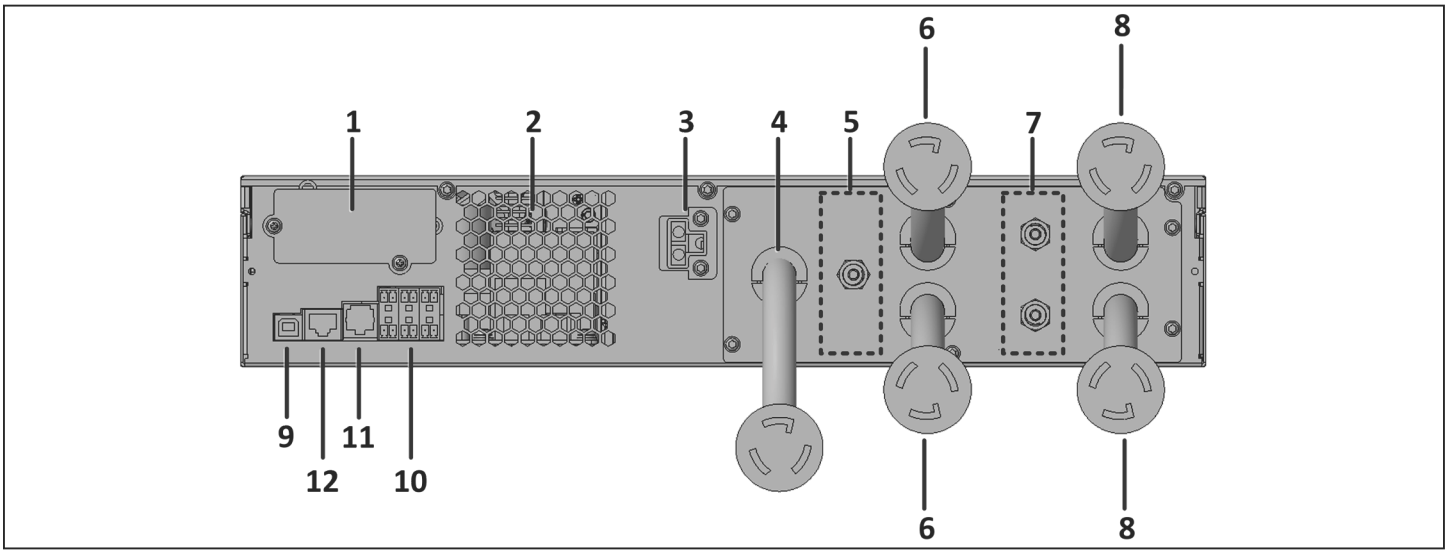


ITEM	DESCRIPTION
1	Operation/Display panel
2	Upper bezel
3	Lower bezel/battery-access door

1.3. Rear Panels

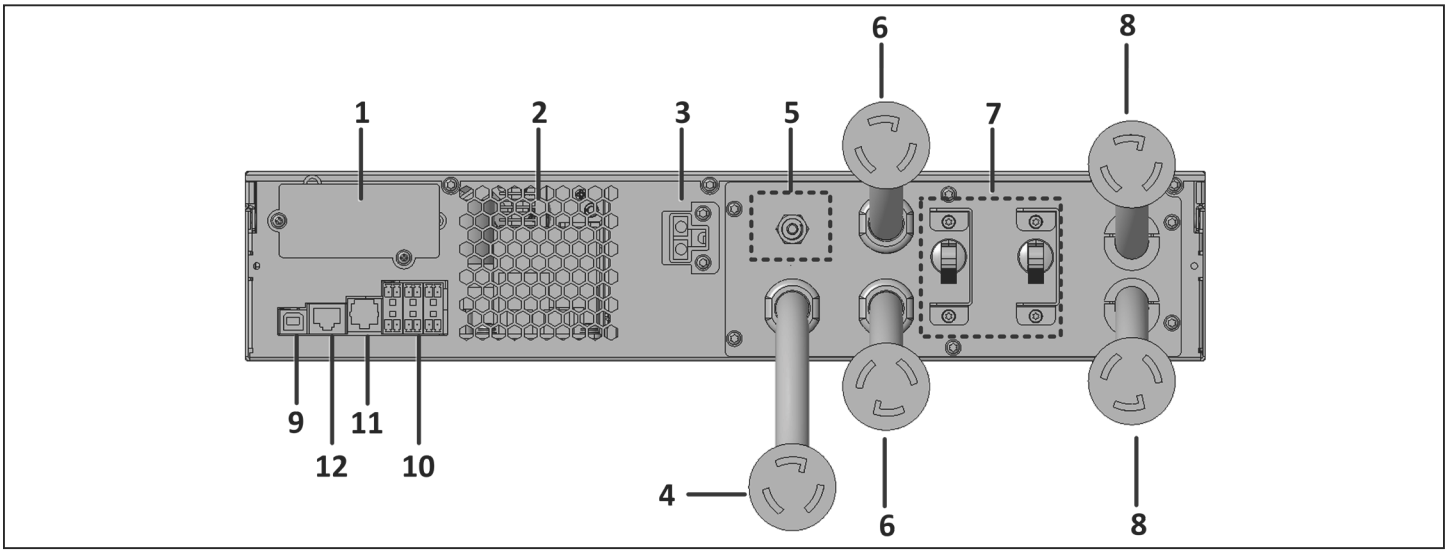
The following figures detail the rear-panel features for each GXT5 model.

Figure 1-2 GXT5-3KL62 0RT2UXL Rear Panel



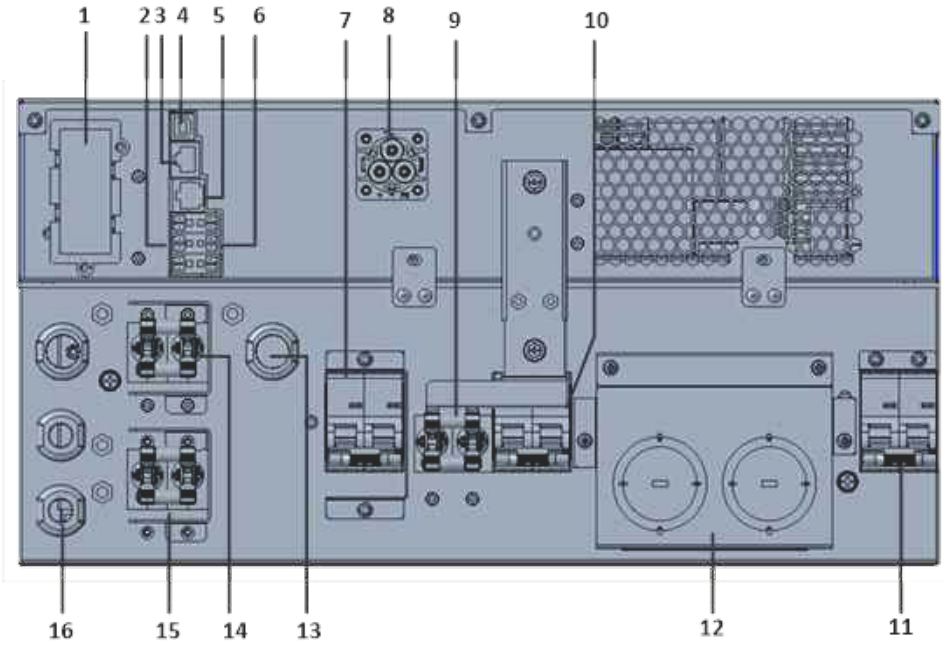
ITEM	DESCRIPTION
1	Liebert® IntelliSlot™ port
2	Ventilation Hole
3	External-battery-cabinet connector
4	Input power cable, L6-20P
5	Output circuit-breaker reset button, 20-A
6	Output cable, L6-20R
7	Output circuit-breaker reset buttons, 15-A
8	Output cables, L6-15R
9	USB port
10	Terminal-block communication 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

Figure 1-3 GXT5-3KL630RT2UXL Rear Panel



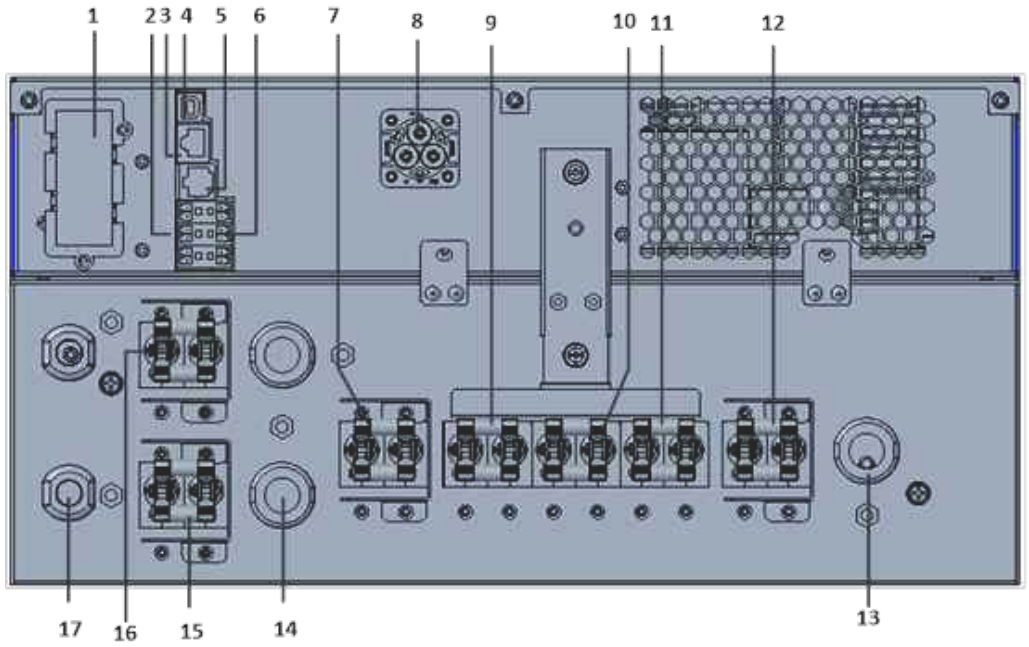
ITEM	DESCRIPTION
1	Liebert® IntelliSlot™ port
2	Ventilation Hole
3	External-battery-cabinet connector
4	Input power cable, L6-30P
5	Output circuit-breaker reset button, 20-A
6	Output cable, L6-30R
7	Output circuit-breakers, 15-A
8	Output cables, L6-15R
9	USB port
10	Terminal-block communication ports
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

Figure 1-4 GXT5-5000HVRT5UXLN Rear Panel



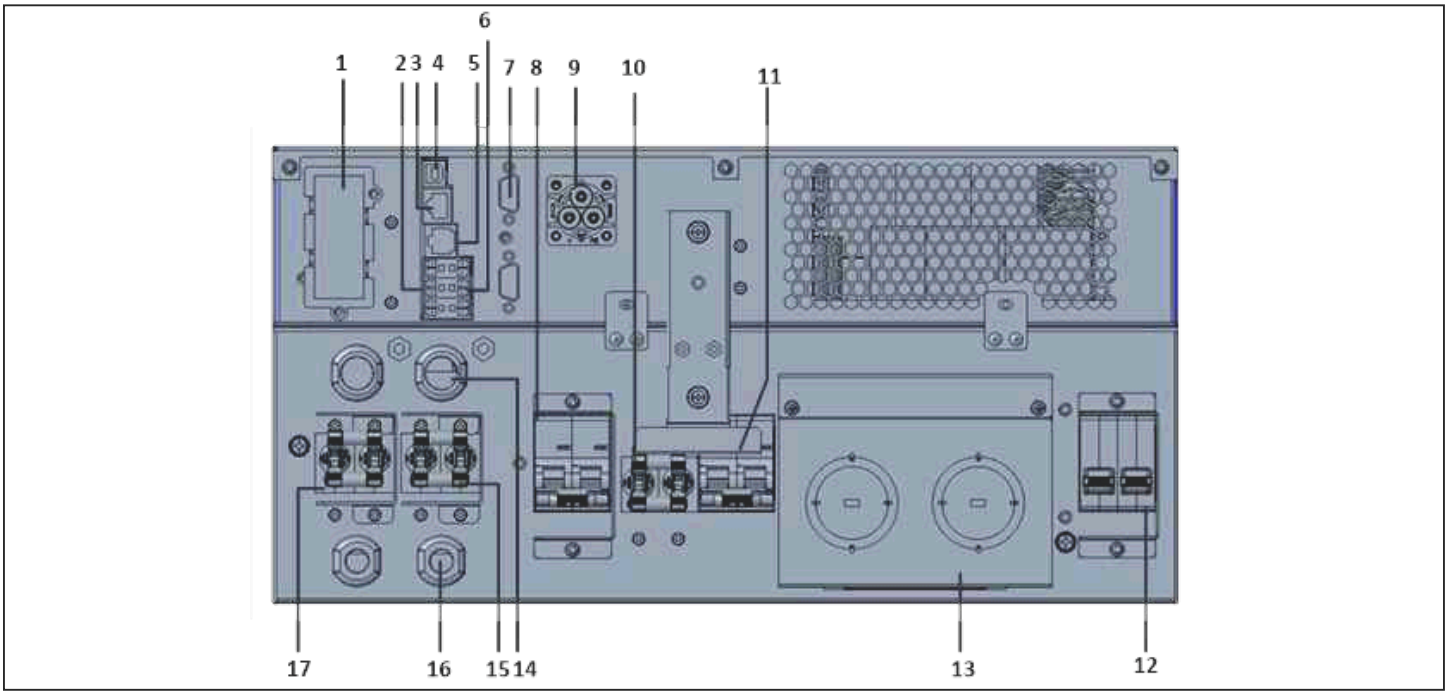
ITEM	DESCRIPTION
1	Liebert® IntelliSlot™ port
2	Terminal-block communication connectors
3	RS-485 port - RJ-45 connection used for external temperature sensors
4	USB port
5	RS-232 port - RJ-45/RJ-11 connection used for command line interface
6	REPO connector
7	Output circuit breaker
8	External-battery-cabinet 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 1-5 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	L6-30R output breaker
8	External-battery-cabinet 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 1-6 GXT5-8000/10KHVRT5UXLN Rear Panel

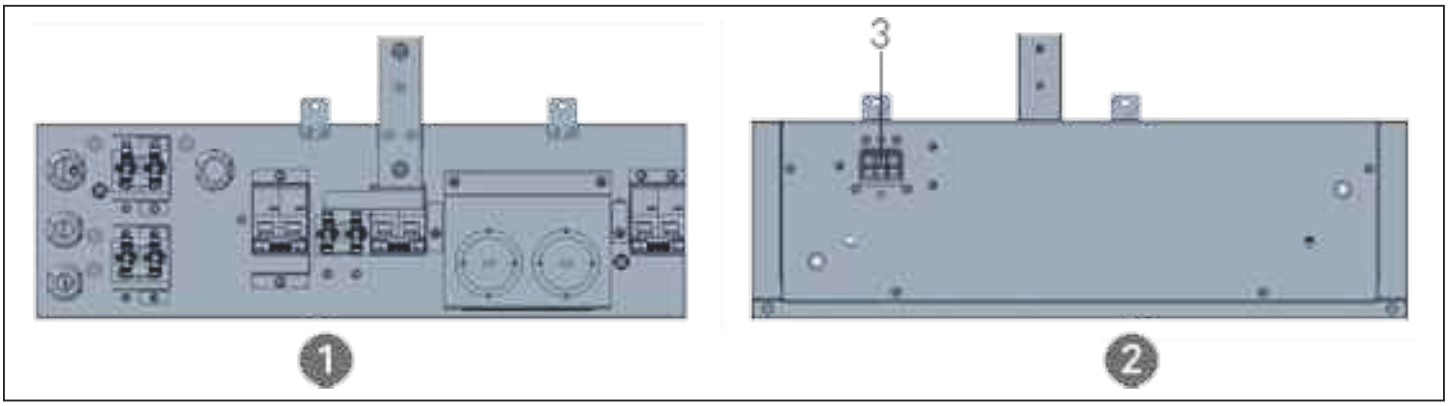


ITEM	DESCRIPTION
1	Liebert® IntelliSlot™ port
2	Terminal-block communication connectors
3	RS-485 port - RJ-45 connection used for external temperature sensors
4	USB port
5	RS-232 port - RJ-45/RJ-11 connection used for command line interface
6	REPO connector
7	DB9 ports - Used for communication when operating in a parallel system, see 2.8. Installing a Parallel System
8	Output circuit breaker
9	External-battery-cabinet connector
10	Programmable outlet maintenance bypass breaker
11	Maintenance-bypass breaker
12	Input circuit breaker
13	Removable junction box with knockouts for hardwire I/O
14	L6-30R output receptacle (2x)
15	Programmable L6-20R output breaker
16	Programmable L6-20R output receptacle (2x)
17	L6-30R output breaker

