

# Liebert®

## GXT4™ Operation & Trouble Shooting Guideline Quick Guide



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### 1. 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.**

#### A. 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.

#### B. 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.

#### C. 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.

#### D. 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](#))

#### E. 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.

#### F. 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.

### 2. 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.**

#### A. 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/>.

#### B. 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.

#### B.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 gives 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 2.1 Output voltage option

UPS MODEL	FACTORY DEFAULT SETTING	OUTPUT VOLTAGE OPTION
All models	230 VAC	200V, 208V, 220V, 230V, 240V

#### NOTICE

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

**NOTE: Programming the output voltage of a 230V model of the GXT4 to 220V automatically derates the UPS to 96% of both the VA and watt ratings**

**NOTE: This program is compatible with UPS models beginning with 'GXT4,' as in 'GXT4-3000RT230' 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.**

#### C. Terminal Block Communication

The Terminal Block includes eight pins, as shown in the figure

Figure 2.1 Terminal-block communication pin layout



#### C.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.**

#### C.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 the 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.**

#### C.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.

#### C.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

### 3. 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.

#### A. 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.

#### A.1 Faults

When the fault indicator is illuminated, the LCD displays the fault. The faults are described in Table A.1 below.

Table 3.1 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.**

#### A.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 3.2 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

#### A.3 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](#)

Table 3.3 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.
UPS has reduced battery backup time	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.
	Batteries are not fully charged	Keep UPS plugged in continuously at least 24 hours to recharge batteries.
Battery indicator is flashing	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 local dealer, Vertiv representative or Technical Support for replacement battery kit.
Bypass 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.
	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 the 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.

**Note :**  
**for technical support :**  
**• Visit [www.vertiv.com](http://www.vertiv.com)**  
**• send an email to [vertiv.indonesia@dksh.com](mailto:vertiv.indonesia@dksh.com)**



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