



# T91 Unity Online UPS

700VA, 1000VA, 1500VA, 2000VA, 3000VA Models

User & Installation Manual

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## Important Safety Warning

Thank you for selecting this uninterruptible power supply (UPS). It provides you with protection for connected equipment. Please read this manual before installing the T91-Series UPS models T91-700, T91-1000, T91-1500, T91(T91i)-2000 and T91-3000 as it provides important information that should be followed during installation and maintenance of the UPS and batteries, allowing you to correctly set up your system for the maximum safety and performance. Included is information on customer support and service, if it is required. If you experience a problem with the UPS, please refer to the Troubleshooting section in this manual to correct the problem. If the problem is not corrected, please collect information so that the Technical Support personnel can more effectively assist you.

### IMPORTANT SAFETY INSTRUCTIONS: (SAVE THESE INSTRUCTIONS)

**CAUTION! (UPS having Internal Batteries):** Risk of electrical shock – Hazardous live parts inside this unit are energized from the battery supply even when the input AC power is disconnected.

**CAUTION! (No User serviceable Parts):** Risk of electrical shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

**CAUTION! (Non-isolated Battery supply):** Risk of electric shock, battery circuit is not isolated from AC input, hazardous voltage may exist between battery terminals and ground. Test before touching.

**WARNING! (Fuses):** To reduce the risk of fire, replace only with the same type and size of fuse.

**WARNING!** Unit intended for installation in a controlled environment.

**CAUTION!** Do not dispose of batteries in a fire, the battery may explode.

**CAUTION!** Do not open or mutilate the battery, released electrolyte is harmful to the skin and eyes.

**CAUTION!** A battery can present a risk of electric shock and high short circuit current. The following precaution should be observed when working on batteries:

- Remove watches, rings or other metal objects.
- Use tools with insulated handles.

To reduce the risk of electric shock, disconnect the UPS from the main supply before installing a computer interface signal cable. Reconnect the power cord only after signaling interconnections have been made.

Servicing of batteries should be performed or supervised by personnel with knowledge of batteries and the required precautions. Keep unauthorized personnel away from batteries.

These UPS units are extremely heavy. Caution should be taken in moving and positioning equipment. The instructions contained within this safety manual are deemed important and should be closely followed at all times during installation and follow-up maintenance of the UPS and batteries.

**CAUTION**

The unit has a dangerous amount of voltage. If the UPS indicator is on, the unit's outlets may have a dangerous amount of voltage even when not plugged into the wall outlet because the battery may continue to supply power.

Care should be taken to undertake installation indoors, free from electrically-conductive particles which are under temperature and humidity control, in order to reduce the risk of electric shock.

It is best to disconnect the device using the power supply cord. Ensure that the equipment is placed in a position near the outlet where easily accessible.

Except for replacing the batteries, all servicing on this equipment must be carried out by qualified service personnel.

Before conducting any maintenance, repair, or shipment, first ensure that everything is turned off completely and disconnected.

**Special Symbols**

The following symbols used on the UPS warn you of precautions:



RISK OF ELECTRIC SHOCK - Please observe the warning that a risk of electric shock is present



CAUTION: REFER TO OPERATOR'S MANUAL - Refer to the operator's manual for additional information, such as important operating and maintenance instructions.



SAFE GROUNDING TERMINAL - Indicates primary safe ground



Please do not discard the UPS or the UPS batteries as the UPS may have valve-regulated lead-acid batteries. Please recycle batteries appropriately.

## Introduction

The information provided in this manual covers single phase 700VA, 1000VA, 1500VA, 2000VA, and 3000VA uninterruptible power systems, their basic functions, operating procedures, options available and emergency situations. It also includes information on how to ship, store, handle, and install the equipment. Only detailed requirements of the UPS units are described herein, and installation must be carried out in accordance with this manual. Electrical installation must also carefully follow local legislation and regulations. Only qualified personnel should conduct these installations as failure to acknowledge electrical hazards could prove to be fatal.

## Product Description

Many different kinds of sensitive electrical equipment can be protected by an Uninterruptible Power Supply (UPS) including computers, workstations, process control systems, telecommunications systems, sales terminals, other critical instrumentation, etc. The purpose of the UPS is to protect these systems from poor quality utility power, complete loss of power, or other associated problems.

Electrical interference exists in many forms, causing problems in AC power, from lightning, power company accidents and radio transmission motors, air conditioners, and vending machines. Protection of sensitive electrical equipment is vital to protect against power outages, low or high voltage conditions, slow voltage fluctuations, frequency variations, differential and common-mode noise, transients, etc.

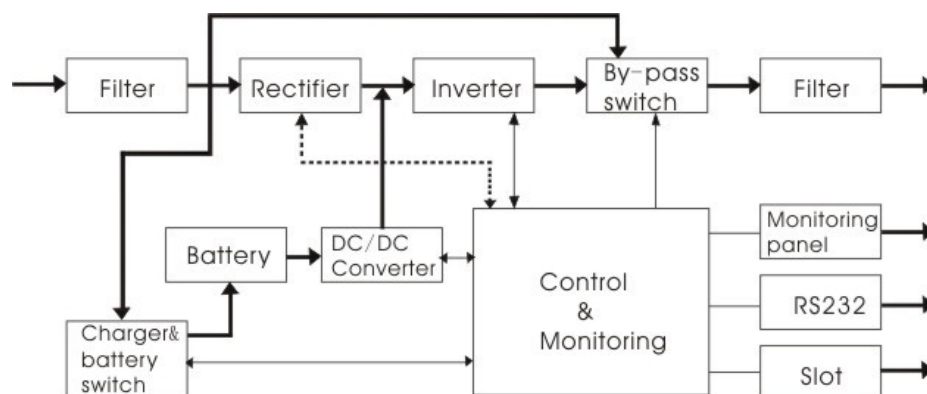
To prevent power line problems from reaching critical systems causing damage to software, hardware, and equipment malfunctions, the UPS maintains constant voltage, isolating critical load output and cleaning the utility AC power.

### *Double Conversion Online Technology*

A double conversion on-line technology UPS provides completely isolated, clean, uninterrupted single-phase power to your critical systems, while maintaining the batteries for their maximum potential. In the event that the power failure lasts longer than the UPS backup time, the UPS will shut down avoiding battery damage. When the input AC voltage returns, the UPS will automatically return online to recharge the batteries.

As shown in block diagram:

- An input filter reduces transients on the incoming utility.
- To maintain full battery charge, the AC input power is rectified and regulated in the rectifier feeding power to the battery converter and inverter.
- DC power is converted to AC in the inverter, passing it on to the load.
- Power is maintained from the battery during a power failure.
- The converter increases voltage appropriately for the inverter.



## ***Diagnostic Tests***

When the UPS is started, a diagnostic test is automatically executed, checking the electronics and batteries, reporting any problems on the LCD display.

## **System Configuration**

The UPS device and the internal batteries make up the system. Depending on the site and load requirements of the installation, certain additional options are available for the solution.

Planning a UPS system, the following should be taken into consideration:

- The total demand of the protected system shall dictate the output power rating (VA). Allow a margin for future expansion or calculation inaccuracies from measured power requirements.
- Backup time required will indicate the battery size needed. If the load is less than the UPS nominal power rating, then actual backup time is longer.
- The following options are available:
  - o Connectivity Options – Web/SNMP Card, Relay Card, Modbus Card
  - o Battery packs, bypass switches

See the Specification section of this manual for additional model information.

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

## **Transportation**

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

## **Preparation**

- Condensation may occur if the UPS system is moved directly from cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heater.
- Do not block ventilation holes in the UPS housing.

## Installation

- Do not connect appliances or devices which would overload the UPS system (e.g. laser printers) to the UPS output sockets.
- 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.
- The UPS can be operated by any individuals with no previous experience.
- Connect the UPS system only to an earthed shockproof outlet which must be easily accessible and close to the UPS system.
- Please use only VDE-tested, CE-marked (or UL-marked for 100/110/115/120/127 VAC models) mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring outlet (shockproof outlet).
- Please use only VDE-tested, CE-marked (or UL-marked for 100/110/115/120/127 VAC models) power cables to connect the loads to the UPS system.
- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected devices does not exceed 3.5mA.
- Temperature Rating - Units are considered acceptable for use in a maximum ambient of 40°C (104°F).
- For Pluggable Equipment - The socket-outlet shall be installed near the equipment and shall be easily accessible.

