



Liebert®

GXT4™ UPS

Installer/User Guide

120 V/208 V, 500 VA – 3000 VA

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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.VertivCo.com/en-us/support/> for additional assistance.

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1 IMPORTANT SAFETY PRECAUTIONS

SAVE THESE INSTRUCTIONS

This manual contains important safety instructions that must be followed during the installation and maintenance of the UPS and batteries. Read this manual thoroughly before attempting to install or operate this UPS.

UPS Safety Notes

This UPS contains no user-serviceable parts except the internal battery pack. The Off/Bypass push button does not electrically isolate internal parts. Under no circumstances attempt to gain internal access other than to replace the batteries due to risk of electric shock or burn. Do not continue to use the UPS if the front panel indications are not in accordance with these operating instructions or if the UPS performance alters in use. Refer all faults to your local dealer, Vertiv representative or Vertiv Channel Support.

This UPS has an internal battery, and the output receptacles of the UPS may carry live voltage even if the UPS is not connected to utility input power.

Before moving or rewiring this UPS, disconnect utility input power and the battery and make sure that the UPS is completely shut down. Otherwise, the output terminal may carry live voltage, presenting an electric shock hazard.

To ensure human safety and normal UPS operation, the UPS must be properly grounded before use.

When the UPS is connected to an IT power distribution system, a short-circuit protection device must be installed on the neutral line.

Install and use the Liebert® GXT4 in the following environments:

- Temperature: 32°F - 104°F (0°C - 40°C), relative humidity: 0% to 95% non-condensing
- Out of direct sunlight
- Away from heat sources
- Stable surface, not subject to vibrations or shocks
- Away from dust and other particulates
- Away from corrosive substances, salts and flammable gases

Keep the air inlet and outlet of this UPS unobstructed. Poor ventilation will increase the internal temperature of the UPS and can adversely affect the UPS and its batteries.

Keep liquid and foreign objects away from the UPS.

In case of fire, use a dry chemical fire extinguisher to put out the fire. Using a fluid fire extinguisher may cause electric shock.

This product is designed for commercial/industrial use only. This UPS is not intended for use with life support and other designated critical devices. Maximum load must not exceed that shown on the UPS rating label. This UPS is designed for data processing equipment. If uncertain, consult your local dealer or Vertiv representative.

This UPS is not for use in a computer room as defined in the standard for the Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75.

The Liebert® GXT4-3000RT120™ was tested under 30A branch circuit in accordance with the National Electrical Code, ANSI/NFPA 70. To reduce the risk of fire, connect only to a circuit provided with 30A maximum branch over-current protection.

The Liebert® GXT4-3000RT208 was tested under 20A branch circuit in accordance with the National Electrical Code, ANSI/NFPA 70. To reduce the risk of fire, connect only to a circuit provided with 20A maximum branch over-current protection.

Battery Safety



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.

The following precautions should be observed 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 charging source prior to connecting or disconnecting battery terminals.
- If the battery kit is damaged in any way or shows signs of leakage, contact your local Vertiv representative immediately.
- Handle, transport and recycle batteries in accordance with local regulations.
- Determine if the battery is inadvertently grounded. If it is inadvertently grounded, remove the source of the ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if grounds are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded supply circuit).

ELECTROMAGNETIC COMPATIBILITY The Liebert® GXT4 series complies with the limits for a CLASS A DIGITAL DEVICE, PURSUANT TO Part 15 of FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Operating this device in a residential area is likely to cause harmful interference that users must correct at their own expense.

The Liebert® GXT4 series complies with the requirements of EMC Directive 2004/108/EC and the published technical standards. Continued compliance requires installation in accordance with these instructions and use of accessories approved by Vertiv.

Information for the Protection of the Environment

UPS Servicing: UPS makes use of components dangerous for the environment (electronic cards, electronic components). The components removed must be taken to specialized collection and disposal centers.

NOTICE TO EUROPEAN UNION CUSTOMERS: DISPOSAL OF OLD APPLIANCES—This product has been supplied from an environmentally aware manufacturer that complies with the Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/CE.

The “crossed-out wheelee bin” symbol at right is placed on this product to encourage you to recycle wherever possible. Please be environmentally responsible and recycle this product through your recycling facility at its end of life. Do not dispose of this product as unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE). C

For information regarding the scrapping of this equipment, please browse <https://www.vertivco.com/en-emea/> or call our worldwide technical support.

- Toll Free: 00 80011554499
- Toll Number Based in Italy: +39 0298250222

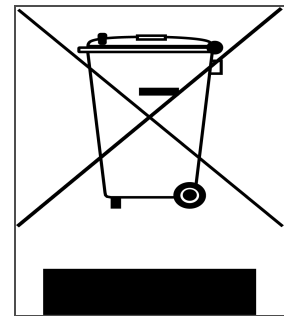













Table 1.1 Glossary of Symbols

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Risk of electrical shock		Recycle
	Indicates caution followed by important instructions		DC voltage
	AC input		Equipment grounding conductor
	AC output		Bonded to ground
	Requests the user to consult the manual		AC voltage
	Indicates the unit contains a valve-regulated lead acid battery		

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2 GXT4 DESCRIPTION

The Liebert® GXT4 is a compact, online uninterruptible power system (UPS) that continuously conditions and regulates its output voltage. The Liebert® GXT4 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® GXT4 protects equipment from these disturbances. The Liebert® GXT4 continuously charges its batteries from the utility power, enabling it to supply power to connected loads, even when the mains fail.

2.1 Features

- Intelligent battery management to extend the battery life
- LCD for user-friendly operation and local monitoring and configuration of operational parameters
- Controllable outlet groups
- Fan fault self-inspection and automated diagnostic function
- Intelligent fan operation, automatically changing rotation speed depending on system requirements, to decrease power consumption and noise
- Input circuit breaker to ease recovery from overloads
- Safety approval from UL and cUL
- Communication options: USB port, Liebert® IntelliSlot™ port and terminal-block communication
- Dry contacts for remote monitoring
- Input power factor greater than 0.99
- Output voltage selection function

2.2 Available Models

Available models of the UPS are listed in the following table.

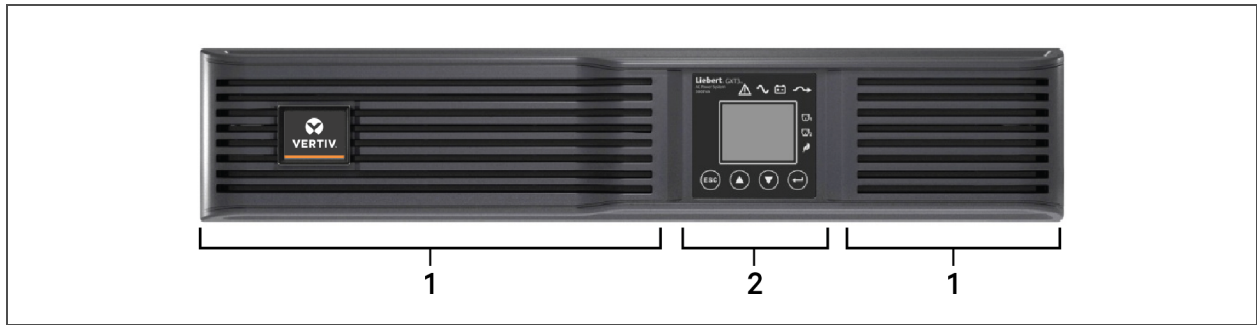
Table 2.1 UPS models, power ratings

MODEL NUMBER	NOMINAL POWER RATING
GXT4-500RT120	500 VA/450 W
GXT4-700RT120	700 VA/630 W
GXT4-1000RT120	1000 VA/900 W
GXT4-1500RT120	1500 VA/1350 W
GXT4-2000RT120	2000 VA/1800 W
GXT4-3000RT120	3000 VA/2700 W
GXT4-3000RT208	3000 VA/2700 W

2.3 Front Panel and Controls

The Liebert GXT4 rack/tower models in various power ratings have the same general appearance, controls and features as shown in the following figure. The various rack/tower and minitower models differ largely in the type of receptacles each has.

Figure 2.1 Front view



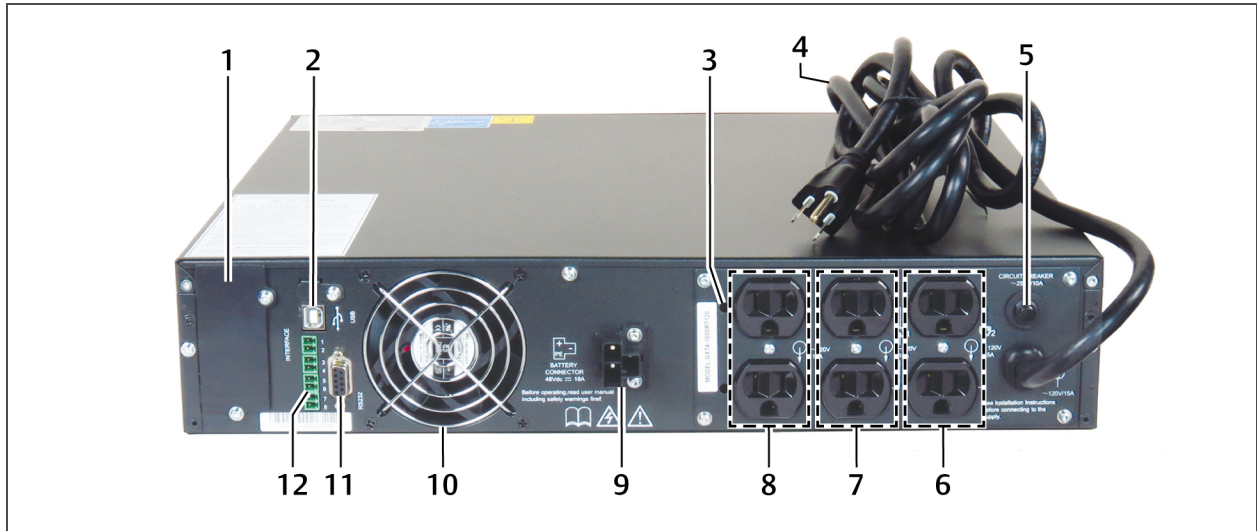
NO.	DESCRIPTION
1	Ventilation slots
2	Operation and display panel

2.4 Rear Panel Features

The rear panel of the Liebert® GXT4 has these features:

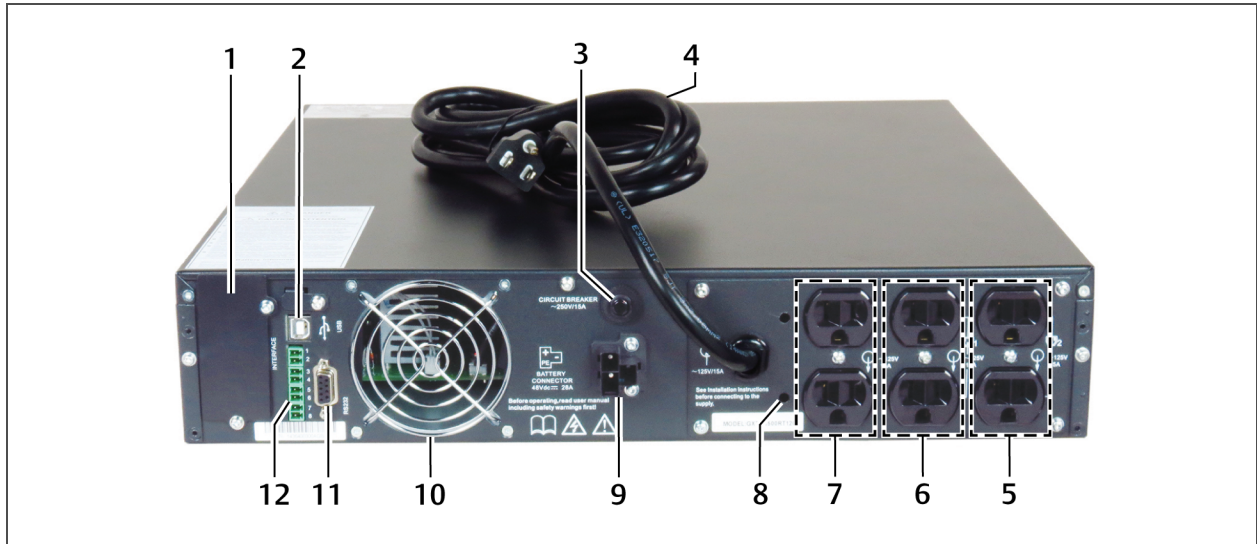
- Liebert® IntelliSlot™ Port
- USB port
- Input Circuit Breaker
- Input Receptacle
- General Output Receptacles
- Programmable Output Receptacles
- Cable Strain-relief Attachment Hole
- External Battery Connector
- Cooling Fan
- RS-232 port
- Terminal Block Communication
- Output Circuit Breakers (only on 3000 VA models)

