Power Protection for
Business-Critical Continuity

Liebert GXT-MT
1 - 3 kVA True On Line Double Conversion UPS
User Manual

EMERSON™
Network Power

Liebert GXT-MT Series 1-3 kVA UPS

User Manual

Version: V2.11
Revision date: September 29, 2005

Emerson Network Power provides customers with technical support. Users may contact the nearest Emerson local sales office or service center.

While every precaution has been taken to ensure accuracy and completeness in this manual, Emerson Network Power assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

Emerson Network Power pursues a policy of continuous product development and reserves the right to change the equipment design without notice.

Contents

Safety Instructions

As dangerous voltages are present within the UPS, only an Emerson technician or an Emerson-authorized technician is permitted to open it. Failure to observe this could result in electric shock risk and invalidation of any implied warranty

Transport

- Please transport the UPS system only in the original packaging (to protect against shock and impact).

Set-up

- Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours.
- Do not install the UPS system near water or in damp environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heat source.
- Do not block off ventilation openings in the UPS system's housing.

Installation

This manual contains information concerning the installation and operation of the Emerson Network Power Liebert GXT-MT Uninterruptible Power System (UPS)
All relevant parts of the manual should be read prior to commencing the installation.

- Do not connect appliances or equipment (e.g. laser printer) to the output socket, which would overload the UPS system.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances such as hair dryers to UPS output sockets.
- Connect the UPS system only to an earthed shockproof socket outlet.
- The building wiring socket outlet (shockproof socket outlet) must be easily accessible and close to the UPS system.
- Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring socket outlet (shockproof socket outlet).
- Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.
- The UPS must be commissioned and serviced by an authorized representative of Emerson Network Power. Failure to do so could result in personnel safety risk, equipment malfunction and invalidation of warranty.
- The Liebert GXT-MT has been designed for Commercial/Industrial use only, and is not recommended for use in life support applications.
- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA.

Operation

- Do not disconnect the mains cable on the UPS system or the building wiring socket outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminals block may be electrically lived even if the UPS system is not connected to the building wiring socket outlet.
- In order to fully disconnect the UPS system, first press the Standby switch then disconnect the mains lead.
- Ensure that no fluids or other foreign objects can enter the UPS system.
- The UPS operates with hazardous voltages. Only qualified maintenance personnel may carry out repairs.

Maintenance, servicing and faults

- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- Caution - risk of electric shock. Even after the unit is disconnected from the mains power supply (building wiring socket outlet), components inside the UPS system are still connected to the battery and are still electrically live and dangerous.
- Before carrying out any kind of servicing and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exist in the terminals of high capability capacitor such as BUS-capacitors.
- Only persons who are familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorised persons must be kept well away from the batteries.
- Caution - risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Before touching, please verify that no voltage is present!
- Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:
  - remove wristwatches, rings and other metal objects
  - use only tools with insulated grips and handles.
- When changing batteries, install the same number and same type of batteries.
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- Please replace the fuse only by a fuse of the same type and of the same amperage in order to avoid fire hazards.
- Do not dismantle the UPS system

1. Description of commonly used notations

Some or all of the following Notations may be used in this manual and may appear in your application process. Therefore, all users should be familiar with them and understand their explanations.

Notation and Explanation	
Notation	Explanation
	Alert you to pay special attention
	Caution of high voltage
	Turn on the UPS
	Turn off the UPS
	Idle or shut down the UPS
	Alternating current source (AC)
	Direct current source (DC)
	Protective ground
	Alarm silence
	Overload indication
	Battery check
	Recycle
	Keep UPS in a clear area

2 . Product Introduction

The Liebert GXT-MT On-Line-Series is an uninterruptible power supply incorporating double-conversion technology. It provides perfect protection specifically for Novell, Windows NT and UNIX servers.

The double-conversion principle checks all mains power disturbances. A rectifier converts the alternating current from the socket outlet to direct current. This direct current charges the batteries and powers the inverter. On the basis of this DC voltage, the inverter generates a sinusoidal AC voltage, which permanently supplies the loads.

Computers and peripherals are thus powered entirely by the inverter on the mains mode and in the event of power failure, the maintenance-free batteries power the inverter.

This manual covers the UPS listed as follows. Please confirm whether it is the model you intend to purchase by performing a visual inspection of the Model No. on the rear panel of the UPS.

Model Number	Runtime
GXT1000-MT	Standard
GXT1000L-MT	Long Run
GXT2000-MT	Standard
GXT2000L-MT	Long Run
GXT3000-MT	Standard
GXT3000L-MT	Long Run