## Operation

- Do not disconnect the mains cable on the UPS system or the building wiring 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 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/Enter button to disconnect the mains.
- Prevent no fluids or other foreign objects from inside of the UPS system.

## Maintenance, service 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 (building wiring outlet), components inside the UPS system are still connected to the battery and electrically live and dangerous.
- 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.
- 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.
- 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!
- Caution - Do not dispose of batteries in a fire. The batteries may explode.
- Caution - Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- 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:
  - a) Remove watches, rings, or other metal objects.
  - b) Use tools with insulated handles.
  - c) Wear rubber gloves and boots.
  - d) Do not lay tools or metal parts on top of batteries.
  - e) Disconnect charging source and load prior to installing or maintaining the battery.
  - f) Remove battery grounds during installation and maintenance to reduce likelihood of shock. Remove the connection from ground if any part of the battery is determined to be grounded.
- When changing batteries, install the same number and same type of batteries or battery packs.

Manufacture	Type	Rated
Toplite (Guangzhou) Technology Battery Co Ltd (MH29104)	NPW45-12	12 V dc, 9.0 Ah
	UXW460-12	12 V dc, 9.0 Ah
	NPW36-12	12 V dc, 7.2 Ah
	UXW360-12	12 V dc, 7.2 Ah
	NPW45-12 FR	12 V dc, 7.0 Ah
	UXW460-12/FR	12 V dc, 7.0 Ah
	NPW36-12 FR	12 V dc, 7.0 Ah



Manufacture	Type	Rated
CSB Battery Co Ltd (MH14533)	UXW360-12/FR	12 V dc, 7.0 Ah
	GP1272	12 V dc, 7.2 Ah
	UPS 12460 F2	12 V dc, 9.0 Ah
	UPS 12360 6	12 V dc, 6.5 Ah
	UPS 12360 7	12 V dc, 6.5 Ah
	HR 1234W	12 V dc, 8.5 Ah
	HR 1234W FR	12 V dc, 8.5 Ah
Yuasa Battery (Guangdong) Co Ltd (MH29616)	NPW45-12	12 V dc, 8.0 Ah
	NPW45-12FR	12 V dc, 8.0 Ah

**For UPS with internally mounted battery**

- Instructions shall carry sufficient information to enable the replacement of the battery with a suitable manufacturer and catalogue number.
- Safety instructions to allow access by Service Personnel shall be stated in the installation/service handbook.
- If batteries are to be installed by Service Personnel, instructions for interconnections, including terminal torque, shall be provided.
- 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 with the same type and amperage in order to avoid fire hazards.
- Do not dismantle the UPS system.
- **WARNING:** This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures. (only for 220/230/240 VAC system)

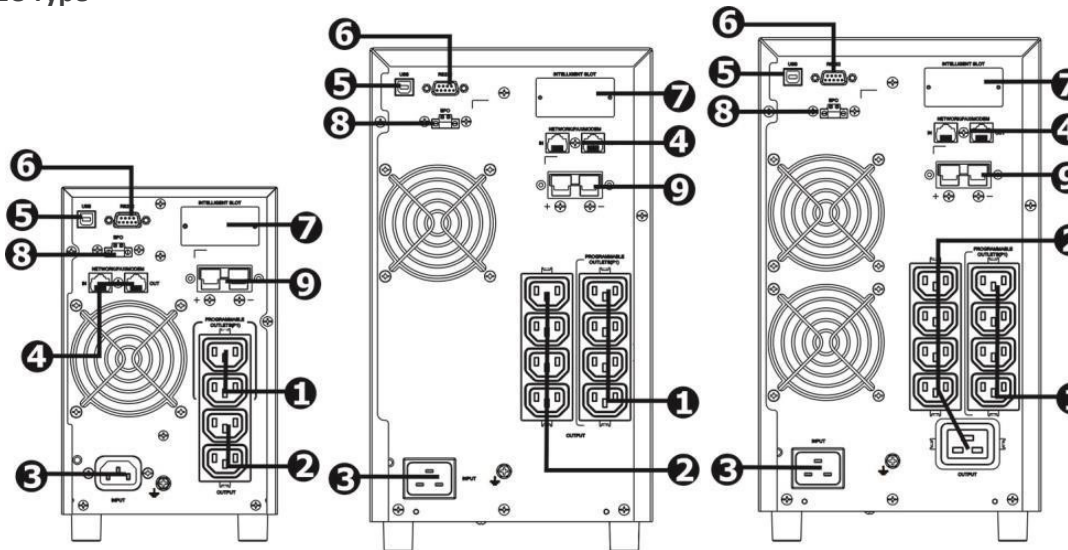
Only for 110/120 VAC system:

- **NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.
- **WARNING:** Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

### Installation and setup

**NOTE:** Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original package in a safe place for future use.

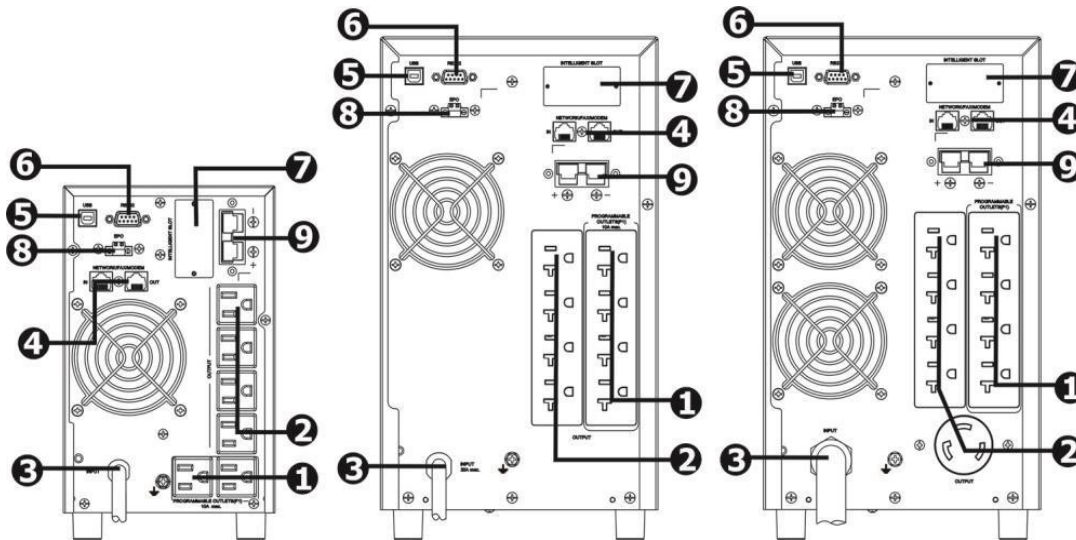
Rear panel view  
Tower Models  
IEC Type



1K/1.5K  
NEMA Type

2K

3K



1K/1.5K

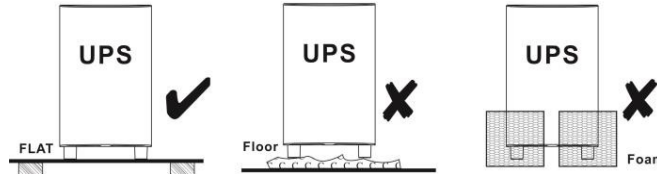
2K

3K

## Setup the UPS

**Before installing the UPS, please read below to select proper location to install UPS.**

1. UPS should be placed on the flat and clean surface. Place it in an area away from vibration, dust, humidity, high temperature, flammable liquids, gases, corrosive and conductive contaminants. Install the UPS indoors in a clean environment, where it is away from window and door. Maintain minimum clearance of 100mm in the bottom of the UPS to avoid dust and high temperature.



2. Maintain an ambient temperature range of 0°C to 45°C for UPS optimal operation. For every 5°C above 45°C, the UPS will derate 12% of nominal capacity at full load. The highest working temperature requirement for UPS operation is 50°C.

