User Manual

ZEUS51E6K

CONTENT:

1. Safety

Please read carefully the following user manual and the safety instructions before installing the unit or using the unit!

1.1. Installation

- This is permanently connected equipment, and it must be installed by qualified maintenance personnel.
- Condensation may occur if the UPS is moved directly from a cold to a warm environment. The UPS must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours.
- Do not install the UPS near water or in damp environment.
- Do not install the UPS where it would be exposed to direct sunlight or near heat.
- Do not connect appliances or items of equipment which would overload the UPS (e.g. laser printers, etc.) to the UPS output.
- Do not block ventilation openings in the UPS's housing. Ensure allow at least 0.5m of space on front and rear of the UPS.
- Place cables in such a way that no one can step on or trip over them.
- Connect UPS with the earth reliably before connecting to the building wiring terminal, and external battery source must also be earthed.
- An integral single emergency switching device which prevents further supply to the load by the UPS in any mode of operation should be provided in the building wiring installation.
- An appropriate disconnect device as short-circuit backup protection should be provided in the building wiring installation.
- The equipment is powered by two sources: the mains source, the internal battery or the external battery source.
- With the installation of the equipment, the sum of the leakage current of the UPS and the connected load does not exceed 5% of rated value of input current.

1.2. Operation

- Do not disconnect the main cable on the UPS or the building wiring terminals during operation since this would remove the protective earth from the UPS and all connected loads.
- The UPS output terminal block may still be electrically lived even if the UPS is

not connected to the building wiring terminal, for there is internal current source (batteries).

- In order to fully disconnect the UPS, first turn the input breaker in the "OFF" position, then disconnect the mains lead.
- Indiscriminate operation of switches may cause output loss or damage to equipment. Refer to instruction before conducting any control.
- While the UPS work as a parallel system, the external parallel cable should be reinforced insulation.
- Ensure that no liquid or other foreign objects can enter the UPS.

1.3. Maintenance, Servicing and Faults

- Do not remove the enclosure since the UPS operates with hazardous voltages. It is to be serviced only by qualified maintenance personnel.
- **Caution!** Risk of electric shock. Even after the unit is disconnected from the mains power supply (building wiring terminal) components inside the UPS are still connected to the battery which are potentially dangerous.
- Before carrying out any kind of service or maintenance, isolate UPS and disconnect the batteries. Verify that no current is present and no hazardous voltage exists in the capacitor or BUS capacitor.
- Batteries must be replaced only by qualified personnel.
- Batteries have a high short-circuit current and pose a risk of shock. Take all precautionary measures specified below and any other necessary measures when working with batteries:
  — remove all jewellery, wristwatches, rings and other metal objects
  — use only tools with insulated grips and handles.
- When changing batteries, replace with the same quantity and the same type of batteries.
- Do not attempt to dispose of batteries by burning them. It could cause explosion.
- The UPS may be connected to external battery package. Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Do not open or destroy batteries. Effluent electrolyte can cause injury to the skin and eyes. It may be toxic.
- Replace the fuse only by a fuse of the same type and of the same spec in order to avoid fire hazards.

1.4. Transport

Please transport the UPS only in the original packaging to protect against shock and impact.

1.5. Storage

The UPS must be stockpiled in the room where is ventilated and dry.

1.6. Standards

* **Safety**	
IEC/EN 62040-1	
* **EMI**	
Conducted Emission.....:IEC/EN 62040-2	Category C3
Radiated Emission.....:IEC/EN 62040-2	Category C3
***EMS**	
ESD.....:IEC/EN 61000-4-2	Level 3
RS.....:IEC/EN 61000-4-3	Level 3
EFT.....:IEC/EN 61000-4-4	Level 4
SURGE.....:IEC/EN 61000-4-5	Level 4
Low Frequency Signals.....:IEC/EN 61000-2-2	
Warning: This is a product for commercial and industrial application in the second environment-installation restrictions or additional measures may be needed to prevent disturbances.	

2. Description of Commonly Used Symbols

Some or all of the following symbols may be used in this manual. It is advisable to familiarize yourself with them and understand their meaning:

Symbol and Explanation			
Symbol	**Explanation**	**Symbol**	**Explanation**
	Alert you to pay special attention		Caution of high voltage
	Alternating current source(AC)		Direct current source(DC)
	Turn on or turn off the UPS		Protective ground
	Recycle		Do not dispose with ordinary trash

3. Introduction

The ZEUS51E6K is an uninterruptible power supply incorporating double-converter technology. It provides perfect protection specifically for computer equipments, communication servers, and data centers.

The double-converter principle eliminates all mains power disturbances. A rectifier converts the alternating current from the mains power to direct current. On the basis of this DC voltage, the inverter generates an AC sinusoidal voltage, which constantly supplies the loads. In the event of power failure, the maintenance-free batteries power the inverter.

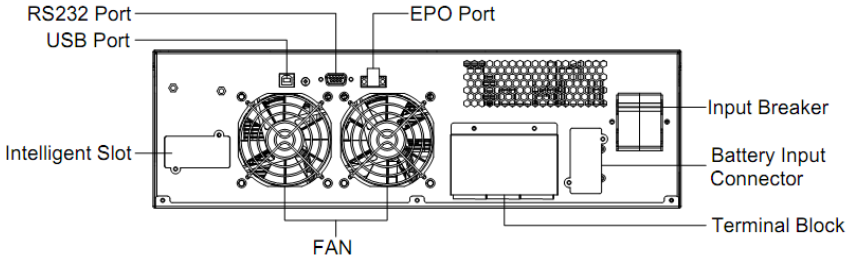


Fig.3-1 The rear view of ZEUS51E6K

* **EPO Port can be set to a ROO port in setting configuration**
EPO: Enable Power-Off in emergency from a remote location.
ROO: Power ON/OFF from a remote location.

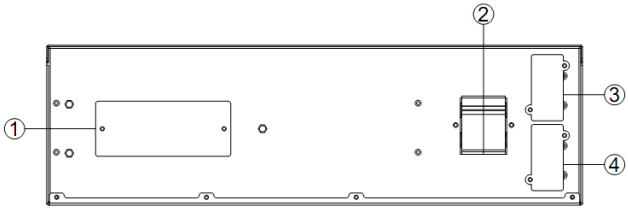


Fig.3-2 The rearview of battery pack

①. **Fuse:** Replaceable fuse is accessible from the rear panel. It must be done by qualified personnel.

