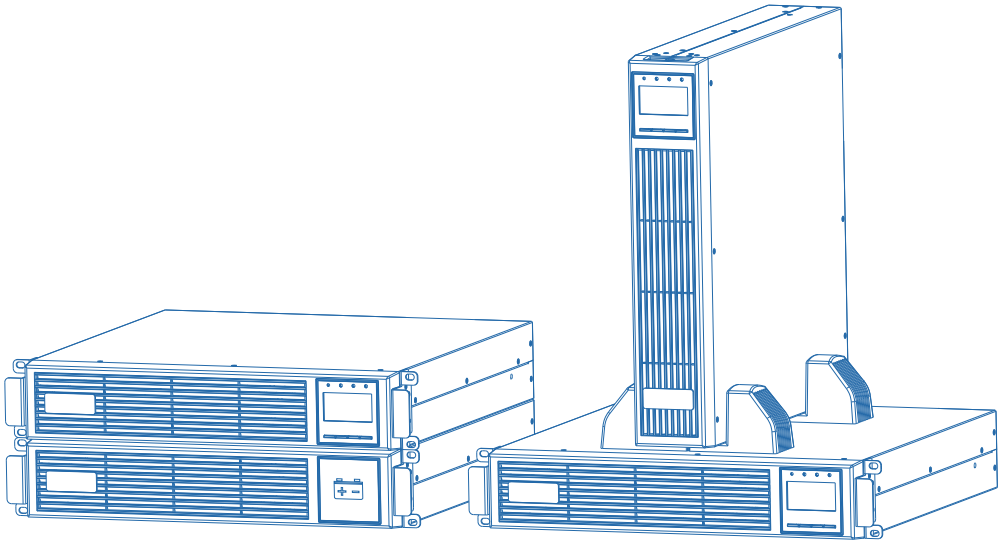
S7 RT LV SERIES



1/2/3 kVA Online UPS

USER MANUAL

Preface

Manual Instructions

Thank you for purchasing our company's power supply products. This product is a professional commercial sine wave, high-performance UPS power supply, which adopts DSP digital technology and high-frequency PWM inverter technology. With advanced technology, this product protects electrical equipment such as computer equipment, communication equipment, and medical equipment from being damaged or losing data due to power interference or interruption.

This manual introduces relevant information about the UPS, including functions and features, performance indicators, external structure, and operation modes. Meanwhile, it also provides contents such as installation instructions, usage and operation, maintenance management, and transportation and storage.

This manual is the technical data distributed along with the equipment. Please read this manual carefully before carrying out any operations such as equipment installation, debugging, and settings.

 **Attention:**

Both the input voltage and the output voltage of this equipment are dangerous high voltages.Improper operation may endanger your life. Please read this manual carefully before installation and operation, and pay attention to all kinds of warning signs and warning statements on the equipment. Unauthorized professional maintenance personnel are not allowed to remove the chassis of the power supply equipment.

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Chapter 1 Safety Instructions

This chapter introduces the safety signs and safety precautions. Before using UPS, please read carefully to avoid endangering personal safety or damaging the equipment due to Improper operation.

1.1 Symbol description

All symbols in this user manual will be shown in the following chart. Please read carefully for reference in installation, maintenance, and repair.

Symbols and meanings	
Item	Description
⚠	Caution
⚠	Danger
~	AC Power
⎓	DC Power
⏚	Power Distribution PE
⏚	PE
♻	Recycle
	Do not randomly disposal
	Overload
	Battery
⏻	On/off

1.2 Safety Precautions

There are hazardous high voltage and high temperature inside the UPS, and the relevant safety specifications and relevant operating procedures must be observed during the installation, operation and maintenance of the equipment, otherwise personal injury or damage to the equipment may be caused. The safety precautions mentioned in the manual are only complementary to the local safety specifications.

The Company shall not assume any liability for violation of general safety operation requirements or violation of safety standards for design, production and use of equipment.

**High voltage danger:**

Direct contact or indirect contact with high voltage and mains through wet objects poses fatal risks.

1.Please read and keep this manual carefully.

2 .Note all warning signs on the machine and do not tear and damage the warning labels.