3. It's required to maintain maximum altitude of 1000m to keep UPS normal operation at full load UPS. If it's used in high altitude area, please reduce connected load. Altitude derating power with connected loads for UPS normal operation is listed as below:

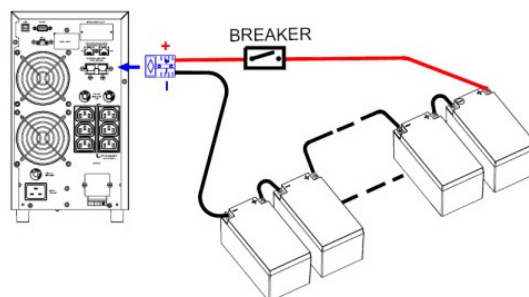
Altitude (meters)	Derating Factor
1,000	1.0
1,500	0.95
2,000	0.91
2,500	0.86
3,000	0.82
3,500	0.78
4,000	0.74
4,500	0.70
5,000	0.67

Based on density of dry air = 1.225kg/m<sup>3</sup> at sea level, +15°C. Since fans lose efficiency with altitude, forced air cooled equipment will have a smaller derating

4. Place UPS:

It's equipped with fan for cooling. Therefore, place the UPS in a well ventilated area. It's required to maintain minimum clearance of 100mm in the front of the UPS and 300mm in the back and two sides of the UPS for heat dissipation and easy maintenance.

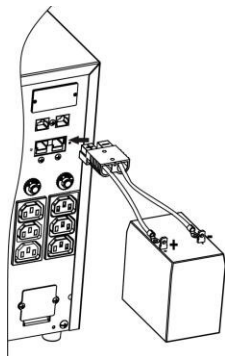
5. Connect to External Battery Pack



When connecting external battery packs, please be sure to connect polarity correctly. Connect positive pole of battery pack to positive pole of external battery connector in UPS and negative pole of battery pack to negative pole of external battery connector in UPS. Polarity misconnection will cause UPS internal fault. It's recommended to add one breaker between positive pole of battery pack and positive pole of external battery connector in UPS to prevent damage to battery packs from internal fault. The required specification of breaker: voltage > 1.25 x battery voltage/set; current > 50A Please choose battery size and connected numbers according to backup time requirement and UPS specifications. To extend battery lifecycle, it's recommended to use them in the temperature range of 15°C to 25°C.

### Step 1: External battery connection

Reference the chart below to make the external battery connection.



### Step 2: UPS input connection

Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.

For 200/208/220/230/240VAC models: The power cord is supplied in the UPS package.

For 100/110/115/120/127VAC models: The power cord is attached to the UPS. The input plug is a NEMA 5-15P for 1K and 1.5K models, NEMA 5-20P for 2K model and NEMA 5-30P for 3K model.

Note: Check if the site wiring fault indicator lights up in LCD panel. It will be illuminated when the UPS is plugged into an improperly wired utility power outlet (Refer to Troubleshooting section). Please also check if there is a circuit breaker against overcurrent and short circuit between the mains and AC input of the UPS for safety operation.

The recommended protection value as following:

For 200/208/220/230/240VAC models: 10A for the 1K and 1.5K models, 16A for the 2K and 3K models.

For 100/110/115/120/127VAC models: 15A for the 1K and 1.5K models, 20A for 2K model and 30A for 3K model.

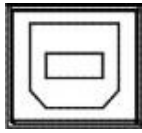
### Step 3: UPS output connection

There are two kinds of outputs: programmable outlets and general outlets. Please connect non-critical devices to the programmable outlets and critical devices to the general outlets. During power failure, you may extend the backup time to critical devices by setting shorter backup time for non-critical devices.

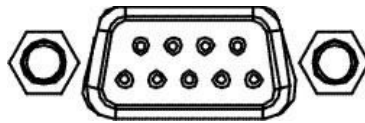
### Step 4: Communication connection

#### Communication port:

##### USB port



##### RS-232 port



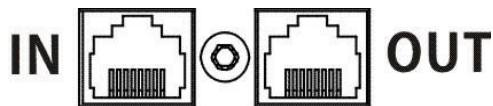
##### Intelligent slot



To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable one end to the USB/RS-232 port and the other to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status through PC.

The UPS is equipped with intelligent slot perfect for either SNMP or AS400 card. When installing either SNMP or AS400 card in the UPS, it will provide advanced communication and monitoring options.

### Step 5: Network connection Network/Fax/Phone surge port

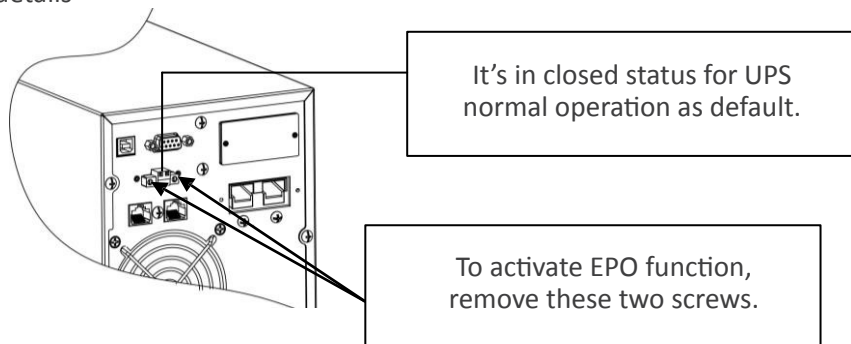


Connect a single modem/phone/fax line into surge-protected "IN" outlet on the back panel of the UPS unit. Connect from "OUT" outlet to the equipment with another modem/fax/phone line cable.

### Step 6: Disable and enable EPO function

This UPS is equipped with EPO function. By default, the UPS is delivered from factory with Pin 1 and pin 2 closed (a metal plate is connected to Pin 1 and Pin2) for UPS normal operation. To activate EPO function, remove two screws on EPO port and metal plate will be removed.

**Note:** The EPO function logic can be set up via LCD setting. Please refer to program 16 in UPS setting for the details



### Step 7: Turn on the UPS

Press the ON/Mute button on the front panel for two seconds to power on the UPS.

Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

## Step 8: Install software

For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. Use supplied RS-232 or USB communication cable to connect RS-232/USB port of UPS and RS-232/USB port of PC. Then, follow below steps to install monitoring software.

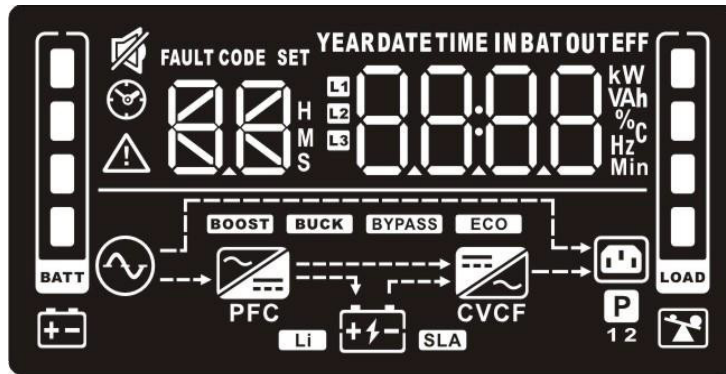
1. Insert the included installation CD into CD-ROM drive and then follow the on-screen instructions to proceed software installation. If there no screen shows 1 minute after inserting the CD, please execute setup.exe file for initiating software installation.
2. Follow the on-screen instructions to install the software.
3. When your computer restarts, the monitoring software will appear as an orange plug icon located in the system tray, near the clock.