3. System Description

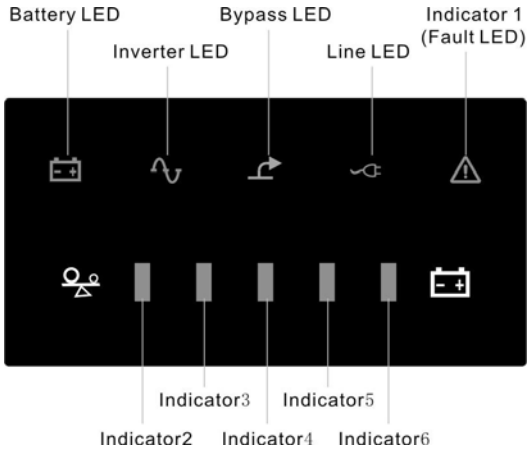


Figure 1: Display Panel

Switch	***Function***
ON - Switch	Turn on UPS system: By pressing the ON-Switch "I" the UPS system is turned on. Deactivate acoustic alarm: By pressing this switch an acoustic alarm can be deactivated.
OFF-Switch	When mains power is normal, the UPS system switches to Standby mode by pressing OFF-Switch "⏻". It is then switched to Bypass and the inverter is off. At this moment, the output sockets are supplied with voltage via the bypass if the mains power is available.
Display	***Function***
LINE LED	The green LINE LED lights up if mains voltage is applied to the UPS input. LINE LED blinks when the phase and neutral conductor have been reversed at the input of the UPS system. If LINE LED and BATTERY-LED light up, the mains power supply is out of tolerance.
BATTERY LED	The orange-coloured BATTERY-LED lights up when the mains power has failed and the inverter is being powered by the batteries.
BYPASS LED	The orange-coloured BYPASS LED lights up when the UPS system is supplying voltage provided by the mains power via the bypass.
INVERTER LED	The green-coloured INVERTER LED lights up if the UPS system is supplying voltage provided by the mains power via the inverter.
FAULT LED	The red FAULT LED lights up and an acoustic warning signal is issued continuously when the UPS system is in fault condition. Press the Standby switch in order to turn off the warning tone.
Display	***Function***
LOAD & BATTERY CAPACITY LEDs	These LEDs show the load of the UPS system if the mains power is available (normal operation): 2nd LED 96%-105 % 3rd LED 76%-95 % 4th LED 56%-75 % 5th LED 36%-55 % 6th LED. 0-35 % In the battery operation, the LEDs indicate the capacity of the batteries: 2nd LED 0-25 % 3rd LED 26%-50 % 4th LED 51%-75 % 5th LED 76%-95 % 6th LED 96%-100 %

4. Installation

Unpacking and Inspection

1) Unpack the packaging and check the package contents. The shipping package contains:

- A UPS
- A user manual
- A communication cable
- A battery cable (for Long Runtime models only)
- A CD containing UPS Monitoring Software (WinPower)

2) Inspect the appearance of the UPS to see if there is any damage 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.

Input and output power cords and protective earth ground installation

1. Notes for installation

1) The UPS must be installed in a location with good ventilation, far away from water, inflammable gas and corrosive agents.

2) Ensure the air vents on the front and rear of the UPS are not blocked. Allow at least 0.25m of space on each side.

3) Condensation to water drops may occur if the UPS is unpacked in a very low temperature environment. In this case it is necessary to wait until the UPS is fully dried inside out before proceeding installation and use. Otherwise there are hazards of electric shock.

2. Installation

Installation and wiring must be performed in accordance with the local electric code and the following instructions by professional personnel.

For safety, please cut off the mains power switch before installation. The battery breaker also needs to be cut off if it is a long backup time model (“GXT-L” model).

1) Open the terminal block cover located on the rear panel of the UPS; please refer to the appearance diagram.

2) For 1KVA UPS, it is recommended to select the 1.5mm^2 wire.

3) For 2/3KVA, it is recommended to select the 2.5mm^2 wire.

Note: Do not use the wall receptacle as the input power source for the 2/3KVA UPS, as its rated current is less than the UPS's maximum input current. Otherwise the receptacle may be burned and destroyed.

4) Connect the input and output wires to the corresponding input and output terminals according to the following diagram.

Note: you must make sure that the input and output wires and the input and output terminals are connected tightly.

5) The protective earth ground wire refers to the wire connection between the equipment which consumes electric equipment and the ground wire. The wire diameter of protective earth ground wire should be at least as above mentioned for each model and green wire or green wire with yellow ribbon wire is used.

6) After having completed the installation, make sure the wiring is correct.

7) Please install the leak current protective breaker at the output power distribution panel of the UPS if necessary.

8) To connect the load with the UPS, please turn off all the loads first, then perform the connection and finally turn on the loads one by one.

9) No matter the UPS is connected to the utility power or not, the output of the UPS may have electricity. The parts inside the unit may still have hazardous voltage after turning off the UPS. To make the UPS have no output, power off the UPS, and then disconnect the utility power supply.

10) Suggest charging the batteries for 8 hours before use. After connection, turn the input breaker in the "ON" position, the UPS will charge the batteries automatically. You can also use the UPS immediately without charging the batteries first, but the backup time may be less than the standard value.

11) If it is necessary to connect the inductance load such as a monitor or a laser printer to the UPS, the start-up power should be used for calculating the capacity of the UPS, as its start-up power consumption is too big when it is started.

5. Connection and Operation

The system may be installed and wired only by qualified electricians in accordance with applicable safety regulations

When installing the electrical wiring, please note the nominal amperage of your incoming feeder

1) Inspection:

Inspect the packaging carton and its contents for damage. Please inform the transport agency immediately should you find signs of damage. Please keep the packaging in a safe place for future use.