3 .Do not use the UPS beyond the rated load.

4.Only Authorized and qualified maintenance/service persons are allowed to install high capacity external battery banks or carry out service and maintenance. Otherwise, it will result in a high risk of electric shock injury or property loss.

5. Do not expose the battery to the fire, the battery may explode.

6. Do not open and damage the battery, the released electrolyte is harmful to the eyes, skin, and even possibly toxic.

7. Avoid a short circuit in the positive and negative electrodes of the battery, otherwise it will cause a fire or electric shock.

8. Do not block vents, please follow the instructions provided by the manufacturer.

9. The product must not storage or used in the following environments:

- Places with combustible gases, corrosive substances, and large amounts of dust
- Places with abnormal high temperature or low temperature (more than 40℃ or less than-10℃) and high humidity (more than 95%)
- Places with direct sunlight or close to the heating appliance
- Places with violent vibration
- Outdoor

10. In case of fire around, please use a dry powder fire extinguisher. If you use a liquid fire extinguisher, there will be a risk of electric shock.

**Keep the equipment in good ventilation.**

Ensure that the UPS inlet and the front of the air vent are not covered by other objects and maintain good ventilation.

 **Live working is very dangerous & not allowed!**

It is strictly prohibited to install and remove the power cord before cut off all power supply include battery input. All power input must be switched off before installing and removing the power cord. Before connecting the cable, double confirm correctness of cable connection and cable labels comply with the actual installation situation.

Chapter 2 Introduction

2.1 Product Introduction

The RT S7 series is an online double conversion uninterruptible power supply system (UPS) available in 1kVA, 2kVA, and 3kVA, which provides stable and reliable high-quality sine wave power for your equipment and supports finance, telecommunications, government, transportation, manufacturing, education, servers, telecom equipment, and various other facilities.

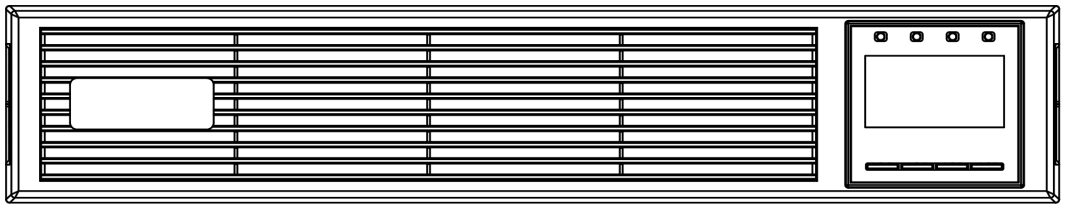
2.2 Product model

This manual is a general use manual for the following models:

Product type and Capacity		Model Name	Remarks
Standard Model	1kVA	S7-01RT	Internal 2 x 7AH batteries
	2kVA	S7-02RT	Internal 4 x 7AH batteries
	3kVA	S7-03RT	Internal 6 x 7AH batteries
Long Backup Time Model	1kVA	S7-01LRT	External Battery
	2kVA	S7-02LRT	
	3kVA	S7-03LRT	