## Operations







### Button operation

Button	Function
ON/Mute Button	<ul style="list-style-type: none"> <li>- Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS.</li> <li>- Mute the alarm: After the UPS is turned on in battery mode, press and hold this button for at least 3 seconds to disable or enable the alarm system. But it’s not applied to the situations when warnings or errors occur.</li> <li>- Up key: Press this button to display previous selection in UPS setting mode.</li> <li>- Switch to UPS self-test mode: Press ON/Mute buttons for 3 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.</li> </ul>
OFF/Enter Button	<ul style="list-style-type: none"> <li>- Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode under power normal or transfer to Bypass mode if the Bypass enable setting by pressing this button.</li> <li>- Confirm selection key: Press this button to confirm selection in UPS setting mode.</li> </ul>
Select Button	<ul style="list-style-type: none"> <li>- Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, input current, battery voltage, battery current, battery capacity, ambient temperature, output voltage, output frequency, load current and load percent.</li> <li>- Setting mode: Press and hold this button for 3 seconds to enter UPS setting mode when Standby and Bypass mode.</li> <li>- Down key: Press this button to display next selection in UPS setting mode.</li> </ul>
ON/Mute + Select Button	<ul style="list-style-type: none"> <li>- Switch to bypass mode: When the main power is normal, press ON/Mute and Select buttons simultaneously for 3 seconds. Then UPS will enter to bypass mode. This action will be ineffective when the input voltage is out of acceptable range.</li> <li>- Exit setting mode or return to the upper menu: When working in setting mode, press ON/Mute and Select buttons simultaneously for 0.2 seconds to return to the upper menu. If it’s already in top menu, press these two buttons at the same time to exit the setting mode.</li> </ul>

## LCD Panel



Display	Function
<b>Backup time information</b>	
	Indicates the estimated backup time. H: hours, M: minute, S: second.
<b>Configuration and fault information</b>	
	Indicates the configuration items, and the configuration items are listed in details in section 3-5.
	Indicates the warning and fault codes, and the codes are listed in details in section 3-7 and 3-8.
<b>Mute operation</b>	
	Indicates that the UPS alarm is disabled.
<b>Input, Battery, Temperature, Output &amp; Load information</b>	
	Indicate the input voltage, input frequency, input current, battery voltage, battery current, battery capacity, ambient temperature, output voltage, output frequency, load current and load percent. k: kilo, W: watt, V: voltage, A: ampere, %: percent, C: centigrade degree, Hz: frequency
	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.
	Indicates overload.
<b>Programmable outlets information</b>	
	Indicates that programmable management outlets are working.
<b>Mode operation information</b>	
	Indicates the UPS connects to the mains.
	Indicates the battery is working.
	Indicates charging status
	Indicates the bypass circuit is working.

Display	Function
	Indicates the ECO mode is enabled.
	Indicates the AC to DC circuit is working.
<b>PFC</b>	Indicates the PFC circuit is working.
	Indicates the inverter circuit is working.
<b>CVCF</b>	Indicates the UPS is working in converter mode.
	Indicates the output is working.
<b>Battery information</b>	
	Indicates the battery level by 0-24%, 25-49%, 50-74%, and 75-100%.
	Indicates low battery.

## Audible Alarm

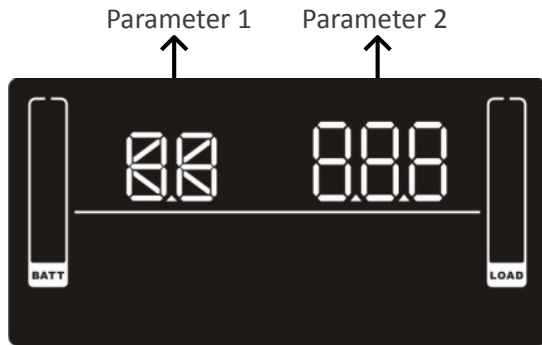
Battery Mode	Sounding every 5 seconds
Low Battery	Sounding every 2 seconds
Overload	Sounding every second
Fault	Continuously sounding
Bypass Mode	Sounding every 10 seconds



## LCD display wordings index

Abbreviation	Display content	Meaning
ENA	ENR	Enable
DIS	dI S	Disable
ESC	ESC	Escape
HLS	HLS	High loss
LLS	LLS	Low loss
AO	AO	Active open
AC	AC	Active close
EAT	EAt	Estimated autonomy time
RAT	rAt	Running autonomy time
SD	Sd	Shutdown
OK	OK	OK
ON	ON	ON
BL	bL	Battery Low
OL	OL	Over Load
OI	OI	Over input current
NC	nC	Battery No Connect
OC	OC	Over Charge
SF	SF	Site wiring fault
EP	EP	EPO
TP	tP	Temperature
CH	CH	Charger
BF	bF	Battery Fault
BV	b <sup>v</sup>	Bypass Out Range
FU	FU	Bypass frequency unstable
BR	bR	Battery Replace
EE	EE	EEPROM error

## UPS Setting




There are two parameters to set up the UPS.  
 Parameter 1: It's for program alternatives. Refer to below table.  
 Parameter 2 is the setting options or values for each program.

### 01: Output voltage setting

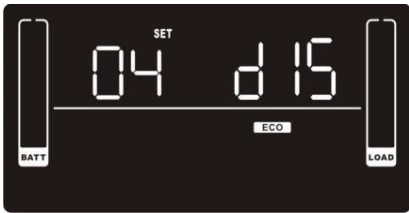
Interface	Settings
	<p><b>Parameter 2: Output voltage</b>                      For 200/208/220/230/240 VAC models, you may choose the following output voltage:  <b>200:</b> presents output voltage is 200Vac  <b>208:</b> presents output voltage is 208Vac  <b>220:</b> presents output voltage is 220Vac  <b>230:</b> presents output voltage is 230Vac (Default)  <b>240:</b> presents output voltage is 240Vac                      For 100/110/115/120/127 VAC models, you may choose the following output voltage:  <b>100:</b> presents output voltage is 100Vac  <b>110:</b> presents output voltage is 110Vac  <b>115:</b> presents output voltage is 115Vac  <b>120:</b> presents output voltage is 120Vac (Default)  <b>127:</b> presents output voltage is 127Vac</p>

### 02: Frequency Converter enable/disable

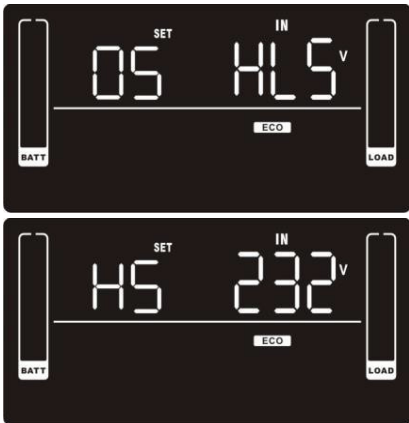
Interface	Settings
	<p><b>Parameter 2:</b> Enable or disable converter mode. You may choose the following two options:  <b>CF ENA:</b> converter mode enable  <b>CF DIS:</b> converter mode disable (Default)</p>

Interface	Settings
	<p><b>Parameter 2:</b> Output frequency setting.                      You may set the initial frequency on battery mode:  <b>BAT 50:</b> presents output frequency is 50Hz  <b>BAT 60:</b> presents output frequency is 60Hz                      If converter mode is enabled, you may choose the following output frequency:  <b>CF 50:</b> presents output frequency is 50Hz  <b>CF 60:</b> presents output frequency is 60Hz</p>

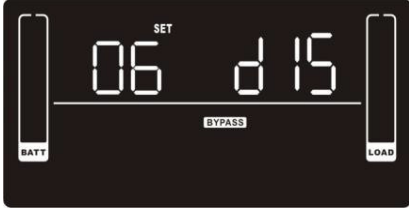
### 04: ECO enable/disable

Interface	Settings
	<p><b>Parameter 2:</b> Enable or disable ECO function. You may choose the following two options:  <b>ENA:</b> ECO mode enable  <b>DIS:</b> ECO mode disable (Default)</p>

