Liebert® GXT MT+EX 6-10 kVA

Installer/User Guide

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Technical Support Site

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

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

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1 Important Safety Instructions

IMPORTANT! This manual contains important safety instructions that must be followed during the installation and maintenance of the Vertiv™ Liebert® GXT MT+EX 6-10 kVA UPS and batteries. Read this manual thoroughly, and the safety and regulatory information, available at https://www.vertiv.com/ComplianceRegulatoryInfo, before attempting to install, connect to supply, or operate this UPS.

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

Transportation

- It is recommended to transport the UPS system only in the original package to protect against shock and impact.
- The UPS system must be stored in the dry and ventilated room.

Preparation

- Condensation may occur, if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before installation. Allow at least 2 hours for the UPS system to adjust to the environment.
- Do not install the UPS system near water or in a moist environment.
- Do not install the UPS system where it would be exposed to direct sunlight or near the heater.
- Do not block ventilation holes in the UPS housing.

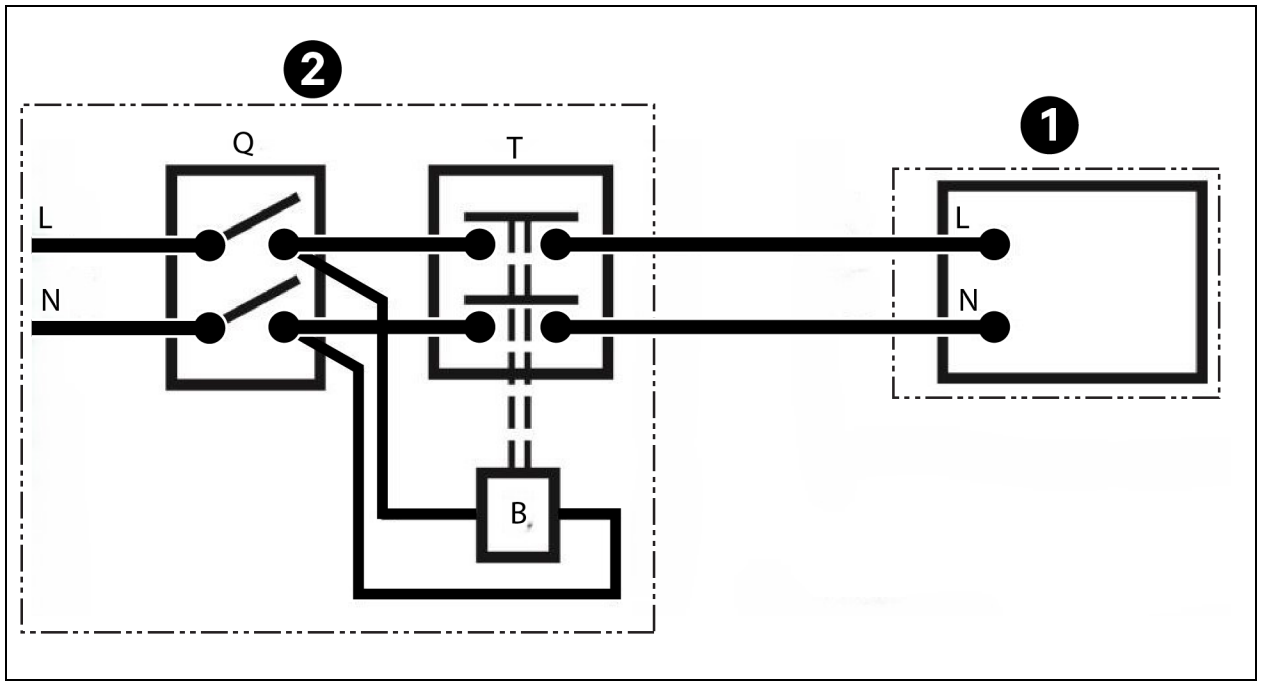
Installation

- Do not connect appliances or devices which would overload the UPS system (such as laser printers) to the UPS output sockets. The load on the ups system should not exceed the rated capacity of the UPS. Overloading of UPS can impact on UPS operation.
- Place the cables in such a way that no one can step on or trip over them.
- The UPS must be installed in a location with good ventilation. Ensure enough space on each side for ventilation.
- In the final set up, UPS provided an earthed connection that equipotentially connects to the external UPS battery cabinets.
- The UPS system must be installed by qualified maintenance person.
- The building wiring installation should have a suitable disconnect device for short circuit backup protection.
- The building wiring installation should have an integrated single emergency switching device that stops the UPS from providing additional power to the load in any mode of operation.
- Before connecting to the building electrical terminal, connect the earth.
- Installation and Wiring must be performed in accordance with the local electrical laws and regulations.

Connection Warnings

- There is no standard back feed protection inside, isolate the UPS before working according to this circuit. The isolation device must be able to carry the UPS input current.

Figure 1.1 External Distribution Panel and UPS



Item	Description
1	UPS
2	External distribution panel
B	Coil remote switch
Q	Magneto Thermal input switch
T	AC contactor as back feed protection device
N	Neutral
L	Line input

- This UPS should be connected with *TN* earthing system.
- The power supply for this unit must be single phase rated in accordance with the equipment nameplate. It also must be suitably grounded.
- Use of this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly affect its safety or effectiveness is not recommended. Do not use this equipment in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.
- Connect the UPS power module's grounding terminal to a grounding electrode conductor.
- The UPS is connected to a DC energy source (battery). The output terminals may be live when the UPS is not connected to an AC supply.

WARNING! Risk of voltage back feed. Can cause equipment damage, injury and death.
Before working on this circuit isolate the UPS. Then check for hazardous voltage between all terminals including the protective earth.

Operation

- Do not disconnect the earth conductor cable on the UPS or the building wiring terminals in any time since this would cancel the protective earth of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminal blocks may be electrically live even if the UPS system is not connected to the building wiring outlet.
- In order to fully disconnect the UPS system, first press the OFF button and then disconnect the mains.
- Ensure that no liquid or other foreign objects can enter into the UPS system.
- The UPS can be operated by any individuals with no previous experience.

WARNING! This is a product for commercial and industrial application in the second environment installation restrictions or additional measures may be needed to prevent disturbances.