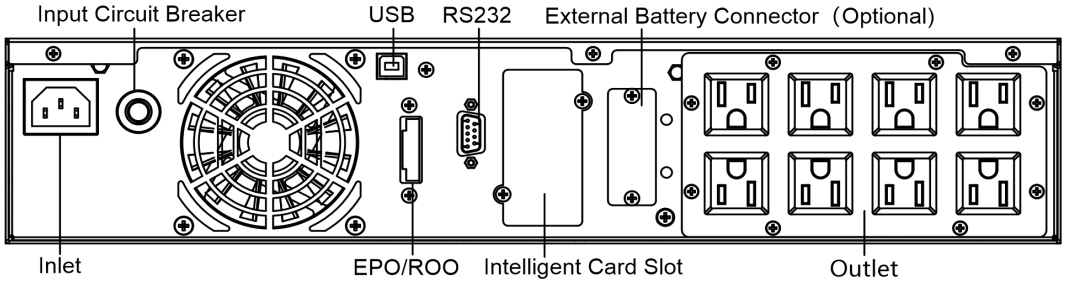
2.3 UPS appearance

2.3.1 Front view

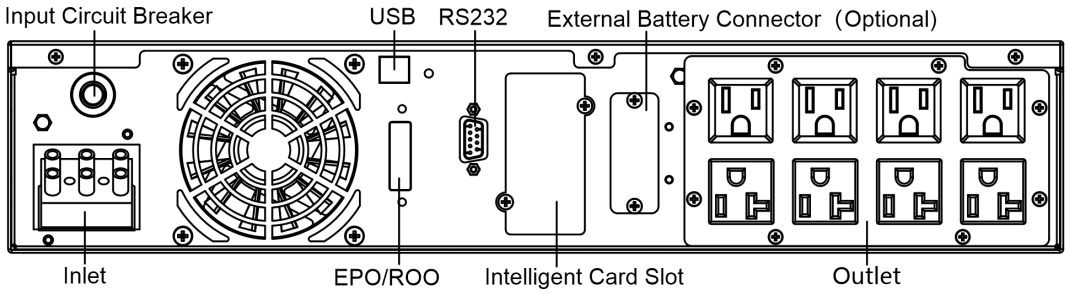


S7-01~03(L)RT

2.3.2 Rear view



S7-01(L)RT Nema Model



S7-02(L)/03(L)RT Nema Model

Note:

1.The rear panel view is for reference only. According to user requirements, the actual product may be slightly different from the above picture.

2.External Battery Connector standard configuration for long back up time model, optional for standard model)

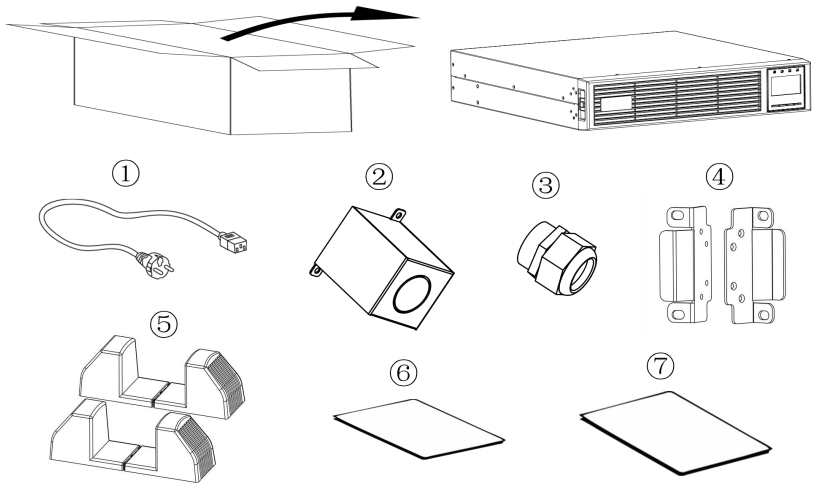
Chapter 3 Installation

3.1 Product inspection

- ❖ Unpack the UPS packaging and conduct a visual inspection of the machine to check for any impact damage incurred during transit.
- ❖ Be careful to lift the UPS unit out of the packing case. The UPS main unit with built-in batteries is heavy. It may require two people to lift together or appropriate tools (such as suction cups) to safely remove the UPS from the carton.
- ❖ Check the appearance of the product, display screen, socket, connector, etc., there must be no pollution or physical deformation.
- ❖ Check whether the random attachments are complete according to the list of attachments in the shipment.
- ❖ Should damage incurred during transit or missing components be identified, prompt contact with the authorized dealer is required.

UPS delivery attachment list:

Item	Accessory	Quantity
1	Input Power Cord(1kVA)	1 PCS
2	Terminal Block Cover(2/3kVA)	1 PCS
3	Cable Gland(2/3kVA)	1 PCS
4	Rack ears (with screws)	2 PCS
5	Tower-type fixing brackets	4 PCS
6	Certificate of Conformity	1 PCS
7	User Manual	1 PCS



3.2 Installation

- ❖ Due to its relatively heavy weight, a stable space is required for UPS installation. A cool environment, good ventilation, low humidity and minimal dust are essential for the safe and reliable operation of the UPS.