Note: Please ensure that the incoming feeder is isolated and secured to prevent it from being switched back on again.

2) *Connection*:

2.1) UPS Input Connection

If the UPS is connected via the power cord, please use a proper socket with protection against electric current, and pay attention to the capacity of the socket: over 10A for 1KVA & over 16A for 2KVA & 3KVA.

2.2) UPS Output Connection

The output of the UPS is CE socket-types only. If the load is couple of PCs simply plug the load power cord to the output sockets to complete connection. However, if there are more loads, cut the load end of the load power cord and wire to the extension board. Use one cord for every 5A load.

Model No.	**Output Socket (pcs)**	**Terminal Block**
GXT1000-MT / GXT1000L-MT	4(CE)	Nil
GXT2000-MT / GXT2000L-MT	6 / 4(CE)	Nil /Available
GXT3000-MT / GXT3000L-MT	4(CE)	Available

The wiring configuration is shown as the following procedure:

a) Remove the small cover of the terminal block

b) Use 2.5mm^2 wires for wiring configuration

c) Upon completion of the wiring configuration, please check whether the wires are securely affixed.

d) Put the small cover back to the rear panel.

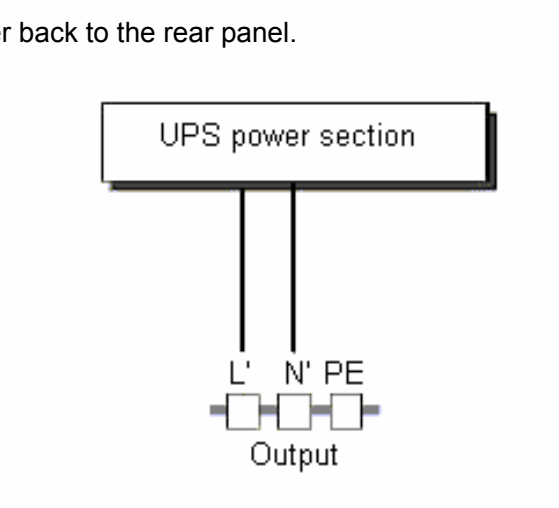


Figure 2: Connection diagram

2.3) Computer Connection:

Connect your computer to the outlet sockets of the UPS system following the above diagram.

Caution!

*Do not connect equipment, such as laser printers, which may overload the UPS system

3) *Battery Charge:*

Fully charge the batteries of the UPS system by leaving the UPS system connected to the mains for 8 hours. You may use the UPS system directly without charging it but the stored energy time may be shorter than the nominal value specified.

4) *Turn On the UPS*:

4.1) With utility power connected:

Press “I” button continuously for more than 1 second to turn on the UPS. Then the UPS will get into self-test status first. After having finishing the self-test, the UPS will get into the inverter mode, at this time, the Utility Power LED, Inverter LED, and Load and Battery Capacity LEDs will light up.

4.2) Without utility power connected:

Even though utility power is connected to the UPS, the UPS still can be turned on by just simply pressing “I” button continuously for more than 1 second. Then the UPS will get into self-test status first. After having finishing the self-test, the UPS will get into the inverter mode, at this time, Battery LED, Inverter LED, and Load and Battery Capacity LEDs will light up.

Note: The default setting for bypass mode is no output after UPS is connecting utility power and breaker is turned on. This can be configured by monitoring software.

5) Test Function:

Test the function of the UPS system by either pressing the On-Switch “I” or disconnecting the input of the UPS system from the power supply.

6) Turn Off the UPS:

6.1) In Inverter Mode:

Press “⏻“ button continuously for more than 1 second to turn off the UPS. Then the UPS will get into self-test status first. After having finished the self-test, the UPS will get into bypass mode and the Utility Power LED and Bypass LED will light up. At this time, the UPS might has output. Disconnect the utility power to turn off the output.

6.2) In Battery Mode:

Press “⏻“ button continuously for more than 1 second to turn off the UPS. Then the UPS will get into self-test status first. After having finished the self-test, the UPS will be turned off completely.

7) Audible Alarm Mute Function:

If the alarm is too annoying in battery mode, you may press “I” button continuously for more than 1 second to clear it. Moreover, the alarm will be enabled when the battery is low to remind you to shutdown the load soon.

8) Operation Procedure of External Battery for Long Backup time Model

- Use the battery pack with voltage: 36Vdc for GXT1000L-MT (3 pcs of 12V batteries), 96Vdc for GXT2000L-MT / GXT3000L-MT (8 pcs of 12V batteries). Connection of batteries more than or less than required will cause abnormality.
- One end of the external battery cord is a plug for connecting the UPS and the other end has 3 (or 2) open wires for connecting the battery pack.