Figure 2.2 Rear panel components—120-V rack/tower, 500, 700, 1000 VA models



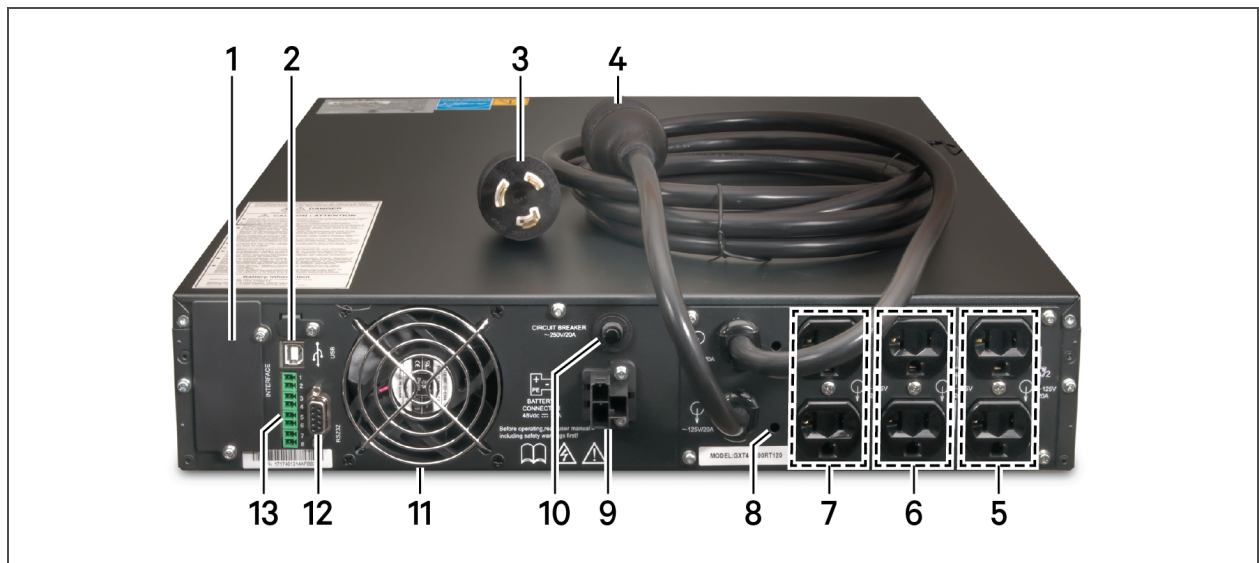
NO.	DESCRIPTION	NO.	DESCRIPTION
1	Liebert® IntelliSlot port	7	Programmable output receptacles #1
2	USB port	8	General output receptacles
3	Strain-relief attachment	9	External battery connector
4	Input power cable	10	Cooling fan
5	Input circuit breaker	11	RS232 port
6	Programmable output receptacles #2	12	Terminal block communication

Figure 2.3 Rear panel components—120-V rack/tower, 1500 VA



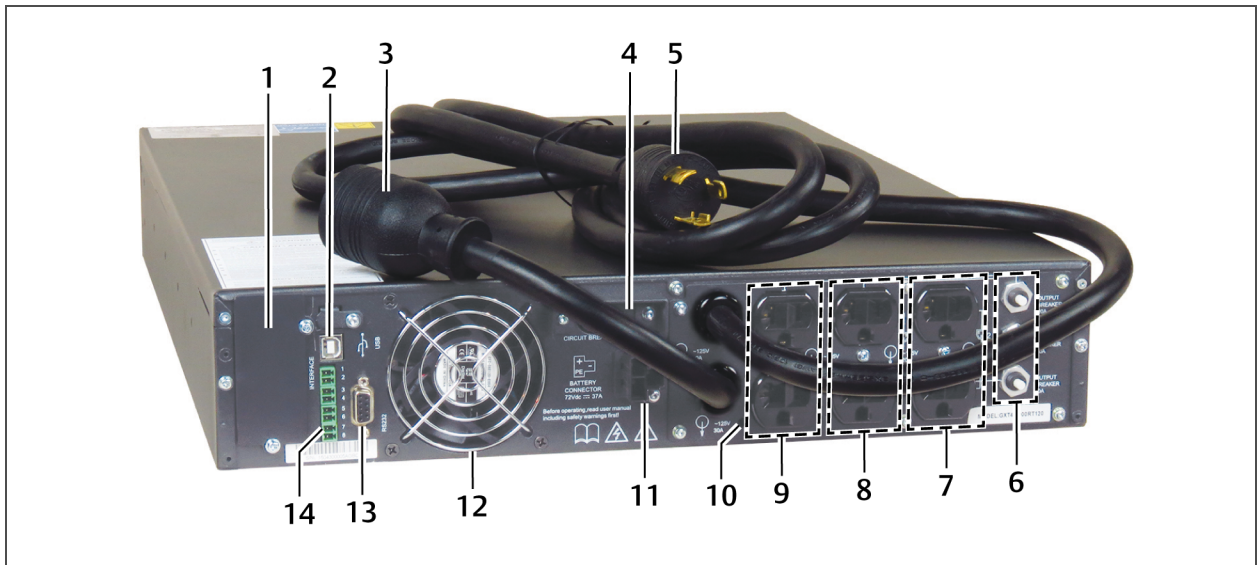
NO.	DESCRIPTION	NO.	DESCRIPTION
1	Liebert® IntelliSlot port	7	General output receptacles
2	USB port	8	Strain-relief attachment
3	Input circuit breaker	9	External battery connector
4	Input power cable	10	Cooling fan
5	Programmable output receptacles #2	11	RS-232 port
6	Programmable output receptacles #1	12	Terminal block communication

Figure 2.4 Rear panel components—120-V rack/tower, 2000 VA models



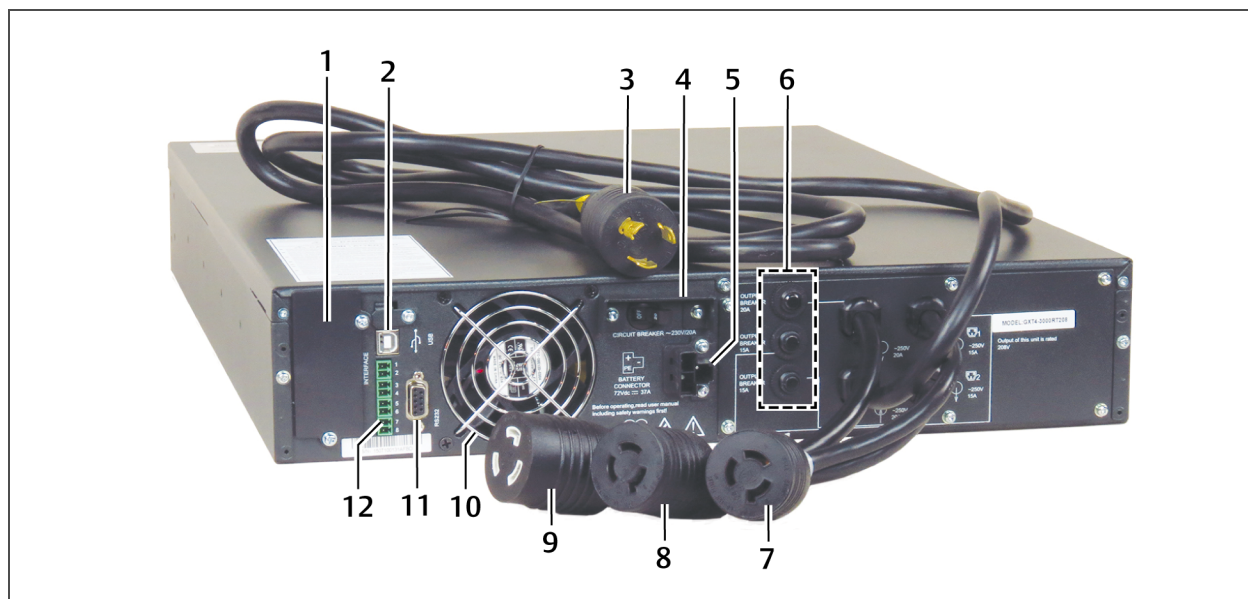
NO.	DESCRIPTION	NO.	DESCRIPTION
1	Liebert® IntelliSlot port	8	Strain-relief attachment
2	USB port	9	External battery connector
3	Input power cable	10	Input circuit breaker
4	Output receptacle (L5-20R) Not shown: 5-20P to L5-20R adapter	11	Cooling fan
5	Programmable output receptacles #2	12	RS232 port
6	Programmable output receptacles #1	13	Terminal block communication
7	General output receptacles		

Figure 2.5 Rear panel components—120-V rack/tower, 3000VA



NO.	DESCRIPTION	NO.	DESCRIPTION
1	Liebert® IntelliSlot port	8	Programmable output receptacles #1
2	USB port	9	General output receptacles
3	Output	10	Strain-relief attachments
4	Input circuit breaker	11	External battery connector
5	Input power plug and cable	12	Cooling fan
6	Output circuit breakers	13	RS-232 port
7	Programmable output receptacles #2	14	Terminal block communication

Figure 2.6 Rear panel components—208-V rack/tower, 3000VA



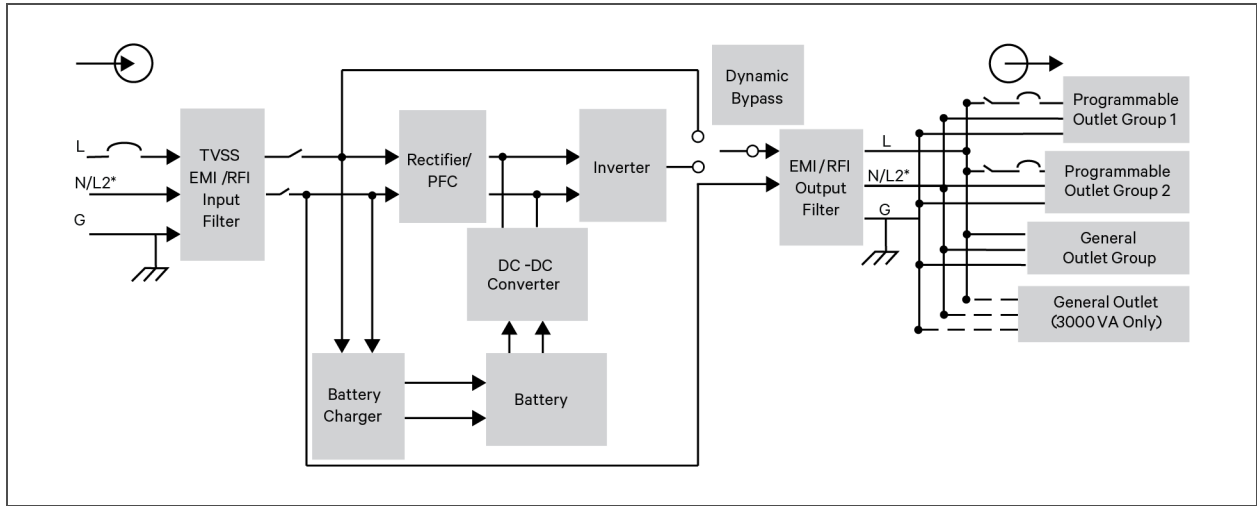
NO.	DESCRIPTION	NO.	DESCRIPTION
1	Liebert® IntelliSlot port	7	Programmable output receptacle 1, L6-15R
2	USB port	8	Programmable output receptacle 2, L6-15R
3	Input power plug and cable, L6-20P	9	Non-programmable output receptacle 1, L6-20R
4	Input circuit breaker	10	Cooling fan
5	External battery connector	11	RS232 port
6	Output circuit breakers	12	Terminal block communication

2.5 Major Components

The UPS is composed of utility input, TVSS and EMI/RFI filters, rectifier/PFC, inverter, battery charger, DC-to-DC converter, battery, dynamic bypass and UPS output.

NOTE: Only the GXT4-3000RT208 model (208 V) requires L2 (L6-20P). All other models covered in the manual are 120-V L-N wired.

Figure 2.7 Operating principle diagram



2.5.1 Transient Voltage Surge Suppression (TVSS) and EMI/RFI Filters

The UPS has surge protection and filters that protect the connected load from power surges, electromagnetic interference (EMI) and radio frequency interference (RFI). These features can minimize any surges or interference present in the utility power. The filters also prevent surges or interference generated by the UPS from adversely affecting devices connected on the same branch as the UPS.

2.5.2 Rectifier/Power Factor Correction (PFC) Circuit

In normal operation, the rectifier/PFC circuit converts utility 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 achieves two objectives:

- Efficient power use by the UPS
- Reduced reflected harmonics

This results in cleaner power available to other devices in the building that are not protected by the GXT4.