1.4. Removable Power Distribution Box

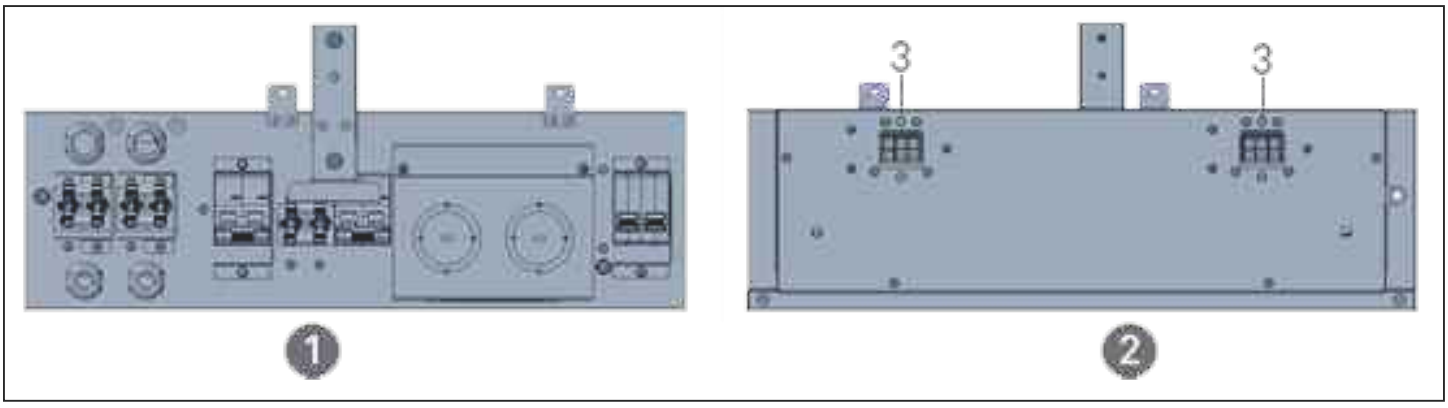
The 5-kVA and 10-kVA models ship with the POD installed. The features for each POD are detailed in the following figures.

Figure 1-7 PD5-CE6HDWRMBSU for GXT5-5000HVRT5UXLN



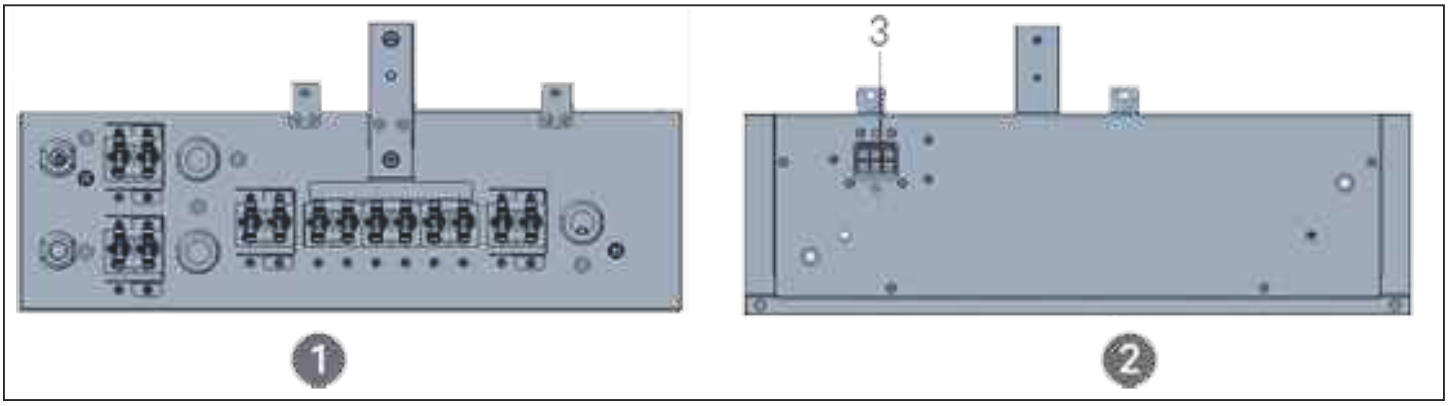
ITEM	DESCRIPTION
1	POD Panel view (on rear of unit)
2	POD inner-surface view
3	Quick connect

Figure 1-8 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 1-9 PD5-L630 for GXT5-6KL630RT5UXLN

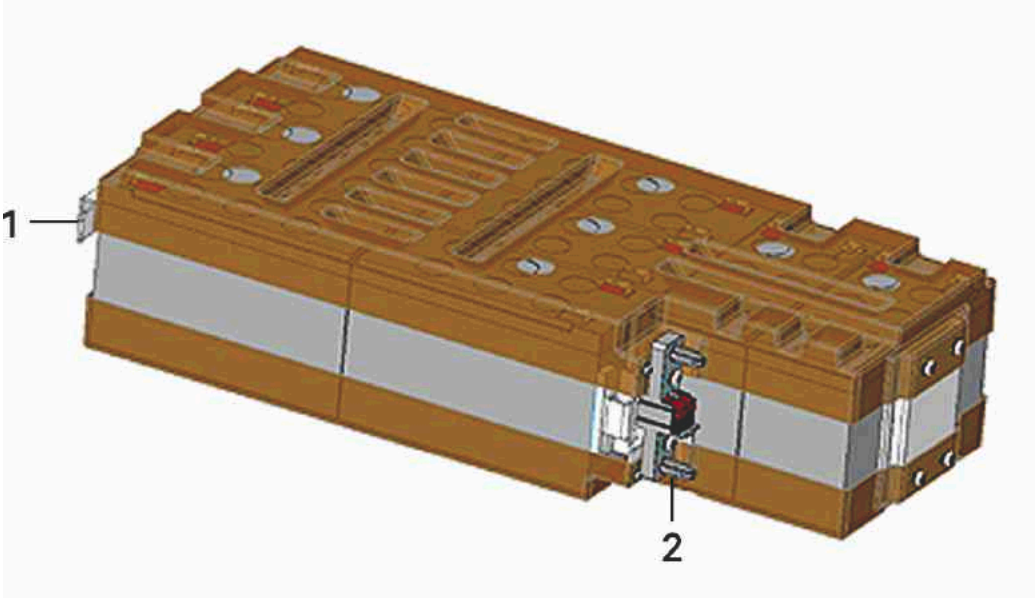


ITEM	DESCRIPTION
1	POD Panel view (on rear of unit)
2	POD inner-surface view
3	Quick connect

1.5. Internal Battery Packs

The internal battery packs for 5-10 kVA GXT5 HV models, shown in Figure 1-10 below, are located behind the access door on the front of the UPS. 3KVA models use a smaller battery pack.

Figure 1-10 Internal Battery Pack



ITEM	DESCRIPTION
1	Handle
2	Connector

1.6. Major Internal Components and Operating Principle

Figure 1-11 on the next page, shows the UPS operating principle. Table 1-2 on the next page, describes the function of the major components in the UPS.

NOTE: Figure 1-11 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 21.

Figure 1-11 Basic Operating Principle Diagram

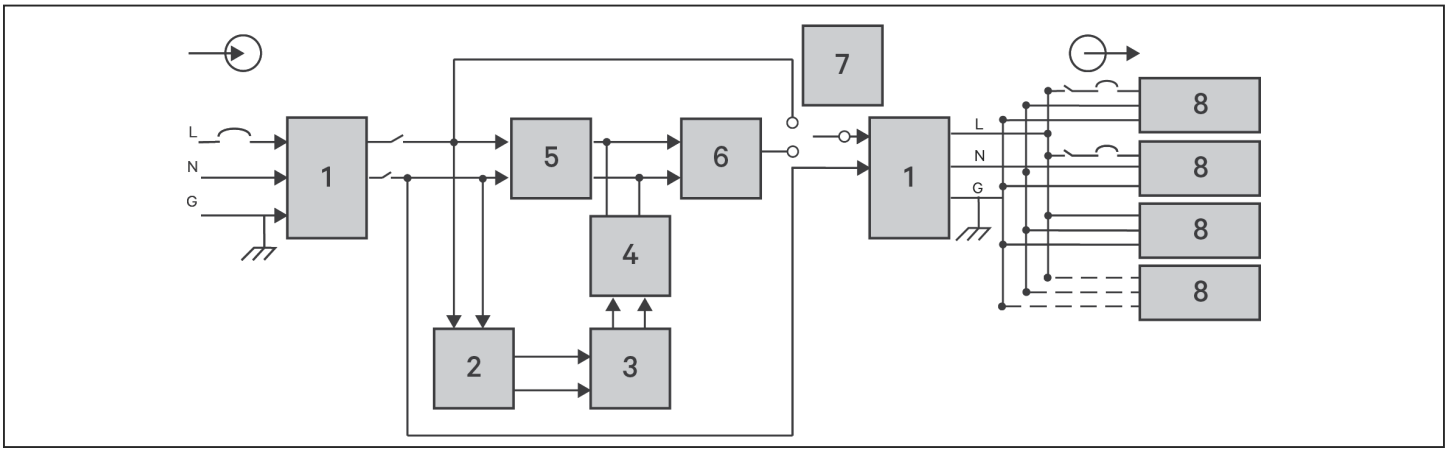


Table 1-2 Major Components

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 34.
8	Outlet group	Output receptacles.

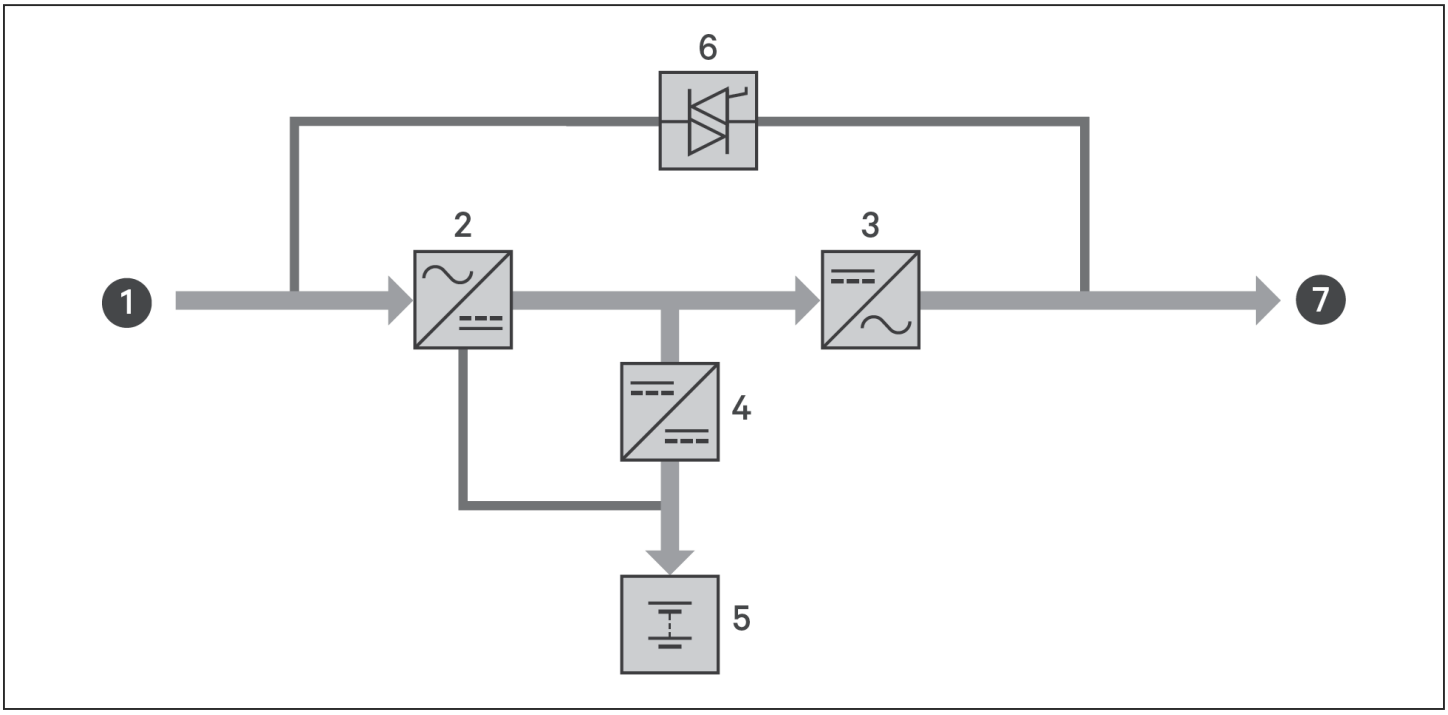
1.7. UPS States and Operating Modes

NOTE: See LED Indicators on page 31, for description of the run-indicator and alarm-indicator LEDs mentioned in this section.

1.7.1. 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 1-12 shows the diagram of normal mode.

Figure 1-12 Normal-mode Operation



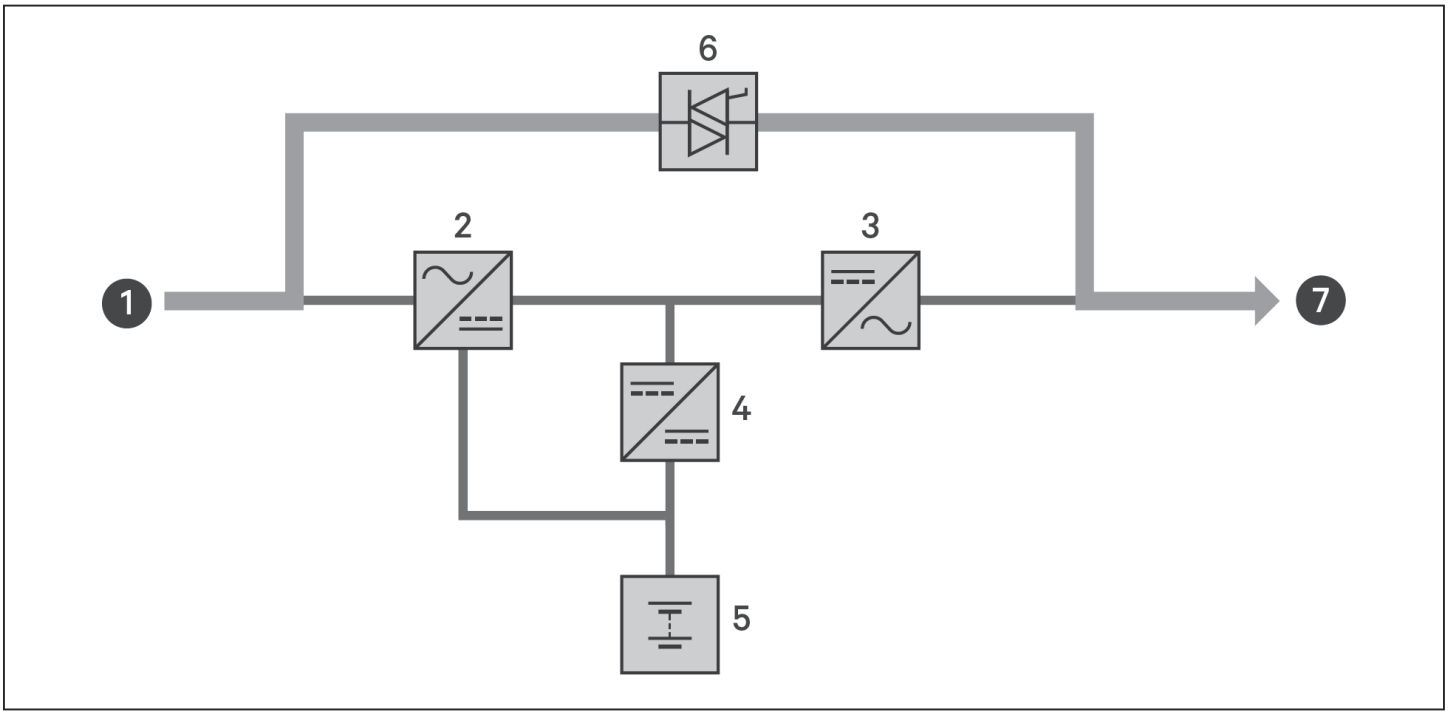
ITEM	DESCRIPTION
1	Mains/Utility input (by-pass input)
2	Rectifier/PFC
3	Inverter
4	Battery charger
5	Battery
6	Bypass static switch
7	UPS output