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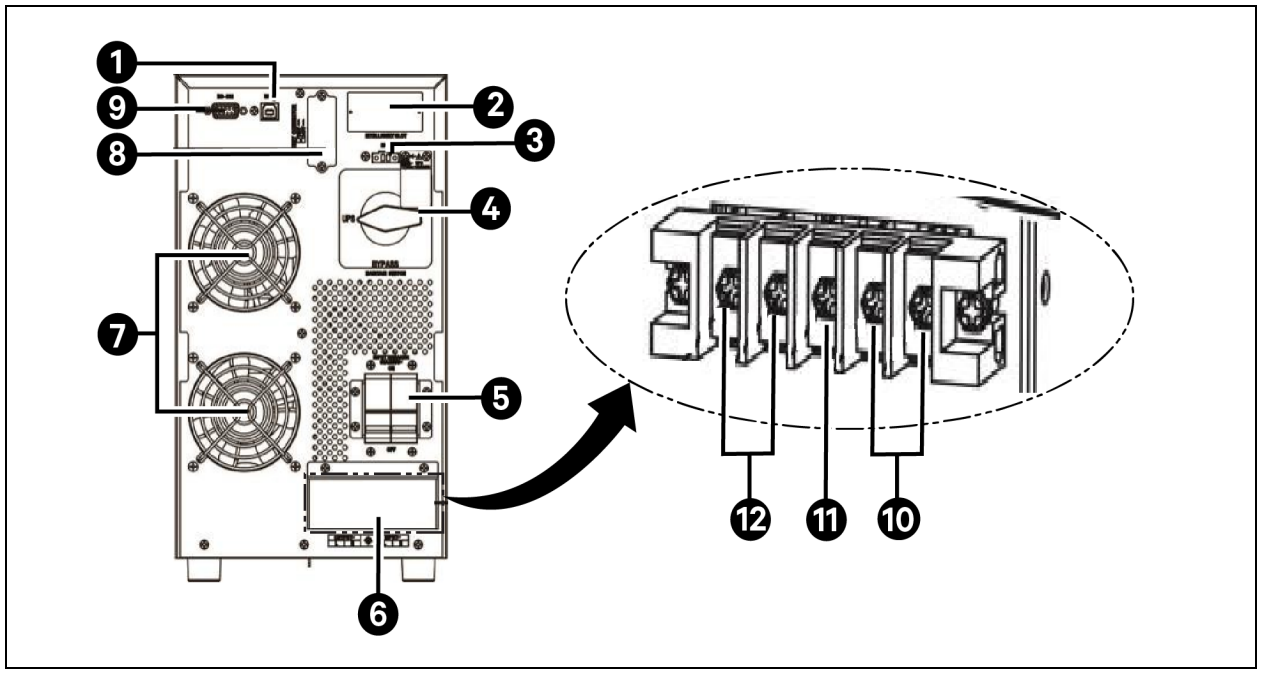
2 Product Description

The Vertiv™ Liebert® GXT MT+EX is a compact, online uninterruptible power system (UPS) that continuously conditions and regulates its output voltage. The Liebert® GXT MT+EX 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, causing data loss, and damage equipment. The Liebert® GXT MT+EX protects equipment from data loss, and damage equipment. The Liebert® GXT MT+EX continuously acts as back up electricity source when the mains fail.

2.1 Rear Panel View

Figure 2.1 Rear Panel—6 kVA/10 kVA



Item	Description	Item	Description
1	USB communication	7	Cooling fan
2	Intelligent slot	8	External battery connector
3	Emergency power off function connector (EPO connector)	9	RS-232 communication port
4	Maintenance bypass switch (option)	10	Utility input terminal
5	Input circuit breaker	11	Grounding terminal
6	Input/Output terminal	12	Output terminal

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3 Installation

3.1 Unpacking and Inspection

Unpack the package and check the package contents.

The shipping package contains:

- One UPS
- One user manual
- One monitoring software CD
- One RS-232 cable (optional)
- One USB cable
- One battery cable (optional)

NOTE: Before installation, inspect the unit. Be sure that nothing inside the package is damaged during transportation. Do not turn on the unit and notify the carrier and dealer immediately if there is any damage or lacking of some parts. keep the original package in a safe place for future use.

3.2 Single UPS Installation

Installation and wiring must be performed in accordance with the local electric laws/regulations and execute the following instructions by professional personnel.

1. Make sure the mains wire and breakers in the building are in compliance with the standard of rated capacity of UPS to avoid the hazards of electric shock or fire.

NOTE: Do not use the wall receptacle as the input power source for the UPS, as its rated current is less than the UPS's maximum input current. Otherwise the receptacle may be burned and destroyed.

2. Switch off the mains switch in the building before installation.
3. Turn off all the connected devices before connecting to the UPS.
4. Prepare wires based on the Table 3.1 below:

Table 3.1 Wire Specifications (AWG)

Model	Input	Output	Battery	Ground
6 KL	10	12	12	12
10 KL	8	8	8	8

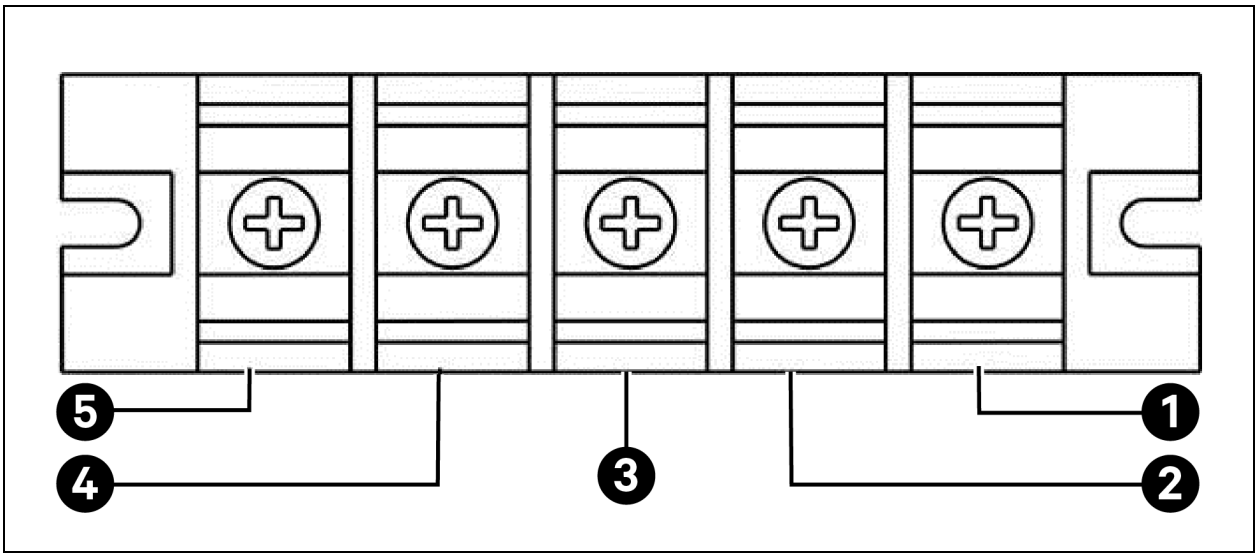
NOTE: It is recommended to use suitable wire in Table 3.1 above or thicker for safety and efficiency.

NOTE: The selections for color of wires should be followed by the local electrical laws and regulations.

5. Remove the terminal block cover on the rear panel of UPS. Then connect the wires according to the following terminal block diagrams.

NOTE: Connect the earth wire first when making wire connection. Disconnect the earth wire last when making wire disconnection.

Figure 3.1 Terminal Block Wiring Diagram



Item	Description
1	Input neutral
2	Input line
3	Ground
4	Output neutral
5	Output line

NOTE: Make sure that the wires are connected tightly with the terminals.

NOTE: Install the output breaker between the output terminal and the load, and the breaker should be qualified with leakage current protective function if necessary.