2.5.3 Inverter

In normal operation, the inverter utilizes the DC output of the PFC circuit to produce precise, regulated sine-wave AC power. When utility power fails, the inverter receives DC power from the DC-to-DC Converter. In either operation mode, the UPS inverter is online, continuously generating clean, precise, regulated AC output power.

2.5.4 Battery Charger

The battery charger utilizes energy from the utility power and precisely regulates it to continuously float charge the batteries. The batteries are being charged whenever the GXT4 is plugged in, even when the UPS is not turned On.

2.5.5 DC-to-DC Converter

The 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.

2.5.6 Battery

The GXT4 uses valve-regulated, non-spillable, lead acid batteries. To maintain battery design life, Operate the GXT4 in an ambient temperature of 32°F to 77°F (0°C to 25°C).

Optional external battery cabinets are available to extend battery run times.

2.5.7 Dynamic Bypass

The GXT4 provides an alternate path for utility power to the connected loads in the unlikely event of a UPS malfunction. Should the GXT4 have an overload, over-temperature or UPS failure condition, the UPS automatically transfers the connected loads to bypass.

NOTE: The bypass power path does not protect the connected loads from disturbances on the utility.

2.5.8 Battery Cabinet

Optional battery cabinets are available for the Liebert® GXT4, shown in [Battery cabinet](#) on the next page. The battery connectors and input breaker are on the battery cabinet's rear panel, as shown in the figure. For battery cabinet specifications, refer to [Specifications](#) on page 53. The GXT4 may be equipped with a maximum of 6 extension battery packs.

For battery run times, refer to [Battery run times \(continued\)](#) on page 60.

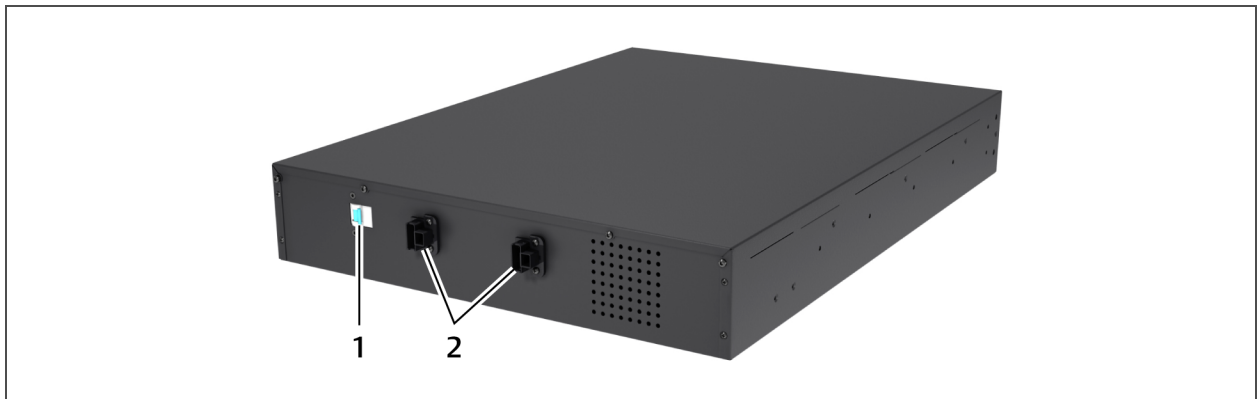


WARNING! Do not contact the battery connectors and ground to avoid electrical shock. The battery loop and AC input are not insulated, which may cause a dangerous voltage between the battery connectors and ground.

NOTE: External Battery Connectors are wired in parallel. Either connector can be connected to the UPS or to another battery cabinet.

NOTE: The standard battery cable delivered with the battery cabinet is 0.65 m (2.13 ft) long.

Figure 2.8 Battery cabinet



NO.	DESCRIPTION
1	Isolation breaker
2	Battery connectors

2.6 Operating Modes

The UPS operation modes include the following: Mains (AC) Mode, Bypass Mode, Battery Mode, Battery Recharge Mode, Active ECO Mode and Frequency Converter Mode.

Refer to [Operation and Display Panel](#) on page 27 for details about the operating mode indicators and control buttons.

2.6.1 Mains Mode

During Mains Mode, the mains provides input power to the GXT4. The filters, PFC circuit and inverter process this power to provide high-quality sine wave power to connected loads. The UPS maintains the batteries in a fully-charged state.

2.6.2 Manual Bypass Mode

Manual Bypass Mode occurs when the unit is manually placed in internal bypass by navigating the LCD menu to select *3 Control > 1 Turn On & Off > Turn UPS Bypass*. Bypass operation is indicated by an audible alarm and illuminated amber bypass indicator. (If other indicators are illuminated, refer to [Troubleshooting](#) on page 49). During Bypass Mode, mains power bypasses the inverter and provides energy to the connected load.

NOTICE

Risk of loss of power to the connected load. Can cause equipment damage.

Turning Off the UPS in Bypass Mode will result in loss of output power to the connected load.

2.6.3 Battery Mode

The GXT4 enters Battery Mode when mains power fails or is outside acceptable limits. The battery system supplies power through the DC-to-DC converter to the inverter to generate clean AC power for the connected loads.

When the GXT4 enters Battery Mode, the UPS sounds a half-second beep at 10-second intervals. When approximately 2 minutes of run time remains, the beeps sound every 5 seconds to warn that the battery is getting low (this Low Battery Warning is user-configurable).

In Battery Mode, the battery indicator will illuminate and the LCD will show the prompt *utility power not available*.

Press either the Up or Down button once, then press the Enter button to clear the prompt and silence the audible alarm. Once the alarm prompt has been acknowledged, the screen showing the estimated battery run time and battery capacity will be visible. Refer to [Troubleshooting](#) on page 49.

For approximate battery run times, refer to **Table 9.5** on page 60.

NOTICE

Risk of loss of power to the connected load. Can cause equipment damage.

Turning Off the GXT4 when it is in Battery Mode will result in loss of output power to the connected load.

If the UPS is turned Off manually, it must be manually restarted after mains power returns.

If the UPS is turned Off by a communication signal or because the batteries are depleted, it will operate as set in the configuration program for Auto-Restart (Refer to [Configuration Program](#) on page 39).

2.6.4 Battery Recharge Mode

Once mains power is applied to the GXT4, the Battery Charger begins charging the batteries.

2.6.5 Frequency Converter Mode

All models of the GXT4 are capable of frequency conversion. Frequency Conversion Mode can be selected using the configuration program. Allowable frequency operating modes include:

- Auto Sensing - 50 Hz or 60Hz – Bypass Enabled
- Auto Sensing - 50 Hz or 60Hz – Bypass Disabled
- Frequency Converter - 50 Hz – Bypass Disabled
- Frequency Converter - 60Hz – Bypass Disabled

NOTE: The default for all models of the Liebert® GXT4 is “Auto Sensing - 50 Hz or 60Hz – Bypass Enabled.”

2.6.6 Active ECO Mode

All Liebert® GXT4 models can operate in Active ECO Mode. In this mode, the connected equipment is powered through the bypass path to increase efficiency, reducing the electrical costs.

Active ECO mode keeps the rectifier and inverter operating, allowing the inverter to remain synchronized to bypass. This synchronization allows the transfer of the connected equipment to UPS inverter power almost seamlessly if bypass power falls outside the user-set limits. Once bypass power returns within the acceptable parameters, the UPS will return to Active ECO Mode operation.

The default setting is Active ECO Mode Off.

3 INSTALLATION

Do not start the UPS until after the installation is finished.



WARNING! Risk of electrical shock. Can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked-out and tagged appropriately to prevent activation during the installation, verify with a voltmeter that power is Off and wear appropriate, OSHA-approved personal protective equipment (PPE) per NFPA 70E. Failure to comply can cause serious injury or death. Before proceeding with installation, read all instructions. Follow all local codes.

3.1 What's Included

- Terminal Block Communication Terminals
- Compact Disk with:
 - Configuration Program
 - User Manual (electronic version)
- USB Cable—one, 2 m (6-1/2 ft) long
- Rack mounting hardware, including screws,
- Two plastic, tower-stand support-base sets (four pieces)
- Warnings, Safety Instructions booklet and WEEE recycling sheet (ISO 14001 compliance)

NOTE: The GXT4 External Battery Cabinet shipping package includes one battery cabinet, two spacers for tower configuration and one DC-power cable and rack-mounting hardware, including screws, handles and mounting rail kit.

3.2 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 dealer or your Vertiv representative immediately.
- Check the accessories included in packaging list. If there is any discrepancy, contact your local dealer or your Vertiv representative immediately.

3.3 Preparation for Installation

3.3.1 Installation Environment

- 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 53.
- Place it in an area of unrestricted air-flow around the unit, away from water, flammable liquids, gases, corrosives, and conductive contaminants. Avoid direct sunlight.

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

3.3.2 Installation Clearances

Maintain at least 4 in. (100 mm) clearance in the front and rear of the UPS. Do not obstruct the air inlets on the front panel and rear panel of the UPS. Blocking the air inlets reduces ventilation and heat dissipation, shortening the service life of the unit.

3.4 Installing the UPS

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

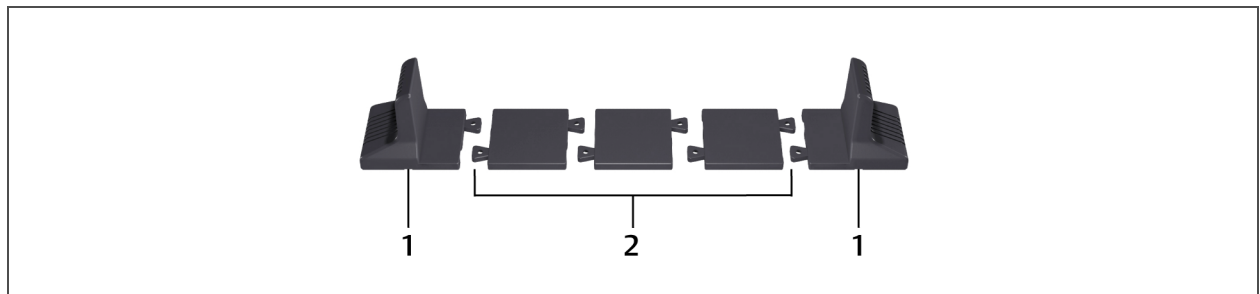
NOTE: When installing the UPS or making input and output connections, comply with all relevant safety codes and standards

3.4.1 Tower Installation

To install the GXT4 as a tower:

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

Figure 3.1 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 3.1** above. Each GXT4 requires 2 support bases, one in the front and one in the rear.
4. Adjust the direction of the operation and display panel and logo on the GXT4.
 - a. Remove the front plastic bezel cover as shown the following figure.
 - b. Pull the operation and display panel gently, rotate it 90 degrees clockwise and snap it back into position, as shown.
 - c. Pull the logo on the front plastic bezel cover gently, rotate it 90 degrees clockwise and snap it back into position.
 - d. Replace the front plastic bezel cover.
The operation and display panel and logo have been rotated 90 degrees clockwise, for upright viewing.

Figure 3.2 Remove the front plastic bezel cover and rotate display



NO.	DESCRIPTION
1	Remove bezel cover.
2	Rotate display 90 degrees.

- Place the GXT4 and any battery cabinets on the 2 support bases.

Figure 3.3 Tower installation



NO.	DESCRIPTION
1	Panel rotated for tower operation.
2	Support bases.

3.4.2 Rack Installation

When installed in a rack enclosure, the GXT4 UPS and external battery cabinets (EBC) must be supported by a shelf or rack-mount rails. The GXT4 and EBC units ship with all required hardware for rack-mount installation. Because different rack-mount options install differently, refer to the installation instructions provided with the rack mount kit being used.

3.4.3 Connecting Cables

The GXT4 rear panel has an input cable and plug, output receptacles and output cable(s) (Output cables are on GXT4-3000 models only). Refer to [Rear Panel Features](#) on page 10 for details. The battery cables are supplied with the battery cabinet.

3.4.4 Connecting to AC Mains and Loads

Ensure that all the loads are turned Off. Prepare an input power supply that is properly protected by a circuit breaker in accordance with national and local electrical codes. The wall receptacle must be grounded. We recommend installing an upstream circuit breaker of the same series as the input circuit breaker of the GXT4.

The specifications of the input circuit breaker on the rear panel of the UPS are listed in the following table.