1.7.2.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 each seconds. The LCD "Flow" screen displays "On Bypass." Figure 1-13 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 1-13 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

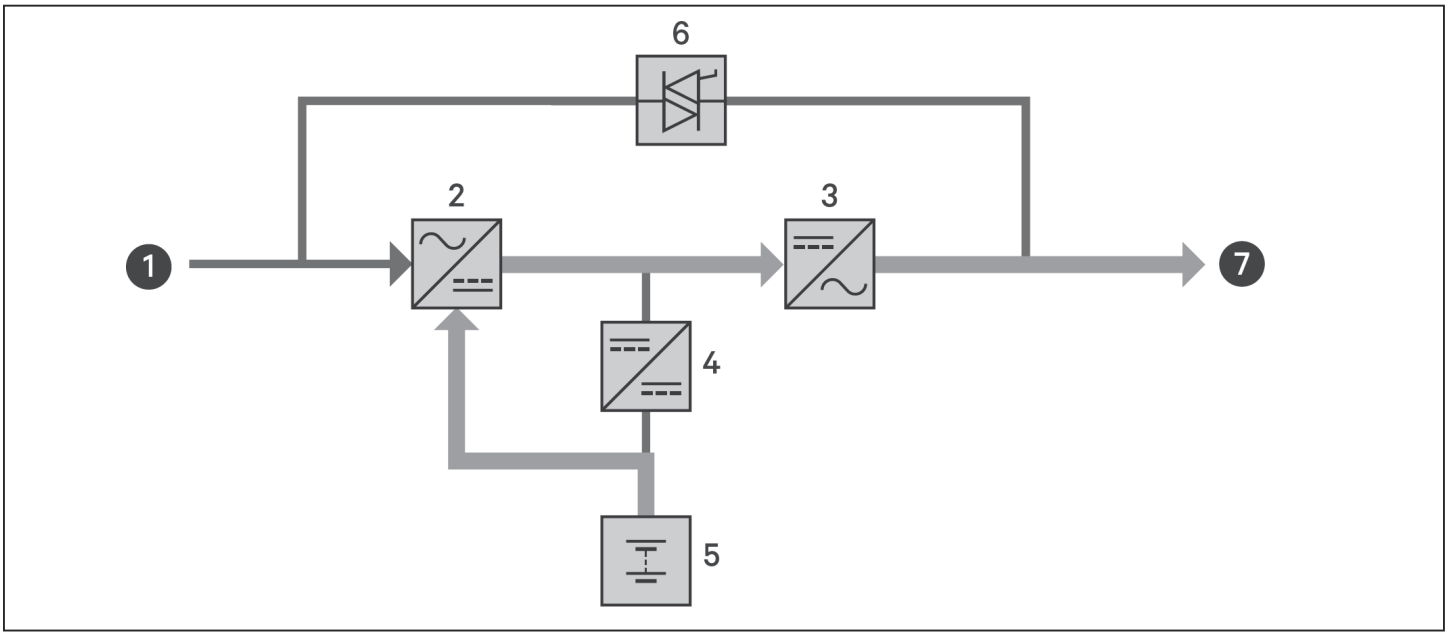
1.7.3. Battery Mode

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 1-14 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 atleast 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 1-14 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

1.7.4. ECO Mode

NOTE: ECO mode is not available on a parallel (multi-UPS) system.

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.

1.7.5. Maintenance Bypass Mode

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

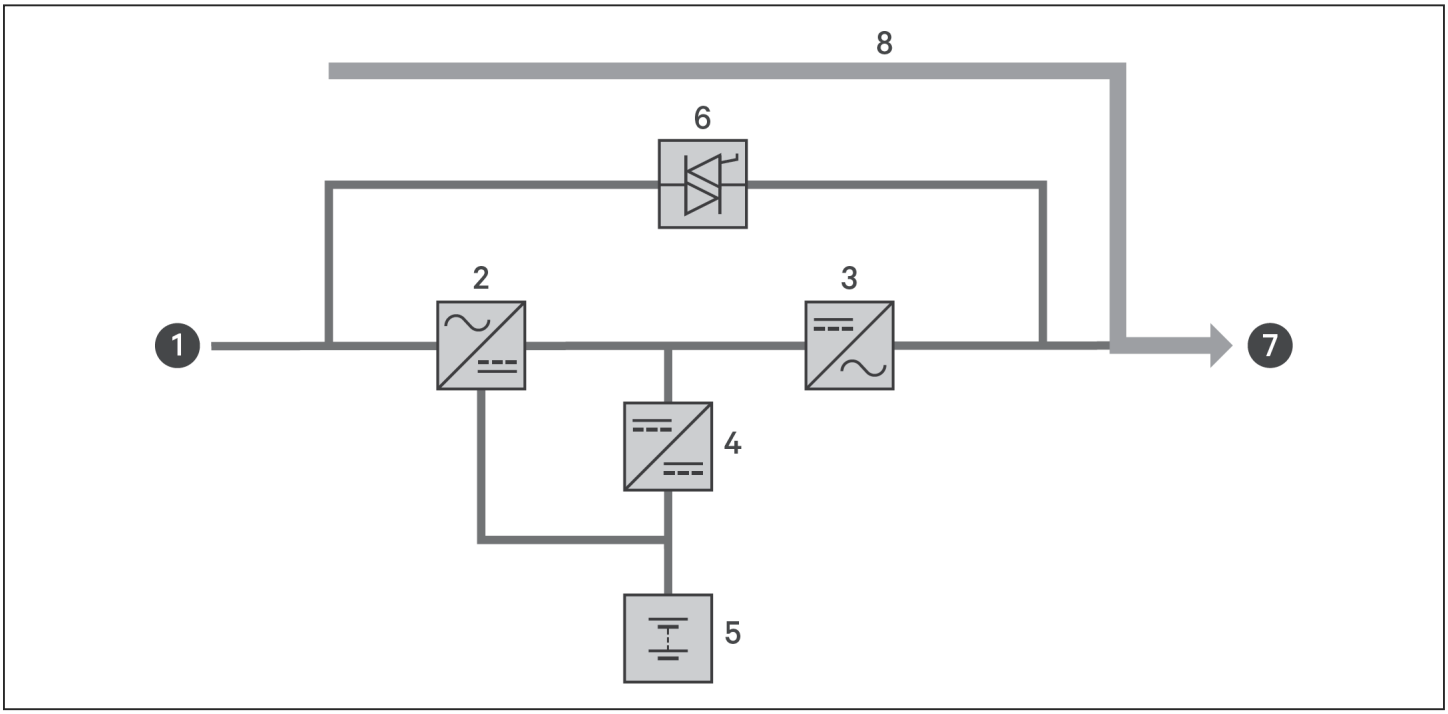
Used in the unlikely event that the UPS requires maintenance or repair, Maintenance-bypass mode powers the connected equipment with utility power while electrically isolating the internal UPS components.

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 1-15 Maintenance 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
8	Maintenance bypass

Chapter 2: 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.

2.1. 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 57, for the weight). Take proper precautions when lifting or moving the unit.

2.2. 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 57.
- 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.

2.2.1. 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.

2.3. 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 or Rack Installation on next page.

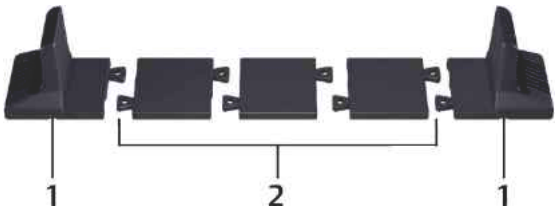
NOTE: When installing the UPS or making input and output connections, comply with all relevant safety codes and standards.

2.3.1. Tower Installation

To install the UPS as a tower:

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

Figure 2-1 Support bases



NO.	DESCRIPTION
1	Support bases
2	Spacers with connectors

2. If optional, Liebert® external battery cabinets will be connected, take out the spacers shipped with the battery cabinet.
3. Connect the spacers and the support bases as shown in Figure 2-1 above. Each GXT5 requires 2 support bases, one in the front and one in the rear.
4. Place the GXT5 and any battery cabinets on the 2 support bases.

2.3.2. Rack Installation

When installed in a rack enclosure, the 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 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 57.

2.4. 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 62. 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-detection.

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 cabinet(s) are heavy, see Table 7-4 on page 61. Take proper precautions when lifting them.

To install the EBC(s):

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, 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.

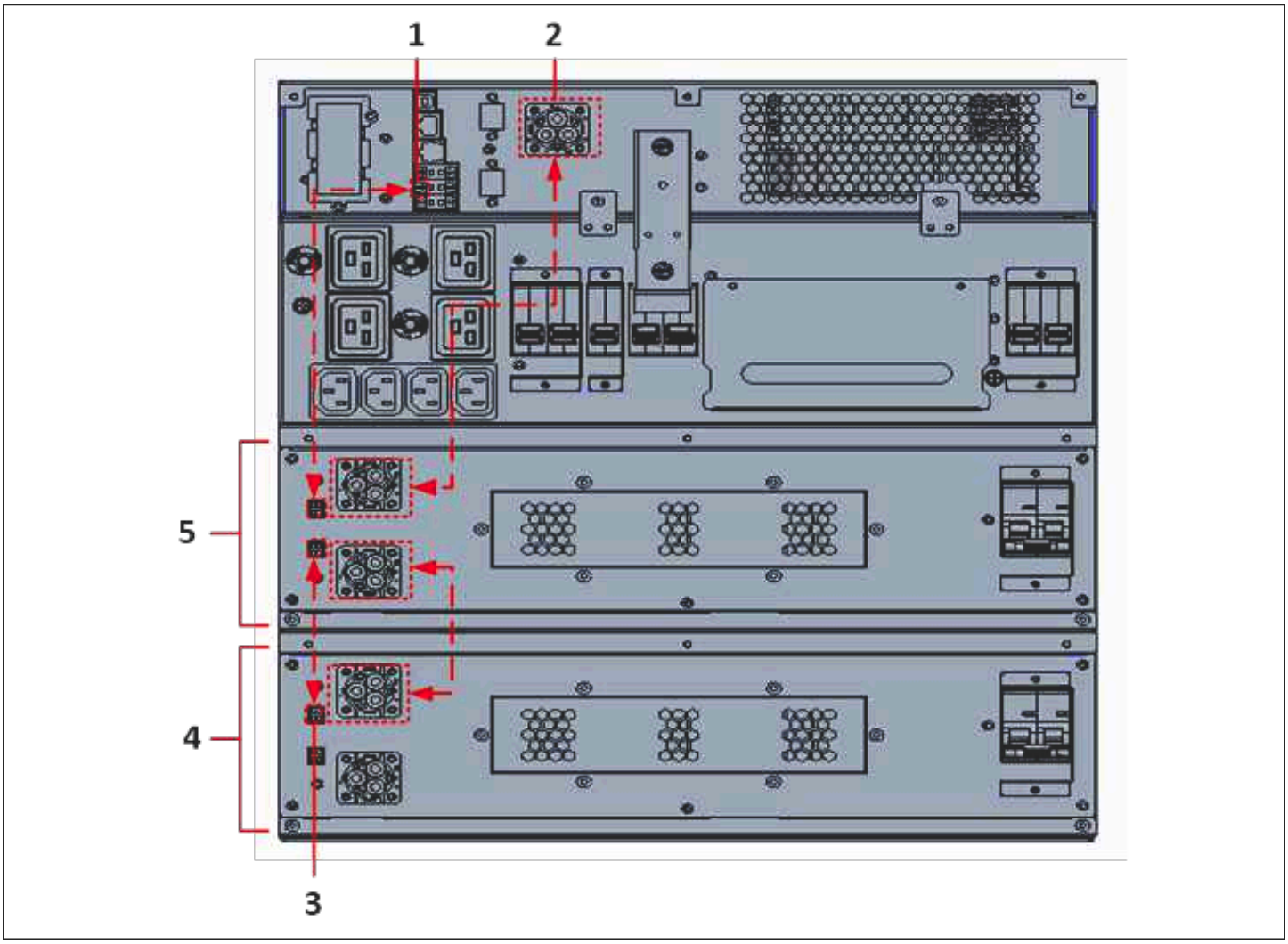
NOTE: Optional slide rails and securing hardware are sold separately. Please contact your Vertiv representative for options and Vertiv Technical Support for assistance.

4. Verify that the EBC breaker is in the “Off” position.
5. Connect the supplied EBC cable(s) to the rear of the cabinet, then to the rear of the UPS, see Figure 2-2.
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 EBC(s) to minimize stand-by current drain on the batteries and help maintain design life.

Figure 2-2 EBCs connected to the UPS



ITEM	DESCRIPTION
1	EBC-detection dry-contact port (See Table 2-2 on page 23, for details.)
2	EBC connector
3	EBC-detection port
4	External battery cabinet
5	External battery cabinet

2.5. Installing a Power distribution Box

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 power-distribution box (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 61.

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.

2.6. Hardwired Input/Output Connections

WARNING! Risk of electric shock

Can cause equipment damage, injury and death. Before beginning installation, verify that all external over-current 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.

2.6.1. Branch Circuit Breaker

The installer must provide an upstream branch circuit breaker, see Table 2-2 on the next page, for the ratings. The input circuit breaker on the distribution box and the output circuit breaker on the rear of the power distribution box disconnect all power between the main cabinet and the distribution box. Figure 2-4 on the next page, shows a diagram of the circuit breakers.

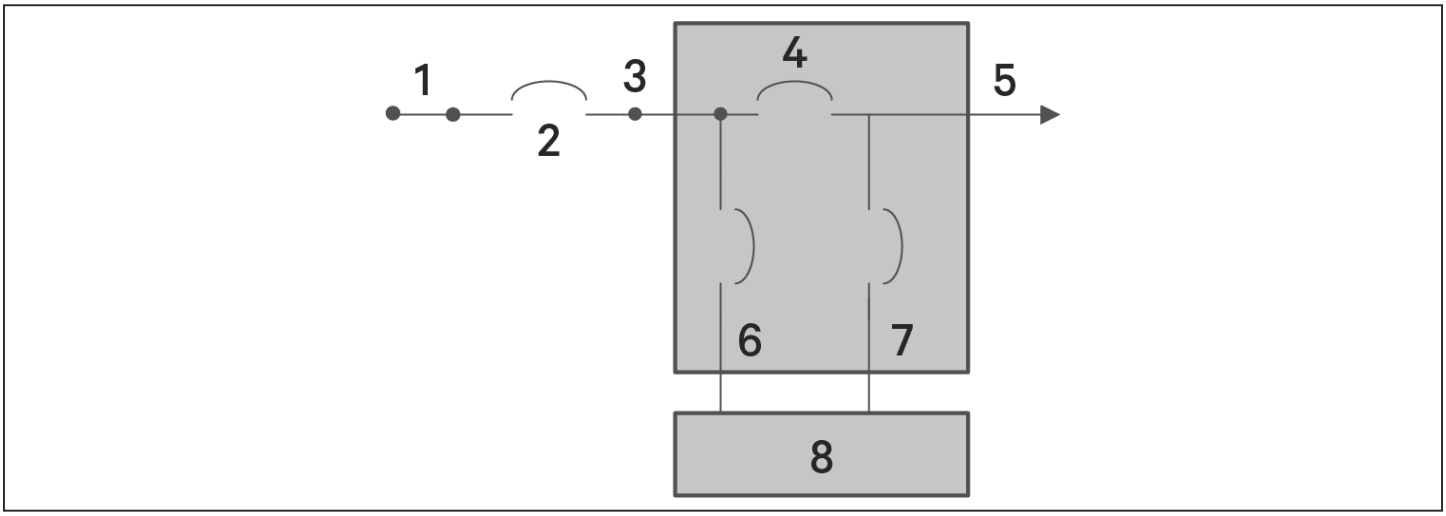
Observe the following guidelines and specifications when making the hard-wire input and output connections:

- 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 2-1 Branch circuit breaker rating

UNIT RATING	RECOMMENDED BREAKER RATING
3KL620	20 A
3KL630	30 A
6KL630	30 A
5 kVA	50 A
8 kVA	60 A
10 kVA	70 A

Figure 2-3 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

2.6.2. 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 Distribution Box on page 6, for the location of the input/output knockouts on your GXT5 model.