6. Put the terminal block cover back to the rear panel of the UPS.

WARNING! Risk of electric shock.
Make sure a DC breaker or other protection device between UPS and external battery pack is installed. If not, install it carefully. Switch off the battery breaker before installation.

CAUTION: Pay highly attention to the rated battery voltage marked on the rear panel. To change the numbers of the battery pack, modify the jumper setting on control board simultaneously. The connection with wrong battery voltage may cause permanent damage of the UPS. Make sure the voltage of the battery pack is correct.

CAUTION: Pay highly attention to the polarity marking on external battery terminal block, and make sure the correct battery polarity is connected. Wrong connection may cause permanent damage of the UPS.

NOTE: Make sure the protective earth ground wiring is correct. The current spec, color, position, connection and conductance reliability of wire should be checked carefully.

NOTE: Make sure the utility input & output wiring is correct. The current spec, color, position, connection and conductance reliability of wire should be checked carefully. Make sure the L/N terminal is correct, not reverse or short circuited.

3.3 Software Installation

For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown.

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4 Operating the UPS

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

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

4.1 Starting Up the UPS

To turn on the UPS with utility power supply in AC mode, follow the steps given below:

1. After power supply is connected correctly, set the breaker of the battery pack at *ON* position. Then, set the input breaker at *ON* position. At this time, the fan is running and the UPS supplies power to the loads via the bypass. The UPS is operating in Bypass mode.

NOTE: When the UPS is in Bypass mode, the output voltage will be directly supplied from the utility after the input breaker is switched on. In Bypass mode, the load is not protected by the UPS. To ensure protection for valuable devices, the UPS should be turned on.

2. Press and hold the ON button for 1 second to turn on the UPS and the audible alarm will beep once.
3. A few seconds later, the UPS will enter to AC mode. If the utility power is abnormal, the UPS will operate in Battery mode without interruption.

NOTE: When the UPS is running out battery, it will shutdown automatically at Battery mode. When the utility power is restored, the UPS will auto restart in AC mode.

To turn on the UPS without Utility power supply in battery mode, follow the steps given below:

1. Make sure that the breaker of the battery pack is at *ON* position.
2. Press and hold the ON button for 1 second to turn on the UPS, and the audible alarm will beep once.
3. A few seconds later, the UPS will be turned on and enter to Battery mode.

4.2 Connecting the Devices to the UPS

After the UPS is turned on, user can connect devices to the UPS.

Follow the steps given below for connecting devices to UPS:

1. Switch on the devices one by one and it will display total load level in LCD panel.
2. If it is necessary to connect the inductive loads such as a printer, the in rush current should be calculated carefully to see if it meets the capacity of the UPS, because the power consumption of this kind of loads is too big.
3. If the UPS is overload, the audible alarm will beep twice every second.
4. When the UPS is overload, remove some loads immediately. It is recommended to have the total loads connected to the UPS less than 80% of its nominal power capacity to prevent overload for system safety.

5. If the overload time is over acceptable time listed in specification at AC mode, the UPS will automatically transfer to Bypass mode. After the overload is removed, it will return to AC mode. If the overload occurs 3 times in half hour, the UPS will be locked in Bypass mode. UPS can transfer to Line mode only by manual restart. At this time, if bypass is enabled, the UPS will power to the load via bypass. If bypass function is disabled or the input power is not within bypass acceptable range, it will cut off output directly.

4.3 Charging the Batteries

After the UPS is connected to the utility power, the charger will charge the batteries automatically except in Battery mode or during battery self test. It is suggested to charge batteries at least for 10 hours before use. Otherwise, the backup time may be shorter than expected time.

Make sure the battery numbers setting on the control board is the same to the real connection. The charging current can be changed from 1 A to 6 A via LCD or software. Make sure that the charging current is suitable to battery specification. Refer to Changing the Battery Numbers on the facing page for detailed setting.

4.4 Battery Mode Operation

When the UPS is in Battery mode, the audible alarm will beep according to different battery capacity. If the battery capacity is more than 25%, the audible alarm will beep once every 4 seconds. If the battery voltage drops to the alarm level, the audible alarm will beep quickly (once every sec) to remind users that the battery is at low level and the UPS will shutdown automatically soon. Users could switch off some non critical loads to disable the shutdown alarm and prolong the backup time. If there is no more load to be switched off at that time, shutdown all the loads as soon as possible to protect the devices or save data. Otherwise, there is a risk of data loss or power failure.

In Battery mode, audible alarm sound can be muted by pressing the Mute button. The backup time of the long run model depends on the external battery capacity. The backup time may vary from different environment temperature and load type.

When setting backup time for 16.5 hours (default value from LCD panel), after discharging 16.5 hours, UPS will shutdown automatically to protect the battery. This battery discharge protection can be enabled or disabled through LCD panel control. For more details refer to LCD Setting on page 20

4.5 Shutting Down the UPS

To turn off the UPS with utility power supply in AC mode, follow the steps given below:

1. Turn off the inverter of the UPS by pressing OFF button for at least 1 second, and then the audible alarm will beep once. The UPS will turn into Bypass mode.

NOTE: If the UPS has been set to enable the bypass output, it will bypass voltage from utility power to output sockets and terminal even though user has turned off the UPS (inverter).

NOTE: After turning off the UPS, be aware that the UPS is working at Bypass mode and there is risk of power loss for connected devices.

2. In Bypass mode, output voltage of the UPS is still present. In order to cut off the output, switch off the input breaker. A few seconds later, there is no display shown on the LCD panel and UPS is complete off.

To turn off the UPS without utility power supply in Battery mode, follow the steps given below:

1. Turn off the UPS by pressing OFF button for at least 1s, and then the audible alarm will beep once.
2. Then UPS will cut off power to output and there is no display shown on the display panel.

4.6 Muting the Audible Alarm

To mute the audible alarm, press the **Mute** button for at least 1 second. If user presses it again after the audible alarm is muted, the audible alarm will beep again. Some warning alarms can not be muted unless the error is fixed. Refer to Audible Alarm on page 19 for the details.

4.7 Operation in Warning Status

When Fault LED flashes and the audible alarm beeps once every second, it means that there are some problems for UPS operation. Users can get the fault code from LCD panel. Check the **Table 7.1** on page 33 for details.

Some warning alarms can not be muted unless the error is fixed. Refer to Audible Alarm on page 19 for more details.

4.8 Fault Mode Instructions

When Fault LED illuminates and the audible alarm beeps continuously, it means that there is a fatal error in the UPS. Users can get the fault code from display panel. Check the troubleshooting **Table 7.1** on page 33 for more details.

Check the loads, wiring, ventilation, utility, battery and so on after the fault occurs. Do not try to turn on the UPS again before solving the problems. If the problems can not be fixed, contact the distributor or service people immediately. For emergency case, cut off the connection from utility, external battery and output immediately to avoid more risk or danger.

4.9 Changing the Battery Numbers

IMPORTANT! This procedure can be only followed by professional or qualified technicians.