Table 3.1 Input circuit breaker specifications

MODEL	RATED CIRCUIT BREAKER
GXT4-500RT120	8 A
GXT4-700RT120	10 A
GXT4-1000RT120	10 A
GXT4-1500RT120	15 A
GXT4-2000RT120	20A
GXT4-3000RT120	30A
GXT4-3000RT208	20A

500 – 2000-VA models have 3 groups of outlets:

- One group is not controlled (always On).
- Two groups are controlled with programmed responses or an SNMP network.

3000 VA models have four groups of outlets:

- Two groups are not controlled (always On).
- Two groups are controlled with programmed responses or an SNMP network.

Verify that the equipment is plugged into the appropriate outlets if any of the outlets will be controlled.

NOTE: Do not overload any output receptacle. Output cable length should not exceed 10 m (32.8 ft).

To connect equipment and input power:

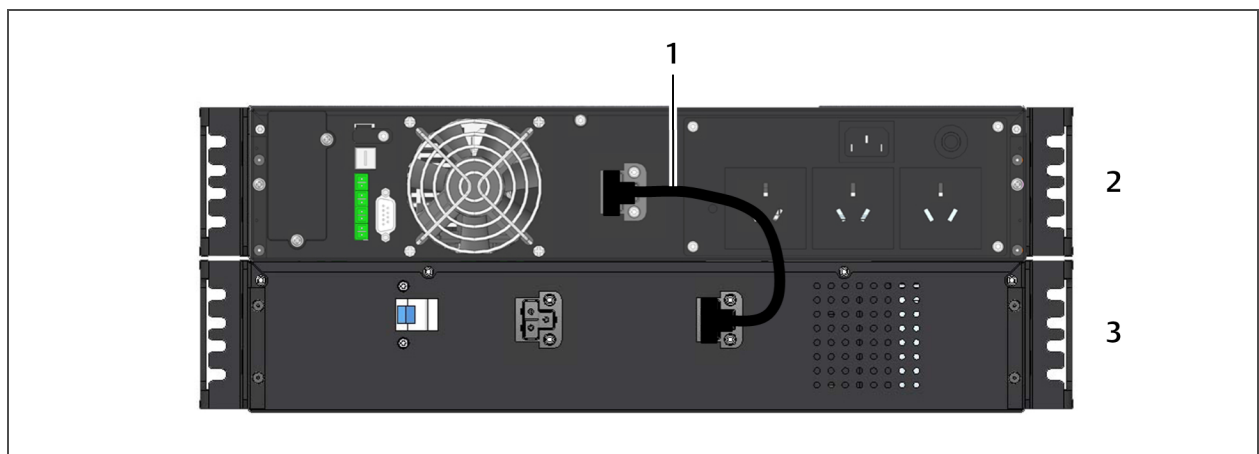
1. Plug equipment into the appropriate output receptacles on the rear of the GXT4.
2. Plug the input plug of the GXT4 into the input power connection.

NOTE: If the input plug is to serve as the disconnecting device, the wall socket/outlet must be near the UPS and must be easily accessible, per the National Electric Code / NFPA 70 requirements.

3.4.5 Connecting Battery Cables

1. Verify that the battery isolation breaker is in the Off (open) position.
2. Take out the battery cable included with the battery cabinet.
3. Connect one end of the battery cable to the external battery connector on the rear panel of the UPS, and connect the other end to any battery port on the rear panel of the battery cabinet.
4. Repeat steps 1 through 3 for each battery cabinet that will be connected to the system. Additional battery cabinets will plug into the previously installed battery cabinet.
5. Switch On the battery breaker on the rear of each external battery cabinet.
6. Use the LCD display or the configuration program included with the UPS to specify the number of external battery cabinets connected. See [Specifications](#) on page 53 for approximate battery run times.

Figure 3.4 Battery cable attachment



NO.	DESCRIPTION
1	Battery cable
2	Liebert® GXT4
3	External battery cabinet

3.4.6 Connecting USB Communication Cables

1. Take the USB communication cables out of the accessories bag.
2. Insert one end of the USB communication cable to the USB port on the rear panel of the GXT4. For the location, see the figure for your UPS model in [Rear Panel Features](#) on page 10.
3. Insert the other end of the USB communication cable to the USB port of the computer.

3.4.7 Installing the Optional Liebert® IntelliSlot™ Card and Communication Cables

1. On the GXT4, remove the protective cover of the Liebert® IntelliSlot port and set it aside.
2. Insert the IntelliSlot card into the IntelliSlot port and secure it with screws.

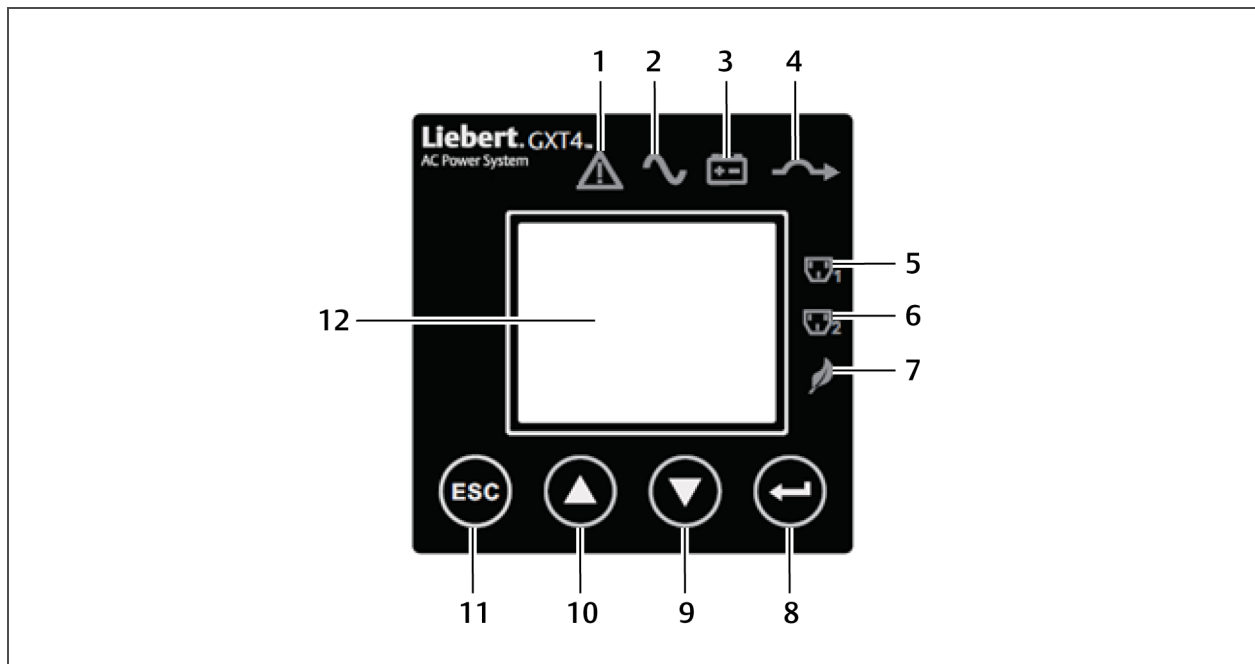
3. To connect any cable associated with an IntelliSlot card, refer to the quick-installation guide provided with the card.

To configure and use the Liebert® IntelliSlot communication card, refer to the card's user manual. Find manuals online at <http://www.VertivCo.com/en-us/support/>.

4 OPERATION AND DISPLAY PANEL

The operation and display panel on the front of the GXT4 has control buttons, LED indicators and a liquid-crystal display (LCD).

Figure 4.1 Operation and display panel



NO.	DESCRIPTION	NO.	DESCRIPTION
1	Fault indicator	7	ECO mode indicator
2	Inverter indicator	8	Enter button
3	Battery indicator	9	Down button
4	Bypass indicator	10	Up button
5	Programmable-outlet 1 indicator	11	Escape button
6	Programmable-outlet 2 indicator	12	LCD panel

4.1 LED Indicators

The LED indicators on the front of the operation and display panel are:

- Inverter
- Battery
- Bypass
- Programmable Outlet1
- Programmable Outlet2
- ECO Mode
- Fault

Figure 4.1 on the previous page, shows the indicators' locations. Their descriptions and functions are as follows.

Table 4.1 LED indicators

INDICATOR	COLOR	DESCRIPTION
Inverter	Green	On when the inverter is supplying power
Bypass	Amber	On when the load is supplied by the mains through automatic/manual bypass
Battery	Amber	On when the load is supplied by the battery
Fault	Red	On when an error has occurred within the UPS
Programmable Outlet1	Green	On when programmable Outlet1 is On
Programmable Outlet2	Green	On when programmable Outlet2 is On
ECO Mode	Green	On when the UPS is in ECO Mode

4.2 Control Buttons

The control buttons are described in the following table.

Table 4.2 Control buttons

BUTTON	DESCRIPTION
ESC	Pressing this button returns to the previous menu or aborts any change in the input data field before confirming.
Up	Pressing this button can move the cursor up or increase the value displayed in the input data field. When a menu is displayed on several screens, pressing the button can scroll up.
Down	Pressing this button can move the cursor down or decrease the value displayed in the input data field. When a menu is displayed on several screens, pressing the button can scroll down.
Enter	Pressing this button can enter the next level menu or confirm the parameter setting value.

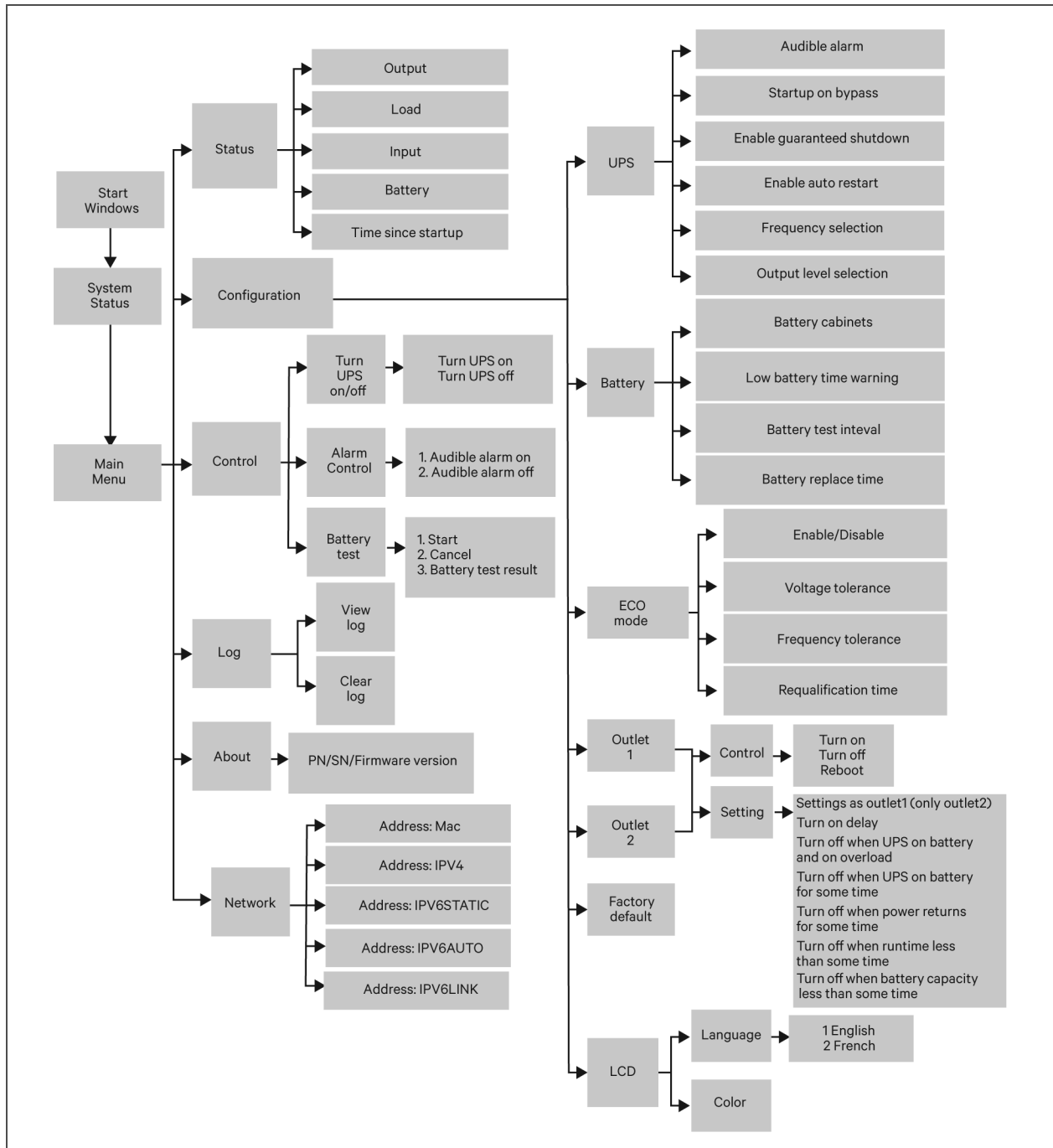
4.3 LCD

The LCD panel shows the UPS status and enables changes to the UPS settings by assisting in navigating through the GXT4 menu (see [Menu Structure](#) on the facing page).