Table 2-2 below details the electrical-connection specifications.

Table 2-2 Terminal-block electrical specifications

UPS MODEL	RECOMMENDED EXTERNAL OVER-CURRENT PROTEC-TION	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:

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

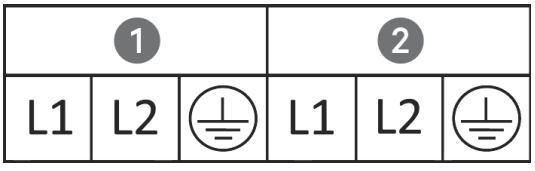
NOTE: We recommend using the knockouts to install input and output wiring in separate conduit. You must use a suitable cable gland or risk electric shock.

2. 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 2-2 above. Refer Connecting to Terminal Blocks on 5-kVA, 8-kVA, and 10-kVA models below.
3. Re-install the cable-entry/conduit-box cover, and tighten the screws.

2.6.3. 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 2-4 below, shows the terminal block. Refer to the details in Terminal-block Connections on page 23, when making the connections.

Figure 2-4 Terminal Block 5 kVA, 8 kVA, and 10 kVA Models



ITEM	DESCRIPTION
1	Output
2	Input

2.7. 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.

2.7.1. Connecting IntelliSlot Communication

The 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 4, for the location of the card port.

To install an IntelliSlot Card:

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

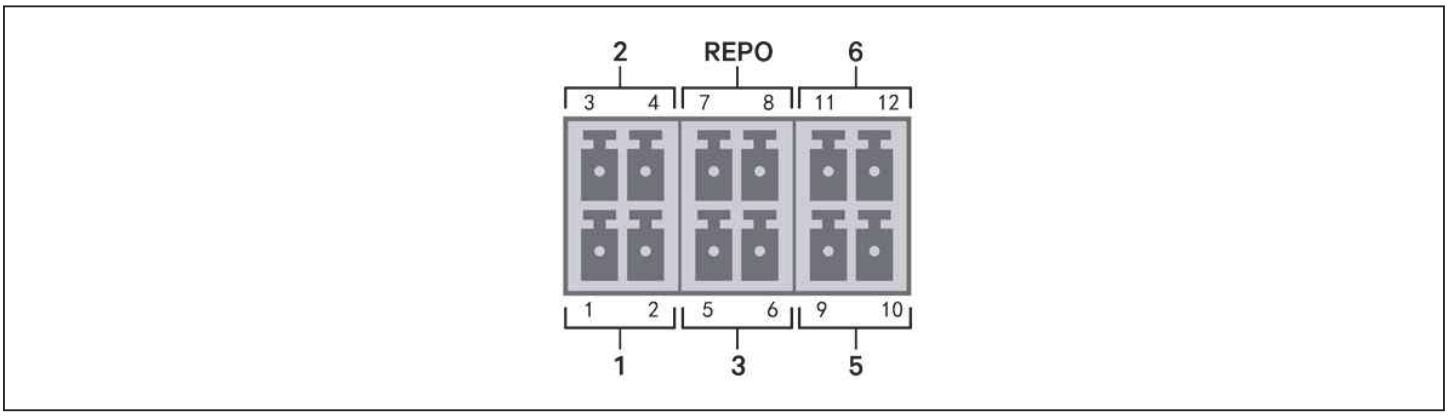
To make connections to the card, refer to the Installer/User Guide for the appropriate IntelliSlot card available at www.vertiv.com.

2.7.2. 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 4, for the location of the port. Figure 2-5 below, shows the ports and Table 2-3 describes each port.

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

Figure 2-5 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 the next page.

Table 2-3 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 49) 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: • 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 49) 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: • 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	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 19.
		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 19.
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.**
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 49) 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: • 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 49) 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: • Low battery • On battery • On bypass • UPS fault (default)

2.7.3. 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 4, for the location of the port.

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

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 2-6 below, shows the cable required to make the connection. We recommend using 18 AWG to 22 AWG (0.82 mm^2 to 0.33 mm^2) 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.

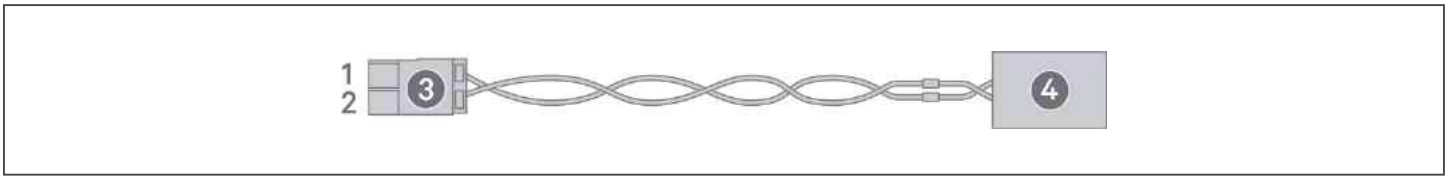
To connect a UPS to the REPO switch.

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 2-6 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 2-6 Cable/Plug for Connecting REPO switch to UPS REPO port



ITEM	DESCRIPTION
1	Terminal 1
2	Terminal 2
3	Plug (connects to REPO port on UPS)
4	REPO switch

2.7.4. Connecting a USB Cable

The UPS includes a USB connector. See the appropriate figure for your model in Rear Panels on page 4, 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.

2.7.5. 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

2.8. Installing a Parallel System

The 10-kVA model may be configured in a parallel system. The UPS parallel system supports the following options:

- 3 active systems
- 2 active systems
- 2 active systems plus 1 redundant system
- 1 active system plus 1 redundant system

All electrical requirements, including external-distribution panel and branch circuit breaker, apply to each UPS in a parallel system, which are then connected in ring configuration for redundancy and additional reliability. System load information can be accessed via any controller/display in the system.

The following are requirements for the parallel-connected system:

- Each UPS must have the same capacity and must be connected to the same mains/utility source.
- If a residual-current detector (RCD) is required, if must be correctly-set and installed before the same neutral-line input terminal. See safety and regulatory information, available at https://www.vertiv.com/ComplianceRegulatoryInfo.
- The output of each UPS must be connected to the same output bus.
- The parameter configuration for each UPS must be **identical**.
- Because the parallel system is not fitted with auxiliary-contact detection devices for the output circuit breaker or the maintenance-bypass circuit breaker of each UPS, You must strictly-follow the procedures for transferring between operating modes when removing a single UPS from the parallel system before maintenance and when adding a single UPS after maintenance. Failure to observe the procedures may affect the reliability of the load power supply.

Figure 2-7 on the next page, shows an example of the 10-kVA model connected as a 2 + 1 parallel system connected in a ring configuration.

NOTE: 8-kVA models do not support paralleling at this time.

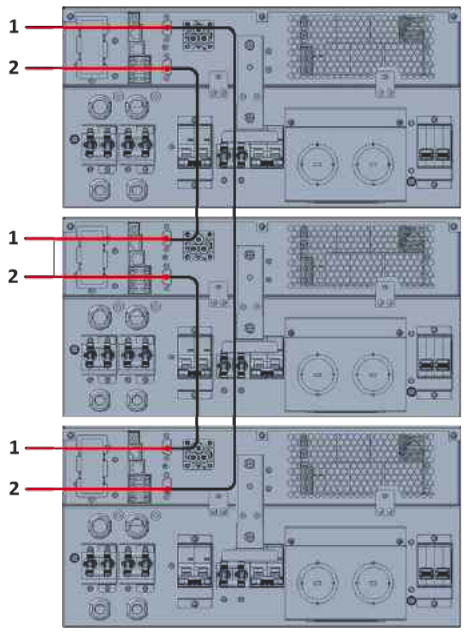
NOTE: You must use Vertiv parallel cables for the connection.

NOTE: If a fault occurs during parallel-system operation, shut-off the system and make sure the cables are connected correctly, see Figure 2-7 below.

CAUTION! Risk of improper disconnection

Can equipment damage. Do not disconnect parallel-system cables while the system is operating.

Figure 2-7 Connection of 2 + 1 Parallel System



ITEM	DESCRIPTION
1	Upper connector
2	Lower connector

2.8.1. First-time Start-up of a Parallel System

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 "Parallel" parameters for each UPS in the system must be set and synchronized at first start-up.

To start and set parameters for the parallel system:

1. Make sure that the output CBs of all units in the parallel system are open (off), then close (turn on) the input CB on each UPS. Each UPS powers on, a self-check screen displays, and the alarm/run indicators are lit for about 5 seconds.
2. Wait about 30 seconds to allow the rectifier start-up to finish, then at each UPS, set the parallel parameters as follows:

NOTE: If the "Parallel Comm Fail" Alarm displays, clear it and proceed. Communication should not fail after the parallel settings are synchronized.

- On the display, press **Enter** to display the Main Menu, then use the arrow buttons to select Settings, and press **Enter**.

NOTE: To adjust the settings, you must enter a password. See Editing Display and Operation Settings on page 58, for details on entering the password and editing the setting parameters.

- Use the arrow buttons to select the Parallel tab, then press **Enter** to display the parameters list.
- Select and Enter each parameter setting, and then use last item in the list, Sync parallel parameters, to validate the settings. For a full description of UPS display functions and settings, see Operation and Display Panel on page 37.

3. After confirming the parallel parameters and each UPS is operating normally, commission the parallel system, see Commissioning Parallel System below.

2.8.2. Commissioning Parallel System

CAUTION

When powering-on the parallel system, confirm that the external output CB for each UPS is closed and that all of the inverter output is connected in parallel.

CAUTION

To avoid load power failure, confirm that the system is working normally, then feed power to the load.

To commission the parallel system:

1. Close the external output CB and input CB on each UPS, then wait about 30 seconds to allow the rectifier start-up to finish.
2. At the first UPS, press the power button for 2 seconds and note that the run indicator (green) is lit, then measure the output voltage and verify that it is normal.
3. Repeat step 2 for each UPS in the parallel system.

2.8.3. Adding a Single UPS to the Parallel System



CAUTION

When adding or replacing a UPS in the parallel system, make sure that all parallel- cabling is correct before powering on the additional/replacement unit.

NOTE: You may also use this procedure when replacing a faulty UPS in the system. The difference is noted in the procedure steps.

1. Connect the power cables and parallel-communication cables, and make sure that they are properly connected, without any short-circuits.
2. Refer to Commissioning Parallel System on the previous page, to verify operation of the added unit then completely power-off the added UPS.
3. At any other UPS in the system, update the parallel parameters as follows:
   - On the display, press **Enter** to display the Main Menu, then use the arrow buttons to select Settings, and press **Enter**.
   - Use the arrow buttons to select the Parallel tab, then press **Enter** to display the parameters list.
   - Set the system count from N to N + 1, and then use last item in the list, Sync parallel parameters.

NOTE: If your are replacing a unit, do not update the system count, just sync the parallel parameters.

4. On the added UPS, close the input and output breakers, wait about 30 seconds to allow the rectifier start-up to finish, then power-on the inverter.
5. Make sure that there are no alarms and that the UPS and the parallel system are operating normally.

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Chapter 3: Operating the UPS

3.1. 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 29.

3.2. 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 7-8 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. If included on your UPS model, close the bypass breaker on the rear of the UPS.
5. Close all output breakers on the rear of the UPS (or in an external panel board, if used).
6. If external battery cabinets are attached, close the breakers on the rear of each cabinet.
7. 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**.
8. 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 29.

3.3. 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 62.

3.4. 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.

3.5. Transferring from Bypass to Normal Mode

Press and hold the power button for 2 seconds.

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

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.

3.6. 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.

3.7. 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.

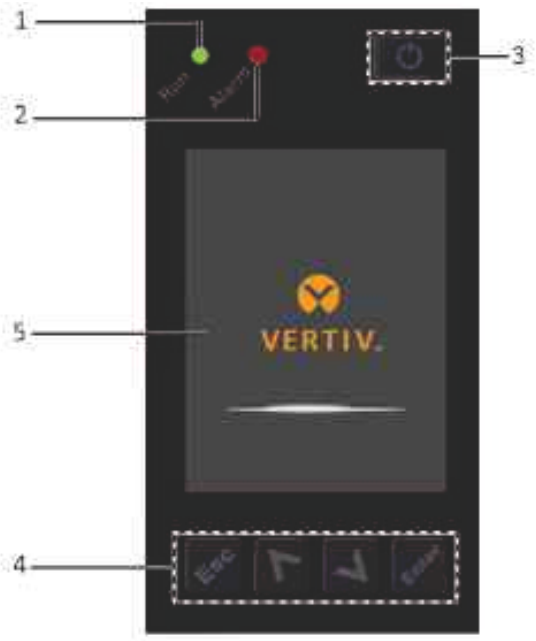
If mains/utility power is present, the UPS control circuit remains active even though output power is disabled. To remove all mains/utility power, disconnect the external input circuit breaker.

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Chapter 4: Operation and Display Panel

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

Figure 4-1 UPS Front-panel Display



ITEM	DESCRIPTION
1	Run indicator LED, see LED Indicators on page 39.
2	Alarm indicator LED, see LED Indicators on page 39.
3	Power button, see Table 4-1 on the next page.
4	Menu keys, see Table 4-1 on the next page.
5	LCD panel.

Table 4-1 Display-panel Button Functions and Descriptions

BUTTON	FUNCTION	DESCRIPTION
Enter	Enter	Confirm or enter selection.
▲	Up	Move to previous page, increase value, move left.
▼	Down	Move to next page, decrease value, move right.
Esc	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 4-2. 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 4-2 LCD Screen Saver



4.1. 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 on page 53, describes the alarm messages you may see. When a fault is indicated, front-panel display list the fault, which are described in Table 6-2 on page 55.

Table 4-2 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

4.2. LCD Menu and Screens

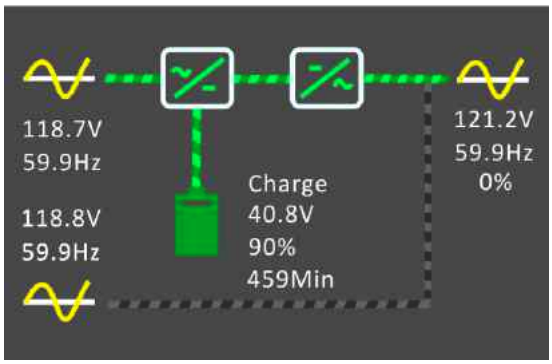
The menu-driven LCD user interface lets you browse the UPS status, view operating parameters, customize settings, control operation, and view alarm/event history. Use the function keys to navigate through the menu, and view statuses or select settings in the screens.

4.2.1. Start-up and Flow Screens

At start-up, the UPS executes a system test and displays the Vertiv logo screen for about 10 seconds, shown in Figure 4-1 on page 37. After the test completes, an overview screen shows status information, the active (green) power path, and the inactive power path (gray).