1. Turn off the UPS. If the load could not be cut off, user should remove the cover of maintenance bypass switch on the rear panel and turn the maintenance switch to *BPS* position first.
2. Switch off the input breaker, and switch off the battery breaker.
3. Remove the cabinet cover, and then modify the jumpers (CN1) on the control board to set the battery numbers as given in **Table 4.1** below.

Table 4.1 Battery Number and Jumpers (CN1)

Battery Number	CN1					
	Pin 15	Pin 16	Pin 17	Pin 18	Pin 19	Pin 20
16	X	1	0	0	0	0
17	X	0	1	0	0	0
18	X	0	0	1	0	0
19	X	0	0	0	1	0
20	X	0	0	0	0	1
NOTE: 1 — connect with jumper; 0 — no jumper; x — the pins are for other functions.						

4. Modify the battery pack for the setting number carefully. After completing it, put the cover back, and switch on the battery breaker.
5. Switch on the input breaker and the UPS will enter in Bypass mode. If the UPS is in maintenance Bypass mode, turn the maintenance switch to *UPS* position and then turn on the UPS.

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5 Operation and Display Panel

5.1 Button Operation

Table 5.1 Button Operation

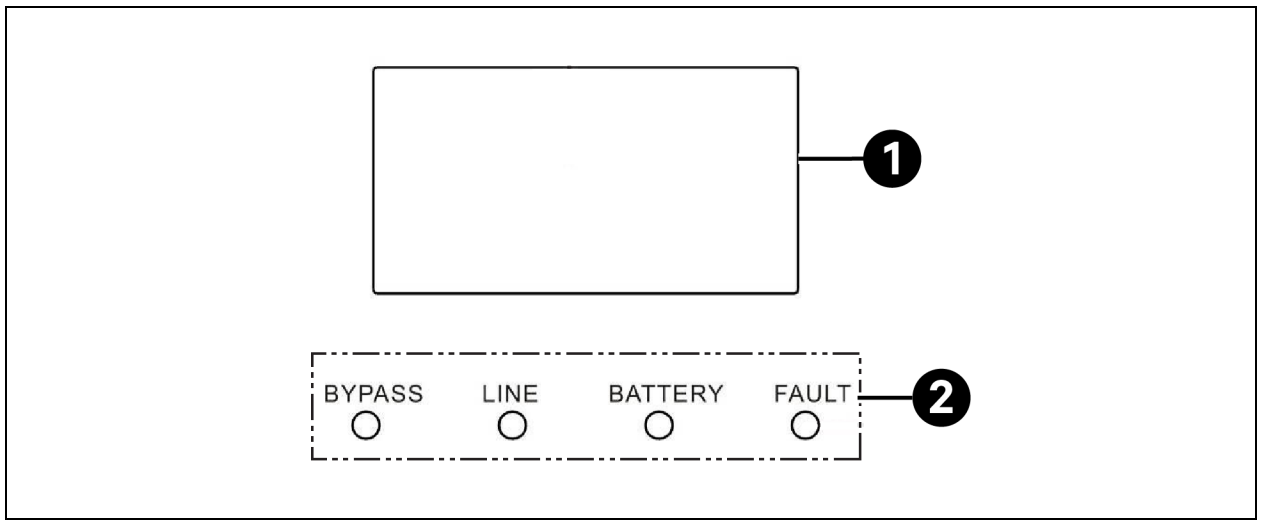
Button	Function
ON/Enter Button	• Turn on the UPS: Press and hold the button more than 1 second to turn on the UPS. • Enter Key: Press this button to confirm the selection in setting menu.
OFF/ESC Button	• Turn off the UPS: Press and hold the button more than 1 second to turn off the UPS. • Esc key: Press this button to return to last menu in setting menu.
Test/Up Button	• Battery test: Press and hold the button more than 1 second to test the battery while in AC mode, or CVCF mode. • UP key: Press this button to display next selection in setting menu.
Mute/Down Button	• Mute the alarm: Press and hold the button more than 1 second to mute the audible alarm. Refer to Starting Up the UPS on page 11 for details. • Down key: Press this button to display previous selection in setting menu.
Test/Up + Mute/Down Button	• Press and hold the two buttons simultaneous more than 1 second to enter/escape the setting menu.
NOTE: CVCF mode means converter mode.	

5.2 LED Indicators and LCD Panel

5.2.1 LED Indicators

There are 4 LEDs on front panel to show the UPS working status, see figure Figure 5.1 below and table Table 5.2 on the next page.

Figure 5.1 LED Indicators and LCD Panel



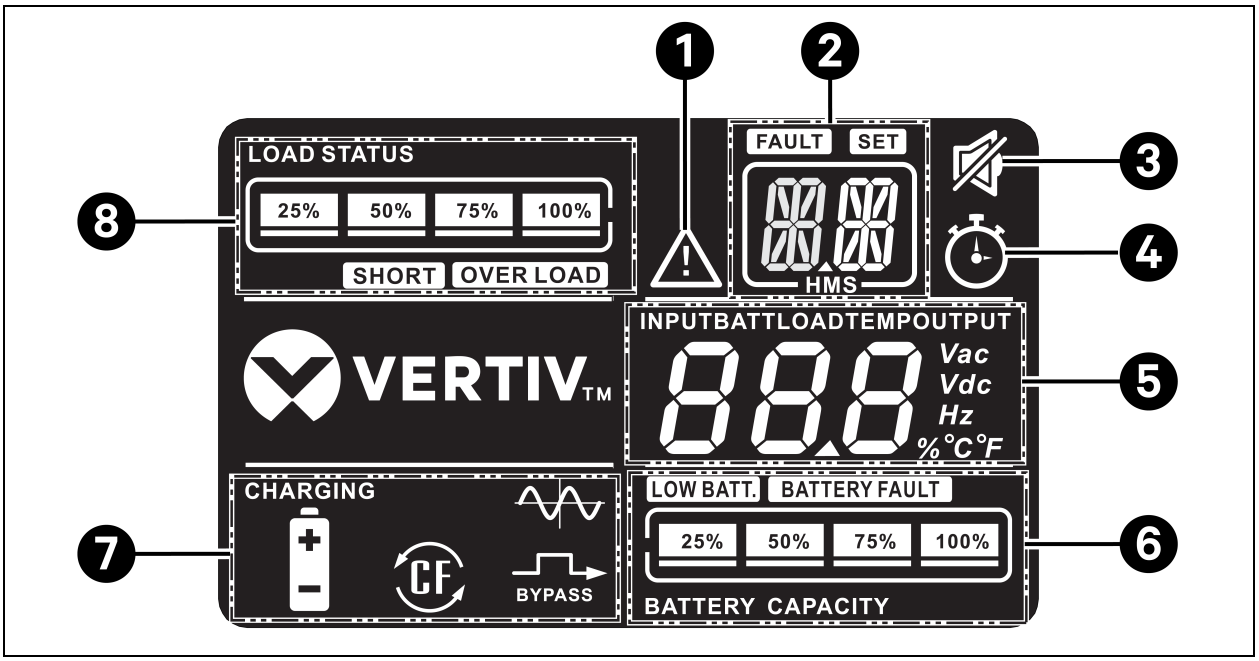
Item	Description
1	LCD panel
2	LED indicators

Table 5.2 LED Indicators

Mode/LED	Bypass	Line	Battery	Fault
UPS Startup	●	●	●	●
Bypass mode	●	○	○	○
AC mode	○	●	○	○
Battery mode	○	○	●	○
CVCF mode	○	●	○	○
Battery Test	●	●	●	○
Fault	○	○	○	●
NOTE: ● Means LED is lighting and ○ means LED is faded.				