- The battery connection procedure is very important. Any incompliance may result in the risk of electric shock. Therefore, the following steps must be strictly complied with.
- First connect in series the batteries of the pack to ensure proper battery voltage.
- Connect the external battery cord to the battery terminal (DO NOT connect the battery socket of the UPS first. Otherwise, it may cause electric shock). Connect the red wire to the "+" terminal of the battery. The black wire is connected to the "-" terminal of the battery. (*Note*: the green/yellow wire is grounded for protection purpose.)
- Do not connect the UPS to any load yet. Then, connect the power cord of the UPS to supply utility power to the UPS to make the UPS operation in utility power mode.
- Plug the external battery cord to the external battery socket on the rear panel of the UPS to complete the connection procedure and the UPS will start to charge the battery pack.

Caution!

The output sockets of the UPS system may still be electrically live even if the power supply system has been disconnected or the Bypass switch is on “OFF” position.

6. Operating modes for all models

1. Utility power mode

The display panel in utility power mode is shown in the following diagram. The utility power LED and the INV LED are turned on. The load level LEDs will be turned on in accordance with the load capacity connected.

1) If the battery LED is turned on and the utility power LED flashes, it indicates the voltage or frequency of the utility power has exceeded the normal range, the UPS operates in battery mode.

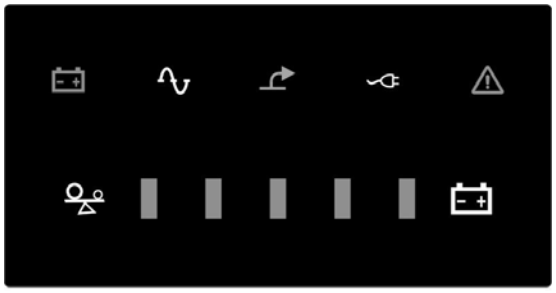


Fig 15.1 The utility power mode

2) If output overloaded, the load level LEDs will be turned on and alarm will sound twice every second. You should get rid of some unnecessary loads one by one to decrease the loads connected to the UPS less than 90% of its nominal power capacity.

Note: Please follow the following steps to connect the generator：

- Activate the generator and wait until the operation is stable before supplying generator power to the UPS.
- The generator capacity should be sized to match the performance characteristics of the UPS

.2. Battery mode

The display panel in battery mode is shown in the following diagram Fig.15.2. The battery LED and the INV LED are turned on. The displayed number of the battery level LEDs will be turned on in accordance with the battery capacity. Note that the load level LEDs in utility power mode will indicate the level of the battery capacity in battery mode instead.

1) When the UPS is running in battery mode, the buzzer beeps once every 4 seconds. If the “ON” button on the front panel is pressed

2) For more than 1 second again, the buzzer will stop beeping (in silence mode). Press the “ON” button once again for more than 1 second to resume the alarm function.

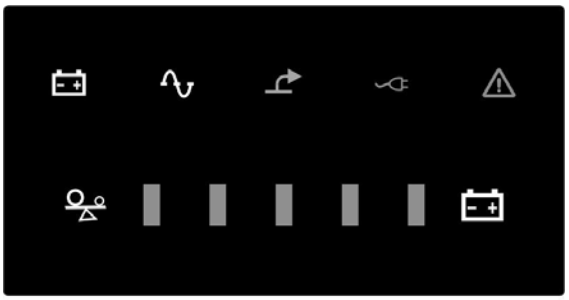


Fig 15.2 Battery mode diagram

2) When the battery capacity decreases, the number of the battery capacity LEDs turned on will be reduced. If the battery voltage descends to the alarm level, the buzzer will beep once every second to remind the users of insufficient battery capacity and the UPS is soon going to shut down automatically. Then the load operations should be carried out promptly and the loads should be eliminated one by one.

3. Bypass mode

The display panel in bypass mode is shown in the following diagram Fig 15.3. The utility power LED and the bypass LED are lit. The displayed number of the load LEDs will be turned on in accordance with the load capacity connected. The UPS will beep once every 2 minutes in bypass mode.

The utility power LED flashes, it shows that the voltage or frequency of the utility power has exceeded the normal range of the UPS.

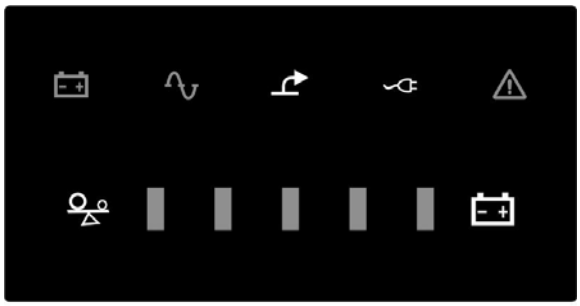


Fig 15.3 UPS bypass mode diagram

1) Other indications on the display panel are the same in utility mode.

2) The UPS does not have the backup function when it is in bypass mode. The power used by the load is supplied from the utility power via internal filter.

4. Abnormality mode

In case the fault LED is turned on when the UPS is in use, it shows that the UPS is operating in abnormal mode.

7. Communication Port

RS232 Interface

The following is the pin assignment and description of DB-9 connector.

Pin #	Description	I/O
2	TXD	Output
3	RXD	Input
5	GND	Input

AS400 Interface (Option)

Except for the communication protocol as mentioned above, this series UPS has AS400 card (an optional accessory) for AS400 communication protocol. Please contact your local distributor for details. The following is the pin assignment and description of DB-9 connector in AS400 card.