②. **BREAKER:** Battery Output Breaker.

③. **Battery Output Connector:** Use this output connector to connect the Battery module and the Power Module.

④. **Battery input Connector:** Use this input Connector to daisy chain the next Battery module.

3.1. Feature

This UPS is a new generation of UPS, which provides the outstanding reliability, and most cost-performance ratio in the industrial. Following benefit the product has:

- True online double-conversion technology with high power density, frequency independence and generator compatibility.
- High input power factor ⩾0.99, overall high efficiency ⩾ 92%, save power and wiring expense. Low input current distortion, avoid power pollution.
- Output power factor is 1, perfect output sine waveform, suitable almost all

critical equipment.

- Outstanding adaptability to the worst mains input condition. Extra wide input voltage, frequency range and waveform, avoid excessive dissipating limited battery energy.
- ECO mode with high efficiency ⩾96%, save power expense for user.
- Start-able without battery.

3.2. Electrical Specifications

Model	ZEUS51E6K
Input	
Phase	Single
Voltage Range	80~300Vac(Depends on load level)
Frequency Range	(45~55)/(54~66)Hz
Rated Current	31(38)A
Power Factor	≥0.99@full load
Battery	
Rated Voltage	192Vdc
Rated Current	31A
Output	
Power Rating	6kVA/6kW
Voltage*	208/220/230/240Vac
Frequency	Synchronized50/60×(1±10%)Hz @Line mode 50/60×(1±0.1%)Hz @Battery mode
Wave Form	sine
Load Type	PF 0.5~1, lagging
THDV	⩽ 2% @ full linear load ⩽5% @ full nonlinear load

Overload**	Line mode: 10 min 105%~110% 1min 110%~130% 3 s >130% Battery mode: 10 min 105%~110% 1min 110%~130% 3 s >130%

*The load capacity would be derated to 90% automatically when the output voltage is adjusted to 208Vac.

**The overload capacity would be derated automatically in Line mode while the circumstance temperature is larger than 35 degree.

3.3. Operating Environment

Temperature	Humidity	Altitude	Storage temperature
0℃~40℃	<95%	<1000m	-15℃~50℃

Note: The load capacity should be derated 1% every 100m heightened on the basis of 1000m.

3.4. Dimensions and Weights

Model	Dimensions W×H×D(mm)	Net Weight (kg)
ZEUS51E6K	438*261*680	59.4

4. Installation

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

For safety, please cut off the mains power switch before installation!

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

4.1. Unpacking

- A UPS
- A user's manual

CAUTION! 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.

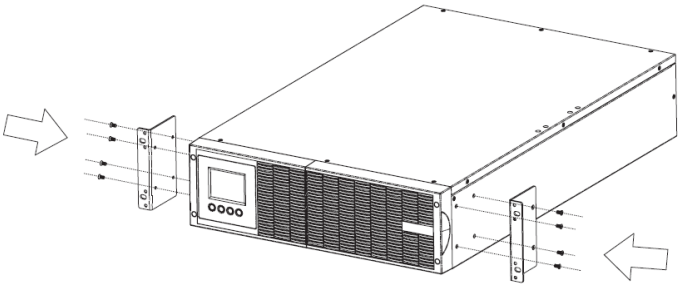
CAUTION! To prevent the risk of fire or electric shock, only use the supplied hardware to attach the mounting brackets.

4.2. Rackmount Installation

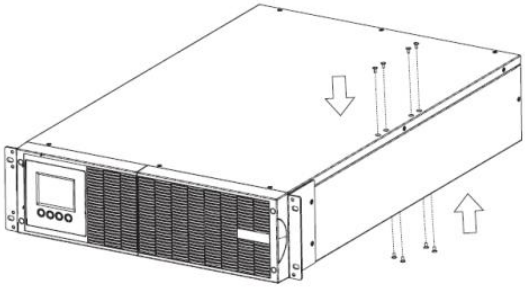
UPS systems can be mounted in a rackmount or vertical tower orientation. This versatility is especially important to growing organizations with changing needs that value having the option to position a UPS on a floor or in a rackmount system. Please follow the instructions below for the respective mounting methods.

Step1.Rackmount ears installation：

1) Attach the two rackmount ears to the power module using the provided screws M4X8L*8pcs.

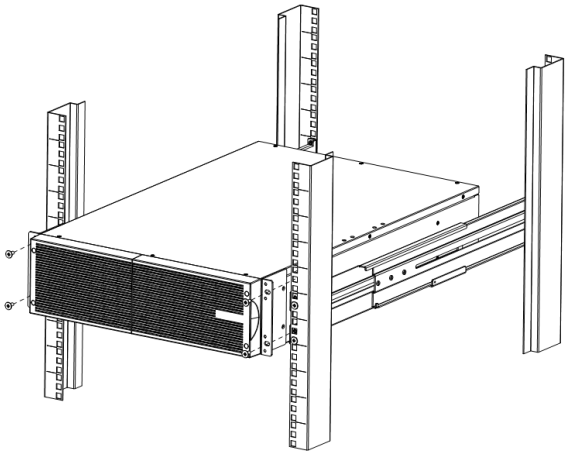


2) Insert dust cover into the rackmount ear screw holes that are not being used.



Step2.Install the power module on the rack：

1) Place the power module on a flat stable surface with the front of the unit facing toward you. Secure the power module to your rack with four M5X12L screws at the front of the rack.



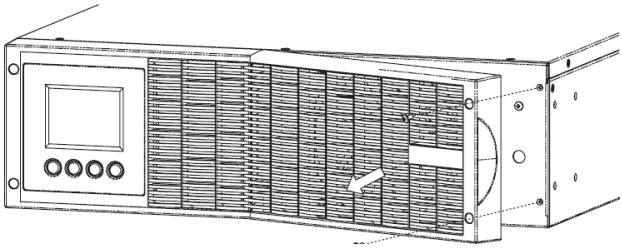
2) Once completed, perform the same steps for the external battery pack.

CAUTION! The external battery pack must be installed below the Power Module.