NOTE: Figure 4-3 is an example flow screen and does not reflect the actual values that you may see on your unit.

Figure 4-3 UPS Flow Screen



4.2.2. Main Menu

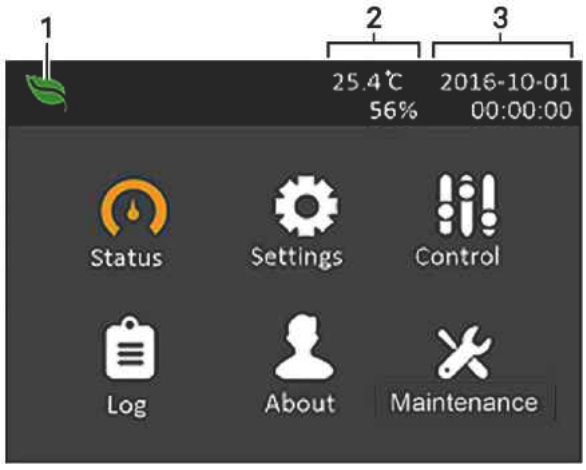
To access the main menu, press **Enter** while at the flow screen. Table 4-3 below, describes the menu options, and Figure 4-4 below, describes the display.

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.

Table 4-3 Menu Options

SUB MENU	DESCRIPTION
Status	Voltage, current, frequency, and parameters for UPS components, see Status Screen on the facing page.
Settings	Display and system parameter settings, see Settings Submenu on page 44.
Control	UPS controls, see Control Screen on page 52.
Log	Current alarms and event history, see Log Screen on page 53.
About	Product and network information, see About Screen on page 55.
Maintenance	Service-only, service-password protected page for use only by Vertiv service representatives.

Figure 4-4 Main Menu



ITEM	DESCRIPTION
1	ECO-mode indicator
2	Ambient Temperature
3	Date and Time

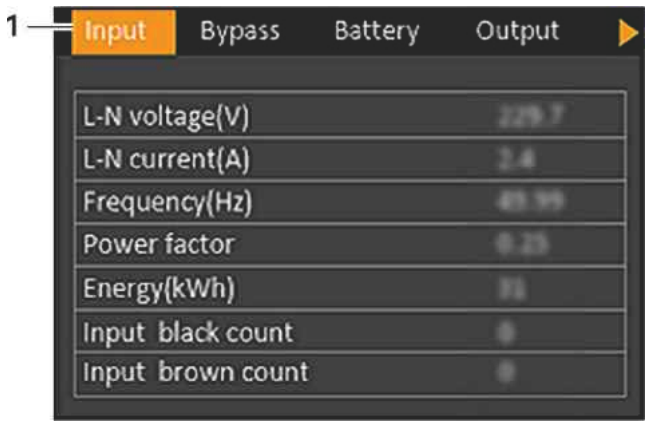
4.2.3. Status Screen

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 4-5 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.

4.2.4. 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% (default)
- -15%
- -20%

Run mode

Selects Normal or ECO operation for the UPS.

- Normal = Connected load is always powered through the UPS inverter. ECO mode is disabled (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

External battery AH

Sets the amp-hour rating of the external battery. This should only be adjusted when using third-party external batteries with “External battery cabinet group No.” set to 0. It is calculated automatically when using Vertiv EBCs using the setting of “External battery cabinet group No.”.

- 0 - 300 Ah (default of 0)

External battery cabinet group No.

Sets the number of attached external battery cabinets or allows the number of EBCs to be detected automatically with Autodetect. Autodetect is used only for Vertiv EBCs. If more than 6 Vertiv EBCs are connected, autodetect does not function and this must be set manually. For third-party external batteries, set this option to 0 and use “External battery AH” setting above.

- 0 - 10
- Autotest (default)

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 of 2)

Battery periodic test enable

The UPS can periodically self-test the battery.

- Enable
- Disable (default)

Battery periodic test interval

Sets the length of time between periodic test.

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

Battery periodic test weekday

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

- Sunday - Saturday (Wednesday is default)

Battery periodic test time

Sets the time that the battery periodic test is performed.

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

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)

Equal charge enable

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

- Enable = Equal charge mode
- Disable = Float charge mode (default)

Max chg curr

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

- 0.9 - 13 A (default of 2.2)

NOTE The maximum setting of this value always shows as 13A on the display however it varies based on internal battery size and the number of EBCs connected. If the value does not save after it is selected, it is too high for the model.

Temp compensation

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

- Enable
- Disable (default)

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 59.

- 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 60.

Time

Select the current time for the UPS display, HH:MM:SS. See Setting the Date and Time on page 60.

Display orientation

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

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

Audible alarm

If enabled, the UPS will beep when an alarm is generated. If disabled, it will be silent. See Audible Alarm (Buzzer). on page 69.

- 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 59.

System Parameter Options

Auto restart

Allows the automatic restart of the UPS when input power is restored after a complete shutdown of the UPS system.

- Enable = The UPS will restart automatically when the input power is restored after a complete shut down. (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 (default)
- Disable

Start with no battery

Allows the UPS to start when the battery has reached the end of discharge (EOD). This can be used to turn on the UPS and power the attached load without battery protection when utility power has been restored after the battery was fully depleted. It works in conjunction with the Auto restart setting above.

- Enable (with Auto restart enable) = The UPS will power the load with no user intervention when mains power returns after the battery has been fully depleted
- Enable (with Auto restart disabled) = The UPS will start up and allow the user to turn on the output when power returns after the battery has been fully depleted
- Disable = The UPS cannot start with a fully depleted battery (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)

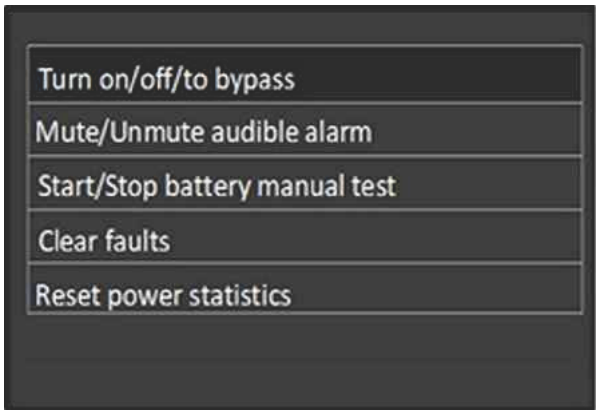
4.2.5. Control Screen

The Control screen offers UPS-control options.

To adjust the UPS controls:

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

Figure 4-6 Control Screen



Control Options

Turn on/off/to bypass
Opens the dialog to change operating modes, see Operating the UPS on page 25.

Mute/Unmute audible alarm
Silences or un-silences the audible alarm, see Silencing the Audible Alarm on page 25.

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 6-2 on page 55, for a description of the faults.

Reset power statistics
Resets the values tracked to calculate the Efficiency graph, see About Screen on page 55.

4.2.6. Log Screen

The Log Screen offers tabs that list the current alarms and the alarm/event history. Table 4-4 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 4-7 Current and History Log Tabs



Table 4-4 Alarm Messages

MESSAGE	DESCRIPTION
Aux. power fault	UPS internal auxiliary power voltage fault. Contact Vertiv Technical Support.
Battery cabinet connect abnormal	More than 10 external battery cabinets are connected to the UPS. Disconnect excess battery cabinets.
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.
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 “Batt. note duration” 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 voltage of the battery was low when the periodic or manual self-test was run. Battery replacement is Recommended.
Battery test started	The battery periodic self-test or manual self-test was started. This will display in the log whenever the event occurs.
Battery test stopped	The battery periodic self-test or manual self-test has finished. This will display in the log whenever the event occurs.
Battery to utility transition	The UPS has transferred the load to the mains power from the battery. This will display in the log whenever the event occurs.
Battery voltage abnormal	The battery voltage exceeds the normal range. Check if the battery terminal voltage exceeds the normal range.

Table 4-4 Alarm Message (continued)

MESSAGE	DESCRIPTION
Bypass abnormal	May be caused by bypass voltage and frequency outside of range, bypass power-off and incorrect bypass cables connection. Check that the bypass voltage and frequency are within the setting range. Check the bypass cables connection
Bypass abnormal in ECO mode	May be caused by ECO bypass voltage and frequency outside of range, ECO bypass power-off, and incorrect ECO bypass cables connection. Check that the ECO bypass voltage and frequency are within the setting range. Check the bypass cable connection
Bypass mode	The UPS is on bypass. This will clear when the UPS returns to Normal mode.
Bypass over-current	The load is drawing more current than the UPS is rated to supply in bypass mode. Reduce the load.
Charger fault	The charger output voltage is abnormal, and the charger is off. Contact Vertiv Technical Support.
Communication fail	Internal communication is abnormal. Check that the communication cables are connected correctly.
DC bus abnormal	The inverter is off due to DC bus voltage out of acceptable range. The load will transfer to bypass if the bypass is available because the bus voltage is outside of the acceptable range.
DC/DC fault	The discharger is faulty, because the bus voltage exceeds the range when the discharger starts. Contact Vertiv Technical Support.
EOD turn off	The inverter is off due to EOD. Check the mains power-off state and recover the mains in time
Fan fault	At least one fan is faulty. Check if the fan is blocked 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 37). This alarm will clear when the UPS is turned on again.
Input abnormal	The rectifier and charger are off due to the mains voltage and frequency exceeding normal range. Check that the rectifier input phase voltage and frequency exceed the normal range or that the mains has power-off
Input ground lost	Check that the PE line is well connected and that the alarm can be cleared at the display.
Input neutral lost	The mains input neutral is not detected. The alarm will clear when the neutral connection has been restored.
Input phase reversed	The mains input line and neutral are reversed. Shut off external input breaker and connect the lines correctly.
Insufficient capacity to start	The UPS is on bypass and is started with a load greater than 105% of the rated capacity. Reduce the load to the rated capacity or below to start the unit.
Inverter fault	The inverter is turned off when the inverter output voltage or current exceed the ranges set. If bypass is available, the UPS will transfer to bypass mode, otherwise the system will power off. Contact Vertiv Technical Support.
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 connection(s).
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 & 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.

Table 4-4 Alarm Message (continued)

MESSAGE	DESCRIPTION
Output off, voltage is not zero	This occurs when the output is off and the system detects that there is still voltage on the output. Check output equipment for backfeeds or contact Vertiv Technical Support.
Output pending	Remote shutdown has been initiated, and the system will turn off shortly.
Output short	A short has occurred on the output. Check the output cables and for any equipment that may have shorted.
Rectifier fault	The rectifier is off because the bus voltage is out of the acceptable range when the rectifier starts. Contact Vertiv Technical Support.
Rectifier overload	The output power is larger than the rectifier overload point. Check that the input voltage meets the output load, mains input 176 V ~ 100 V, the load 100% ~ 50% linear derating.
Remote power- on	The UPS was powered on remotely. This will display in the log whenever the event occurs
Remote shut- off	The UPS was powered off remotely. This will display in the log whenever the event occurs.
Remote shutdown	Any mode shutdown was initiated by the dry contact input. This will display in the log whenever the event occurs.
REPO	Shutdown caused by the REPO terminal Normally-Closed contact input opening. This will display in the log whenever the event occurs.
Restore factory defaults	On the Maintenance page, "Restore Factory Defaults" 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: • Ambient temperature too high or not • Dust is blocked or not • Fan fault or not
System over temp	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: • 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.

4.2.7. About Screen

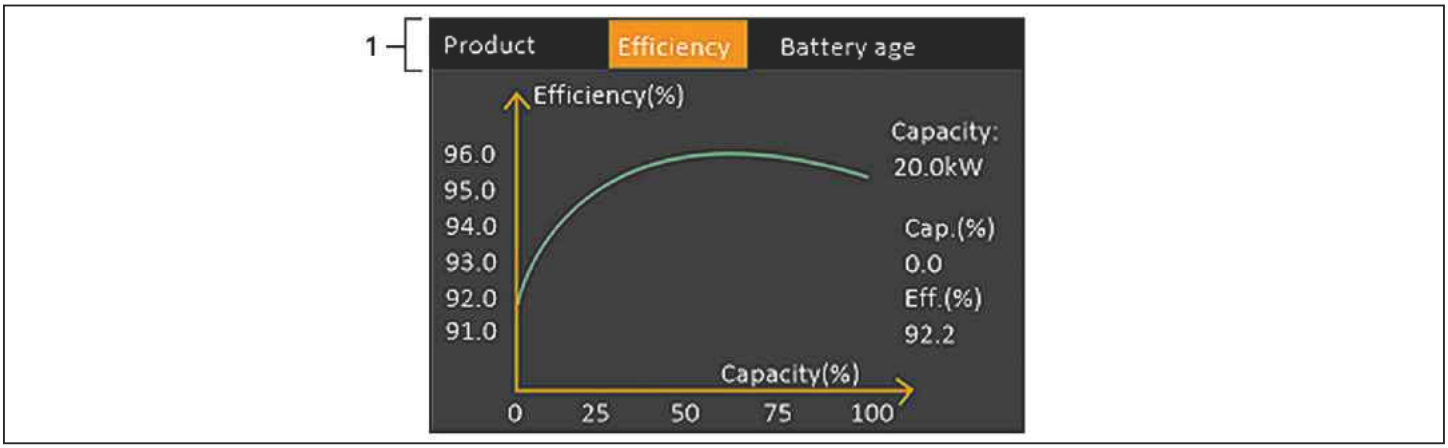
The About screen offers tabs that list information about the product.

- 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:

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

Figure 4-8 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.

4.3. 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 next 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 4-9 Password Prompt



4.3.1. 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 4-5 lists the prompts and their meaning.

Table 4-5 Display Prompts and Meanings

PROMPT	MEANING
Cannot set this online, please shut down output	Appears when changing important output settings (output voltage, output frequency, output phase No.).
Incorrect password, please input again	Appears when the Settings password is input incorrectly.
Operation failed, condition is not met	Appears when attempting to execute a operation for which the required conditions are not met.
Password changed OK	Appears upon successful change of the Settings password.
Fail to change password, please try again	Appears when attempting to change the Settings password but the new and confirmation passwords do not match.
The time cannot be earlier than system time	Appears when attempting to set the time of '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.

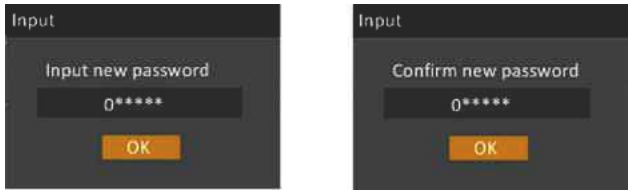
4.3.2. Changing the Password

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 4-10 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 4-10 New and Confirm Password dialogs



4.3.3. 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.

4.3.4. 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.

Chapter 5: 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.

5.1. 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 pack(s), refer to Table 5-1 below, and contact your local dealer or Vertiv representative.