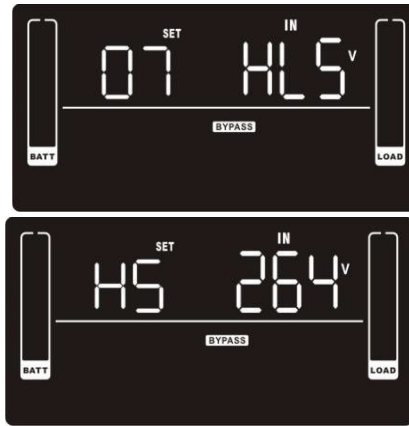
### 05: ECO voltage range setting

Interface	Settings
	<p><b>Parameter 2:</b> Set the acceptable high voltage point and low voltage point for ECO mode by pressing Down key or Up key.  <b>HLS:</b> High loss voltage in ECO mode in parameter 2.                      For 200/208/220/230/240 VAC models, the setting range in parameter 3 is from +7V to +24V of the nominal voltage. (Default: +12V)                      For 100/110/115/120/127 VAC models, the setting range in parameter 3 is from +3V to +12V of the nominal voltage. (Default: +6V)  <b>LLS:</b> Low loss voltage in ECO mode in parameter 2.                      For 200/208/220/230/240 VAC models, the setting range in parameter 3 is from -7V to -24V of the nominal voltage. (Default: -12V)                      For 100/110/115/120/127 VAC models, the setting voltage in parameter 3 is from -3V to -12V of the nominal voltage. (Default: -6V)</p>

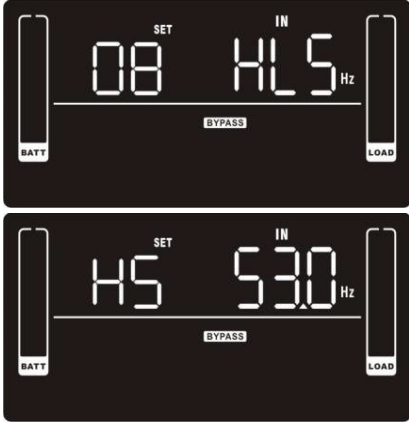
### 06: Bypass enable/disable when UPS is off

Interface	Settings
	<p><b>Parameter 2:</b> Enable or disable Bypass function. You may choose the following two options:  <b>ENA:</b> Bypass enable  <b>DIS:</b> Bypass disable (Default)</p>


### 07: Bypass voltage range setting

Interface	Settings
	<p><b>Parameter 2:</b> Set the acceptable high voltage point and acceptable low voltage point for Bypass mode by pressing the Down key or Up key.  <b>HLS:</b> Bypass high voltage point  For 200/208/220/230/240 VAC models:  <b>230-264:</b> setting the high voltage point in parameter 3 from 230Vac to 264Vac. (Default: 264Vac)  For 100/110/115/120/127 VAC models:  <b>120-140:</b> setting the high voltage point in parameter 3 from 120Vac to 140Vac. (Default: 132Vac)  <b>LLS:</b> Bypass low voltage point  For 200/208/220/230/240 VAC models:  <b>170-220:</b> setting the low voltage point in parameter 3 from 170Vac to 220Vac. (Default: 170Vac) For 100/110/115/120/127 VAC models:  <b>85-115:</b> setting the low voltage point in parameter 3 from 85Vac to 115Vac. (Default: 85Vac)</p>


### 08: Bypass frequency range setting

Interface	Settings
 <p>The interface shows two screens for bypass frequency settings. The top screen displays '08' on the left and 'HLS Hz' on the right. The bottom screen displays 'H5' on the left and '530 Hz' on the right. Both screens have 'BATT' and 'LOAD' indicators on the sides and a 'BYPASS' label at the bottom.</p>	<p><b>Parameter 2:</b> Set the acceptable high frequency point and acceptable low frequency point for Bypass mode by pressing the Down key or Up key.</p> <p><b>HLS:</b> Bypass high frequency point            For 50Hz output frequency models:  <b>51-55Hz:</b> setting the frequency high loss point from 51Hz to 55HZ(Default: 53.0Hz)            For 60Hz output frequency models:  <b>61-65Hz:</b> setting the frequency high loss point from 61Hz to 65Hz(Default: 63.0Hz)</p> <p><b>LLS:</b> Bypass low Frequency point            For 50Hz output frequency models:  <b>45-49Hz:</b> setting the frequency low loss point from 45Hz to 49HZ(Default: 47.0Hz)            For 60Hz output frequency models:  <b>55-59Hz:</b> setting the frequency low loss point from 55Hz to 59Hz(Default: 57.0Hz)</p>


### 09: Programmable outlets enable/disable

Interface	Settings
 <p>The interface shows a screen for programmable outlets settings. It displays '09' on the left and 'd 15' on the right. There are 'BATT' and 'LOAD' indicators on the sides and a 'P' indicator at the bottom right.</p>	<p><b>Parameter 2:</b> Enable or disable programmable outlets.</p> <p><b>ENA:</b> Programmable outlets enable  <b>DIS:</b> Programmable outlets disable (Default)</p>

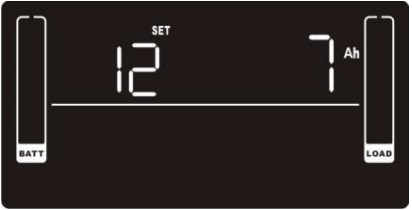
### 10: Programmable outlets setting

Interface	Settings
 <p>The interface shows a screen for programmable outlets backup time settings. It displays '10 M' on the left and '999' on the right. There are 'BATT' and 'LOAD' indicators on the sides and a 'P' indicator at the bottom right.</p>	<p><b>Parameter 2:</b> Set up backup time limits for programmable outlets.</p> <p><b>0-999:</b> setting the backup time limits in minutes from 0-999 for programmable outlets which connect to non-critical devices on battery mode. (Default: 999)</p>

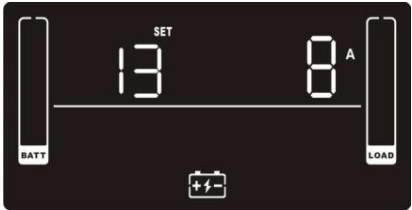
### 11: Autonomy limitation setting

Interface	Settings
	<p><b>Parameter 2:</b> Set up backup time on battery mode for general outlets.  <b>0-999:</b> setting the backup time in minutes from 0-999 for general outlets on battery mode.  <b>DIS:</b> Disable the autonomy limitation and the backup time will depend on battery capacity. (Default)  <b>Note:</b> When setting as “0”, the backup time will be only 10 seconds.</p>


### 12: Battery total AH setting

Interface	Settings
	<p><b>Parameter 2:</b> Set up the battery total AH of the UPS.  <b>7-999:</b> setting the battery total capacity from 7-999 in AH. Please set the correct battery total capacity if external battery bank is connected.</p>


### 13: Maximum charger current setting

Interface	Settings														
	<p><b>Parameter 2:</b> Set up the charger maximum current. For low voltage model with 24/36/48VDC  <b>1/2/4/6/8:</b> setting the charger maximum current                      1/2/4/6/8 in Ampere. (Default: 2A)                      For high voltage model with 24/36/48VDC  <b>1/2/4/6/8/10/12:</b> setting the charger maximum current                      1/2/4/6/8/10/12 in Ampere. (Default: 2A)                      For low voltage and high voltage model with 72/96VDC  <b>1/2/4/6/8:</b> setting the charger maximum current                      1/2/4/6/8 in Ampere. (Default: 2A)  <b>Note:</b> Please set the appropriate charger current based on battery capacity used. The recommended charging current is 0.1C~0.3C of battery capacity as following table for reference.</p> <table border="1" data-bbox="610 1549 1479 1908"> <thead> <tr> <th>Battery capacity(AH)</th> <th>Total charging current (A)</th> </tr> </thead> <tbody> <tr> <td>7~20</td> <td>2</td> </tr> <tr> <td>20~40</td> <td>4</td> </tr> <tr> <td>40~60</td> <td>6</td> </tr> <tr> <td>60~80</td> <td>8</td> </tr> <tr> <td>80~100</td> <td>10</td> </tr> <tr> <td>100~150</td> <td>12</td> </tr> </tbody> </table>	Battery capacity(AH)	Total charging current (A)	7~20	2	20~40	4	40~60	6	60~80	8	80~100	10	100~150	12
Battery capacity(AH)	Total charging current (A)														
7~20	2														
20~40	4														
40~60	6														
60~80	8														
80~100	10														
100~150	12														