- ❖ Always reserve a 250mm clearance behind the UPS rear panel for ventilation and heat dissipation.
- ❖ Check whether the indications on the nameplate on the UPS top cover match the power requirements of the AC power supply and the total load.
- ❖ There are two installation modes to choose from: tower installation and rack installation, depending on the available space and user considerations. You can choose the appropriate installation mode according to the actual situation.

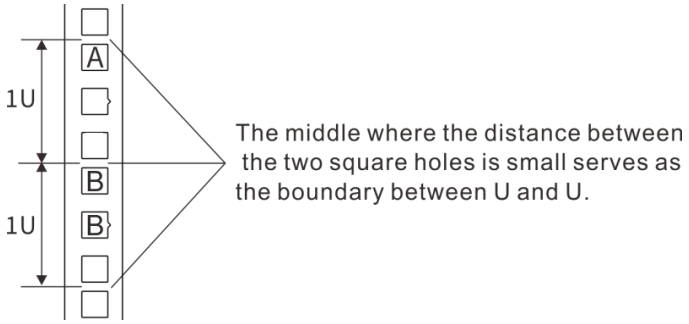
3.2.1 Rack installation

UPS can be installed on a 19 "rack. Please use the slide rail kit (optional) and the rack ear kit (provided) for rack-mount installation.

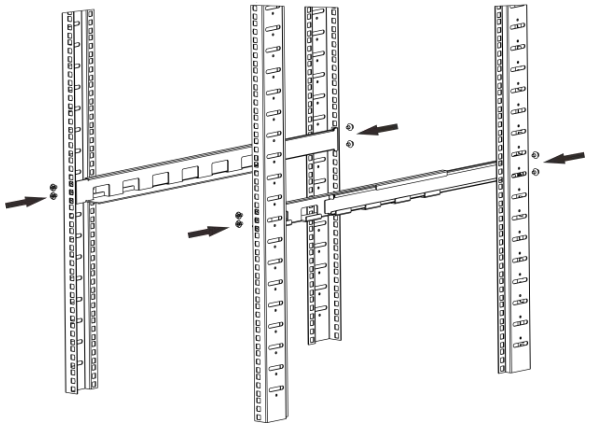
Step 1: Check the slide rail accessory package (this is an optional accessory), as follows:

Accessory name	quantity	unit
Left slide rail	1	PCS
Right slide rail	1	PCS
M5*8mm screws	12	PCS
M5 Bowl - Shaped Washers	12	PCS
M5 floating nuts	2	PCS

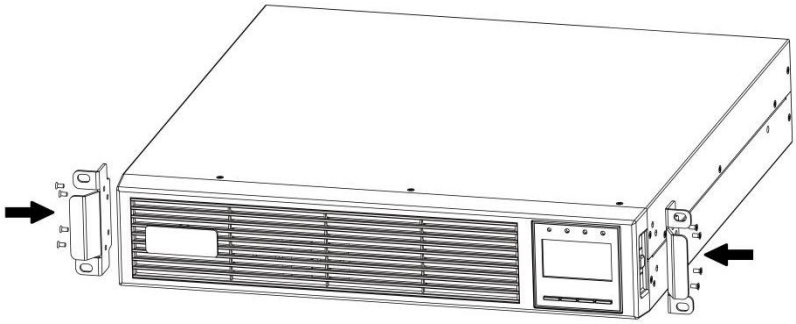
Step 2: Install 2 M5 floating nuts at position A in the following figure on the left and right cabinet columns.



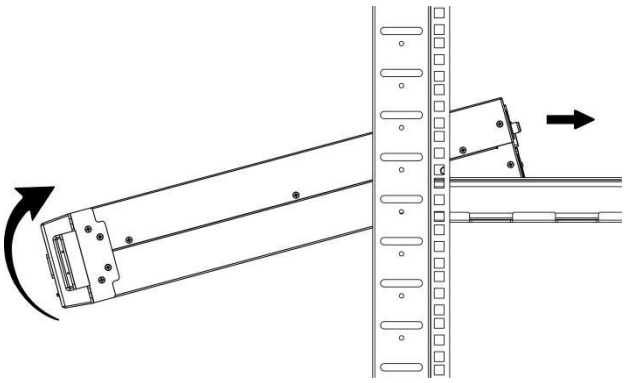
Step 3: Adjust the left and right sliding rails to the same depth as the RACK cabinet columns, then fix the rails to the RACK cabinet front and rear with M5 screws and washers (8 pcs in total). The front end is fixed at position B in the above figure, as shown below.