Table 5-1 Replacement Battery-pack Model Numbers

UPS MODEL NUMBER	BATTERY PACK MODEL NUMBER	QUANTITY REQUIRED
GXT5-3KL620RT2UXL	GXT5-72VBATKIT	1
GXT5-3KL630RT2UXL		
GXT5-6KL630RT5UXLN	GXT5-192VBATKIT	
GXT5-5000HVRT5UXLN		
GXT5-8000HVRT5UXLN		
GXT5-10KHVRT5UXLN		

To replace a battery pack:

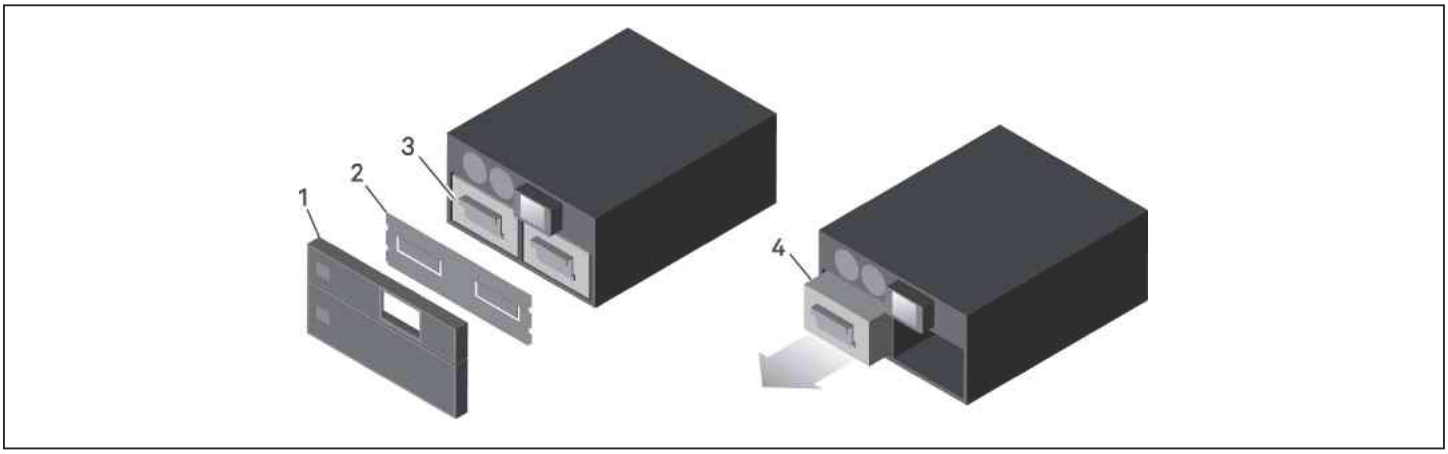
NOTE: The internal battery pack is hot-swappable. However, you must exercise caution because; during this procedure, the load is unprotected from disturbances and power outages. Do not replace the battery while the UPS is operating in Battery Mode. This will result in a loss of output power and will 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 5-1 on the next page.
2. Lay the battery door and screw aside for reassembly.
3. Grasp the battery handle, and pull out the battery pack, see Figure 5-1 on the next 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 pack(s) using the operating/display panel:

NOTE: The display menus and functions are described in Operation and Display Panel on page 37.

- 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 48.
- Select the *Battery* tab, use the arrows to select Replace Battery, and press Enter. The replaced battery packs are activated.
- Use **ESC** to return to the main display.

Figure 5-1 Replacing the Battery Pack



ITEM	DESCRIPTION
1	Front cover
2	Battery door
3	Battery handle
4	Grasp handle and pull battery out.

5.2. 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.

5.3. 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 **Power** button to check the indicators and display function, see **Operation and Display Panel on page 37**.
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 53.
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.

5.4. 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.

5.5. Replacing a Power-distribution Box

Use the following procedures to remove/install a power-output distribution box on 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.

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 5.2 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. From the main menu select CONTROL, then press **Enter**.

b. Select *Turn on/off/to bypass* and press **Enter**.

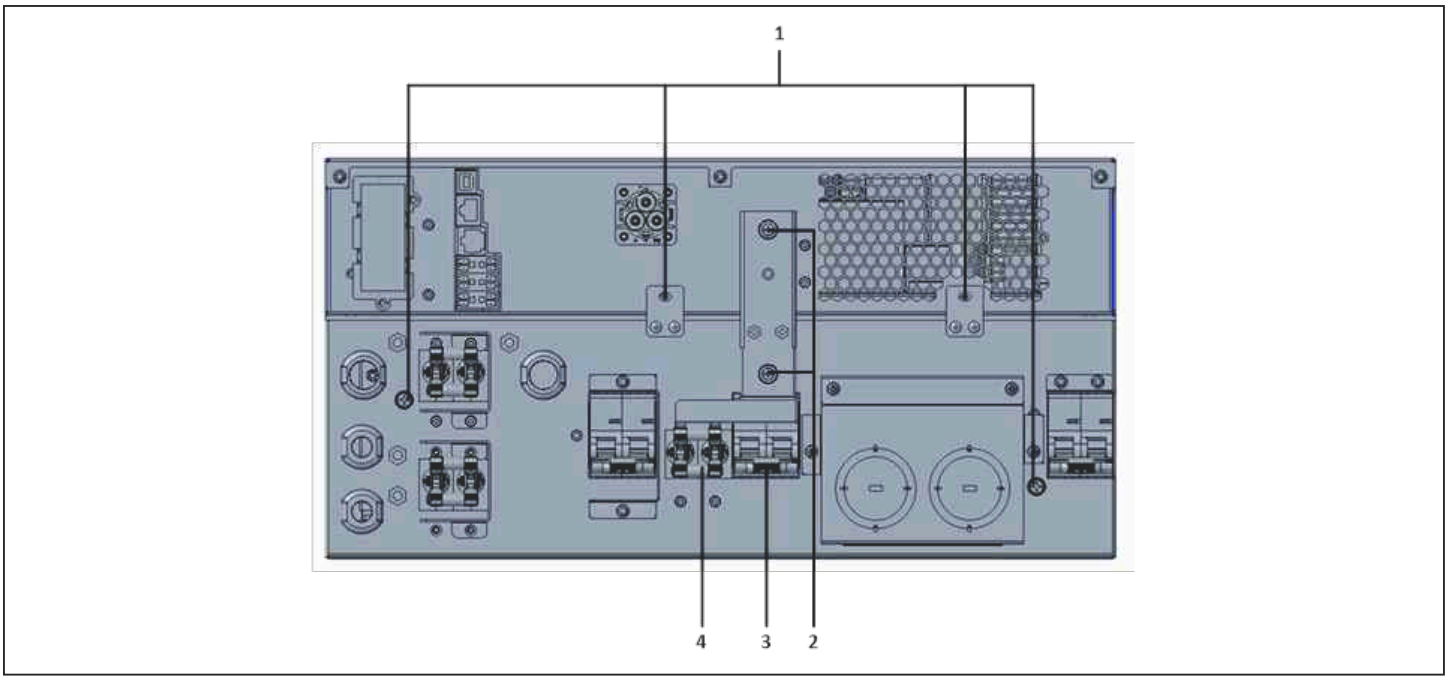
c. Select *Turn to bypass* and press **Enter**.

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

3. Turn the maintenance-bypass breaker On.
4. Wait 1 minute if the UPS is working on battery mode, then confirm that the UPS is turned-off.
5. Turn the output and input breakers Off. On 8-kVA and 10-kVA models, also turn off the bypass breaker.
6. Loosen the remaining captive screws until the power-distribution boxes releases.
7. Remove the power-distribution boxes and set it aside.
8. On the rear of the panel, loosen the screws of the protective cover for the connectors, slide it over the connectors, and tighten the screws.

NOTE: The captive screws and maintenance-bypass breaker cover is similar for all models. Figure 5-2 below, shows an example on the 5-kVA model.

Figure 5-2 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

5.6. Firmware Updates

The UPS has two firmware components:

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

Both may be updated through a connection the UPS, using CLI and the R232 port or, if the UPS includes the IntelliSlot RDU101 card, using the RJ-45 port on the card.

The latest firmware is available for download from the GXT5 product page at www.Vertiv.com. Refer to Table 5-2 below, and make sure you have the correct files for the update.

Table 5-2 Upgrade File Names by UPS Model

UPS MODEL NUMBER	DSP FIRMWARE FILENAME	MCU FIRMWARE FILENAME
GXT5-3KL620RT2UXL	GXT5_Micro_0.5k-3k_P***.bin	GXT5_M***.bin
GXT5-3KL630RT2UXL		
GXT5-6KL630RT2UXL	GXT5_Small_5k-10k_208_P***.bin	
GXT5-5000HVRT5UXLN	GXT5_Small_5k-10k_230_P***.bin	
GXT5-8000HVRT5UXLN		
GXT5-10KHVRT5UXLN		
For DSP update files: • "P"" represents the power module. The number following "P" is the version of the power module. • "D" represents the rectifier and inverter module. The number following "D" is the version of the rectifier and inverter module. • "K" is included after the version for the DSP kernel upgrade file, for example: GXT5_Micro_0.5k-3k_P***K.bin) For MCU update files: "M" represents the MCU module. The number following "M" represents the MCU software version.		

5.6.1. Updating Firmware with RDU101 Card Connection

If your UPS has an IntelliSlot RDU101 communication card installed (optional on some models), you can update firmware with a computer and network cable connected to the card.

NOTE: The RDU101 card is password protected. Be sure to obtain the user name and password from an administrator. The name and password may have been changed from the default.

NOTE: For detailed operating instructions for the card, refer to the Liebert® IntelliSlot™ RDU101 Communications Card Installer/User Guide, available at www.Vertiv.com.

Updating MCU Firmware via RDU101

NOTE: Do not update firmware while the UPS is on Battery mode.

1. Connect a network cable to the RJ-45 Ethernet port of the RDU101 card. For the card/connection location, refer to the appropriate rear-panel description for your UPS model in Rear Panels on page 5.

2. On a computer connected to the same network as the UPS, open a browser window and enter the IP address of the RDU101 card in the address bar.

You can get the card's IP address from the display panel. Select the About menu then the Product tab,and locate IPv4 address.

NOTE: We recommend using the Google Chrome browser.

3. Upload the update file using the card's user interface, see Figure 5-3 on the next page.

a. Select the "GXT5" tab, then the File Transfer folder in the tab-menu pane on the left-hand side of the page.

b. On the file-transfer page, click Choose File, and select the MCU upgrade file, then click Transfer file.

c. Enter the Username and Password, then click Login.

The factory-defaults:
Username : Liebert (case-sensitive)
Password: Liebert (case-sensitive)

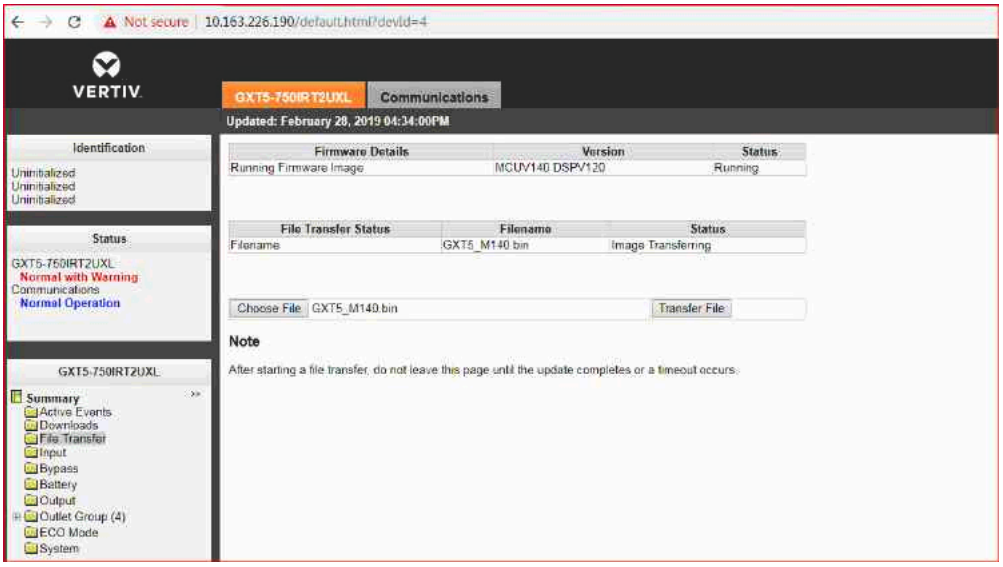
NOTE: The name and password may have been changed from the default. Be sure to obtain the username and password from an administrator.

The status of the transfer displays in the File Transfer Status section. After about 2 minutes, the UPS restarts and the web page refreshes.

NOTE: The transfer process takes about 2 minutes. Do not leave or close the page until the status is "Update Complete."

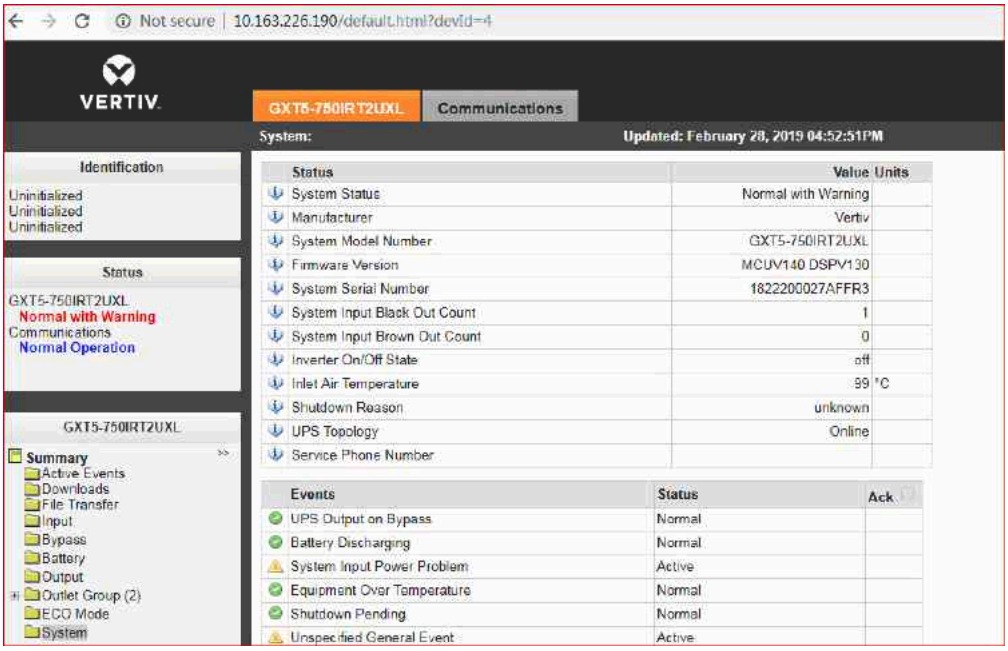
d. You can check the firmware version, select the System folder in the tab-menu pane on the left-hand side of the page, and check the Firmware Version field, see Figure 5-4 on the next page.

Figure 5-3 File Transfer on the RDU101 User Interface



ITEM	DESCRIPTION
1	"UPS" tab, typically the UPS model number
2	File Transfer folder
3	Choose File button
4	Transfer File button
5	Status of file transfer

Figure 5-4 Firmware Version on the RDU101 User Interface

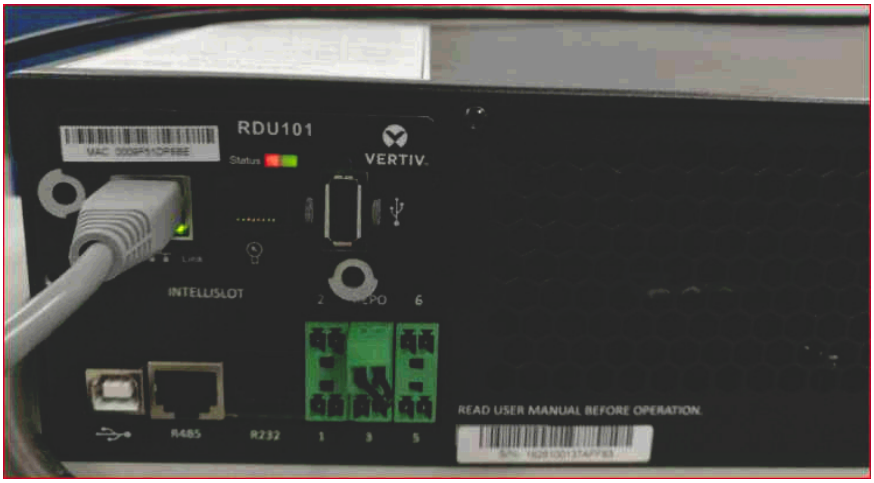


5.7. Updating DSP Firmware via RDU101

NOTE: Only update the DSP firmware while the UPS is in Stand-by mode. The REPO terminal of the UPS must be un-plugged. When the REPO terminal is unplugged the load will lose power. Do not update firmware while the UPS is on Battery mode.