Pin #	Description	I/O
1	UPS Fail	Output
2	Summary Alarm	Output
3	GND	Input
4	Remote Shutdown	Input
5	Common	Input
6	Bypass	Output
7	Battery Low	Output
8	UPS ON	Output
9	Line Loss	Output

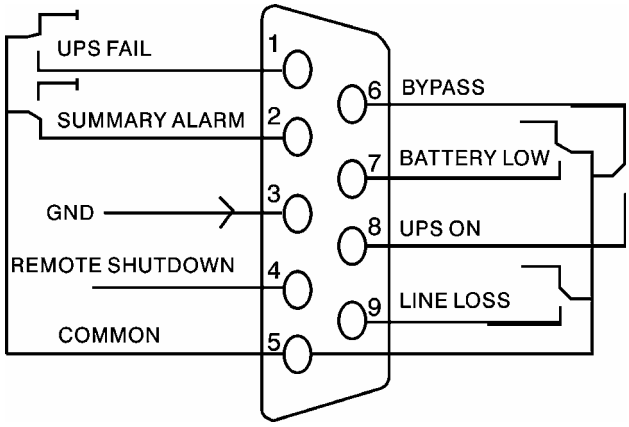
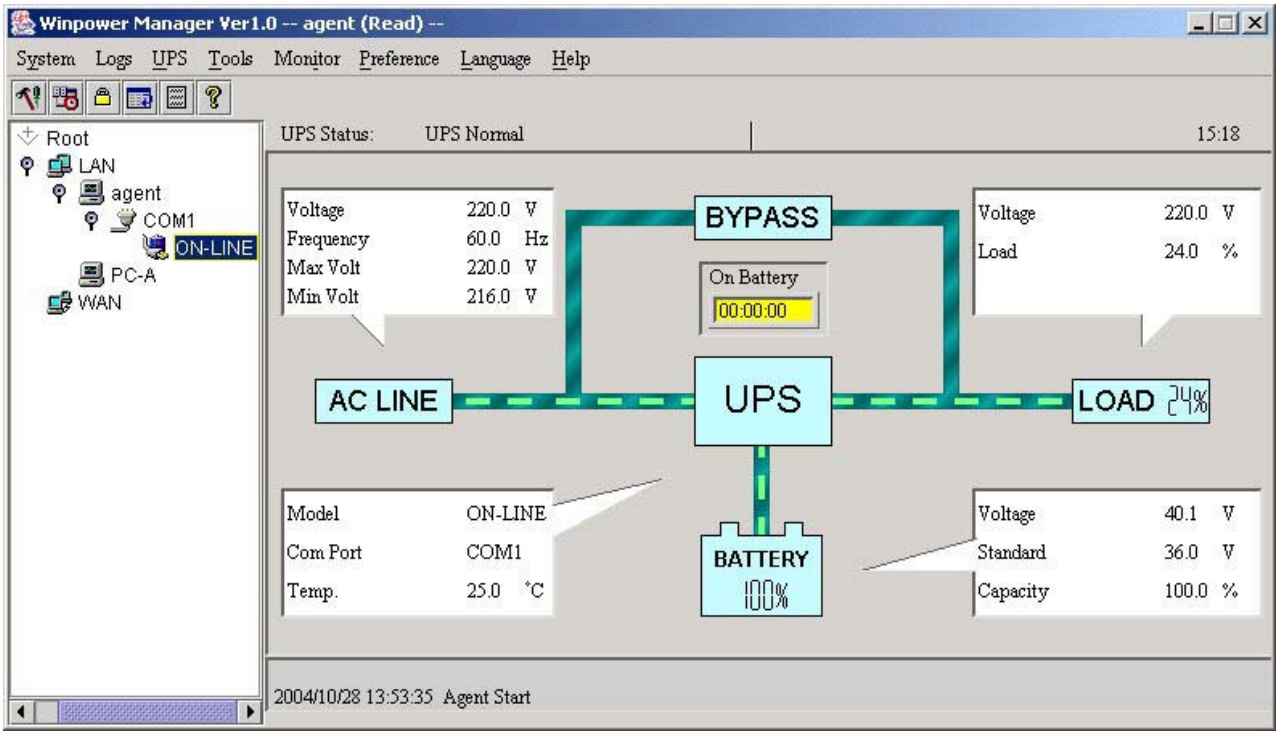


Figure 16.2: DB-9 Interface of AS400 communication protocol

8. Software

Free Software – WinPower

WinPower is a brand new UPS monitoring software, which provides user-friendly interface to monitor and control your UPS. This unique software provides safely auto shutdown for multi-computer systems while power failure. With this software, users can monitor and control any UPS on the same LAN no matter how far from the UPSs.



Installation procedure:

1. Insert the CD into CD ROM.
2. Connect the software cable
3. Follow the on-screen instructions to install the software.

When your computer restarts, the WinPower software will appear as a green plug icon located in the system tray, near the clock.

9. Maintenance

Operation

The UPS system contains no user-serviceable parts. If the battery service life has been exceeded, the batteries must be replaced. In this case please contact your dealer.