4.4 Menu Structure

The menu structure of the LDC display is shown in the following figure.

Figure 4.2 Menu structure



4.4.1 Startup Screen

When the GXT4 is starting up, it initiates a self-test and displays the start-up screen about 10 seconds.

After about 10 seconds, the LCD shows one of the "On" screens. The screen shown depends on whether or not input power is available.

- When input power is available: TURN ON UPS.
- When input power is not available: AC NOT AVAILABLE START ON BATTERY?

To turn On the UPS, press the Up or Down button to select *YES* and press the Enter button. The UPS will start up, the LCD will display *UPS STARTING* and then *START SUCCESSFUL* after the UPS is turned On.

4.4.2 Default Screen

Press any button in the START SUCCESSFUL screen to enter the default interface.

NOTE: Values shown in the default screen will vary depending on installation and configuration.

In the default screen, the LCD shows the UPS model, output parameters, input parameters, battery capacity with run time estimate and load percentage. The UPS operation mode (online/inverter, ECO, Battery or Bypass) will be indicated by the LED indicators.

If no control button (ESC, Up, Down, Enter) is pressed for 2 minutes, the LCD will enter the screen-saver mode (back light turns off). It will remain off until a control button is pressed.

4.4.3 Main Menu Screen

Press the Enter button in the default screen to enter the MAIN MENU screen.

To select a sub menu, press the Up or Down button to move the cursor to the required item, then press the Enter button to enter its sub menu or set its parameter.

Menu options

STATUS Screen

In the MAIN MENU screen, select *STATUS* to enter the Status Screen, displaying OUTPUT, LOAD, INPUT, BATTERY and TIME SINCE STARTUP.

CONFIGURATION Screen

Select *MAIN MENU > CONFIGURATION* to enter the Configuration menu

In the CONFIGURATION screen, press the Up or Down button to move the cursor to the required item, then press the Enter button to enter a sub menu or set its parameters.

UPS Screen

Select *MAIN MENU > CONFIGURATION > UPS* to enter the UPS screen. This menu has six screens.

Press the Up or Down button to move the cursor to the required item, and press the Enter button to confirm the settings.

Battery Screen

Select *MAIN MENU > CONFIGURATION > BATTERY* to enter the BATTERY screen. This menu has four screens.

Press the Up or Down button to increase or decrease the value of the settings, and press the Enter button to confirm it.

ECO Mode Screen

Select *MAIN MENU > CONFIGURATION > ECO MODE* to enter the ECO MODE screens.

Press the Up or Down button to move the cursor to the required item, and press the Enter button to confirm the settings.

Outlet1 Output Control Screen

Select *MAIN MENU > 2 CONFIGURATION > 4 OUTLET1* to enter the OUTLET1 screen. This menu has two sub menus

Select *1 OUTLET CONTROL* and press the Enter button to enter the OUTLET CONTROL screen.

Press the Up or Down button to move the cursor to the required item, and press the Enter button to confirm the settings.

Outlet1 Outlet Setting screen

Select *MAIN MENU > 2 CONFIGURATION > 4 OUTLET1* to enter the OUTLET1 screen. This menu has two sub menus

Select *2 Outlet Setting* and press the Enter button to enter the OUTLET SETTING screen.

Outlet2 Screen

The Outlet2 screens are the same as the Outlet1 screens. The same settings are available as on the Outlet1 screen. If the Outlet2 group will have the same settings as the Outlet1 group, GXT4 offers a programming shortcut. When configuring the Outlet2 group, select *YES* and press the Enter button to apply the Outlet1 settings to the Outlet2 screen.

Press the Up or Down button to move the cursor to the required item, and press the Enter button to confirm the settings.

LCD screen

Select *Main Menu > 2 CONFIGURATION > 6 LCD* to enter the LCD screen. This menu has two sub menus, *LANGUAGE* and *COLOR*.

Select *1 LANGUAGE* and press the Enter button to enter the LANGUAGE screen.

Language screen

GXT4 supports multiple languages. For the list of supported languages and instructions on how to upload them, refer to the Configuration Program user manual on the included CD.

Color screen

Select *2 COLOR* and press the Enter button to enter the COLOR screen.

FACTORY DEFAULT screen

Select *MAIN MENU > 2 CONFIGURATION > 7 FACTORY DEFAULT* to enter the FACTORY DEFAULT screen.

Control Screen

Select *MAIN MENU > 3 CONTROL* to enter the CONTROL screen. This screen has three sub menus, TURN ON & OFF, ALARM CONTROL and BATT TEST.

In the CONTROL screen, press the Up or Down button to move the cursor to the required item, and press the Enter button to enter its sub menu.

TURN ON & OFF screen

Select *MAIN MENU -> 3 CONTROL -> 1 TURN ON & OFF* to enter the TURN ON & OFF screen. This screen shows one of two displays, TURN ON UPS and TURN OFF UPS, depending on the state of the UPS.

ALARM CONTROL screen

Select *MAIN MENU -> 3 CONTROL -> 2 ALARM CONTROL* to enter the ALARM CONTROL screen. This section allows active audible alarms to be silenced.

To completely turn off the audible alarm, select *CONFIGURATION > UPS*.

BATT TEST screen

Select *MAIN MENU -> 3 CONTROL -> 3 BATT TEST* to enter the BATT TEST screen.

Log Screen

Select *MAIN MENU -> 4 LOG* to enter the LOG screen. This screen has two submenus, VIEW LOG and CLEAR LOG.

CLEAR LOG Screen

Select *MAIN MENU > LOG > CLEAR LOG* to enter the CLEAR LOG screen.

Press the Up or Down button to move the cursor to the required item. Press the Enter button to confirm the settings.

ABOUT Screen

Select *MAIN MENU > ABOUT* to enter the ABOUT screen. The ABOUT screen displays UPS model, serial number, software version and hardware version.

Network

Select *MAIN MENU > NETWORK* to enter the NETWORK screen.

The NETWORK screen displays the MAC address and the IPv4 IP address. If the GXT4 is fitted with an optional Liebert® IntelliSlot Web card (Liebert IS-WEBCARD), the screen will display IPv6 IP address settings (IPv6 requires configuration).

4.5 Prompt List

A prompt screen is displayed during the operation of the system to alert you to certain conditions and/or to require your confirmation of a command or other operation. See the following table for the prompts and meanings.

Table 4.3 System prompts and meanings

PROMPT	MEANINGS
Mains Power Restored	The mains power returns and the UPS transfers back to mains (AC) mode.
UPS Return From A Low Battery Condition	The UPS transfers back to mains (AC) mode from battery low mode.
UPS Return From Battery Mode	The UPS transfers back to mains (AC) mode from battery mode.
UPS Self Test Successful	The UPS self-test is successfully performed.
UPS Shutdown Command Received	The UPS shut down was initiated through communication.
UPS Turn Off	The UPS shuts down and has no output power.
UPS Turn On	The UPS starts up successfully and supplies protected power to the load.
UPS Shutdown Process Had Been Canceled	The shutdown command sent through SNMP card to the UPS is canceled.
ECO Mode Enabled	The UPS is configured to ECO mode operation,
ECO Mode Disabled	The UPS is configured to Online mode, supplying protected power to the load through the inverter.
UPS Internal Temperature Return To Normal	The internal temperature of the UPS recovers to normal range.
UPS Load Return From Overload	The loads are reduced, and the UPS recovers to normal state from overload.
Load On Inverter	The inverter is on and supplies protected power to the load.
Load On ECO Bypass	The UPS is on ECO mode; the mains is supplying power to the load directly to reduce energy usage.
OUTLET1 Closed Auto / Manual	The programmable output receptacle 1 received a turn-off command and is turned Off.
OUTLET1 Open Auto / Manual	The programmable output receptacle 1 received a Turn-On command and is turned On.
OUTLET2 Closed Auto / Manual	The programmable output receptacle 2 received a Turn-Off command and is turned Off.
OUTLET2 Open Auto / Manual	The programmable output receptacle 2 received a turn-on command and is turned On.
Bypass Power Restored	The bypass power recovered and the UPS can now transfer to bypass.

4.6 Warning List

All UPS warning messages are described the following table.

Table 4.4 Warning list

WARNING	DESCRIPTION
Mains Power Not Available	The mains power is not available, or it cannot satisfy the input requirements for the UPS to operate from mains power
UPS Batteries Low And Exhausted Soon	The battery capacity is low and will be exhausted soon
UPS Has Switched To Battery Mode	The mains power is abnormal or the PFC side is faulty, the UPS transfers back to Battery mode
Load On Bypass	The UPS transfers to Bypass mode, at this point, the input mains power supplies power to the load directly, and the load is not protected
Input Power Wiring Error	L-N line reverse or PE not connected.
Bypass Power Not Available	The bypass power is not available, or it cannot satisfy the requirements for the UPS transfers to bypass
UPS Maintenance Bypass Output	The UPS transfers to maintenance bypass.
AC input not qualified, cannot start UPS	The utility power is not qualified, the inverter cannot be powered up
Output disabled	REPO terminal connect error

4.7 Fault List

All UPS fault messages are described the following table.

Table 4.5 Fault list

FAULT	DESCRIPTION
UPS Self-Test Failed	The battery is bad or weak or not connected.
UPS Overload	The UPS is overloaded.
Inverter Out Of Order	The inverter has failed.
Battery Weak/Bad	The battery is bad or weak.
Output Short Circuit	The output connection is short-circuited.
DC Bus Overvoltage	The DC bus is faulty.
UPS Overtemperature	Overtemperature occurs to the UPS and the UPS will transfer to Bypass mode.
Charger Out Of Order	The charger has failed.
Fan Out Of Order	At least one fan is failed.
DC Bus Discharge Fail	DC-DC failure occurs.
Rectifier Out Of Order	Rectifier failure occurs.

If a fault occurs, the UPS automatically switches to Bypass Mode. The original operating mode will be maintained only in the case of a battery disconnection fault. The fault message alternates with UPS Mode once a second, the red fault indicator on the operation and display panel lights up and the alarm sounds continuously.

If a fault occurs:

1. Enter the ALARM CONTROL screen, and select *AUDIBLE ALARM ON* or *AUDIBLE ALARM OFF* to switch the alarm On or Off.
2. Enter the EVENT LOG screen, and select *VIEW LOG* to view the entire event log.

NOTE: There will be a short delay before the EVENT LOG screen displays the historical fault log to allow the log to load.

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5 OPERATION

This section describes checks to be made before starting the UPS, how to start the UPS, manual battery test, manual bypass, shutting down the UPS and disconnecting mains power from the UPS.

NOTE: The GXT4's battery has been fully-charged before delivery, but some charge will be lost during storage and shipping. To ensure that the battery has adequate reserve power to protect the connected load, charge the battery for 5 hours before putting the UPS into service.

5.1 Startup Checklist for the GXT4

Before starting the UPS, perform these checks:

1. Check that the input plugs and loads are connected properly and reliably.
2. Check that the battery cable is connected properly.
3. Check that the communication cables are connected properly.

5.2 Starting the UPS

1. Plug the UPS into the appropriate AC outlet.
2. **3000VA models only:** Close the input breaker on the rear of the unit.
3. The UPS will begin the start-up sequence once AC power is present.

NOTE: The UPS will sound an audible alarm, this is normal.

4. On the LCD, press either the Up or Down button once, then press the Enter button to turn On the UPS.
The UPS will sound the audible alarm again as the output receptacles are now being powered by the internal bypass, then will sound one more time as the inverter powers the connected equipment.
5. Check the LCD and LED indicators to ensure that the UPS is operating normally.
6. Check the load percentage on the default screen to ensure that the connected equipment is not exceeding the UPS's rated capacity.

The UPS is now providing conditioned and protected power to the connected equipment.

5.3 Performing a Manual Battery Test

To initiate a manual battery test, select *MAIN MENU > CONTROL > BATT TEST > START*.

- If the battery test results show *FAILED*, allow the UPS to recharge the batteries for 24 hours.
- Retest the batteries after 24 hours of charging.
- After the batteries have been retested, if the battery test still shows *FAILED*, contact your local Vertiv representative or Technical Support.

5.4 Performing Manual Bypass

To manually transfer the connected equipment to the internal bypass:

1. From the main menu select Control then press enter.
2. Select *TURN ON & OFF* and press Enter.
3. Select *TURN UPS BYPASS* and press Enter. The UPS will transfer the connected loads to the internal bypass.