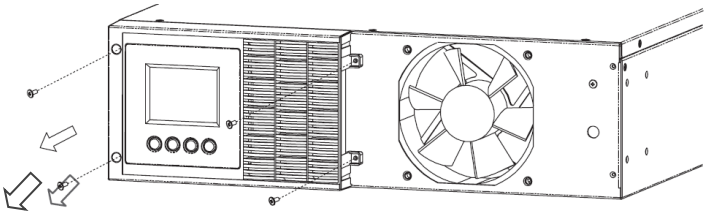
4.3. Vertical/Tower Installation

Step1.Rotate the multifunction LCD module：

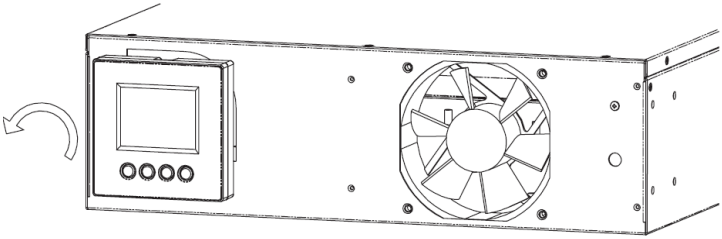
1) Unscrew the right panel of the Power Module. Separate the right panel from Power Module.



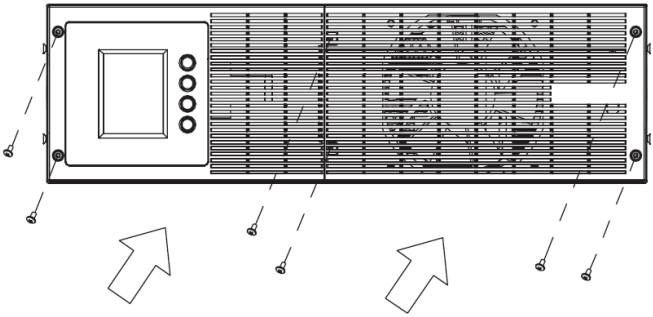
2) Unscrew the left panel of the Power Module. Separate the left panel from Power Module.



3) Rotate the LCD module to the left. Reinstall it for a tower configuration .



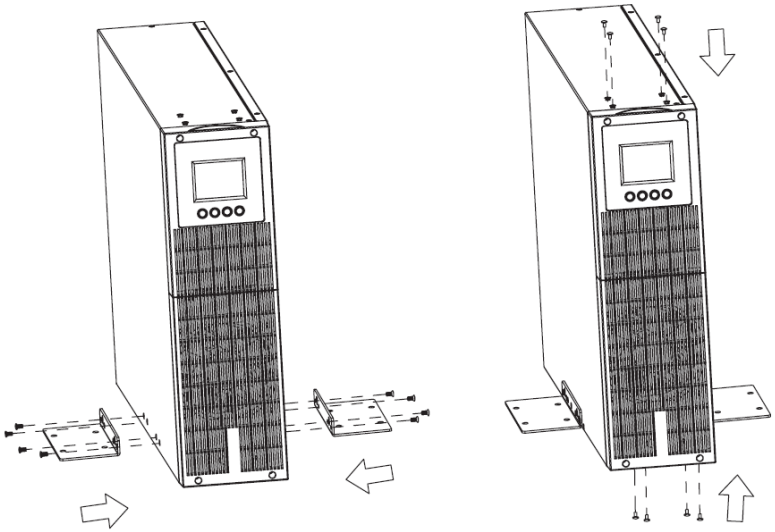
4) Last tighten the screws to fix the left panel and the right panel.



Step2.Attach the base stands：

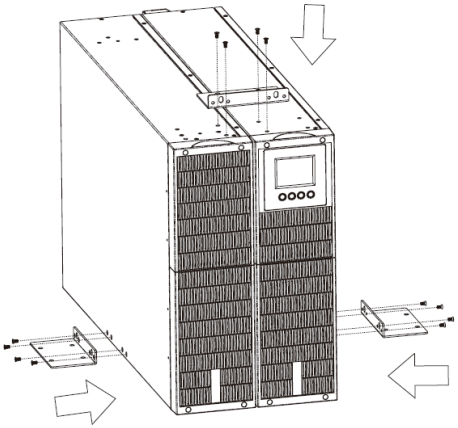
Connection#1: *Power module without external battery pack*

1) Tighten the screws (M5X12*8pcs) of the base stands (rackmount ears) onto the bottom of Power Module.
2) Insert dust cover into the rackmount ear screw holes that are not being used.

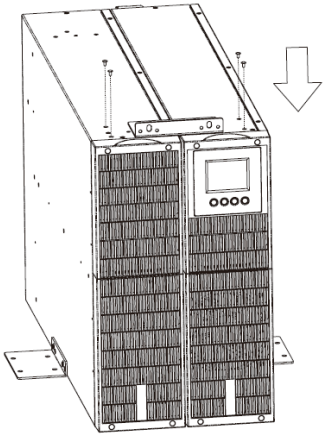


Connection#2: *Power module with external battery pack*

1) Tighten the screws (M5X12*8pcs) of the base stands (rackmount ears) onto the bottom of power module and battery pack.



2) Insert dust cover into the rackmount ear screw holes that are not being used.



4.4. Power Wires Installation

4.4.1. Notes for installation:

1) The UPS must be installed in a location with good ventilation, faraway 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 0.5m 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.

4.4.2. Installation

Use cable cross section and protective device specification：

Model	ZEUS51E6K
Protective earthing conductor Min cross section	6mm² (UL1015 10AWG)
Input L, N Min conductor cross section	6mm² (UL1015 10AWG)
Input breaker	40A/250Vac
External Battery Cabinet Fuse in Positive Pole(+), Negative pole(-)	30A/240Vdc
External Battery Cabinet Breaker in Positive Pole(+), Negative pole(-)	32A/240Vdc
Torque for fixing above terminals	3.95~4.97Nm (35~44 1b in)

1) It is suggested to install an external isolating device against current back feed between mains input and UPS. After the device is installed, it must add a warning label with the following wording or the equivalent on the external AC contactor: **RISK OF VOLTAGE BACKFEED**. Isolate the UPS before operating on this circuit, then check for hazardous voltage between all terminals.