5.2.2 LCD Panel

Figure 5.2 LCD Panel

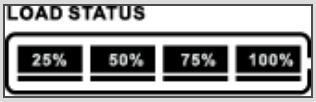
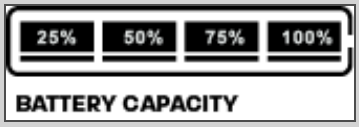


Item	Description
1	Warning indicator
2	Fault and Warning information/Setting operation/Backup time setting
3	Mute operation
4	Backup time indicator
5	UPS information
6	Battery information
7	Mode operation information
8	Load information

Table 5.3 Display Function Description

Parameter	Display	Function
Remaining Backup time information		Indicates the backup time in pie chart.
		Indicates the backup time in numbers. H: hours M: minute S: second
Setting operation		Indicates the setting operation.
Fault and warning information		Indicates that the warning situation occurs.
		Indicates the warning and fault codes, and the codes are listed in details in Faults Reference Code and warning Reference Code sections.
Muted operation		Indicates that the UPS alarm is disabled.
UPS information		Indicates the input and output voltage, frequency, battery voltage, load information, and internal temperature. Vac: input/output voltage Vdc: battery voltage Hz: frequency %: load level °C/°F: temperature

Table 5.3 Display Function Description (continued)

Parameter	Display	Function
Load information		Indicates the load level by 0-25%, 26-50%, 51-75%, and 76-100%.
		Indicates overload.
		Indicates the load or the UPS output is short circuit.
		Indicates the UPS is in online mode.
		Indicates the UPS is in battery mode.
		Indicates the UPS is bypass mode.
		Indicates the UPS is in converter mode.
		Indicates the UPS is charging battery.
Battery information		Indicates the Battery capacity by 0-25%, 26-50%, 51-75%, and 76-100%.
		Indicates the battery is fault.
		Indicates low battery level and low battery voltage.

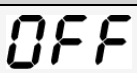
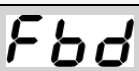
5.3 Audible Alarm

Table 5.4 Audible Alarm

Description	Audible Alarm Status	Muted
UPS Status		
Bypass mode	Beeping once every 2 minutes	Yes
Battery mode	Beeping once every 4 seconds	
Fault mode	Beeping continuously	
Warning		
Overload	Beeping twice every second	No
Low battery	Beeping once every second	
Battery unconnected		
Over charge		
EPO enable		
Fan failure/Over temperature		
Charger failure		
Overload 3 times in 30min		
EPO status		
Cover of maintain switch is open		
Fault		
Bus start failure	Beeping continuously	Yes
Bus over		
Bus under		
Bus unbalance		
Inverter soft start failure		
High Inverter voltage		
Low Inverter voltage		
Inverter output short circuited		
Battery SCR short circuited		
Over temperature		
Overload		

5.4 LCD Display Wording

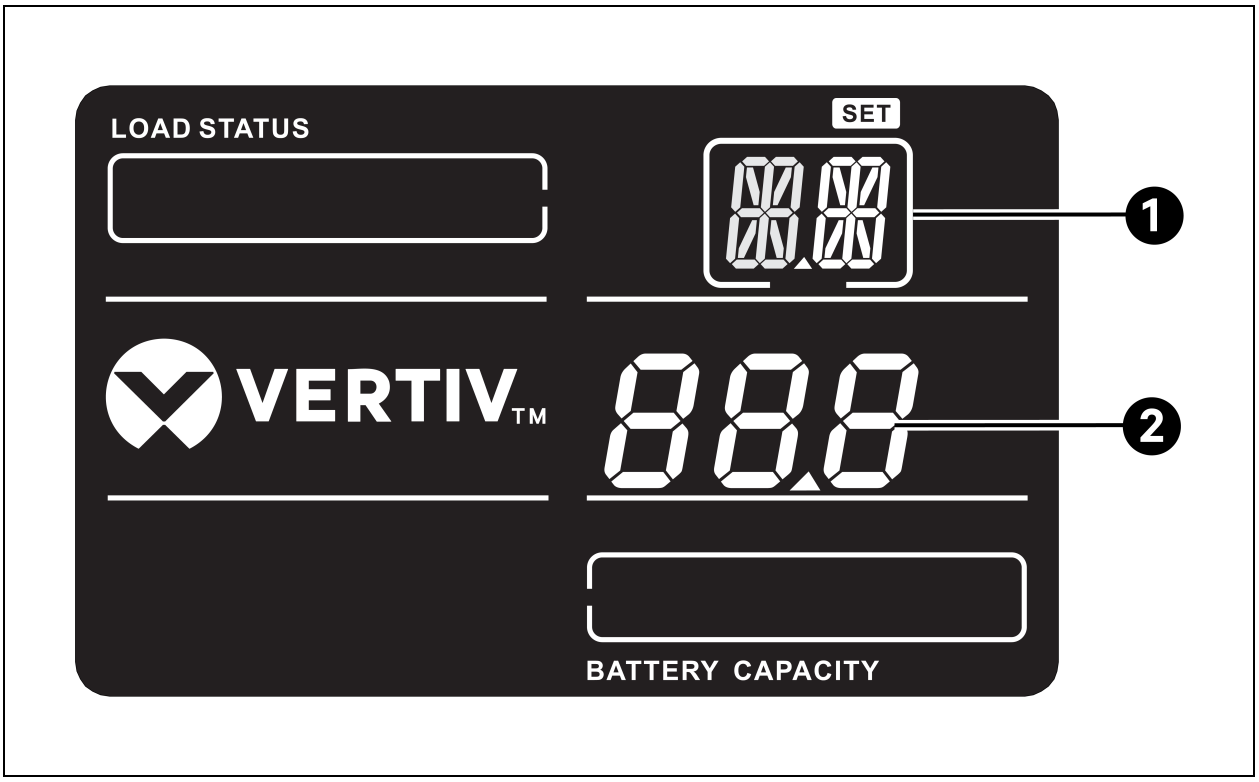
Table 5.5 LCD Display Wording

Abbreviation	Display Content	Meaning
ENA		Enable
DIS		Disable
ATO		Auto
ON		On
OFF		Off
FBD		Forbidden
OPN		Allowed

5.5 LCD Setting

At the main interface, press and hold the Up and Down buttons simultaneous for more than 1 second to enter or escape from setting menu. There are two parameters to set up the UPS. Refer to Figure 5.3 on the facing page.