If the internal bypass is not available because of input power problems, pressing this button once will be ignored. Bypass operation is indicated by an audible alarm and illuminated amber Bypass indicator. (If other indicators are illuminated, refer to [Troubleshooting](#) on page 49.)

5.5 Shutting Down the GXT4

To shut down the UPS from the LCD:

1. From the Main Menu select *CONTROL*, press Enter, then select *TURN ON & OFF*.
2. Press the Enter key.
3. Select *TURN UPS OFF*, then press Enter. Press either the Up or Down button to move the cursor to confirm the turn off command and press Enter.
The UPS will sound an audible alarm. This is normal.
4. Power to the connected equipment is now Off.

The UPS display will still be illuminated because the batteries are still being charged. The UPS may now be disconnected from AC power, and the UPS will completely shut down in approximately 15 seconds.

5.6 Disconnecting Input Power from the GXT4

1. After the UPS has been shut down as detailed in [Shutting Down the GXT4](#) above, disconnect the input cable from the wall socket.
2. Wait 30 seconds and verify that all indicators have turned Off and the fan has stopped. This indicates that the power-off is complete.
3. Turn the external battery cabinet breaker switch to the Off position if the UPS has an external battery cabinet.

After powering Off the UPS, the UPS ceases output and the load is powered Off.

6 COMMUNICATION

This section describes the communication ports on the rear of the UPS:

- Liebert® IntelliSlot™ port
- USB port (standard B-type)
- Terminal Block Communication
- RS232 port (DB9F)



CAUTION: To maintain safety (SELV) barriers and for electromagnetic compatibility, signal cables should be segregated and run separate from all other power cables.

6.1 Liebert® IntelliSlot Communication Cards

The Liebert® IntelliSlot port accepts the following optional cards:

- Liebert® IntelliSlot Web Card (IS-WEBCARD)
- Liebert® IntelliSlot Unity Card (IS-UNITY-DP)

The Liebert® IntelliSlot Web Card provides SNMP monitoring and control of the UPS across the network.

The Liebert® IntelliSlot Unity Card provides SNMP and/or RS-485 monitoring of the UPS across the network and/or building management system. The Liebert® IntelliSlot UNITY card also enables monitoring external temperature, humidity and contact closure inputs using external sensors.

Follow instructions provided with the Liebert IntelliSlot card to configure the UPS or any additional ancillary product for the Liebert® GXT4. The instructions are available at <http://www.VertivCo.com/en-us/support/>.

6.2 USB Port Communication

The standard B-type USB port is used to connect the UPS and network server or other computer system.

A standard B-type USB port is provided to allow connection to a computer or network server. The USB port can be used to communicate with the GXT4 configuration program (see section [Configuration Program](#) below for details) or the Microsoft Windows shut-down feature.

6.2.1 Configuration Program

The configuration program is on the Liebert® GXT4 CD and can be used instead of making configuration setting changes from the LCD panel. The configuration program communicates to a computer running a Microsoft® Windows® operating system via the included USB cable.

For most users, the factory-default settings are adequate. This section give a brief overview of the features and parameters that are available for modification, as well as the factory-default settings. Should any changes be necessary, refer to the Configuration Program User Manual that is located on the included CD for further details.

The configuration program allows these features of the GXT4 to be changed:

- Change and set the display language
- Enable/Disable Auto-Restart (default is Enable)

- Select frequency converter operation with a fixed output frequency of 50 Hz or 60 Hz, bypass disabled (default is Auto-Select with bypass enabled)
- Set the Low Battery Warning alarm time from 2 to 30 minutes (default is 2 minutes)
- Enable/Disable the Auto-Battery test (default is Enable)
- Enable/Disable Auto-Restart after removing Remote shutdown (default is Disable)
- Set the wiring mode of Remote shutdown (default is normally open)
- Set the Auto-Enable output after remote shutdown (default is Disable)
- Set the Auto-Battery test to 8, 12, 16, 20, or 26 weeks (default is 8 weeks)
- Select the number of external battery cabinets connected to the UPS to adjust the remaining run time calculated by Vertiv software products (default is zero)
- Select one of multiple output voltages to match various voltages.

Table 6.1 Output voltage option

UPS MODEL	FACTORY DEFAULT SETTING	OUTPUT VOLTAGE OPTION
GXT4-500RT120 - GXT4-3000RT120	120 VAC	110, 115, 120 and 127V
GXT4-3000RT208	208 VAC	208 / 220 / 230 / 240V

NOTICE

The output voltage settings cannot be changed while the UPS is On and powering connected loads.

NOTE: Setting the output voltage of the GXT4-500RT120, GXT4-700RT120, and GXT4-1000RT120 models to 110VAC automatically de-rates both the VA and Watt ratings to 95% of the unit's rating. Setting the output voltage of the GXT4-1500RT120 and GXT4-2000RT120 models to 110VAC automatically de-rates both the VA and Watt ratings to 85% of the unit's ratings, and programming the output voltage to 115VAC automatically de-rates both the VA and Watt ratings to 95% of the unit's rating.

Setting the output voltage of the GXT4-3000RT120 model to 110VAC automatically de-rates both the VA and Watt ratings to 90% of the unit's ratings (refer to [Specifications](#) on page 53 for the VA and Watt ratings).

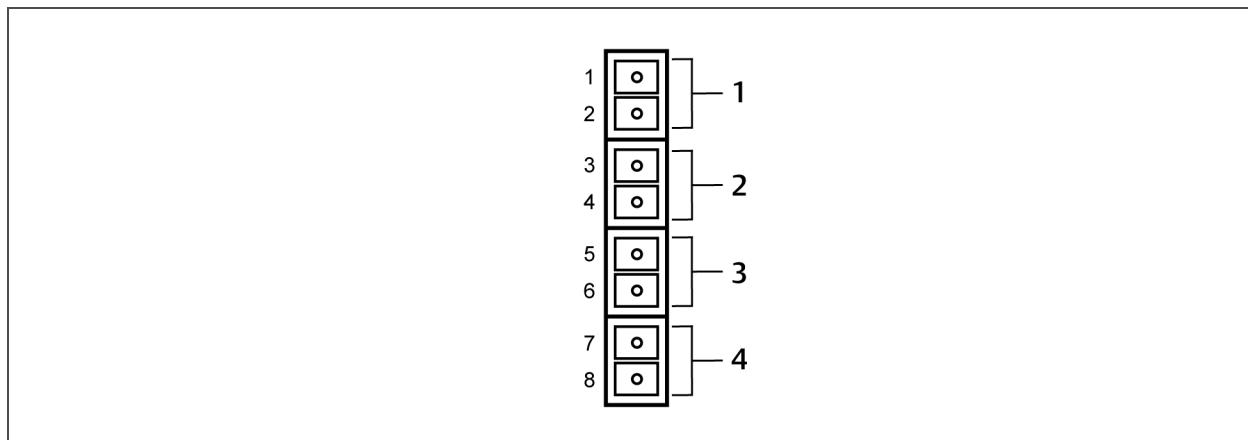
NOTE: This program is compatible with UPS models beginning with 'GXT4,' as in 'GXT4-3000RT230.' It is not compatible with earlier versions of the Liebert® GXT UPS.

A computer running Microsoft® Windows 2000®, Windows XP®, Windows Vista®, Windows 7 or Windows 8 is required to set up and run the configuration program.

6.3 Terminal Block Communication

The Terminal Block includes eight pins, as shown the figure

Figure 6.1 Terminal-block communication pin layout



NO.	DESCRIPTION
1	Any mode shutdown
2	Battery-mode shutdown
3	On battery mode
4	Low battery mode

6.3.1 Any Mode Shutdown

The purpose of Any Mode Shutdown is to shut down the UPS output by turning Off the rectifier, inverter and static switch so that there is no power to the loads.

Any Mode Shutdown can be operated locally or remotely:

- Local Any Mode Shutdown can be performed by shorting pins 1 and 2.
- Remote Any Mode Shutdown can be performed using a switch mounted at a remote location and connected to pins 1 and 2.

NOTE: Remote Power Off will be performed either by NO or NC contact of Any Mode Shutdown, depending on the settings in the configuration program.

A current-limited source for this optocoupler (+12 VDC, 50 mA) will be available from the UPS.

The connection to the UPS for remote connection will be via terminal block connector.

Any Mode Shutdown wiring must conform to all national, regional and local wiring regulations.



WARNING! When the Auto-Enable output option is selected and the UPS output is disabled using Any Mode Shutdown, the GXT4 output can turn On automatically and without warning if the connection is changed.

6.3.2 Battery Mode Shutdown

Battery Mode Shutdown permits shutting down the UPS by turning Off the rectifier, inverter and static switch so that there is no power to the load when the UPS is On Battery. The auxiliary power for the UPS will still be active.

Battery Mode Shutdown can be performed locally or remotely:

- Local Battery Mode shutdown can be performed by shorting pins 3 and 4.
- Remote Battery Mode Shutdown can be performed using a switch mounted in a remote location and connected to pins 3 and 4.

NOTE: Remote Power Off will be performed by NO contact.

A current-limited source (+12 VDC, 50 mA) will be available from UPS.

The connection to the GXT4 for remote connection will be via terminal block connector.

Battery Mode Shutdown wiring must conform to all national, regional and local wiring codes and laws.

This signal must last for 1.5 seconds or longer.

A battery shutdown signal will not cause an immediate shutdown. It will start a 2-minute shutdown timer. This timer cannot be stopped once triggered. If the mains power returns during this countdown, the GXT4 will still shut down and must remain shut down for 10 seconds. Whether the UPS turns back On when the power is restored depends on the auto-restart setting.

6.3.3 On Battery

On Battery signal is a Normally Open (NO) dry contact. When the UPS is supplying output power from the battery this dry contact will be closed.

6.3.4 Low Battery

Low Battery signal is a Normally Open (NO) dry contact. When the UPS is supplying output power from the battery and has reached the Low Battery Warning time selected in the configuration program, this dry contact will be closed.

The rated values for the dry contacts for the On Battery and Low Battery signals are:

- Rated Voltage: 30 V (AC or DC)
- Rated Current: 300 mA

7 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 charging source 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 inadvertently grounded, remove the source of the ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if grounds are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded supply circuit).

7.1 Replacing the Internal Battery Pack

The GXT4 allows you to replace the internal battery pack safely. Refer to **Table 7.1** below, for internal battery pack part numbers for GXT4:

Table 7.1 Replacement internal battery pack model number

UPS MODEL NUMBER	REPLACEMENT INTERNAL BATTERY PACK MODEL NUMBER	QUANTITY REQUIRED
Liebert GXT4-500RT120	GXT4-5A48BATKIT	1
Liebert GXT4-700RT120	GXT4-5A48BATKIT	1
Liebert GXT4-1000RT120	GXT4-5A48BATKIT	1
Liebert GXT4-1500RT120	GXT4-9A48BATKIT	1
Liebert GXT4-2000RT120	GXT4-9A48BATKIT	1
Liebert GXT4-3000RT120	GXT4-9A72BATKIT	1
Liebert GXT4-3000RT208	GXT4-9A72BATKIT	1

7.1.1 Battery Replacement Procedures

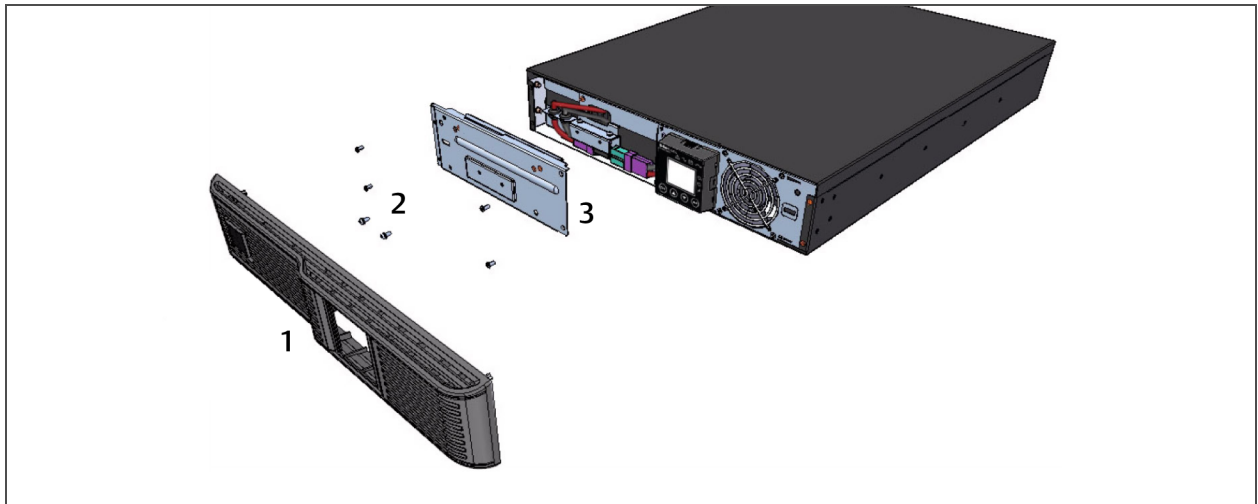
Read all safety cautions before proceeding. A trained user can replace the internal battery pack when the UPS is always in a restricted access location (such as a rack or server closet). Contact your local dealer or Vertiv representative to obtain the pricing of the appropriate replacement battery pack.