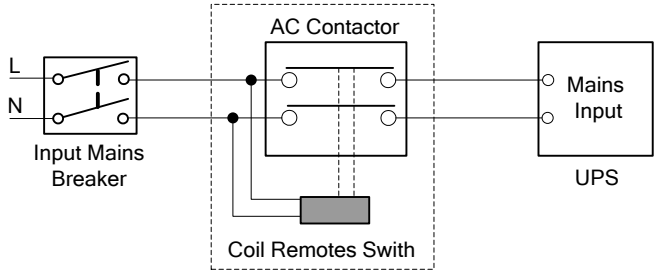


Fig.4-1 Typical external isolating device installation

2) No matter the UPS is connected to the mains power or not, the output of the UPS may be electrically live. The parts inside the unit may still have hazardous voltage after turning off the UPS. To make the UPS have no output, turn off the UPS, and cut off the mains power supply, wait the UPS shut down completely, finally cut off the battery connection.
3) Open the terminal block cover located on the rear panel of UPS, please refer to the appearance diagram.
4) Ensure the capacity of mains power supply. Do not use the wall receptacle as the input power source for the UPS, as its rated current is less than the UPS's maximum input current. Otherwise the receptacle may be burned and destroyed.
5) The protective earth ground wire should be installed first according to the following diagram. It is better to use green wire or green wire with yellow ribbon wire.
6) Connect other input and output wires to the corresponding input and output terminals according to the following diagram.

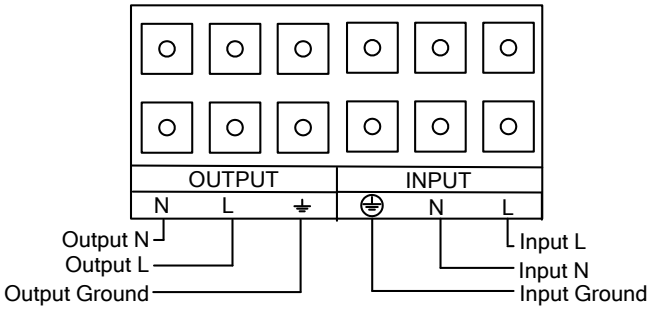


Fig.4-2 Input and output terminal block wiring diagram

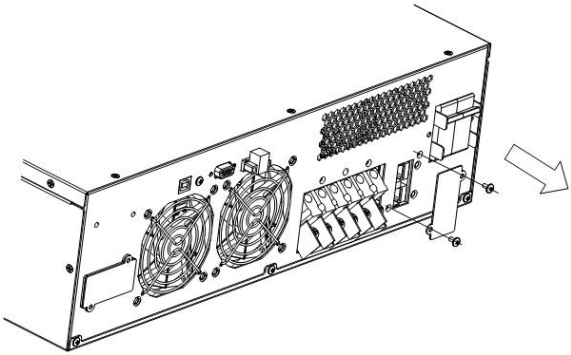
Note: Make sure that the input and output wires and the input and output terminals are connected tightly.

7) It is requested to use the accessorial terminal splices which can be compacted on the wires tightly, to ensure the connection between the wires and the terminal block is reliable.
8) Install an output breaker between the output terminal of UPS and the load, and the breaker should be with leakage current protective function if necessary.
9) Turn off all the loads first before connecting the load with the UPS, then perform the connection and finally turn on the loads one by one.
10) After completing the installation, please check the wires to make sure all were connected correctly and tightly.
11) Suggest charging the batteries for 8 hours before use. After Installation, turn on the mains power switch and turn the input breaker in the "ON" position, the UPS will charge the batteries automatically. It can also use the UPS immediately without charging the batteries, but the backup time may be less than the standard value.
12) 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 to make the UPS which capacity is small fail easily.

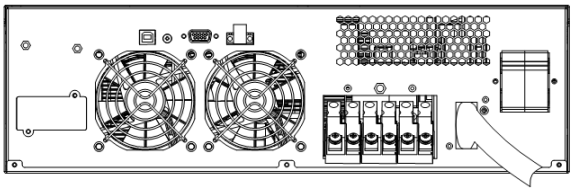
4.5. External Battery Pack Connecting Procedure

The nominal DC voltage of external battery pack is 192Vdc. To achieve longer backup time, it is possible to connect multi-battery packs, but the principle of "same voltage, same type" should be strictly followed.

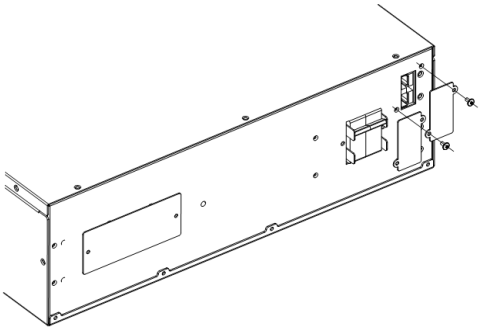
1) Loosen the screws to remove the Battery Input Connector Cover of Power Module.



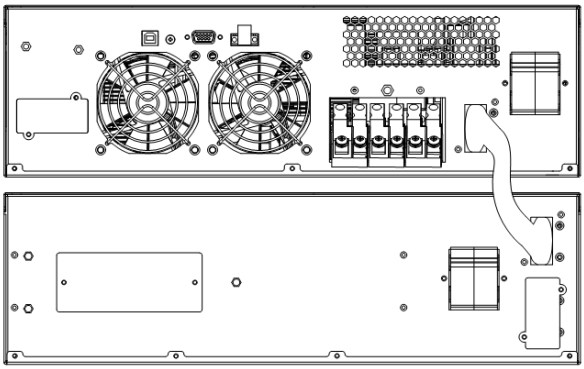
2) Connect the Battery Cable to the Power Module and ensure the polarity is right.



3) Loosen the screws to remove the Battery Output Connector Cover of Battery Pack.



4) Connect the battery cable to the Battery Pack.



4.6. EPO Connection

EPO (Emergency power off): when the emergency occurs, such as the failure of load, the UPS can cut off the output at once by operating the EPO port manually.

The connection：

Normally the EPO connector is closed with a wire on the rear panel (Fig.4-4), which is supplied in the accessory. Once the connector is open, the UPS would stop the output and enter EPO status (Fig.4-3).