Battery Maintenance

- This series UPS only requires minimal maintenance. The battery used for standard models are value regulated sealed lead-acid maintenance free battery. These models require minimal repairs. The only requirement is to charge the UPS regularly in order to maximize the expected life of the battery. When being connected to the utility power, whether the UPS is turned on or not, the UPS keeps charging the batteries and also offers the protective function of overcharging and over-discharging.
- The UPS should be charged once every 4 to 6 months if it has not been used for a long time.
- In the regions of hot climates, the battery should be charged and discharged every 2 months. The standard charging time should be at least 12 hours.
- Battery replacement should be performed by qualified personnel.
- Replace batteries with the same number and same type of batteries.
- Do not replace the battery individually. All the batteries should be replaced at the same time following the instructions of the battery supplier.
- Normally, the batteries should be charged and discharged once every 4 to 6 months. Charging should begin after the UPS shuts down automatically in the course of discharging, the standard charging time for the standard UPS should be at least 12 hours.

Notes for Battery Disposal and Battery Replacement

1) Before disposing of batteries, remove conductive jewelry such as necklace, wrist watches and rings.

2) If it is necessary to replace any connection cables, please purchase the original materials from the authorized distributors or service centers, so as to avoid overheat or spark resulting in fire due to insufficient capacity.

3) Do not dispose of batteries or battery packs in a fire, they may explode.

4) Do not open or mutilate batteries, released electrolyte is highly poisonous and harmful to the skin and eyes.

5) Do not short the positive and negative of the battery electrode, otherwise, it may result in electric shock or fire.

6) Make sure that there is no voltage before touching the batteries. The battery circuit is not isolated from the input potential circuit. There may be hazardous voltage between the battery terminals and the ground.

7) Even though the input breaker is disconnected, the components inside the UPS are still connected with the batteries, and there are potential hazardous voltages. Therefore, before any maintenance and repairs work is carried out, switch off the breaker of the battery pack or disconnect the jumper wire of connecting between the batteries.

8) Batteries contain hazardous voltage and current. Battery maintenance such as the battery replacement must be carried out by qualified personnel who are knowledgeable about batteries. No other persons should handle the batteries.

10. Trouble Shooting

If the UPS system does not operate correctly, please attempt to solve the problem using the table below.

Problem	***Possible cause***	***Remedy***
No indication, no warning tone even though system is connected to mains power supply	No input voltage	Check building wiring socket outlet and input cable.
LINE LED blinks	Phase and neutral conductor at input of UPS system are reversed	Rotate mains power socket by 180° or connect UPS system.
LINE-LED blinks and BATTERY-LED lights up	Input power and/or frequency are out of tolerance	Check input power source and inform dealer if necessary
LINE and BYPASS LED light up even though the power supply is available	Inverter not switched on	Press On-Switch “I”
INVERTER LED lights up, and audible alarm sounding every 1 beep in every 4 seconds	Mains power supply has failed	Switching to battery mode automatically. When audible alarm sounding every second, battery is almost empty.
FAULT LED lights, warning tone once a second	Overload	Remove loads of UPS output.
FAULT-LED lights up, permanent warning tone	UPS fault	Notify dealer
Emergency supply period shorter than nominal value	Batteries not fully charged / batteries defect	Charge the batteries for at least 1 - 2 hours and then check capacity. If the problem still persists, consult your dealer.
FAULT LED lights, BATTERY-LED blinks, warning tone once a second	Charger or Batteries damaged	Notify dealer

Please have the following information at hand before calling the After-Sales Service Department:

1. Model number, serial number
2. Date on which the problem occurred
3. Detailed description of the problem

11. Technical Data

Mechanical		
Module	**W×H×D (mm)**	**Weight (kg)**
Power module GXT1000-MT	145X220X400	14
Power module GXT1000L-MT	145X220X400	7
Power module GXT2000-MT	192X347X460	34.5
Power module GXT2000L-MT	192X347X460	15
Power module GXT3000-MT	192X347X460	35.5
Power module GXT3000L-MT	192X347X460	16

EMS		
Item	**Standard**	**Level**
ESD immunity	IEC61000-4-2	Level 4
RS immunity	IEC61000-4-3	Level 3
EFTB immunity	IEC61000-4-4	Level 4
Surge immunity	IEC61000-4-5	Level 4

EMI		
Item (for GXTL models)	**Standard**	**Level**
Limitation of emission of input harmonic currents	EN61000-3-2	-
Limitation of voltage changes, voltage fluctuations and flicker	EN61000-3-3	-
Conducted Emission	EN50091-2	Class B
Radiated Emission	EN50091-2	Class B

Environmental	
Item	Normal range
Ambient temperature	0°C~40°C
Relative humidity	Less than 90% Condensing
Altitude	Lower than 1000m; no derating; 1000~1500m; 1% derating for every 100m rise
Storage temperature	-0°C~40°C (excluding battery)