### 14: Charger boost voltage setting

Interface	Settings
	<p><b>Parameter 2:</b> Set up the charger boost voltage.  <b>2.25-2.40:</b> setting the charger boost voltage from 2.25 V/cell to 2.40V/cell. (Default: 2.36V/cell)</p>


### 15: Charger float voltage setting

Interface	Settings
	<p><b>Parameter 2:</b> Set up the charger float voltage.  <b>2.20-2.33:</b> setting the charger float voltage from 2.20 V/cell to 2.33V/cell. (Default: 2.28V/cell)</p>


### 16: EPO logic setting

Interface	Settings
	<p><b>Parameter 2:</b> Set up the EPO function control logic.  <b>AO:</b> Active Open (Default). When AO is selected as EPO logic, it will activate EPO function with Pin 1 and Pin 2 in open status.  <b>AC:</b> Active Close. When AC is selected as EPO logic, it will activate EPO function with Pin 1 and Pin 2 in close status.</p>

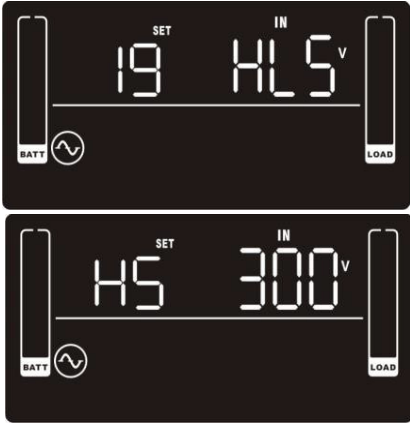
### 17: External output isolation transformer connection

Interface	Settings
	<p><b>Parameter 2:</b> Allow or disallow external output isolation transformer connection.  <b>ENA:</b> If selected, it's allowed to connect to an external output isolation transformer.  <b>DIS:</b> If selected, it's not allowed to connect to external output isolation transformer. (Default)</p>


### 18: Display setting for autonomy time

Interface	Settings
	<p><b>Parameter 2:</b> Set up the display setting for autonomy time  <b>EAT:</b> If EAT is selected, it will display the remaining autonomy time. (Default)  <b>RAT:</b> If RAT is selected, it will show accumulated autonomy time so far.</p>








### 19: Acceptable input voltage range setting

Interface	Settings
	<p><b>Parameter 2:</b> Set the acceptable high voltage point and acceptable low voltage point for input voltage range by pressing the Down key or Up key.</p> <p><b>HLS:</b> Input high voltage point                      For 200/208/220/230/240 VAC models:  <b>280/290/300:</b> setting the high voltage point in parameter 2. (Default: 300Vac)                      For 100/110/115/120/127 VAC models:  <b>140/145/150:</b> setting the high voltage point in parameter 2. (Default: 150Vac)</p> <p><b>LLS:</b> Bypass low voltage point                      For 200/208/220/230/240 VAC models:  <b>110/120/130/140/150/160:</b> setting the low voltage point in parameter 2. (Default: 110Vac)                      For 100/110/115/120/127 VAC models:  <b>55/60/65/70/75/80:</b> setting the low voltage point in parameter 2. (Default: 55Vac)</p>


### 00: Exit setting

Interface	Settings
	<p>Exit the setting mode.</p>























Operating mode	Description	LCD
Online 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 online mode.	
ECO mode	Energy saving mode: When the input voltage is within voltage regulation range, UPS will bypass voltage to output for energy saving. The UPS will also charge the battery at ECO mode.	
Frequency Converter mode	When input frequency is within 40 Hz to 70 Hz, 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, the UPS will backup power from battery and alarm is sounding every 5 seconds.	
Bypass mode	When input voltage is within acceptable range but UPS is overload, UPS will enter bypass mode or bypass mode can be set by front panel. Alarm is sounding every 10 seconds.	
Standby mode	UPS is powered off and no output supply power, but still can charge batteries.	
Fault mode	When a fault has occurred, the ERROR icon and the fault code will be displayed.	

## Faults Reference Code

Fault event	Fault code	Icon	Fault event	Fault code	Icon
Bus start fail	01	x	Battery voltage too high	27	x
Bus over	02	x	Battery voltage too low	28	x
Bus under	03	x	Charger output short	2A	x
Inverter soft start fail	11	x	Over temperature	41	x
Inverter voltage high	12	x	Overload	43	
Inverter voltage low	13	x	Charger failure	45	x
Inverter output short	14	x	Over input current	49	x













## Warning indicator

Warning	Icon (flashing)	Code	Alarm
Low Battery	 	bL	Sounding every second
Overload	 	OL	Sounding 2 beep every 10 seconds
Over input current		OI	Sounding every 2 seconds
Battery is not connected	 	NC	Sounding every 2 seconds
Over Charge	 	OC	Sounding every 2 seconds
Site wiring fault	 	SF	Sounding every 2 seconds
EPO enable		EP	Sounding every 2 seconds
Over temperature		TP	Sounding every 2 seconds
Charger failure		CH	Sounding every 2 seconds
Battery fault		bF	Sounding every 2 seconds (At this time, UPS is off to remind users something wrong with battery)
Out of bypass voltage range	 	b <sup>v</sup>	Sounding every 2 seconds
Bypass frequency unstable		FU	Sounding every 2 seconds
Battery replacement		b <sup>t</sup>	Sounding every 2 seconds
EEPROM error		EE	Sounding every 2 seconds

**NOTE:** “Site Wiring Fault” function can be enabled/disabled via software. Please check software manual for the details.

## Troubleshooting

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

Symptom	Possible cause	Remedy
No indication and alarm even though the mains is normal.	The AC input power is not connected well.	Check if input power cord firmly connected to the mains.
	The AC input is connected to the UPS output.	Plug AC input power cord to AC input correctly.
The icon  and the warning code  flash on LCD display and alarm is sounding every 2 seconds.	EPO function is activated.	Set the circuit in closed position to disable EPO function.
The icons of  and  and the warning code  flash on LCD display. Alarm is sounding every 2 seconds.	Line and neutral conductors of UPS input are reversed.	Rotate mains power socket by 180° and then connect to UPS system.
The icons of  and  and the warning code  flash on LCD display. Alarm is sounding every 2 seconds.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well.
Fault code is shown as 27 on LCD display and alarm is continuously sounding.	Battery voltage is too high or the charger is fault.	Contact your dealer.
Fault code is shown as 28 on LCD display and alarm is continuously sounding.	Battery voltage is too low or the charger is fault.	Contact your dealer.
The icons  and  and the warning code  flash on LCD display. Alarm is sounding every second.	UPS is overload	Remove excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove 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 excess loads from UPS output first. Then shut down the UPS and restart it.
Fault code is shown as 49 on LCD display and alarm is continuously sounding.	UPS is over input current.	Remove excess loads from UPS output.
Fault code is shown as 43 and the icon  is lighting on LCD display. Alarm is continuously sounding.	The UPS shut down automatically because of overload at the UPS output.	Remove excess loads from UPS output and restart it.

Symptom	Possible cause	Remedy
Fault code is shown as 14 on LCD display and alarm is continuously sounding.	The UPS shut down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Fault code is shown as 01, 02, 03, 11, 12, 13 and 41 on LCD display and alarm is continuously sounding.	A UPS internal fault has occurred. There are two possible results: 1. The load is still supplied, but directly from AC power via bypass. 2. The load is no longer supplied by power.	Contact your dealer.
Battery backup time is shorter than nominal value.	Batteries are not fully charged	Charge the batteries for at least 5 hours and then check capacity. If the problem still persists, consult your dealer.
	Batteries defect	Contact your dealer to replace the battery.
Fault code is shown as 2A on LCD display and alarm is continuously sounding.	The short circuit occurs on the charger output.	Check if battery wiring of connected external pack is in short circuit status.
Fault code is shown as 45 on LCD display. At the same time, alarm is continuously sounding.	The charger does not have output and battery voltage is less than 10V/PC.	Contact your dealer.

## Storage and Maintenance

### Storage

Before storing, charge the UPS at least 5 hours. Store the UPS covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-25°C - 40°C	Every 3 months	1-2 hours
40°C - 45°C	Every 2 months	1-2 hours

### Maintenance



The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.