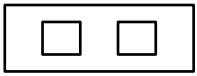


Fig.4-3 Enable the EPO status

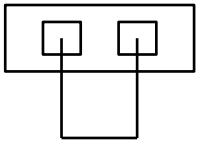
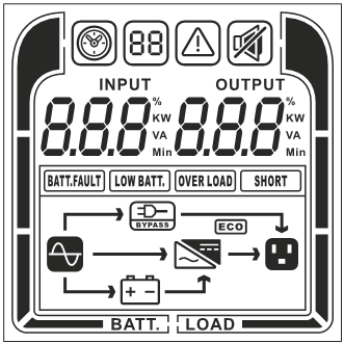


Fig.4-4 Disable the EPO status

To recover to normal status, first EPO connector should be closed (Fig.4-4), and press button **ON** more than 1 second to clear EPO status, then UPS would stop alarm and recover to Bypass model. And UPS needs be turned on by manual operation.

5. Operation

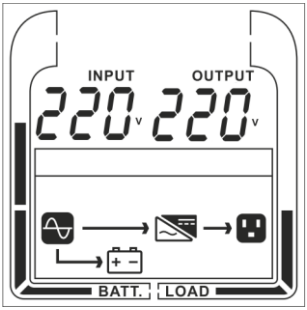
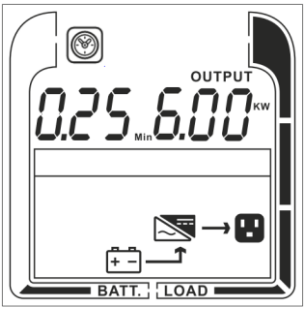
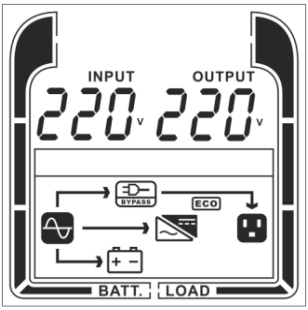
5.1. Display Panel

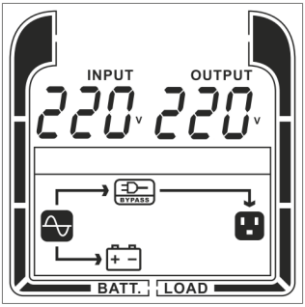
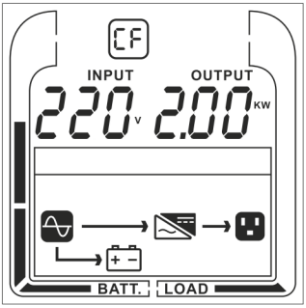
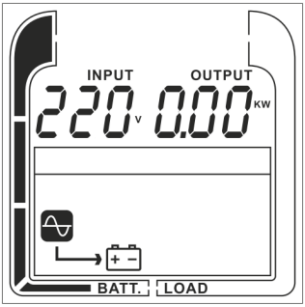


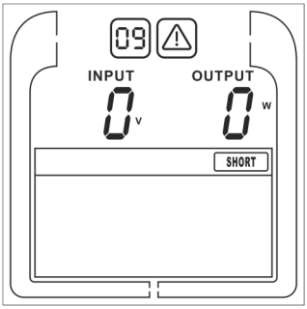
5.2. Button functions

Button	Operation Description
ON	Press this button to turn on UPS. In line mode, ECO mode, or converter mode, press the “ON” button for 5 seconds to activate the battery test.
OFF	Press this button to turn off UPS.*
ENTER	Press this button for 5 seconds to get into setting mode while in bypass mode, or standby mode. In setting mode, press this button to confirm selection, or press this button for long time to exit setting mode and saving changes. Press this button to scroll up in the LCD menu.
ESC	In setting mode, press this button to display next selection, or press this button for long time to exit setting mode without saving changes. Press the “ESC” button for 5 seconds to disable and enable buzzer alarm. Press this button to scroll down in the LCD menu.
ENTER + ESC	Switch to bypass mode: When the main power is normal, press these two buttons simultaneously for 5 seconds, then UPS will enter to bypass mode.

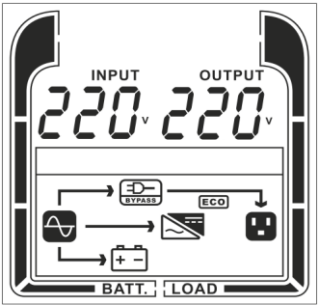
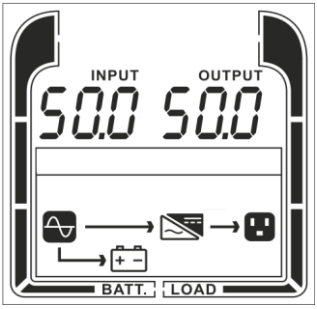
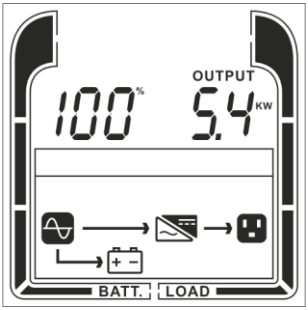
5.3. LCD Operation

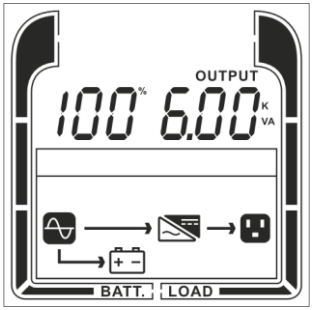
Operation mode	Description	LCD display
Line mode	Utility will provide energy to loads. It will also charge the battery at the same time.	
Battery mode	The unit will provide output power from battery.	
ECO mode	When the input voltage is within voltage regulation range, UPS will bypass voltage to output for energy saving.	

Bypass mode	When the input voltage is within bypass voltage range, UPS will bypass voltage to output.	
Converter mode	When input frequency is within 40Hz to 70Hz, the UPS can be set at a constant output frequency, 50Hz or 60Hz.	
Standby mode	Utility will charge the battery and no output voltage until switch on the UPS.	
Warning mode	The UPS is warning because of overload.	

Fault mode	The UPS goes to fault mode because output is short.	