1. Disconnect the REPO terminal from the rear panel of the UPS, see Figure 5-5 below.

Figure 5-5 REPO Terminal



2. Connect a network cable to the RJ-45 Ethernet port of the RDU101 card. For the card/connection location, refer to the appropriate rear-panel description for your UPS model in Rear Panels on page 5.
3. On a computer connected to the same network as the RDU101 open a browser window and enter the IP address of the RDU101 card in the address bar.

You can get the card's IP address from the display panel. Select the About menu then the Product tab,and locate IPv4 address.

NOTE: We recommend using the Google Chrome browser.

4. Upload the update file using the card's user interface, see Figure 5-6 on the next page.

a. Select the "GXT5" tab, then the File Transfer folder in the tab-menu pane on the left-hand side of the page.

b. On the file-transfer page, click Choose File, and select the DSP upgrade file, then click Transfer file.

c. Enter the Username and Password, then click Login.
The factory-defaults:
Username : Liebert (case-sensitive)
Password: Liebert (case-sensitive)

NOTE: The name and password may have been changed from the default. Be sure to obtain the user name and password from an administrator.

The status of the transfer displays in the File Transfer Status section. After about 2 minutes, the UPS restarts and the web page refreshes.

NOTE: The transfer process takes about 2 minutes. Do not leave or close the page until the status is "Update Complete."

d. You can check the firmware version, select the System folder in the tab-menu pane on the left-hand side of the page, and check the Firmware Version field, see Figure 5-7.

Figure 5-6 File Transfer on the RDU101 User Interface

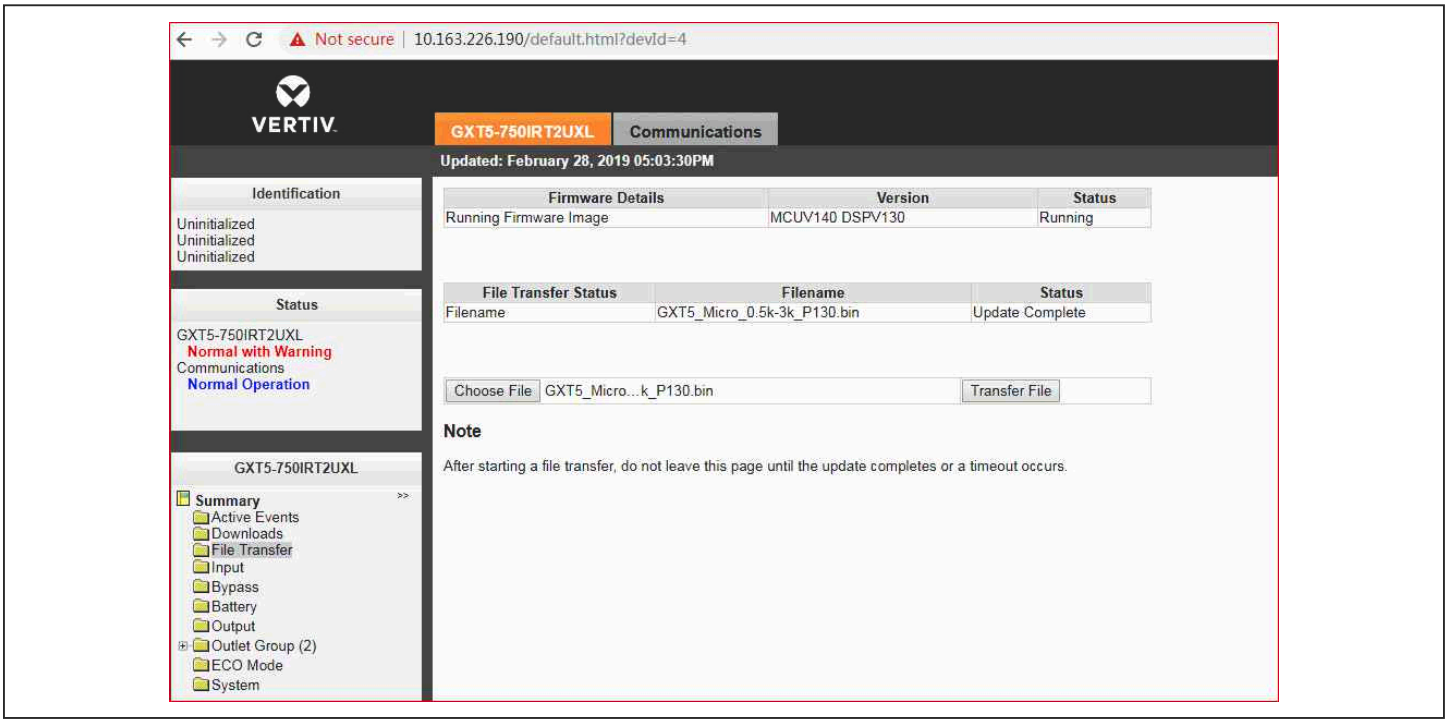
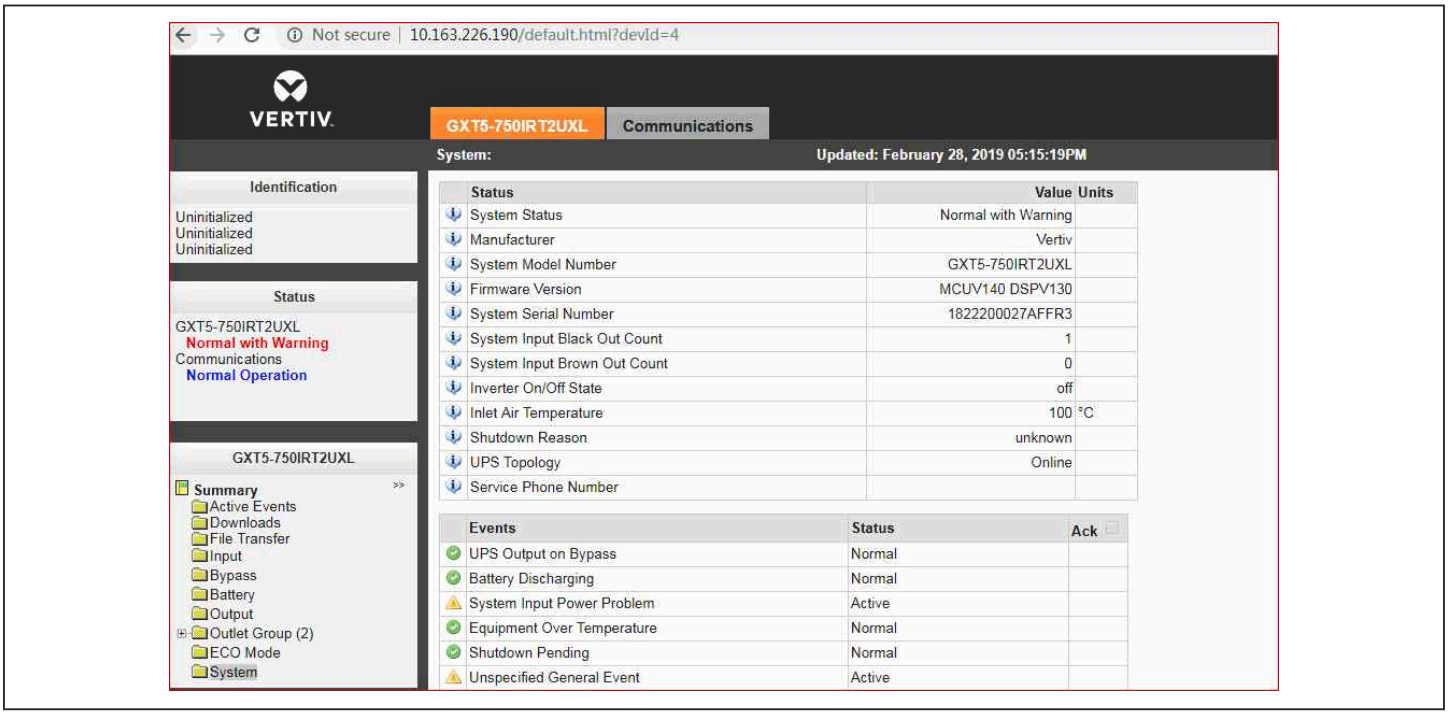


Figure 5-7 Firmware Version on the RDU101 User Interface



5.8. Updating Firmware with a CLI Connection

You can use the Vertiv command-line interface to update firmware with a computer connected to the R232 (RJ-45) port on the rear of the UPS.

To perform the update via CLI, you need the following:

- Serial-terminal emulator with Ymodem transfer ability (for example: ExtraPuTTY)
- Cable with RJ-45 connector on one end and DB9 connector on the other or an RJ45/FTDI USB serial-port adapter

Updating MCU Firmware via CLI

NOTE: Do not update firmware while the UPS is on Battery mode.

1. Connect the RJ-45 connector to the R232 port on UPS. For the connection location, refer tothe appropriate rear-panel description for your UPS model in Rear Panels on page 5.
2. Connect the DB9/USB connector to the computer with the serial-terminal emulator installed.
3. Open the serial-terminal emulator, and adjust the settings to communicate with the UPS:
   - Select “Serial” connection for the session.
   - Check the computer “device management” settings for the communication port (for example COM6),and select it in the emulator.

- Select 115200 for the connection speed.
- Open the emulator session.

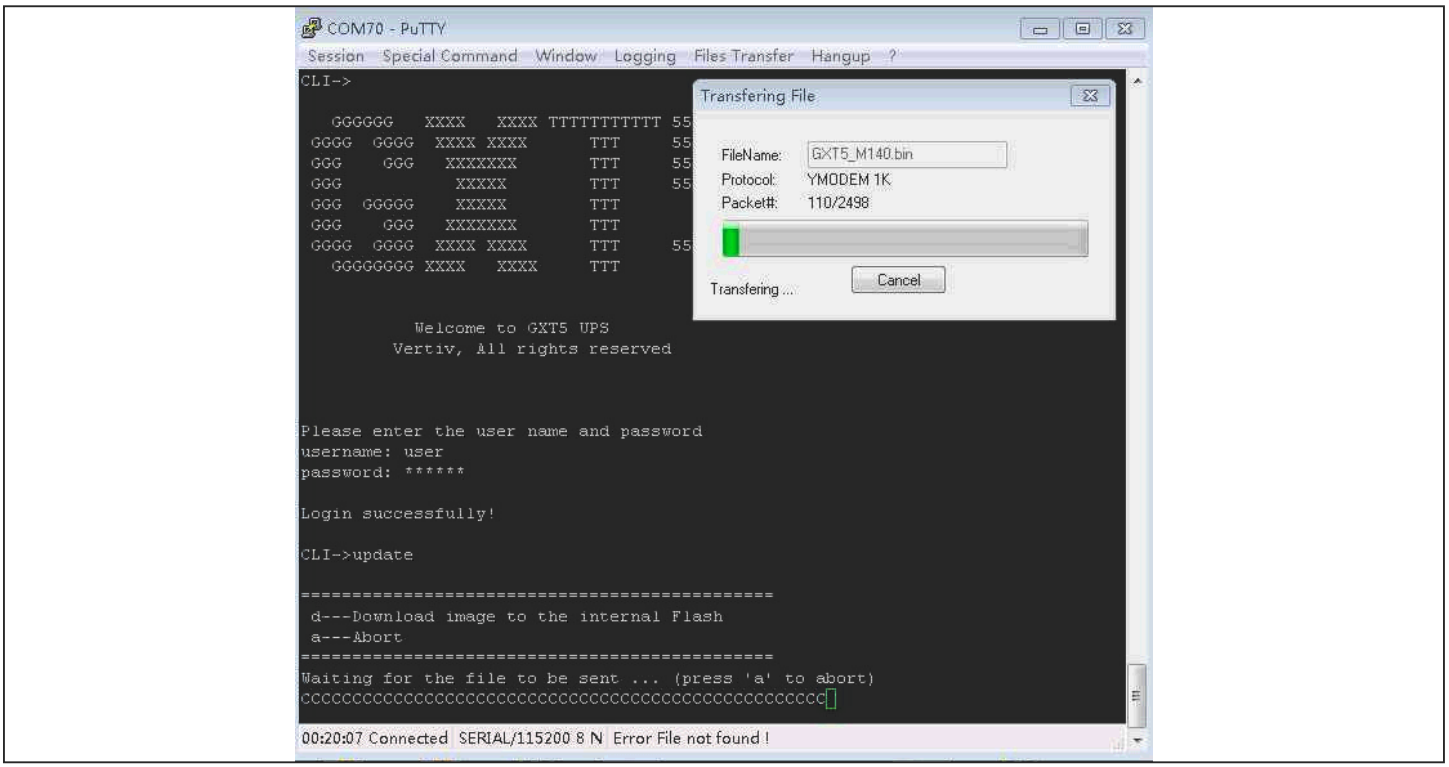
4. On the CLI, enter the username and password:
   - Default username = user
   - Default password = 123456
5. On the command line, enter update, then press d on the keyboard, see Figure 5-8 on the next page
6. In the menu bar, select Files Transfer > Ymodem, select the MCU upgrade file, then click Send.

The status of the transfer displays in a status dialog. After about 3 minutes, the UPS restarts and the CLI exits update mode.

NOTE: The transfer process takes about 3 minutes. Do not close the status dialog.

a. You can check the firmware version by entering status system in the command line.

Figure 5-8 File Transfer with the CLI

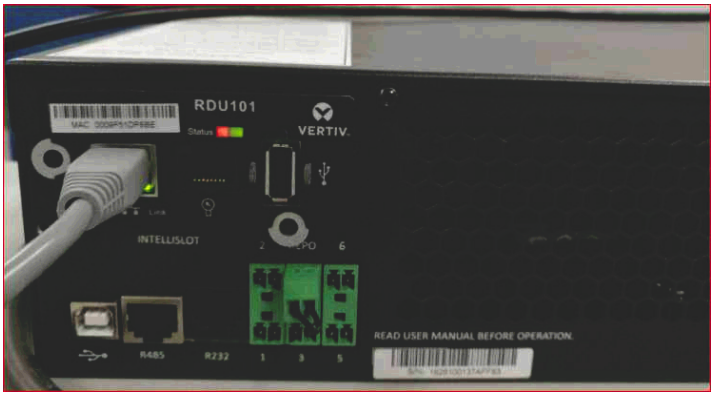


Updating DSP Firmware via CLI

NOTE: Only update the DSP firmware while the UPS is in Stand-by mode. The REPO terminal of the UPS must be un-plugged. Do not update firmware while the UPS is on Battery mode.

1. Disconnect the REPO terminal from the rear panel of the UPS, see Figure 5-9 below.

Figure 5-9 REPO Terminal



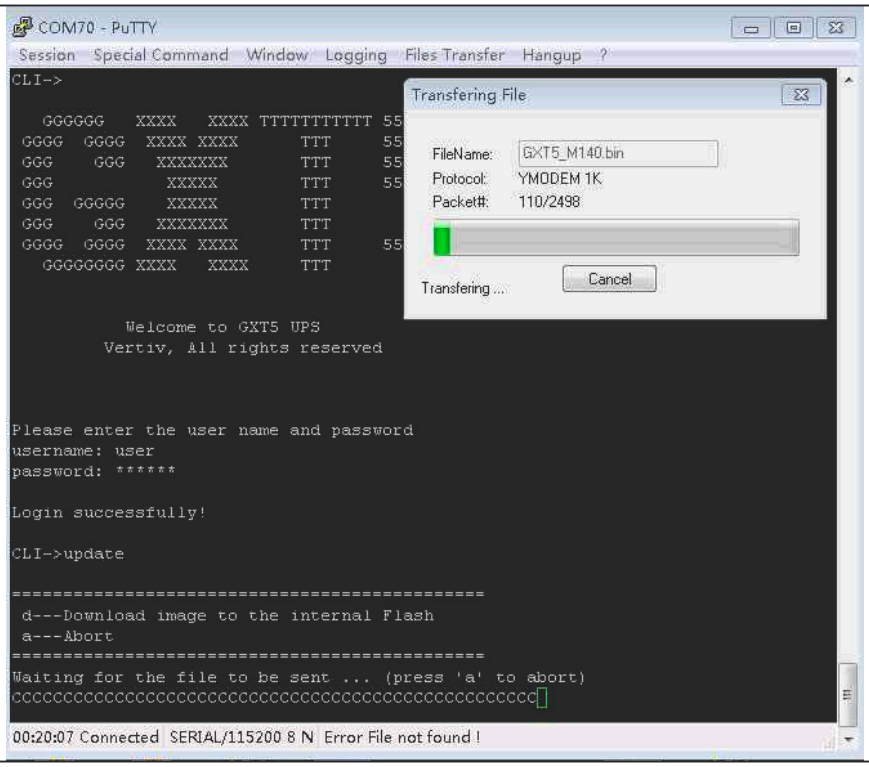
2. Connect the RJ-45 connector to the R232 port on UPS. For the connection location, refer to the appropriate rear-panel description for your UPS model in Rear Panels on page 5.
3. Connect the DB9 connector the a computer with the serial-terminal emulator installed.
4. Open the serial-terminal emulator, and adjust the settings to communicate with the UPS:
   - Select “Serial” connection for the session.
   - Check the computer “device management” settings for the communication port (for example COM6),and select the same port in the emulator.
   - Select 115200 for the connection speed.
   - Open the emulator session.
5. On the CLI, enter the username and password:
   - Default username = user
   - Default password = 123456
6. On the command line, enter update, then press d on the keyboard, see Figure 5-10 on the next page
7. In the menu bar, select Files Transfer > Ymodem, select the MCU upgrade file, then click **Send**.