Figure 5.3 Parameters to Setup the UPS



Item	Description
1	Parameter 1: This is for program alternatives. Refer to Table 5.6 below for the details.
2	Parameter 2: Setting options or values for each program.

Table 5.6 Programs Available List for Parameter 1

Code	Description	Bypass	AC	CVCF	Battery	Battery Test
01	Output voltage	Y				
02	Frequency Converter enable/disable	Y				
03	Output frequency	Y				
04	Voltage low loss for bypass	Y				
05	Voltage high loss for bypass	Y				
06	Frequency low loss for bypass	Y				
07	Frequency high loss for bypass	Y				
08	Bypass mode allowed/forbidden	Y	Y			
09	Manual Bypass mode enable/disable	Y	Y			
10	Battery maximum discharge time setting	Y	Y	Y	Y	Y
11	Battery voltage Calibration	Y	Y	Y	Y	Y

Table 5.6 Programs Available List for Parameter 1 (continued)

Code	Description	Bypass	AC	CVCF	Battery	Battery Test
12	Inverter voltage Calibration		Y	Y	Y	
13	Floating charger voltage adjustment	Y	Y	Y	Y	Y
14	Constant charger voltage adjustment	Y	Y	Y	Y	Y
15	Charger maximum current setting	Y	Y	Y	Y	Y
16	Battery capacity setting	Y	Y	Y	Y	Y
17	Battery groups setting	Y	Y	Y	Y	Y
18	Backup time calibration	Y	Y	Y	Y	Y

NOTE: Y means that this program can be set in this mode.

Table 5.7 UPS Interface Settings

Parameter	Interface	Settings
Output Voltage		Parameter 2: Output voltage Choose the following output voltage: 208: Presents output voltage is 208 VAC 220: Presents output voltage is 220 VAC 230: Presents output voltage is 230 VAC 240: Presents output voltage is 240 VAC
Frequency Converter enable/disable	 	Parameter 2: Frequency mode Setting output frequency at CVCF mode or non CVCF mode. ENA: Setting UPS to CVCF mode. If selected, the output frequency will be fixed at 50 Hz or 60Hz according to Output frequency setting. The input frequency could be from 46 Hz to 64 Hz. DIS: Setting UPS to normal mode (non CVCF mode). If selected, the output frequency will synchronize with the input frequency within 46 Hz to 54 Hz at 50 Hz or within 56 Hz to 64 Hz at 60 Hz according to setting Output frequency setting. If 50 Hz selected in Output frequency setting, UPS will transfer to battery mode when input frequency is not within 46 Hz to 54 Hz. If 60 Hz selected in Output frequency setting, UPS will transfer to battery mode when input frequency is not within 56 Hz to 64 Hz.
Output Frequency Setting		Parameter 2: Output Frequency 50.0 Hz: The output frequency is setting for 50.0 Hz. 60.0 Hz: The output frequency is setting for 60.0 Hz. ATO: If selected, output frequency will be decided according to the latest normal utility frequency. If it is from 46 Hz to 54 Hz, the output frequency will be 50.0 Hz. If it is from 56 Hz to 64 Hz, the output frequency will be 60.0 Hz. ATO is default setting.

Table 5.7 UPS Interface Settings (continued)

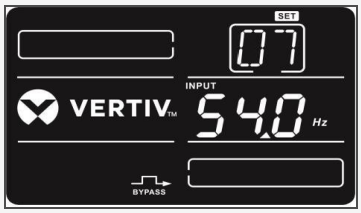
Parameter	Interface	Settings
	 	
Voltage Low Loss for Bypass		Parameter 2: Set the acceptable low voltage for bypass. Setting range is from 110 V to 209 V and the default value is 110 V.
Voltage High Loss for Bypass		Parameter 2: Set the acceptable high voltage for bypass. Setting range is from 231 V to 276 V and the default value is 264 V.
Frequency Low Loss for Bypass		Parameter 2: Set the acceptable low frequency for bypass. 50 Hz system: Setting range is from 46.0 Hz to 49.0 Hz. 60 Hz system: Setting range is from 56.0Hz to 59.0 Hz. The default value is 46.0 Hz/56.0 Hz.
Frequency High Loss for Bypass		Parameter 2: Set the acceptable high frequency for bypass. 50 Hz: Setting range is from 51.0Hz to 54.0 Hz. 60 Hz: Setting range is from 61.0Hz to 64.0Hz. The default value is 54.0 Hz/64.0 Hz.

Table 5.7 UPS Interface Settings (continued)

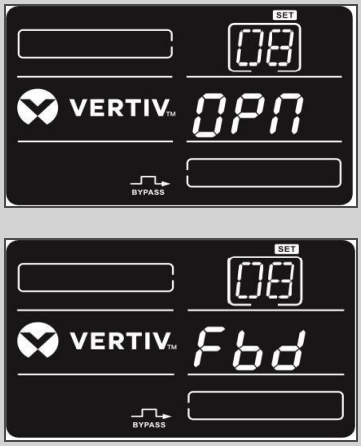
Parameter	Interface	Settings
Bypass Mode Allowed/Forbidden		Parameter 2: OPN: Bypass allowed. When selected, UPS will run at Bypass mode depending on the setting of Manual Bypass mode enable/disable. FBD: Bypass not allowed. When selected, it is not allowed for running in Bypass mode under any situations.
Manual Bypass Mode Enable/Disable	 	Parameter 2: ENA: Bypass enabled. When selected, Bypass mode is activated. DIS: Bypass disabled. When selected, automatic bypass is acceptable, but manual bypass* is not allowed. *Manual bypass means users manually operate UPS for Bypass mode. For example, pressing OFF button in AC mode to turn into Bypass mode.
Battery Maximum Discharge Time Setting		Parameter 2: 000 to 999: Set the maximum discharge time from 0 min. to 999 min. UPS will shutdown to protect battery after discharge time arrives. The default value is 990 min. DIS: Disable battery discharge protection and backup time will depend on battery capacity.
Battery Voltage Calibration		Parameter 2: Set Battery voltage calibration. The voltage setting range is from -5.7 V to 5.7 V. The default value is 0 V.

Table 5.7 UPS Interface Settings (continued)

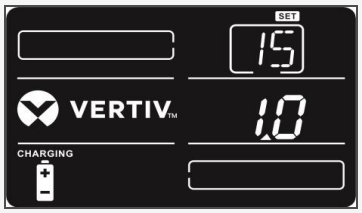
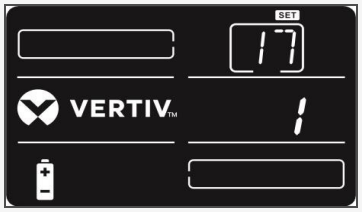
Parameter	Interface	Settings
		
Inverter Voltage Calibration	 	**Parameter 2**: Set Inverter voltage calibration. The voltage setting range is from -6.4 V to 6.4 V. The default value is 0 V.
Floating Charger Voltage Adjustment		**Parameter 2**: Set floating charger voltage. The voltage range is from 0 V to 8 V, the default value is 0 V.
Constant Charger Voltage Adjustment		**Parameter 2**: Set constant charger voltage. The voltage range is from 0 V to 4 V, the default value is 0 V.
Maximum Charger Current Setting		**Parameter 2**: The maximum charging current could be adjusted. Default value is 4A. The available options are 1A, 2A, 4A and 6A. 6A is only available for the UPS with 16 pieces of batteries.