CAUTION: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

1. Remove the front plastic bezel cover from the UPS.
2. Loosen and remove the screws on the battery door, as shown in **Figure 7.1** below.
3. Lay the battery door and screws aside for reassembly.

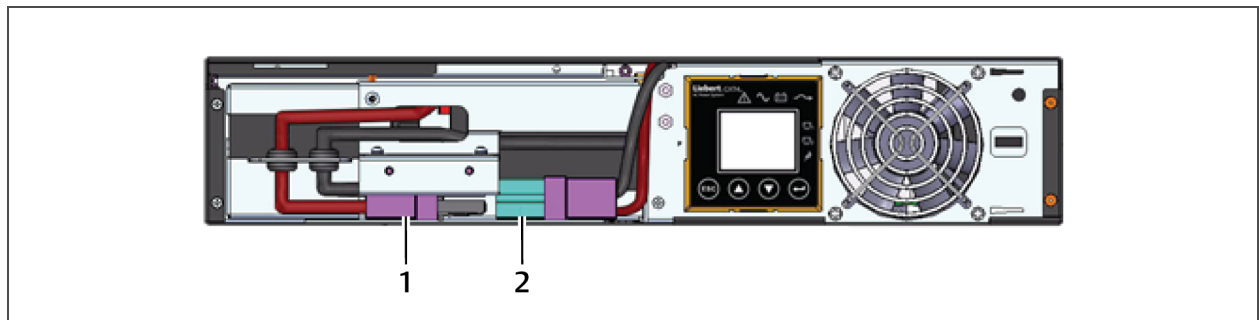
Figure 7.1 Removing the front bezel cover and battery door



NO.	DESCRIPTION
1	Front, plastic bezel cover
2	Screw (4 pieces)
3	Battery door

- Gently pull the battery wire out and disconnect the battery plug and battery receptacle, as shown in the following figure.

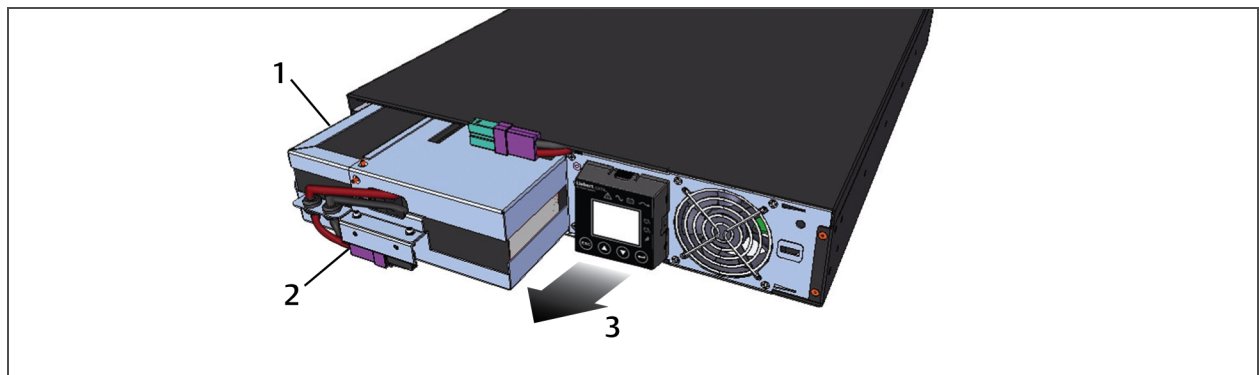
Figure 7.2 Disconnecting the battery plug and battery receptacle (front view)



NO.	DESCRIPTION
1	Battery connector
2	Battery receptacle

- Grasp the battery handle, and pull the internal battery pack out of the UPS, as shown in the following figure.

Figure 7.3 Pull out the battery



NO.	DESCRIPTION
1	Internal battery pack
2	Battery handle
3	Pull battery out using handle.

- Unpack the new internal battery pack. Take care not to destroy the packing. Compare the new and old internal battery pack to make sure they are the same type and model. If so, proceed with 7. If they are different, stop and contact your Vertiv representative, or Technical Support.
- Line up and slide in the new internal battery pack.
- Reconnect the battery plug and battery receptacle.

9. Push the battery wire and internal battery pack back into the UPS.
10. Reattach the front battery door with the 6 screws.
11. Reattach the front plastic bezel cover to the UPS.

NOTE: The internal battery pack is hot-swappable. However, caution should be exercised 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.

7.2 Charging Batteries

The batteries are valve-regulated, non-spillable, lead acid 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.

7.3 Precautions

Although the Liebert® GXT4 is designed and manufactured to ensure personal safety, improper use can result in electrical shock or fire. To ensure safety, observe the following precautions:

- Turn Off and unplug the GXT4 before cleaning it.
- Wear rubber gloves and boots.
- Clean the UPS with a dry cloth. Do not use liquid or aerosol cleaners.
- Never block or insert any objects into the ventilation holes or other openings of the GXT4.
- Do not place the GXT4 power cord where it might be damaged.

7.4 Checking UPS Status

We recommend checking the UPS operation status every six months.

- Check if the UPS is faulty: Is the Fault Indicator On? Is the UPS sounding an alarm?
- Check if the UPS is operating in Bypass mode: Normally, the UPS operates in Normal Mode. If it is operating in Bypass Mode, stop and contact your local Vertiv representative or Technical Support.
- Check if the battery is discharging: When the utility input is normal, the battery should not discharge. If the UPS is operating in Battery Mode, stop and contact your Vertiv representative or Technical Support.

7.5 Checking UPS Functions

NOTE: UPS function check procedures may interrupt power supply to the connected load.

We recommend checking the UPS functions once every 6 months.

Back-up the load data before conducting the UPS functions check. Procedures are as follows:

1. Press the Standby/Manual Bypass button to check whether the alarm and indicators are normal.
2. Press the On/Alarm Silence/Manual Battery Test button to check again whether the indicators are On and the UPS is operating normally.
3. Press the On/Alarm Silence/Manual Battery Test button for three seconds after Inverter Mode. The UPS should initiate battery self-test. Check to determine whether the battery is operating normally. If not, stop and contact your Vertiv representative or Technical Support.

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8 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.

8.1 Symptoms that Require Troubleshooting

The following symptoms indicate the UPS is malfunctioning:

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

8.1.1 Faults

When the fault indicator is illuminated, the LCD displays the fault. The faults are described in **Table 8.1** below.

Table 8.1 Description of displayed faults

DISPLAYED FAULT	CAUSE	CORRECTIVE STEPS
UPS self test failed	The battery is bad or weak.	Contact technical support.
UPS shutdown command received	The UPS shuts down through communication.	Contact customer service.
UPS overload	The UPS is overloaded.	Reduce the load and contact technical support.
Inverter Out of Order	The inverter is faulty.	Contact technical support.
Battery Weak/Bad	The battery is bad or weak.	Replace the battery.
Output Short Circuit	The output connection is short-circuited.	Shut down the equipment and contact technical support.
DC Bus Overvoltage	The DC bus is faulty.	Contact technical support.
UPS Overtemperature	Over-temperature occurs to the UPS and the UPS will transfer to Bypass mode.	Reduce the load and contact technical support.
Charger Out of Order	The charger is faulty.	Contact technical support.
Fan Out of Order	At least one fan is faulty.	Contact technical support.
DC Bus Discharge Fail	A DC-DC failure occurs.	Contact technical support.

NOTE: If the UPS encounters a fault and no correction attempt is performed within 2 minutes, the LCD back light will flash (on 1 second and off 1 second) as an alert.

Press any button to exit the alert mode. If no correction attempt is performed on the UPS, the LCD back light will flash again until the UPS fault is corrected.

8.1.2 Audible Alarm

An audible alarm will sound in conjunction with the visual indicators to indicate a change in UPS operating status. The audible alarm will sound as described in the following table.

Table 8.2 Audible alarm description

CONDITION	ALARM
Battery discharge	Half-second beep every 10 seconds
Low battery	Two half-second beeps every 5 seconds
UPS fault, load on bypass	1-second beep every 4 seconds
UPS fault, no power to load	Continuous
Overload	Half-second beep every half second
Battery replacement	2-second beep every 2 minutes
Battery loss	Continuous
Wiring problem (loss of proper grounding for UPS)	Continuous
Bypass reminder	1-second beep every 60 seconds

8.2 Troubleshooting UPS Issues

In the event of an issue with the UPS, refer to the following table to determine the cause and solution. If the fault persists, contact Vertiv Technical Support. See [Technical Support](#) on page 63

Table 8.3 Troubleshooting table

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, make the connection 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.
Battery indicator is illuminated	UPS is not plugged in	UPS is operating from battery mode. Ensure UPS is securely plugged into the wall receptacle.
	UPS input protection fuse has blown/opened	UPS is operating from battery mode. Save data and close applications. Replace UPS input fuse, then restart UPS.
	Mains power is out of tolerance	UPS is operating from battery mode. Save data and close applications. Ensure mains supply voltage is within acceptable limits for UPS.
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.

Table 8.3 Troubleshooting table (continued)

PROBLEM	CAUSE	SOLUTION
	Batteries may not be able to hold a full charge due to age	Replace batteries. Contact your local dealer, Vertiv representative or Technical Support for replacement battery kit.
Battery indicator is flashing.	Battery source is not available; continuous horn.	Check battery connections, completely power down and restart UPS. NOTE: If the battery circuit opens while the UPS is running, it will be detected when the next battery test is performed.
Bypass indicator is flashing.	Because the voltage or frequency is outside acceptable limits, the bypass is disabled.	The AC input powers the PFC input and serves as the bypass source. If the AC is present but the voltage or frequency exceeds the acceptable range for safe operation with a load, the bypass will be disabled and this indicator will flash, indicating that the bypass is unavailable.

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*.

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9 SPECIFICATIONS

Table 9.1 Specifications for GXT4-500RT120, GXT4-700RT120 and GXT4-1000RT120

MODEL NUMBER	GXT4-500RT120	GXT4-700RT120	GXT4-1000RT120
RATING	500VA/450W	700VA/630W	1000VA/900W
Dimensions, D × W × H, in. (mm)			
Unit	16.2 x 16.9 x 3.4 (408 x 430 x 85)		
Shipping	25.5 x 23.9 x 10.6 (647 x 607 x 270)		
Weight, lb (kg)			
Unit	40 (18.2)		
Shipping	47 (21.4)		
Input AC			
Voltage Range (typical)	120-VAC nominal; variable based on output load		
90% ~ 100% loading	90VAC/140VAC		
70% ~ 90% loading	86VAC/140VAC		
30% ~ 70% loading	77VAC/140VAC		
0 ~ 30% loading	60VAC/140VAC		
Frequency	40Hz ~ 70Hz; Auto Sensing		
Input Power Cord	10 ft. attached w/ NEMA 5-15P plug		
Output AC			
Output Receptacles	5-15R × 6		
Voltage	110/115/120VAC (user-configurable); ±3%		
Waveform	Sine wave		
Utility (AC) Mode Overload	200% for 2 seconds; 150% for 50 seconds with transfer to bypass		
Battery			
Type	Valve-regulated, non-spillable, lead acid		
Qty × V × Rating	4 × 12V × 5.0Ah		
Battery Mfr./Part #	YUASA/NPH5-12; CSB/HR 1221W; CSB/GP1245		
Backup Time	See Battery run times (continued) on page 60		
Recharge Time	5 Hours to 90% capacity after full discharge with 100% load till UPS auto-shutdown (Internal Batteries Only)		
Environmental Requirements			
Operating Temperature, °F (°C)	32 to 104 (0 to 40); see Operating Temperature Parameters on page 57		

Table 9.1 Specifications for GXT4-500RT120, GXT4-700RT120 and GXT4-1000RT120 (continued)

MODEL NUMBER	GXT4-500RT120	GXT4-700RT120	GXT4-1000RT120
RATING	500VA/450W	700VA/630W	1000VA/900W
Storage Temperature, °F (°C)	5°F to 122°F (-15°C to 50°C)		
Relative Humidity	0% to 95%, non-condensing		
Operating Elevation	Up to 10,000 ft. (3000 m) at 77°F (25°C) without derating		
Storage Elevation	50,000 ft. (15000 m) maximum		
Audible Noise	<43dBA max @ 3ft. (1m) front and sides <46dBA max @ 3ft. (1m) rear		< 50 dBA, at 3ft. (1m) rear < 45 dBA, at 3ft. (1m) front and sides
Agency			
Safety	UL 1778, cUL Listed		
RFI/EMI	FCC Class A		
Surge Immunity	IEC 62040-2 2nd Ed		
Transportation	ISTA Procedure 1A		