LCD displays 6 pages in total：

1(default)	Left: AC INPUT(Voltage) Right: OUTPUT(Voltage) V	
2	Left: INPUT(Frequency) Hz Right: OUTPUT(Frequency) Hz	
3	Left: W load percent(%) Right: OUTPUTXXX W	

4	Left: VA load percentage(%) Right: OUTPUTXXX VA	
5	Left: Battery capacity percentage(%) Right: Battery voltage(v)	
6	Left: Backup Time(Min) Right: Battery voltage(v)	

LCD SETTING CONFIGURATION

There are 22 UPS settings that can be configured by the user.

1、Press and hold the "**ENTER**" button for 5 seconds to activate the setting mode.

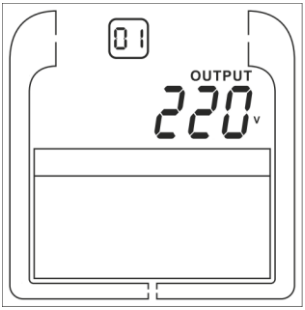
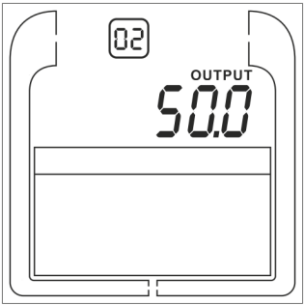
The first configuration parameter will be displayed on the LCD screen.

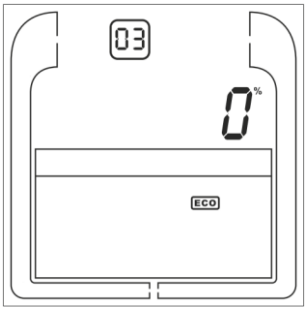
Note: The manual settings programming mode can ONLY be invoked while UPS is in Bypass mode or Standby mode. To make UPS on Standby mode or Bypass mode, connect utility power to UPS and do not turn on UPS.

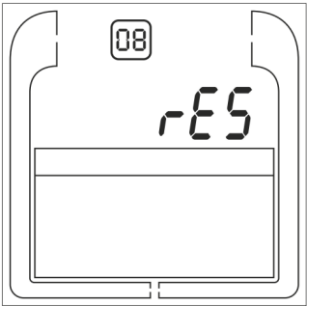
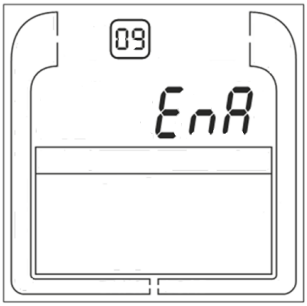
2、Press the "**ENTER**" button to select the setting you want to configure.

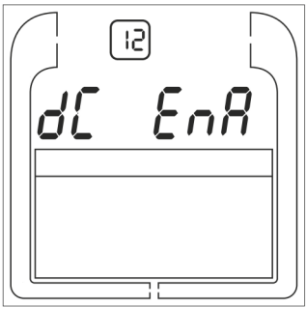
3、Press the "**ESC**" buttons to scroll through the different parameters and select the parameter you want.

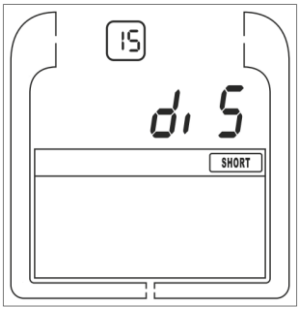
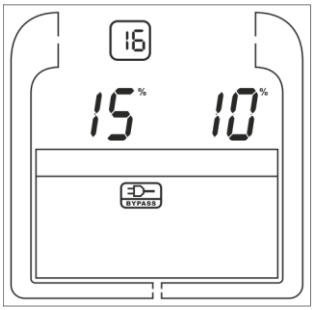
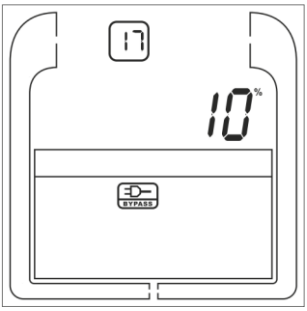
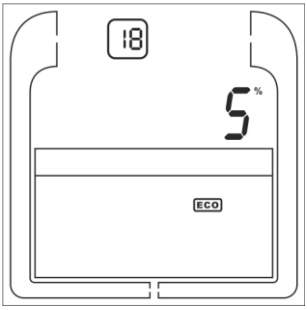
4、Press the "**ESC**" button for 5 seconds to cancel and exit setting mode. Press the "**ENTER**" button for 5 seconds to save all the settings you just do and exit setting mode.

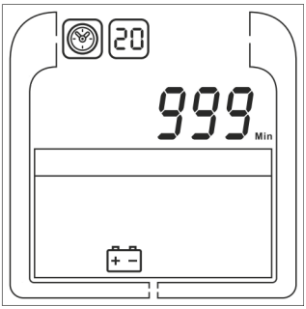
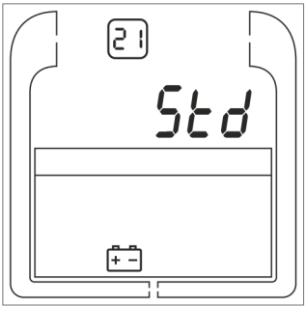
Setting item	**LCD Display**	**Setting**
01 Output voltage		You may choose the following output voltage in 01 setting. **208**:Present output voltage is 208Vac **220**:Present output voltage is 220Vac(**default**) **230**:Present output voltage is 230Vac **240**:Present output voltage is 240Vac
02 Output frequency		You may choose the following output frequency in 02 setting. **50**:Present output frequency is 50Hz**(default)** **60**:Present output frequency is 60Hz

03 ECO mode		**0%**: ECO mode disabled. When selected, ECO mode is not allowed**(default)** **10%**: ECO mode enabled. When selected, ECO mode is activated when the input voltage is within +/-10% of setting output voltage **15%**: ECO mode enabled. When selected, ECO mode is activated when the input voltage is within +/-15% of setting output voltage
04 Bypass output		**DIS**: Bypass output disabled. When selected, Bypass output is not allowed in standby mode. But automatic bypass is acceptable when overload or other fault occurs **ENA**: Bypass output enabled. When selected, Bypass output is activated when the utility power is available even not turn on the UPS**(default)**
05 Converter mode		**DIS**: Setting UPS to normal mode(non-CVCF mode).If selected, the output frequency will synchronize with the input frequency within 46~54Hz at 50Hz or within 56~64Hz at 60Hz according to setting program 002.**(default)** **ENA**: Setting UPS to CVCF mode .If selected, the output frequency will be fixed to 50Hz or 60Hz according to setting program 002.But load capacity will be derated by 40%.
06 EPO/ROO***		**EPO**: Enable EPO function, if selected, user can Power-Off in emergency from a remote location.**(default)** **ROO**: Enable ROO function, if selected, user can power ON/OFF from a remote location.