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.



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.



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



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.



Batteries may cause electric shock and have a high short-circuit current. Please 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.



When replacing the 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. The batteries must be properly disposed of according to local regulation.



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 with the same type and amperage in order to avoid fire hazards.



Do not disassemble the UPS system. The UPS contains no user-serviceable parts.

### Batteries

The life of batteries used in these UPS products is estimated at 3-6 years depending on level of usage and environment. Once the battery is no longer useful and must be replaced, please contact service personnel for assistance.

## Specifications

MODEL NUMBER		T91-700	T91-1000	T91-1500	T91-2000	T91-3000	T91i-2000	
CAPACITY	Power rating	700VA (700W)	1000VA (1000W)	1500VA (1450W)	2000VA (1930W)	3000VA (2880W)	2000VA (2000W)	
INPUT	Voltage	55-150VAC*					110-300VAC*	
	Frequency	50/60Hz auto sensing						
	Power factor	>0.99 at full load						
OUTPUT	Voltage	120VAC nominal (100/110/115/127 selectable)***					200/208/220/230/240VAC***	
	Waveform	Pure sine wave, zero transfer time						
	Frequency	50/60Hz auto sensing ≤ 1%						
	Efficiency	Up to 98% ECO Mode and 92% online mode						
	Overload capacity	125% for 1 min, 150% for 10 sec						
BATTERY	Battery type	(2) 12V 9AH	(3) 12V 9AH	(3) 12V 9AH	(6) 12V 9AH	(6) 12V 9AH	(6) 12V 9AH	
	Recharge	3 hours to 95% for internal battery with 2A charge current						
	Battery charger	2A (default) to 8A, programmable from LCD display						
PHYSICAL	UPS dimensions	5.6" x 15.6" x 8.6" (W x D x H)			7.4" x 16.5" x 12.5" (W x D x H)			
	UPS weight	25.7 lbs	30 lbs	34.3 lbs	63 lbs	66 lbs	62 lbs	
	Line cord	5-15P			8 ft, C19 to L5-20P**	L5-30P	C20 Inlet	
	Receptacles	(6) 5-15R			(1) L5-20R + (8) 5-20R	(1) L5-30R + (8) 5-20R	(1) C19 + (8) C13	
OPTIONAL BATTERY PACKS	Model number	N/A	T91-BP36A		T91-BP72A			
	Dimensions	N/A	5.6" W x 15.6" D x 8.6" H		7.4" W x 16.5" D x 12.5" H			
	Weight	N/A	44 lbs		82 lbs			
ENVIRONMENT	Temperature	32-104°F (0-40°C)						
	Audible noise	< 50 dB with fan speed control						
	Altitude	11,500 ft above sea level						
APPROVALS	UL1778 (cTUVus), FCC B, RoHS				UL1778 (cTUVus), FCC A, RoHS		CE, RoHS	
WARRANTY	3 years electronics, 3 years battery warranty (USA and Canada)							
COMMUNICATIONS INTERFACE	RS-232, USB, EPO, intelligent slot for optional cards (Web/SNMP, Relay/dry contact, Modbus)							
INCLUDED IN BOX	ViewPower monitoring software CD, USB cable, user manual							
AVAILABLE OPTIONS	Extended warranty, bypass distribution (XBDM), power distribution (XPDU)							

\*Voltage range is load dependent. \*\*T91-2000 includes L5-20P input cord and 5-20P adapter. \*\*\*Capacities are based on highest selectable voltage. Some models derate at lower voltages.

## Shipping List

1. ViewPower CD
2. Manual
3. 4ft USB cable

## Obtaining Service

If the UPS requires Service:

1. Use the TROUBLESHOOTING section in this manual to eliminate obvious causes.
2. Verify there are no circuit breakers tripped.
3. Call your dealer for assistance. If you cannot reach your dealer, or if they cannot resolve the problem, call Xtreme Power Conversion Corp Technical Support at 800.582.4524. Technical support inquiries can also be made at [support@xpcc.com](mailto:support@xpcc.com). Please have the following information available BEFORE calling the Technical Support Department:
  - Your name and address.
  - The serial number of the unit.
  - Where and when the unit was purchased.
  - All of the model information about your UPS.
  - Any information on the failure, including LED's that may or may not be illuminated.
  - A description of the protected equipment, including model numbers if possible.
  - A technician will ask you for the above information and, if possible, help solve your problem over the phone. In the event that the unit requires factory service, the technician will issue you a Return Material Authorization number (RMA).

If you are returning the UPS to Xtreme Power for service, please follow these procedures:

1. Pack the UPS in its original packaging. If the original packaging is no longer available, ask the Technical Support Technician about obtaining a replacement set of packaging material. It is important to pack the UPS properly in order to avoid damage in transit. Never use Styrofoam beads for a packing material.
2. Include a letter with your name, address, daytime phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
3. Mark the RMA number on the outside of all packages. Xtreme Power cannot accept any package without the RMA number marked on the outside of the boxes.
4. Return the UPS by insured, prepaid carrier to the address provided by the Technician.
5. Refer to the Warranty statements in this manual for additional details on what is covered.

## Xtreme Power Conversion Limited Warranty

Xtreme Power Conversion (XPC) Corporation warrants Xtreme Power Conversion equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of **three years for T91-Series products** from the date of purchase. XPC Corporation warrants **internal batteries for a period of three years** from the date of purchase. For equipment sites within the United States and Canada, this warranty covers repair or replacement, at the sole discretion of XPC Corporation. The customer is responsible for the costs of shipping the defective product to XPC Corporation. XPC Corporation will pay for ground shipment of the repaired or replacement product. This warranty applies only to the original purchaser.

If equipment provided by XPC Corporation is found to be **Dead-on-Arrival (DOA)**, XPC Corporation will be responsible for the costs of shipping product to and returning equipment from the customer in a timely manner as agreed to with the customer, once the customer has requested and received a **Return Material Authorization (RMA)** number. DOA equipment is defined as equipment that does not properly function according to user documentation when initially received and connected in conjunction with proper procedures as shown in the user documentation or via support provided by XPC Corporation personnel or authorized agents.

This warranty shall be void if (a) the equipment is repaired or modified by anyone other than XPC Corporation or a XPC Corporation approved third party; (b) the equipment is damaged by the customer, is improperly used or stored, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; or (c) the equipment has been used or stored in a manner contrary to the equipment's operating manual, intended use or other written instructions. Any technical advice furnished by XPC Corporation or a XPC Corporation authorized representative before or after delivery with regard to the use or application of Xtreme Power Conversion equipment is furnished on the basis that it represents XPC Corporations best judgment under the situation and circumstances, but it is used at the recipient's sole risk.

EXCEPT AS STATED ABOVE, XPC Corporation DISCLAIMS ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCEPT AS STATED ABOVE, IN NO EVENT WILL XPC Corporation BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF Xtreme Power Conversion EQUIPMENT, including but not limited to, any costs, lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, cost of substitutes, or claims by third parties. Purchaser's sole and exclusive remedy for breach of any warranty, expressed or implied, concerning Xtreme Power Conversion equipment, and the only obligation of XPC Corporation under this warranty, shall be the repair or replacement of defective equipment, components, or parts; or, at XPC Corporations sole discretion, refund of the purchase price or substitution of an equivalent replacement product.



## Xtreme Power Conversion Load Protection Policy

THIS POLICY IS NOT A WARRANTY. REFER TO **THE XPC CORPORATION, INC. LIMITED WARRANTY** FOR INFORMATION CONCERNING THE WARRANTY FOR YOUR XPC PRODUCT. THE LIMITATIONS AND CONDITIONS CONTAINED IN THIS POLICY DO NOT AFFECT **THE TERMS OF THE XPC LIMITED WARRANTY**.