The status of the transfer displays in a status dialog. After about 2 minutes, the UPS restarts and the CLI exits update mode.

NOTE: The transfer process takes about 2 minutes. Do not close the status dialog.

a. You can check the firmware version by entering status system in the command line.

Figure 5-10 File Transfer with the CLI



Chapter 6: 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.

6.1. 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.

6.2. Audible Alarm (Buzzer)

An audible alarm accompanies various events during UPS operations. Table 6-1 below, describes the sounds and their meaning. To silence an alarm, see Silencing the Audible Alarm on page 25.

Table 6-1 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 4-4 on page 42, describes the alarm messages you may see. When a fault is indicated, front-panel display list the fault, which are described in Table 6-2 below.

6.2.1. Faults

When the fault indicator is illuminated, the LCD displays the fault. The faults are described in Table 6-2 below.

Table 6-2 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.
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.

6.3. Troubleshooting UPS Issues

In the event of an issue with the UPS, refer to Table 6.3 below, to determine the cause and solution. If the fault persists, contact Vertiv Technical Support. Visit the 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 6-3 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.

Chapter 7: Specifications

Table 7-1 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	430×630×217 (16.9×24.8×8.5)		
Shipping	646×816×520 (25.4×32.1×20.5)		
Weight, lb.(kg)			
Unit	71.1 (156.7)	75.5 (166.4)	
Shipping	92(202.8)	94 (207.2)	
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	Sinewave		
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	2.25 A default, maximum 5 A	2.25 A default, maximum 8 A	
Battery Parameters			
Type	Valve-regulated, non-spillable, flame-retardant, lead acid		
Quantity x Voltage x Rating	16 x 12V x 9.0AH		
Battery Mfr./Part #	LEOCH DJW12-9.0		
Back-up time	See Battery Run Times on page 81.		
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		

Table 7-1 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
Environmental			
Operating Temperature, °F (°C)	32 to 104 (0 to 40) (no derating)		
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	IEC62040-1:2008 version, 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		
Surge Immunity	IEC/EN EN61000-4-5, Level 4, Criteria A; ANSI C62.41 Category B		
Transportation	ISTA Procedure 1E		

Table 7-2 UPS Specifications, 3KL620, 3KL630, and 6KL630 models

MODEL GXT5-	3KL620RT2UXL	3KL630RT2UXL	6KL630RT2UXL
RATING	3000 VA/2700 W	3000 VA/3000 W	4900 VA/4900 W
Dimensions, D×W×H, in. (mm)			
Unit	21.3 x 16.9 x 3.4(540 × 430 × 85)		16.9 x 23.6 x 8.5 (430 x 600 x 217)
Shipping	28.2 x 22.4 x 10.3(717 x 570 x 262)		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)	149.1 (68)
Shipping	79.2 (36)	80.5 (36.6)	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	208 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		

Table 7-2 UPS Specifications, 3KL620, 3KL630, and 6KL630 models

MODEL GXT5-	3KL620RT2UXL	3KL630RT2UXL	6KL630RT2UXL
RATING	3000 VA/2700 W	3000 VA/3000 W	4900 VA/4900 W
28% ~ 70% loading	129~ 164VAC/288VAC		175 – 280 VAC
0% ~ 28% loading	129VAC/288VAC		
Frequency	40 Hz ~ 70 Hz; auto-sensing		
Input Power Cord	L6-20P	L6-30P	L6-30P Plug (on PD5-L630 POD)
Output AC			
Output Receptacles	2x L6-20R & 2x L6-15R	2x L6-30R & 2x L6-15R	(2) L6-20R and (2) L6-30R on 12-in. (300-mm) cords (on PD5-L630POD)
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% to 125% for 5 minutes 125% to 150% for 60 seconds >150% (impact load) minimum 200 ms
Internal Charger			
Charging Current	2.25 A (default), maximum 8 A		2.25 A (default), maximum 5 A
Battery Parameters			
Type	Valve-regulated, non-spillable, lead acid		
Quantity x Voltage x Rating	6 × 12V × 9.0Ah		16 x 12V x 9.0AH
Battery Mfr./Part #	LEOCH DJW12-9.0		
Back-up time	See Battery Run Times on page 81.		
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 122 (0 to 50); Operating temperature may be increased to 122°F (50°C) with a 10% de-rating of the output power		32 to 104 (0 to 40) (no derating)
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 3.2 ft (1 m) from the front and sides, <55 dBA, at 3.2 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
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 7-3 Power-distribution Specifications

MODEL NUMBER	PD5-CE6HDWRMBS PD5-CE6HDWRMBSU	PD5-CE10HDWRMBS PD5-CE10HDWRMBSU
Amp Rating	50 A	63 A
Input Power Connection	Single-phase (L1-L2-G) hard-wired	
Output Power Connection	Single-phase (L1-L2-G) hard-wired	
Includes	Two IEC320 C19 16A/250V Sockets Six C13 10A/250V Sockets	Four IEC320 C19 16A/250V Sockets, Four C13 10A/250V Sockets
Input Branch Circuit Breaker, Supplied by User	50 A	70 A

Table 7-4 External Battery Specifications

MODEL NUMBER	GXT5-EBC72VRT2U	GXT5-EBC192VRT3U
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 × 430 × 85)	430 x 630 x 130 (16.9 x 24.8 x 5.1)
Shipping	24.3 x 22.4 x 10.3 (617 x 570 x 262)	840 x 670 x 465 (33 x 26.4 x 18.3)
Weight, lb.(Kg)		
Unit	85.8 (39)	57.6 (127)
Shipping	110 (50)	80 (176.4)
Battery		
Type	Valve-regulated, non-spillable, lead acid	
Qty × Voltage	6 × 12 V	16 x 12 V
Battery Mfr./Part#	LEOCH DJW12-9.0	
Backup time	See Battery Run Times on page 81	
Environmental Requirements		
Operating Temperature, °F (°C)	32 to 104 (0 to 40)	
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

7.1. 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 7-5 Battery Run Time in Minutes Model: GXT5-3KL620RT2UXLN

LOAD			INTERNAL BATTERY ONLY	NUMBER OF EXTERNAL BATTERY CABINETS									
				1	2	3	4	5	6	7	8	9	10
%	VA	W	Minutes										
10	300	270	85.5	283.4	497.2	713.4	945.3	1183.4	1400.6	1585.8	1727.5	1839.3	1929.9
20	600	540	41.1	150.1	260.2	376.8	497.0	616.3	738.6	866.7	997.2	1129.4	1256.4
30	900	810	24.6	99.3	173.6	247.2	325.8	406.7	488.8	572.1	649.8	735.9	823.1
40	1200	1080	16.8	72.0	128.2	183.8	238.9	298.1	358.4	419.7	481.9	545.0	607.1
50	1500	1350	12.4	53.9	101.3	145.9	191.3	235.6	283.4	331.2	380.7	430.9	480.1
60	1800	1620	9.6	43.1	83.0	119.9	159.0	196.5	233.9	273.4	314.3	355.0	396.4
70	2100	1890	7.6	36.4	69.3	102.7	135.5	168.1	199.7	232.1	266.0	300.3	335.7
80	2400	2160	6.0	29.7	57.3	87.2	116.3	145.0	173.9	201.4	229.9	259.7	289.9
90	2700	2430	4.9	25.5	49.4	77.2	102.6	127.7	152.4	178.2	202.7	228.3	254.7
100	3000	2700	4.0	22.2	43.2	67.1	89.4	113.7	136.9	159.4	181.7	203.7	226.8

Table 7-6 Battery Run Time in Minutes Model: GXT5-3KL630RT2UXLN

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	74.2	245.3	431.5	619.7	817.3	1023.1	1229.9	1478.7	1632.9	1754.7	1853.3
20	600	600	35.8	133.7	229.1	330.9	438.3	545.2	648.4	777.7	894.8	1013.4	1133.6
30	900	900	21.3	87.2	154.2	219.9	289.8	360.9	435.4	510.7	586.7	655.9	733.8
40	1200	1200	14.6	61.9	114.6	165.6	213.8	266.7	320.9	375.6	431.7	487.1	543.9
50	1500	1500	10.7	46.9	89.0	131.5	172.3	210.5	253.9	296.6	340.8	385.0	430.7
60	1800	1800	8.2	38.6	73.8	108.4	142.3	176.4	208.6	244.3	280.8	317.4	354.1
70	2100	2100	6.4	31.0	59.0	89.3	119.2	148.7	178.5	206.7	236.7	267.5	298.6
80	2400	2400	5.0	25.9	50.0	78.0	103.7	129.1	154.0	180.3	205.0	231.3	258.2
90	2700	2700	4.0	22.2	43.1	67.0	89.3	113.6	136.7	159.4	181.7	203.7	226.8
100	3000	3000	3.3	19.1	38.7	57.9	80.9	101.5	121.0	137.8	157.2	177.0	196.7

Table 7-7 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	120.0	272.5	427.5	582.5	737.5	892.5	1047.5	1202.5	1357.5	1512.5	1667.5
20	1000	1000	59.0	129.0	211.0	294.0	377.0	460.0	543.0	625.5	708.5	791.5	874.5
30	1500	1500	36.5	85.0	133.0	189.5	246.0	303.0	359.5	416.5	473.0	530.0	586.5
40	2000	2000	25.0	62.5	99.0	136.0	179.5	222.5	266.0	309.5	353.0	396.5	439.5
50	2500	2500	18.5	48.0	78.0	107.5	138.0	173.0	208.0	243.0	278.0	313.5	348.5
60	3000	3000	14.5	38.5	63.5	88.0	113.0	138.5	168.0	197.0	226.5	256.0	285.5
70	3500	3500	11.5	31.0	53.0	74.0	95.5	117.0	139.0	164.5	189.5	214.5	240.0
80	4000	4000	9.5	26.0	45.0	64.0	82.5	101.0	120.0	139.5	161.5	183.5	206.0
90	4500	4500	8.0	22.0	38.5	55.5	72.0	89.0	105.5	122.0	140.0	159.5	179.0
100	5000	5000	7.0	19.0	33.5	49.0	64.0	79.0	94.0	109.0	124.0	140.0	158.0

Table 7-8 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	130.0	296.0	463.0	630.0	797.0	964.0	1131.0	1298.0	1465.0	1632.0	1799.0
20	980	920	64.5	141.5	231.0	321.0	410.5	500.0	590.0	679.5	769.0	858.5	948.5
30	1470	1380	40.5	92.5	146.5	208.0	269.0	330.5	392.0	453.5	514.5	576.0	637.5
40	1960	1840	28.0	68.0	108.0	150.0	197.0	244.0	290.5	337.5	384.5	431.5	478.5
50	2450	2300	21.0	53.5	85.5	117.5	152.5	191.0	229.0	267.0	305.0	343.0	381.0
60	2940	2760	16.0	42.5	69.5	96.5	123.5	153.5	185.5	217.0	249.0	281.0	313.0
70	3430	3220	13.0	35.0	58.5	81.5	104.5	128.0	154.0	181.5	209.0	236.0	263.5
80	3920	3680	11.0	29.0	50.0	70.0	90.5	110.5	131.0	154.5	178.5	202.5	226.5
90	4410	4140	9.0	24.5	43.0	61.5	79.5	97.5	115.5	133.5	155.0	176.5	198.0
100	4900	4600	8.0	21.5	37.5	54.0	70.5	86.5	103.0	119.5	136.0	155.5	174.5

Table 7-9 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	75.0	166.0	267.5	369.0	471.0	572.5	674.5	776.0	878.0	979.5	1081.0
20	1600	1600	33.5	79.0	124.5	176.0	229.5	283.0	336.5	390.0	443.5	496.5	550.0
30	2400	2400	19.5	50.5	81.5	112.5	145.0	181.5	218.0	254.5	291.0	327.5	364.0
40	3200	3200	13.0	35.0	59.0	82.0	105.5	128.5	155.0	183.0	210.5	238.0	265.5
50	4000	4000	9.5	26.0	45.0	64.0	82.5	101.0	120.0	139.5	161.5	183.5	206.0
60	4800	4800	7.5	20.0	35.5	51.5	67.0	82.5	98.5	114.0	129.5	147.5	166.0
70	5600	5600	6.0	16.0	29.0	42.5	56.0	69.5	83.0	96.5	110.0	123.5	137.5
80	6400	6400	4.5	13.5	24.0	35.5	48.0	59.5	71.5	83.0	95.0	106.5	118.5
90	7200	7200	4.0	11.5	20.5	30.5	41.0	52.0	62.5	73.0	83.5	94.0	104.5
100	8000	8000	3.5	9.5	17.5	26.5	36.0	45.5	55.5	64.5	74.0	83.5	93.0

Table 7-10 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	59.0	129.0	211.0	294.0	377.0	460.0	543.0	625.5	708.5	791.5	874.5
20	2000	2000	25.0	62.5	99.0	136.0	179.5	222.5	266.0	309.5	353.0	396.5	439.5
30	3000	3000	14.5	38.5	63.5	88.0	113.0	138.5	168.0	197.0	226.5	256.0	285.5
40	4000	4000	9.5	26.0	45.0	64.0	82.5	101.0	120.0	139.5	161.5	183.5	206.0
50	5000	5000	7.0	19.0	33.5	49.0	64.0	79.0	94.0	109.0	124.0	140.0	158.0
60	6000	6000	5.5	14.5	26.0	39.0	51.5	64.5	77.0	89.5	102.0	114.5	127.0
70	7000	7000	4.0	12.0	21.0	31.5	42.5	54.0	64.5	75.0	86.0	97.0	107.5
80	8000	8000	3.5	9.5	17.5	26.5	36.0	45.5	55.5	64.5	74.0	83.5	93.0
90	9000	9000	2.5	8.0	15.0	22.5	30.5	39.5	48.0	56.5	65.0	73.0	81.5
100	10000	10000	2.0	7.0	13.0	19.5	26.5	34.5	42.0	50.0	57.5	65.0	72.5

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Appendix I: Open Source Software Legal Notices

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Appendix I:Technical Support

Our Technical Support staff is ready to assist you with any installation or operating issues you may encounter with your Liebert® product. Please call or e-mail us:

In Europe, Middle East, and Asia

EMEA Multi-Language Technical support

e: eoc@vertiv.com
p: Toll free 00800115544 99
p: Toll +39 02 98250222

In the United States

Technical support

e: liebert.upstech@vertiv.com
p: 1-800-222-5877 menu option 1

Monitoring support

e: liebert.monitoring@vertiv.com
p: 1-800-222-5877 menu option 2

Warranty support

e: microups.warranty@vertiv.com
p: 1-800-222-5877 menu option 3



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