07 EBM Number****		You may set the number of battery package in 07 setting as [0bP]~ [AbP] [1bP] is the default setting for long-run model
08 Reserved		Reserved
09 Buzzer		**DIS**: Disabled the buzzer. When selected, buzzer will be silent, but it will beep when alarm or fault occurs. **ENA**: Enabled the buzzer. **(default)**
10 Site wiring fault alarm		**ENA**: Site wiring fault alarm enabled. If selected, UPS will give site wiring fault alarm when line and neutral wiring reverse. (**default**) **DIS:** Site wiring fault alarm disabled. If selected, UPS will not give any alarm when line and neutral wiring reverse.

11 Ambient temperature warning		**ENA:** Ambient temperature warning enabled. (**default**) **DIS:** Ambient temperature warning disabled.
12 DC start		**ENA:** DC start enabled. If selected, UPS can be switched on when DC voltage is available. Utility power is not essential. (**default**) **DIS:** DC start disabled. If selected, UPS can't be switched on when only DC voltage is available. Utility power is essential when turn on the UPS.
13 Auto Restart		**ENA:** Auto restart enabled. If selected, UPS will auto restart after shutdown if utility power come back. **(default)** **DIS:** Auto restart disabled. If selected, UPS will not auto restart after shutdown even if utility power come back.
14 Automatic overload restart		**ENA:** Automatic overload restart enabled. If selected, UPS will auto restart after overload fault. (**default**) **DIS:** Automatic overload restart disabled. If selected, UPS will not auto restart after overload fault.

15 Short circuit restart		**ENA:** Short circuit restart enabled. If selected, UPS will auto restart after short circuit fault. **DIS:** Short circuit restart disabled. If selected, UPS will not auto restart after short circuit fault. **(default)**
16 Bypass voltage range		Left parameter: Set the acceptable low voltage for bypass. Setting range is 10%/15%/20% of normal output voltage and the default value is 15%. Right parameter: Set the acceptable high voltage for bypass. Setting range is 10%/15% of normal output voltage and the default value is 10%.
17 Bypass frequency range		Set the acceptable frequency range for bypass. Setting range is from 1% to 10% of normal output frequency and the default value is 10%.
18 ECO frequency range		Set the acceptable frequency range for ECO mode. Setting range is from 1% to 10% of normal output frequency and the default value is 5%.

19 Automatic battery tests period		Set the automatic battery tests period. Setting range is from 0 to 45days and the default value is 7days.
20 Battery maximum discharge time setting		**0~ 999:** Set the maximum discharge time from 0 to 999minutes.UPS will shut down to protect battery after discharge time arrives. The default value is 999min. **DIS:** Disable battery discharge protection and backup time will depend on battery capacity.
21 Ext. Bat Type		**STD:** The battery type is standard.UPS will calculate battery capacity and discharge time.**(default)** **CUS:** The battery type is customed.UPS can't calculate battery capacity and discharge time.
22 Restore default setting		**NO:** Not restore default setting for the UPS.(**default**) **YES:** Restore default setting for the UPS.UPS need shut down.

*) When operating in ECO Mode, the efficiency of UPS is higher than that in online mode, but transfer time should not be 0ms

**) When operating in Converter Mode, the frequency of output should be always 50Hz or 60Hz, but load capacity will be derated by 40%.

*) This function would be set as 0% when Converter Mode is enabled.

**) UPS has no bypass when Converter Mode is enabled.

***) ROO (Remote On/Off): If ROO is enabled, UPS can be turn on/off by the ROO port. If ROO port is disconnected, UPS will be turned off. If ROO port is connected, UPS will be turned on when the utility is normal

****) 1. UPS cannot detect the numbers of external battery automatically, so manual input from user is necessary.

2. For standard models, this setting is disabled.

3.For long run models, the default number is 1.

6. Special Function

The UPS has some special functions, which could satisfy some special application of user. And the functions have own features, please contact your local distributor for further information before using the function.

6.1. ECO Function

Brief introduction of ECO function：

If ECO function is set to enable, after the UPS is turned on, the power used by the load is directly supplied from the mains power via internal filter while the utility power is in normal range, so the economy mode could be gained in ECO mode. Once the mains power is loss or abnormal, the UPS would transfer to Line mode or Battery mode and the load is supplied continuously.

The great virtue is overall high efficiency≥96% of UPS, to save power for user.

But the disadvantage is:

1) The load can't be protected as well as in Line mode, for the load is directly supplied from the mains;
2) The transfer time of UPS output from ECO mode to Battery mode is about 10ms.

So the function is not suitable to some sensitive loads, and the region where the mains power is unstable.

Set the function:

The function could be enabled through the LCD setting.

6.2. Converter Function

Brief introduction of Converter function：

In converter mode, the UPS would free run with fixed output frequency (50Hz or 60Hz). Once the mains power is loss or abnormal, the UPS would transfer to Battery mode and the load is supplied continuously.

The great virtue is the output frequency is fixed, which is required by some very sensitive loads. But the disadvantage is the load capacity of UPS should be derated to 50% in converter mode.

Set the function:

The function could be enabled through the LCD setting.

7. Trouble Shooting

If the UPS system does not operate correctly, first check the operating information on the LCD display. Please attempt to solve the problem using the table below. If the problem still persists, consult your dealer.