**Definitions:**

1. “Product” means a Standard 120, 208, or 240 Volt power protection device that is used in the United States and Canada. This policy does not include custom manufactured products.
2. “Power Disturbance” means an AC power line transient (telephone line or Local Area Network, if applicable), spike or surge.
3. “Connected Equipment” properly connected electronic equipment
4. “Fair Market Value” of damaged Connected Equipment as determined by XPC shall be the lower of (a) the average price the same or similar items are being sold for on eBay, (b) the price list of Orion Blue Book (or if such price list is no longer published, a published or announced price list reasonably selected by XPC), (c) the lowest price the same or similar items can be purchased for in the United States or (d) the total amount of all payment(s) you have or are entitled to receive from insurance, other warranties, extended warranties, a legal liability claim or from other sources or persons for the damaged Connected Equipment.
5. “Purchaser” means the person or entity that originally purchased the Product from an authorized reseller or distributor of XPC Products.

The Purchaser of this Product is protected, for the term of the XPC Limited Warranty, against certain losses caused by a Power Disturbance for properly connected electronic equipment (referred to as the "Connected Equipment") subject to certain terms and conditions provided below.

This policy applies only to the original purchaser of the Product. If the Product is transferred or sold to another person or entity, this policy is void.

**Load Protection Policy Dollar and Period Limits**

For purchasers that meet the qualifications and conditions set forth in this policy, XPC will provide reimbursement (cost of repair or fair market value as determined by XPC) during the period limits and up to the dollar limits stated as follows:

PRODUCT	DOLLAR LIMIT	PERIOD OF COVERAGE
XVT	25,000	Term of XPC Limited Warranty
XST	25,000	Term of XPC Limited Warranty
S70	25,000	Term of XPC Limited Warranty
XPRT 6kVA & 10kVA	50,000	Term of XPC Limited Warranty
NXRT	50,000	Term of XPC Limited Warranty
P90, P90L, P90g, P90Lg	50,000	Term of XPC Limited Warranty
T90, T91	50,000	Term of XPC Limited Warranty
TX90, TX90i	50,000	Term of XPC Limited Warranty

This Load Protection Policy is not deemed "first dollar" coverage. XPC’s obligation is reduced by any amounts that the Purchaser is entitled to recover, from other sources regarding the Connected Equipment, including, but not limited to, insurance, other warranty, extended warranty, or legal liability, regardless of whether or not the Purchaser makes a claim for recovery.

**Eligibility for Coverage Under the Load Protection Policy**

1. The Product must be registered on the XPC website, [www.xpcc.com](http://www.xpcc.com), within 10 days of purchase. All required information must be provided, and Purchaser should retain a copy for Purchaser's records. When registering on the website, Purchaser must list all connected equipment that is directly connected to the product. Only those devices registered in that manner will be covered.
2. All Connected Equipment must be UL or CSA approved.
3. The Product must be plugged into a properly wired and grounded outlet. Use of input surge devices, extension cords, adapters, ground wires, or electrical connections not manufactured by XPC voids the XPC Load Protection Policy. No other surge protection device may be connected to the output sockets of the Product. The installation must comply with all applicable electrical and safety codes set forth pursuant to the NEC.
4. The Product must have undeniable physical evidence of a Power Disturbance that directly and proximately caused the damage;
5. The Connected Equipment must have been damaged by a Power Disturbance on a properly installed, grounded, and National Electric Code, ("NEC"), code-compliant 120, 208, 240 Volt AC power line in the United States or Canada, by a Power Disturbance on standard telephone land line or PBX telephone equipment line that is properly installed and connected to an RJ11 port on the Product; or by a Power Disturbance on a standard Local Area Network connection that is properly installed and connected to an RJ45 port on the Product and (d) is directly plugged into, and properly connected to, the Product in its original condition which was properly operated when a Power Disturbance passed through the Product and (i) exhausts the protection capacity of the Product or (ii) damages the Product.
6. The Load Protection Policy does not apply if the Product has been operated in a failure mode or not in compliance with XPC operating instructions in the Product user's manual, or if the Connected Equipment has not been operated in compliance with the instructions and manuals of its manufacturer/vendor.
7. This policy is null and void if, XPC determines, in its sole discretion, that the Product has been tampered with or altered in any way.

**What is Not Covered Under the Load Protection Policy:**

The following damage is not covered by this Policy:

1. Restoration of lost data and reinstallation of software.
2. Damage from a cause other than AC power-line transients, except for damage due to telephone line, Local Area Network, or CATV transients, which is covered only if the Product offers such protection.
3. DAMAGE CAUSED BY FAILURE TO PROVIDE A SUITABLE INSTALLATION ENVIRONMENT FOR THE PRODUCT (INCLUDING, BUT NOT LIMITED TO, LACK OF A PROPER SAFETY GROUND).
4. Damage caused by the use of the Product for purposes other than those for which it was designed.
5. Damage caused by accidents, or natural disasters, including but not limited to, fire, flood, and wind.
6. Damage caused by abuse, misuse, alteration, modification, or negligence.
7. Any labor costs or travel, room and board expenses associated with the repair and/or restoration of lost or damaged hardware, software or data.

**EXCEPT AS EXPRESSLY PROVIDED IN THIS POLICY, XPC SHALL NOT BE LIABLE FOR ANY DAMAGES WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, DIRECT, INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR MULTIPLE DAMAGES ARISING OUT OF THE USE OF THE PRODUCT OR DAMAGE TO THE CONNECTED EQUIPMENT, REGARDLESS OF THE LEGAL THEORY ON WHICH SUCH CLAIM IS BASED, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH**

**Submitting a Load Protection Policy Claim:**

1. Any claim under the Load Protection Policy must be made within 10 days of the date of alleged damage to the Connected Equipment.
2. Call the XPC technical support department at 1-800- 582-4524 and obtain a Load Protection Policy Returned Material Authorization (RMA) number. Have information on all applicable insurance or other resources of recovery/payment that is available to the Purchaser and the name of the power utility supplier for the location of the Connected Equipment. XPC will forward to the Purchaser a Load Protection Policy claims form, which must be completed and filed with XPC within 30 days.
  - Mark the Load Protection Policy RMA number on the Product the Purchaser is returning.
  - Pack the Product in its original packaging or similar packing materials if the original packaging has been discarded. Enclose the completed Load Protection Policy claim form and a copy of the Purchaser's original sales receipt for the Product in the box.
  - Mark the RMA number clearly on the outside of the box.
  - Ship the Product (one-way shipping charges paid by the Purchaser) to:

XPC Corporation  
230 Yuma Street  
Denver, CO 80223  
Attn: LPP RMA#

3. XPC will evaluate the Product to determine its level of functionality, and will examine the Product for evidence of damage from a Power Disturbance.
  - If XPCs' evaluation provides no evidence of damage from a Power Disturbance, XPC will send to the Purchaser (i) a report summarizing the tests performed and (ii) a rejection of claim notice.
  - If the Product shows evidence of damage from a Power Disturbance, XPC will request that all Connected Equipment for which a Load Protection Policy claim has been submitted, be sent for evaluation to either XPC or an authorized service center. If it is determined that the Connected Equipment has been damaged by a Power Disturbance, XPC will, in its sole discretion, issue payment to the Purchaser for either the cost of repair of the Connected Equipment or the Fair Market Value of the damaged Connected Equipment, up to the dollar limits stated above. XPC reserves the right to require the Purchaser to transfer title and deliver the Connected Equipment to XPC if it chooses to reimburse the Purchaser for the fair market value of the Connected Equipment. XPCs' maximum liability shall be reduced to reflect all such other payments or sources of recovery, whether applied for or not.
4. If XPC issues payment to the Purchaser to have the Connected Equipment repaired, the repair must be performed at a service center that is authorized by the manufacturer of the Connected Equipment. XPC reserves the right to contact the authorized service center directly to discuss repair costs and damage to the Connected Equipment to determine if it was caused by a Power Disturbance and the right to request that the service center forward the Connected Equipment or components of the Connected Equipment to XPC for inspection
5. Unless modified in writing signed by an officer of XPC and the Purchaser, the terms of this policy are the complete and exclusive agreement between the parties, superseding all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement. No employee of XPC or any other party is authorized to make any representations beyond those made in this agreement concerning the Load Protection Policy.

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230 Yuma Street  
Denver, CO 80223  
1.800.582.4524