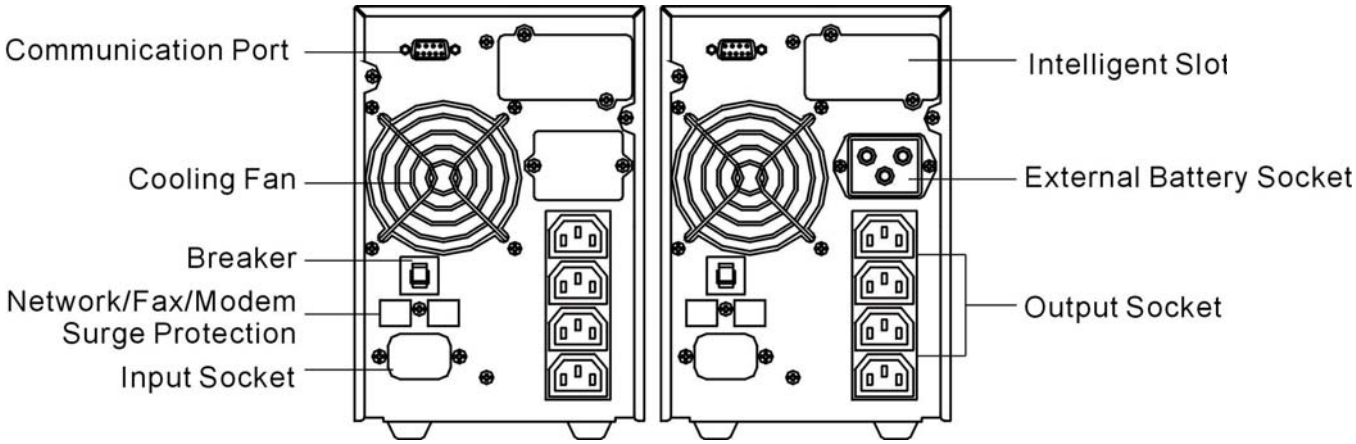
Electrical							
Model		**GXT 1000-MT**	**GXT 1000L-MT**	**GXT 2000-MT**	**GXT 2000L-MT**	**GXT 3000-MT**	**GXT 3000L-MT**
Rating		1000VA/700W		2000VA/1400W		3000VA/2100W	
Input	Input system	1-phase, plus PE					
	Rated voltage	220Vac / 230Vac / 240 Vac					
	Voltage range	1. 160~300 Vac full load 2. 110 Vac half load					
	Frequency	50/60 Hz					
	Power factor	0.97 (conditions: rated voltage, full pure resistive load, fully charged battery)					
Output	Output system	1-phase, plus PE					
	Power factor	0.7					
	Voltage	220Vac / 230 Vac / 240 Vac ±2%					
	Line regulation	≤2%(0~100% linear load)					
	Voltage harmonic distortion (rated input voltage, rated input frequency)	≤3%(0 ~100% linear load) ≤6%(0 ~100% non-linear load)					
	Dynamic variation	<5% in 20 ms					
	Frequency	50 / 60 Hz ±0.2Hz					
	Frequency range	46-54 Hz / 56-64 Hz					
	Inverter overload capability (in Normal mode, 25°C)	108%~150% 30s >150% 300ms					
	Inverter overload capability (in Battery mode, 25°C)	108%~150% 30s >150% 300ms					
	Bypass overload capability	200% for < 60 mins 300% for 5s					
	Crest factor	3:1					
	Bypass operating voltage	80~264V					
	Transfer time	Normal<—>Battery: 0ms					
	DC component	≤200mV					
	Efficiency	Battery mode: ≥83% (rated battery voltage, full linear load) Normal mode: ≥88% (rated mains voltage, full linear load, battery fully charged)					
External battery voltage		36Vdc		96Vdc			
Charging current		1A	4A	1A	8A	1A	8A
Battery	Qty. ×Volts. ×Capacity	3×12V×7.2Ah	-	8X12X7.2Ah	-	8X12X7.2Ah	-
	Manufacturer / model	CSB/GP1272F2 or Panasonic equivalent	-	CSB/GP1272F2 or Panasonic equivalent	-	CSB/HRL1234W F2 or Panasonic equivalent	-
	Typical Autonomy Time	12 Minutes	-	15 Minutes	-	9 Minutes	-
	Autonomy at Half Load	20 Minutes	-	26 Minutes	-	16 Minutes	-
	Charging duration	80% of battery capacity in 4 hrs (standard type)					
Noise (within 1m)		GXT1000L-MT, GXT2000L-MT, GXT3000L-MT: <45db					
Protection		IP20(static state)					

Units with CE markings comply with the following standards:

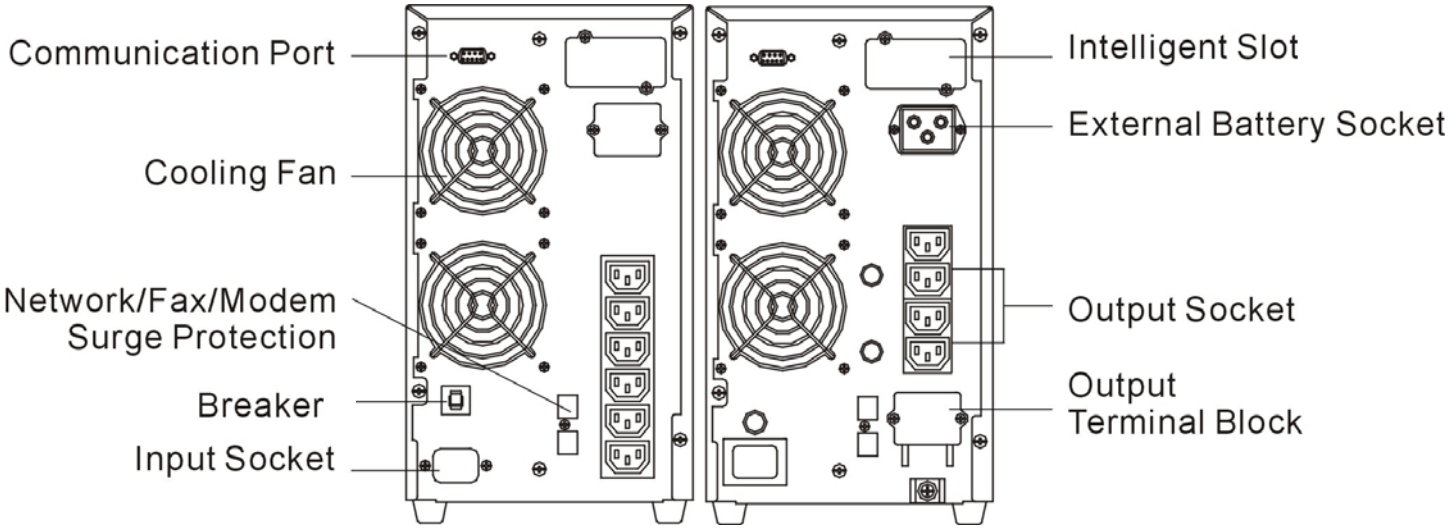
1) ***For GXT1000L-MT/ GXT1000L-MT / GXT1000L-MT***

EN62040-1-1 (safety)
Conducted Emission: EN50091-2 .....Class B
Radiated Emission: EN50091-2 .....Class B
Harmonic Current: EN61000-3-2
Voltage Fluctuations and Flicker: EN61000-3-3
EMS: EN61000-4-2(ESD) ..... Level 4
EN61000-4-3(RS) ..... Level 3
EN61000-4-4(EFT) ..... Level 4
EN61000-4-5(lighting surge) ..... Level 4
EN61000-2-2 (Immunity to low frequency signals)

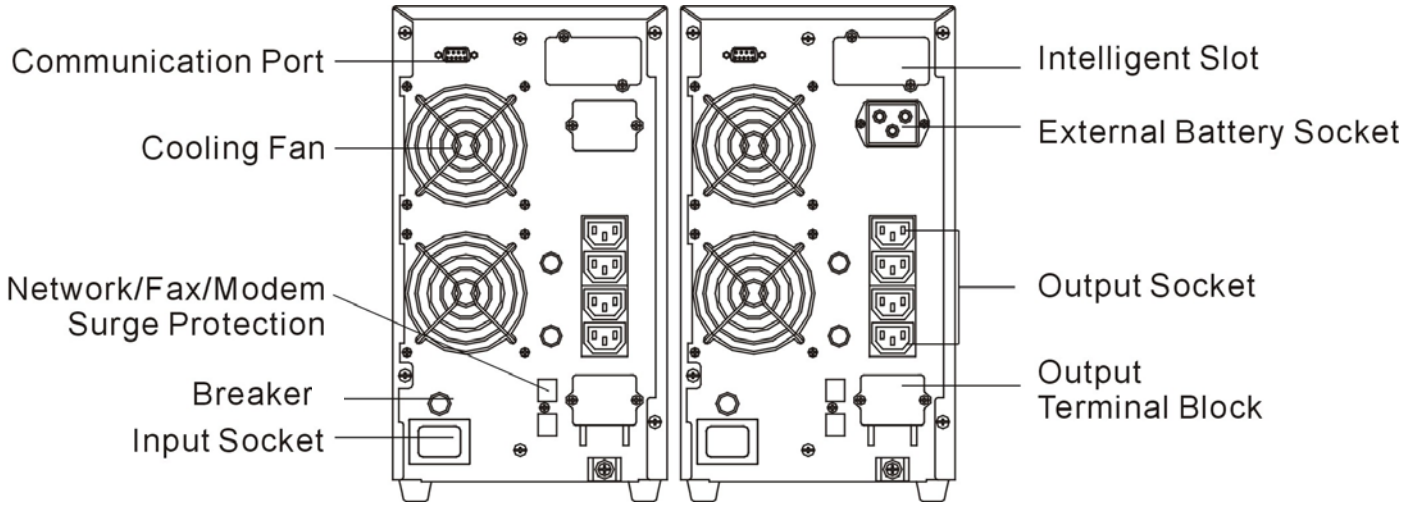
Appendix - Back Panel



Back View of GXT1000-MT and GXT1000L-MT



Back View of GXT2000-MT and GXT2000L-MT



Back View of GXT3000-MT and GXT3000L-MT

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