Table 5.7 UPS Interface Settings (continued)

Parameter	Interface	Settings
Battery Capacity Setting		Parameter 2: Set the battery capacity such as 7AH, 9AH, 10AH, 12AH, 17AH, 26AH, 40AH, 65AH, 100AH and so on. The default value is 9AH.
Battery Groups Setting		Parameter 2: Set battery group range from 1 to 6. The default value is 1 group. These parameters are for the battery backup time calculation.
Backup Time Calibration		Parameter 2: Calibrate the displayed backup time by adjusting this multiplier factor. The formulation is listed below: Displayed backup time=Original calculated backup time x Multiplier factor The default value of multiplier factor is 1.0 and the setting range is from 0.5 to 2.

5.6 Operating Mode Description

Table 5.8 Operating Mode/Status Description

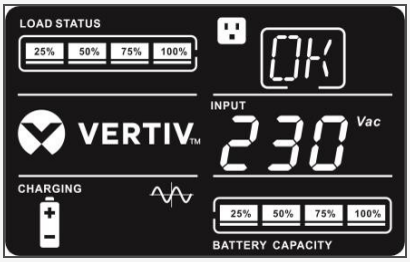
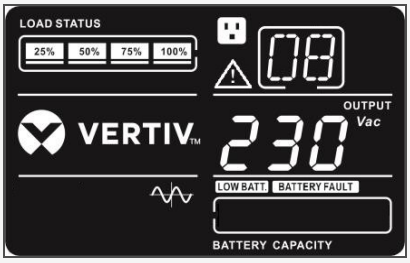
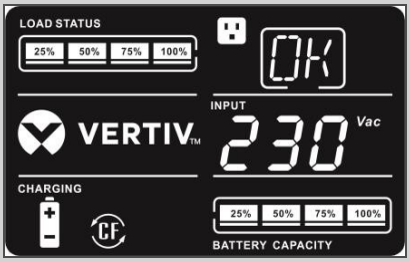
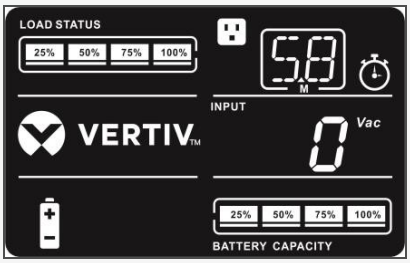
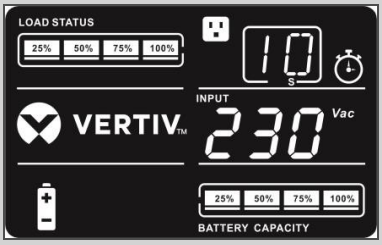
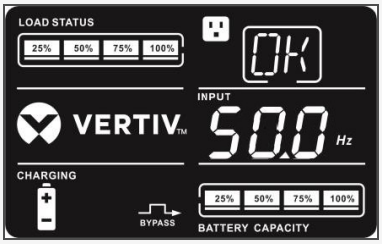
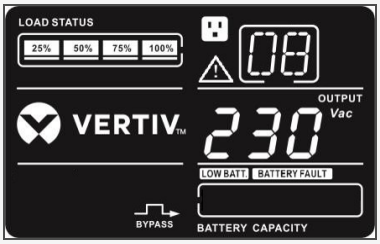
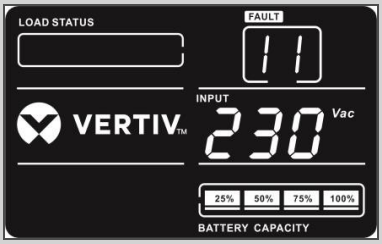
Operating mode/status	Description	LCD display
AC mode	When the input voltage is within acceptable range, UPS will provide pure and stable AC power to output. The UPS will also charge the battery at AC mode.	 
CVCF mode	When input frequency is between 46Hz and 64Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge battery under this mode.	
Battery mode	When the input voltage is beyond the acceptable range or power failure, UPS will backup power from battery and alarm will beep every 4 seconds.	

Table 5.8 Operating Mode/Status Description (continued)

Operating mode/status	Description	LCD display
Battery Test	When UPS is in AC mode or CVCF mode, press **Test** key for more than 2 seconds. Then, UPS will beep once and start "Battery Test". This operation is used to check the battery status.	
Bypass mode	When input voltage is within acceptable range and bypass is enabled, turn off the UPS and it will enter Bypass mode. Alarm beeps every two minutes.	 
Fault status	When fault occurs in UPS, it will display fault icon and fault code in LCD panel.	

5.7 Faults Reference Code

Table 5.9 Faults Reference Code

Fault Event	Fault Code	Icon (ON)	Fault Event	Fault Code	Icon (ON)
Bus start failure	01	FAULT	Low inverter voltage	13	FAULT SHORT
Bus over	02	FAULT	Inverter output short circuited	14	FAULT
Bus under	03	FAULT	Battery SCR short circuited	21	FAULT

Table 5.9 Faults Reference Code (continued)

Fault Event	Fault Code	Icon (ON)	Fault Event	Fault Code	Icon (ON)
Bus unbalance	04	FAULT	Over temperature	41	FAULT
Inverter soft start failure	11	FAULT	Overload	43	FAULT OVER LOAD
High inverter voltage	12	FAULT			

5.8 Warning Indicator

Table 5.10 Warning and Alarm

Warning Description	Code	Icon (Flashing)	Alarm
Battery is not connected	01	BATTERY FAULT	Beeping every second
Over charge	07	25% 50% 75% 100%	Beeping every second
Low battery	08	LOW BATT.	Beeping every second
Overload	09	OVER LOAD	Beeping twice every second
EPO enabled	0B		Beeping every second
Over temperature	0D		Beeping every second
Charger failure	0E		Beeping every second
Overload 3 times in 30 minutes	33	OVER LOAD	Beeping every second
Cover of maintain switch is open	3A		Beeping every second

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6 Maintenance

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

Observe the following precautions when working on batteries:

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

6.1 Storage

Store the UPS covered and upright in a cool, dry location.

6.2 Maintenance

WARNING! Risk of electric shock.
The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.

WARNING! Risk of electric shock.
Even after the unit is disconnected from the mains, components inside the UPS system are still connected to the battery packs which are potentially dangerous.

CAUTION: Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high capability capacitor such as BUS-capacitors.

CAUTION: Only persons are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorized persons must be kept well away from the batteries.

WARNING! Risk of electric shock.
Verify that no voltage between the battery terminals and the ground is present before maintenance or repair. In this product, the battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground.

CAUTION: Batteries may cause electric shock and have a high short circuit current. Remove all wristwatches, rings and other metal personal objects before maintenance or repair, and only use tools with insulated grips and handles for maintaining or repairing.