7.1. Trouble Shooting According to Warning Indication

Warning code	Problem Displayed	Possible cause	Remedy
51	Site fail	The ground wire is disconnected, or phase and neutral conductor at input of UPS system are reversed	Check the Ground wire status; Reverse mains power wiring
53	Fuse open	Input fuse break	Check the input fuse status
56	Battery low	Battery Volt/Cap/Remain Time is low	When audible alarm sounding every second, battery is almost empty
59	Battery open	Battery is disconnect	Do the battery test to confirm; Check the battery bank is connected to the UPS; Check the battery breaker is turn on

60	Over Charge	Battery is over charged	The UPS will turn off the charger until the battery voltage is normal
61	Charger fail	The charge fails	Consult dealer
64	Over Load	Over Load	Check the loads and remove some non-critical loads; Check if some loads are failed.
66	EPO active	EPO connector is open	Check the EPO connector status.
68	Over Temperature	Inside temperature of UPS is too high	Check the ventilation of UPS and the ambient temperature
69	Fan warning	Fan blocked or disconnected	Check the fan status
94	Input Soft Fail	Input Soft Fail	Consult dealer
95	Model pin error	model pin error	Consult dealer
96	Amb NTC abnormal	The ambient temperature is too high	Check the environment ventilation
97	Heat Sink NTC Abnormal	Heat Sink NTC Abnormal	Consult dealer

7.2. Trouble Shooting According to Fault Indication

Warning code	Problem Displayed	Possible cause	Remedy
09	Output Short	Output short circuit	Remove all the loads. Turn off the UPS. Check if UPS output and loads is short circuit. Ensure short circuit is removed before turning on again.
14	Over Load	Over Load	Check the loads and remove some non-critical loads; Check if some loads are failed.
16	Neg power fail	The load is pure inductive and capacitive	Remove some non-critical loads; Bypass supplies the load first, ensure there is no overload, then turn on UPS
19	Over Temperature	Inside temperature of UPS is too high	Check the ventilation of UPS and the ambient temperature.
18	Fan fail	Fan blocked or disconnected over time	Check the fan status.
17	Back feed	Output voltage is returned to input	Consult dealer
05	DC short	Bus short	Consult dealer
02	DC Over	Bus Over Voltage	Consult dealer
03	DC Under	Bus Under Voltage	Consult dealer
04	DC Unbalance	Bus Unbalance	Consult dealer
01	DC soft fail	Bus Soft start fail	Consult dealer
06	Output soft fail	Output Soft start fail	Consult dealer
08	Output Volt low	Output Volt low	Consult dealer
07	Output volt high	Output volt high	Consult dealer

7.3. Trouble Shooting in Else Cases

Problem	Possible cause	Remedy
No indication, no warning tone even though system is connected to mains power supply	No input voltage	Check the building wiring and input cable; Check if the input breaker is closed.
BYPASS icon flash even though the power supply is available	Inverter not switched on	Press button **ON** to turn on UPS.
BATTERY icon flash , and audible alarm sounding every 1 beep in every 4 seconds	Input voltage and/or frequency are out of tolerance	Check input power source; Check the building wiring and input cable; Check if the input breaker is
Emergency supply period shorter than nominal value	Batteries not fully charged / batteries defect	Charge the batteries for at least 12 hours and then check capacity.

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) LCD display information, Buzzer alarm status.
4) Mains power condition, load type and capacity, environment temperature, ventilation condition.
5) Other information for complete description of the problem.

8. Battery Maintenance

Battery replacement should be performed by qualified personnel.

- This 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.
- Under normal conditions, the battery life lasts 3 to 5 years. Incase if the battery is found not in good condition, earlier replacement should be made. 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.
- If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced.

9. Communication Port

9.1. USB Interface

The USB port is compliance with USB protocol for its communication software.

9.2. RS232 Interface

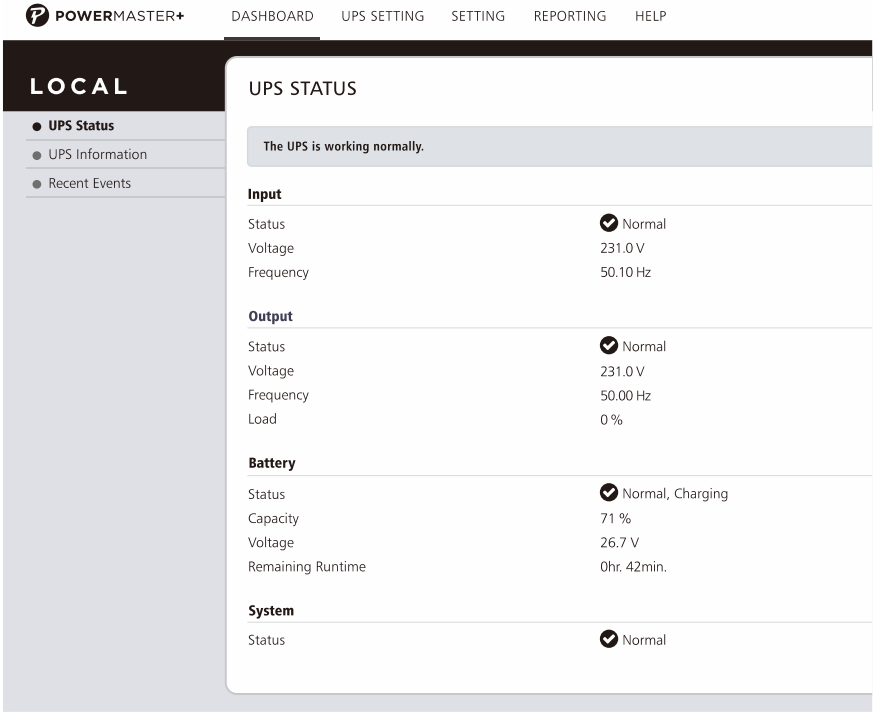
The RS232 port is available for UPS monitoring, control, and firmware updates.

9.3. Intelligent slot

This UPS is equipped with an intelligent slot for other optional card to achieve remote management of the UPS through internet / intranet. Please contact your local distributor for further information.

10. Software Installation

Power Master+ management software provides a user-friendly interface for your power systems. The graphic user-interface is intuitive and displays essential power information at a glance. Please follow procedure below to install the software.



Installation procedure:

1. Download Power Master+ from the website: https://www.powermonitor.software/
2. Double-click the file and follow the installation steps.

   When your computer restarts, the Power Master+ software will appear as a blue icon located in the system tray.