Table 9.2 Specifications for GXT4-1500RT120 to GXT4-3000RT120 and GXT4-3000RT208

MODEL NUMBER	GXT4-1500RT120	GXT4-2000RT120	GXT4-3000RT120	GXT4-3000RT208
RATING	1500VA/1350W	2000VA/1800W	3000VA/2700W	3000VA/2700W
Dimensions, D × W × H, in. (mm)				
Unit	19.7 × 16.9 × 3.4 (497 × 430 × 85)		23.7 × 16.9 × 3.4 (602 × 430 × 85)	
Shipping	25.5 × 23.9 × 10.6 (647 × 607 × 270)		29.4 × 23.4 × 10.6 (747 × 607 × 270)	
Weight, lb. (kg)				
Unit	54.6 (24.8)		56.1 (25.5)	71.4 (32.4)
Shipping	69.6 (31.6)		70.5 (32)	86 (39)
Input AC				
Voltage Range (typical)	120-VAC nominal; variable based on output load			208VAC nominal; variable based on output load
90 - 100% loading	102VAC/140VAC			177VAC/280VAC
70 - 90% loading	96VAC/140VAC			168VAC/280VAC
30 - 70% loading	84VAC/140VAC			150VAC/280VAC
0 - 30% loading	60VAC/140VAC			115VAC/280VAC

Table 9.2 Specifications for GXT4-1500RT120 to GXT4-3000RT120 and GXT4-3000RT208 (continued)

MODEL NUMBER	GXT4-1500RT120	GXT4-2000RT120	GXT4-3000RT120	GXT4-3000RT208
RATING	1500VA/1350W	2000VA/1800W	3000VA/2700W	3000VA/2700W
Frequency	40 - 70Hz; Auto Sensing			
Input Power Cord	10 ft. attached w/ NEMA 5-15P plug	10 ft. attached w/ NEMA L5-20P plug	10 ft. attached w/ NEMA L5-30P plug	10 ft. attached w/ NEMA L6-20P plug
Output AC				
Output Receptacles	5-15R × 6	L5-20R × 1 + 5-20R × 6	L5-30R × 1 + 5-20R × 6	L6-20R × 1 + L6-15R × 2
Voltage	110/115/120VAC (user-configurable); ±3%			208/220/230/240 VAC (user-configurable); ±3%
Waveform	Sine wave			
Utility (AC) Mode Overload	200% for 2 seconds 150% for 50 seconds		200% for 2 seconds 150% for 10 seconds	
Battery				
Type	Valve-regulated, non-spillable, lead acid			
Qty × V × Rating	4 × 12V × 9.0Ah		6 × 12V × 9.0Ah	
Battery Mfr./Part #	Panasonic/UP- RW1245; CSB/HR 1234W F2; CSB UPS12460F2			
Backup Time	See Battery run times (continued) on page 60			
Recharge Time to 90% capacity after full discharge with 100% load till UPS auto-shutdown (Internal Batteries Only)	6 Hours	5 Hours		
Environmental				
Operating Temperature, °F (°C)	+32 to +104 (0 to 40); see Operating Temperature Parameters on page 57			
Storage Temperature, °F (°C)	5 to +122 (-15 to 50)			
Relative Humidity	0% to 95%, non-condensing			
Operating Elevation	Up to 10,000 ft. (3000 m) at 77°F (25°C) without derating			
Storage Elevation	50,000 ft. (15000 m) maximum			
Audible Noise	< 45dBA at 3ft (1m) rear < 46 dBA at 3ft. (1m) front and side	<48dBA max @ 3ft (1m) front and side <48dBA max @ 3ft. (1m) rear		
Agency				
Safety	UL 1778, c-UL Listed			

Table 9.2 Specifications for GXT4-1500RT120 to GXT4-3000RT120 and GXT4-3000RT208 (continued)

MODEL NUMBER	GXT4-1500RT120	GXT4-2000RT120	GXT4-3000RT120	GXT4-3000RT208
RATING	1500VA/1350W	2000VA/1800W	3000VA/2700W	3000VA/2700W
RFI/EMI	FCC Class A			
Surge Immunity	IEC 62040-2 2nd Ed			
Transportation	ISTA Procedure 1A			

Table 9.3 Battery cabinet specifications

MODEL NUMBER	GXT4-48VBATT	GXT4-72VBATT
USED W/UPS MODEL	GXT4-500RT120, GXT4-700RT120, GXT4-1000RT120, GXT4-1500RT120, GXT4-2000RT120	GXT4-3000RT120, GXT4-3000RT208
Dimensions, D × W × H, in (mm)		
Unit	19.7 × 16.9 × 3.3 (497 × 430 × 85)	23.7 × 16.9 × 3.3 (602 × 430 × 85)
Shipping	24.3 × 22.4 × 10.3 (617 × 570 × 262)	28.2 × 22.4 × 10.3 (717 × 570 × 262)
Weight, lb (kg)		
Unit	57.3 (26)	83.8 (38)
Shipping	86 (39)	110 (50)
Battery parameters		
Type	Valve-regulated, non-spillable, lead acid	
Qty × V × Rating	2 × 4 × 12V × 9.0Ah	2 × 6 × 12V × 9.0Ah
Battery Mfr./Part #	Panasonic/UP-RW1245; CSB/HR 1234W F2; CSB UPS12460F2	
Backup Time	See Battery run times (continued) on page 60	
Environmental		
Operating Temperature, °F (°C)	32 to 104 (0 to 40)	
Storage Temperature, °F (°C)	19 to 122 (-15 to 50) High ambient temperatures will reduce battery life.	
Relative Humidity	0% to 95%, non-condensing	
Operating Elevation	Up to 10,000 ft. (3000 m) at 104°F (40°C) without derating	
Storage Elevation	50,000 ft. (15000 m) maximum	
Agency		
Safety	UL 1778, c-UL Listed	

Table 9.3 Battery cabinet specifications (continued)

MODEL NUMBER	GXT4-48VBATT	GXT4-72VBATT
USED W/UPS MODEL	GXT4-500RT120, GXT4-700RT120, GXT4-1000RT120, GXT4-1500RT120, GXT4-2000RT120	GXT4-3000RT120, GXT4-3000RT208
RFI/EMI	FCC Class A	
Surge Immunity	IEC 62040-2 2nd Ed	
Transportation	ISTA Procedure 1A	

Table 9.4 Operating Temperature Parameters

AMBIENT TEMPERATURE, °C (°F)	25-30 (77-86)	30-35 (86-95)	35-40 (95-104)
Maximum Output Power Factor Derating @ Maximum Load	100%-93%	93%-86%	86%-79%

Table 9.5 Battery run times

NUMBER OF EXTERNAL BATTERY CABINETS	LOAD PERCENT OF CAPACITY	120 VAC RT MODELS						208 VAC RT MODELS
		500VA	700VA	1000VA	1500VA	2000VA	3000VA	3000VA
Internal Battery	10%	131	115	84	117	86	83	79
	20%	84	62	40	57	41	40	38
	30%	44	39	31	36	25	24	23
	40%	40	33	24	25	17	16	16
	50%	35	28	17	18	12	12	12
	60%	31	23	14	14	9	9	9
	70%	27	18	11	11	7	7	7
	80%	24	15	9	9	5	6	5
	90%	21	13	8	7	4	4	4
	100%	17	11	7	6	3	3	3

Table 9.5 Battery run times (continued)

NUMBER OF EXTERNAL BATTERY CABINETS	LOAD PERCENT OF CAPACITY	120 VAC RT MODELS						208 VAC RT MODELS
		500VA	700VA	1000VA	1500VA	2000VA	3000VA	3000VA
Internal Battery + 1 External Battery Cabinet	10%	684	584	418	385	288	276	261
	20%	419	319	224	202	151	148	143
	30%	284	220	159	137	100	99	94
	40%	226	171	119	101	73	73	70
	50%	186	138	92	79	54	54	53
	60%	158	113	73	61	42	43	42
	70%	136	94	60	50	35	36	35
	80%	118	80	51	42	28	29	29
	90%	103	68	44	37	24	25	24
	100%	92	59	37	31	20	21	21
Internal Battery + 2 External Battery Cabinets	10%	1319	1122	798	670	505	484	460
	20%	799	616	433	353	262	257	246
	30%	560	423	299	234	175	174	167
	40%	436	323	224	176	129	129	126
	50%	354	259	179	139	101	102	100
	60%	298	216	148	114	82	83	81
	70%	256	183	124	95	67	69	67
	80%	223	158	107	82	55	57	56
	90%	199	139	92	70	47	48	47
	100%	178	123	82	59	41	42	41

Table 9.5 Battery run times (continued)

NUMBER OF EXTERNAL BATTERY CABINETS	LOAD PERCENT OF CAPACITY	120 VAC RT MODELS						208 VAC RT MODELS
		500VA	700VA	1000VA	1500VA	2000VA	3000VA	3000VA
Internal Battery + 3 External Battery Cabinets	10%	1809	1628	1209	977	725	695	657
	20%	1211	924	648	511	380	372	356
	30%	845	637	451	339	250	247	237
	40%	652	489	337	251	186	186	181
	50%	535	390	265	199	146	147	144
	60%	449	322	218	164	119	120	118
	70%	385	272	187	139	100	102	101
	80%	335	236	162	118	85	87	85
	90%	296	208	142	104	74	76	75
	100%	264	185	125	90	62	65	64
Internal Battery + 4 External Battery Cabinets	10%	2065	1926	1574	1284	960	921	871
	20%	1576	1249	879	668	501	490	471
	30%	1150	859	607	449	330	326	313
	40%	886	651	456	330	242	241	236
	50%	715	525	358	260	191	193	189
	60%	605	434	295	212	157	160	156
	70%	518	366	249	181	132	135	133
	80%	453	318	215	156	113	116	114
	90%	399	278	190	138	98	101	99
	100%	356	247	169	120	85	88	86

Table 9.5 Battery run times (continued)

NUMBER OF EXTERNAL BATTERY CABINETS	LOAD PERCENT OF CAPACITY	120 VAC RT MODELS						208 VAC RT MODELS
		500VA	700VA	1000VA	1500VA	2000VA	3000VA	3000VA
Internal Battery + 5 External Battery Cabinets	10%	2219	2104	1817	1550	1202	1154	1091
	20%	1818	1535	1118	836	620	610	587
	30%	1433	1093	761	559	412	407	391
	40%	1126	827	574	412	301	301	294
	50%	909	657	454	324	236	238	233
	60%	758	549	373	265	194	197	193
	70%	648	465	316	224	165	168	165
	80%	571	402	272	194	141	144	142
	90%	505	352	238	171	122	126	124
	100%	452	313	210	150	108	112	110
Internal Battery + 6 External Battery Cabinets	10%	2321	2223	1979	1740	1421	1369	1302
	20%	1980	1740	1344	1008	745	729	698
	30%	1653	1317	926	665	495	490	471
	40%	1353	1007	690	496	363	362	354
	50%	1107	800	550	389	284	286	280
	60%	923	659	455	319	232	235	230
	70%	789	564	384	268	196	199	196
	80%	687	488	331	231	169	173	171
	90%	611	429	289	203	147	150	148
	100%	547	381	256	180	129	134	132

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.

9.1 Auto-Learning Battery Run Times

As batteries age, the estimated run times may become less accurate. The Liebert® GXT4 is programmed to “learn” from a full battery discharge and modify the estimated run time for the measured battery capacity. This can improve accuracy and compensate for aging batteries or batteries that operate at different ambient temperatures.

The UPS will update the anticipated run time calculation only under certain conditions.

- The UPS must have a steady load that is greater than 20%.
- The UPS must be at 100% charge at the start of a battery discharge.

- The battery discharge must continue uninterrupted until the batteries reach their end-of-discharge voltage.

If all conditions are not met, the run time calculation will not be modified.

If the configuration program is used to change the number of battery cabinets, then the values in the battery above table will be restored. This will override any value that is auto-learned.

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APPENDICES

Appendix A: Technical Support

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

In Europe, Middle East, and Asia:

EMEA Multi-Language Technical support:

e: eoc@vertivco.com

p: Toll free 0080011554499

p: Toll +39 02 98250222

In the United States:

Technical support:

e: liebert.upstech@vertivco.com

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

Monitoring support:

e: liebert.monitoring@vertivco.com

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

Warranty support:

e: microups.warranty@vertivco.com

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

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