IMPORTANT! When replace the batteries, install the same number and same type of batteries.

CAUTION: Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.

IMPORTANT! Replace the fuse only with the same type and amperage in order to avoid fire hazards.

IMPORTANT! Do not disassemble the UPS system.

6.2.1 Cleaning the UPS

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

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

7 Troubleshooting

In the event of an issue with the UPS, refer to Table 7.1 below to determine the cause and solution. If the fault persists, contact Vertiv Technical Support. Visit the GXT MT+EX product page at www.vertiv.com for contact information. For details on fault codes, refer to the Table 5.9 on page 28.

Table 7.1 Troubleshooting

Symptom	Possible Cause	Solution
No indication and alarm even though the mains is normal.	The AC input power is not connected properly.	Check if the input cable firmly connected to the mains.
The icon ⚠ and the warning code 0B flash on the LCD display and alarm beeps every second.	EPO function is enabled.	Set the circuit in closed position to disable the EPO function.
The ⚠ icon and BATTERY FAULT flash on LCD display and alarm beeps every second.	The external or internal battery is incorrectly connected.	Check if all the batteries are connected properly.
The icon ⚠ and OVER LOAD flash on LCD display and alarm beeps twice every second.	UPS is overloaded.	Remove the excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove the excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove the excess loads from UPS output first. Then shutdown the UPS and restart it.
Fault code is shown as 43. The icon OVER LOAD lights on LCD display and alarm beeps continuously.	UPS is overloaded for too long and becomes faulty. Then it shuts down automatically.	Remove the excess loads from the UPS output and restart it.
Fault code is shown as 14, the icon SHORT lights on LCD display, and alarm beeps continuously.	The UPS shuts down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Other fault codes are shown on LCD display and alarm beeps continuously.	A UPS internal fault has occurred.	Contact your dealer.
The battery backup time is shorter than nominal value.	The batteries are not fully charged.	Charge the batteries for at least 7 hours and then check capacity. If the problem still persists, consult your dealer.
	The batteries are defective.	Contact your dealer to replace the battery.
The icon ⚠ and warning code 0D flash on LCD display and alarm beeps every second.	The UPS temperature is too high.	Check fans and notify dealer.
The UPS cannot startup, the icon ⚠ flashes on LCD display, and alarm beeps every second.	Cover of the maintain switch is open.	Check if the cover of maintain switch is screwed tightly.

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8 Specifications

Table 8.1 Specifications

Model		Liebert® GXT MT+EX 6 kVA	Liebert® GXT MT+EX 10 kVA
Capacity		**6000 VA /5400 W**	**10000 VA/9000 W**
Input			
Voltage Range	Low Line Loss	• 110 VAC ±3% at 50% Load • 176 VAC ±3% at 100% Load	
	Low Line Comeback	Low Line Loss Voltage +10 V	
	High Line Loss	300 VAC ±3%	
	High Line Comeback	High Line Loss Voltage -10 V	
Frequency Range		• 46-54 Hz at 50 Hz system • 56-64 Hz at 60 Hz system	
Phase		Single phase with ground	
Power Factor		≧ 0.99 at 100% Load	
Output			
Output Voltage		208/220/230/240 VAC	
AC Voltage Regulation		±1%	
Frequency Range (Synchronized Range)		• 46-54 Hz at 50 Hz system • 56-64 Hz at 60 Hz system	
Frequency Range (Battery Mode)		50 Hz ±0.1 Hz or 60 Hz ±0.1 Hz	
Overload	AC Mode	• 100% to 110% for 30 minutes • 110% to 130% for 5 minutes • >130% for 10 seconds	
	Battery Mode	• 100% to 110% for 3 minutes • 110% to 130% for 30 seconds • >130% for 10 seconds	
Current Crest Ratio		3:1 maximum	
Harmonic Distortion		• ≦ 3% THD (Linear load) • ≦ 5% THD (Non linear load)	
Transfer Time	Line Battery	0 millisecond	
	Inverter Bypass	0 millisecond	
Efficiency			
AC Mode		>92%	>93%
Battery Mode		>90%	>91%

Table 8.1 Specifications (continued)

Model		Liebert® GXT MT+EX 6 kVA	Liebert® GXT MT+EX 10 kVA
Capacity		**6000 VA /5400 W**	**10000 VA/9000 W**
Battery			
Long Run Model	Battery Type	Depending on applications	
	Numbers	16 to 20	
	Charging Current	Default: 4 A ± 10% Max.: 1 A, 2 A, 4 A, 6 A (Adjustable, 6 A is only available for 16 pieces batteries)	
	Charging Voltage	218.4 V ±1% (based on 16 pcs batteries)	
Physical			
Long run Model	Dimension, D X W X H (mm)	369 x 190 x 318	442 x 190 x 318
	Net Weight (kgs)	12	16
Environment			
Operation Temperature		0 °C to 40 °C (Battery life cycle will be shortened when temperature is above 25 °C)	
Operation Humidity		<95% and non condensing	
Operation Altitude (Refer notes)		<1000 m	
Noise Level		Less than 55 dB at 1 m	Less than 58 dB at 1 m
Management			
Smart RS-232 or USB		Supports Windows 2000/2003/XP/Vista/2008, Windows 7/8, Linux, Unix, and MAC	
Optional SNMP		Power management from SNMP manager and web browser	
Agency			
Safety		IEC/EN 62040-1	
EMI	Conducted Emission	IEC/EN 62040-2 Category C3	
	Radiated Emission		
EMS	ESD	IEC/EN 61000-4-2 Level 4	
	RS	IEC/EN 61000-4-3 Level 3	
	EFT	IEC/EN 61000-4-4 Level 4	
	SURGE	IEC/EN 61000-4-5 Level 4	
	CS	IEC/EN 61000-4-6 Level 3	

Table 8.1 Specifications (continued)

Model		Liebert® GXT MT+EX 6 kVA	Liebert® GXT MT+EX 10 kVA
Capacity		**6000 VA /5400 W**	**10000 VA/9000 W**
	Power Frequency Magnetic Field	IEC/EN 61000-4-8 Level 4	
	Low Frequency Signals	IEC/EN 61000-2-2	

NOTE:
- **Derate capacity to 60% of capacity in CVCF mode and to 90% when the output voltage is adjusted to 208 VAC.**
- **Product specifications are subject to change without further notice.**
- **If the UPS is installed or used in a place where the altitude is above than 1000m, the output power must be derated one percent per 100 m.**

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Appendices

Appendix A: Technical Support and Contacts

A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2778

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

A.2 Locations

United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH, 43082, USA

Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

Asia

7/F, Dah Sing Financial Centre

3108 Gloucester Road, Wanchai

Hong Kong

A.3 Customer Support—Liebert® GXT MT+EX 6-10 kVA

India

Vertiv Energy Private Limited,

Plot C-20, Road No.19, Wagle Ind Estate, Thane (W), 400604. India

Email: customer.care@vertiv.com

Phone: 1-800-2096070

Connect with Vertiv on Social Media

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

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

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

 https://www.x.com/Vertiv/

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