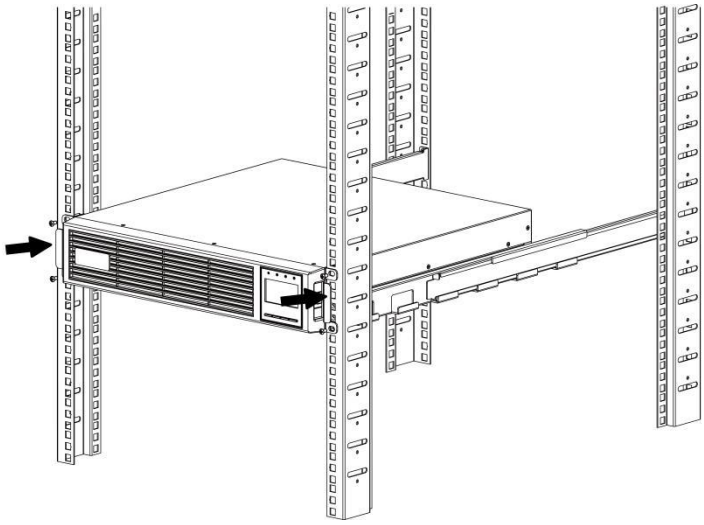
Step 4: Install the rack ear kits in the UPS accessories on both sides of the UPS main unit, as shown in the figure below.



Step 5: After checking that all the above screws are tightened, lift and tilt the rear of the UPS to first insert it into the RACK cabinet sliding rails, then lift the front half of the UPS to a horizontal position, and push the UPS into the cabinet until it is positioned, as shown in the figure below.



Step 6: Use 4 M5 screws and washers to lock and secure the UPS to the cabinet columns to prevent the UPS from slipping out and falling, as shown in the figure below.

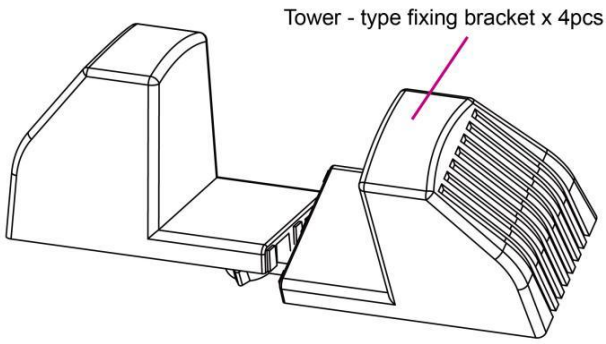


Note: If other types of rails are used, the above steps can be referred to.

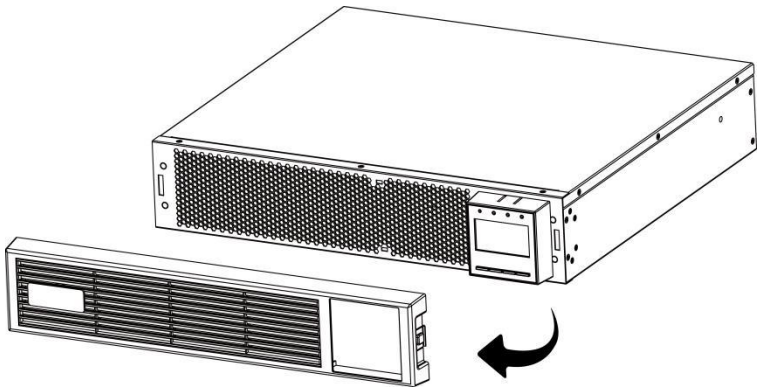
3.2.2 Tower installation

Use the included tower-type fixing bracket (standard configuration) and set up the UPS in a tower upright manner according to the following steps.

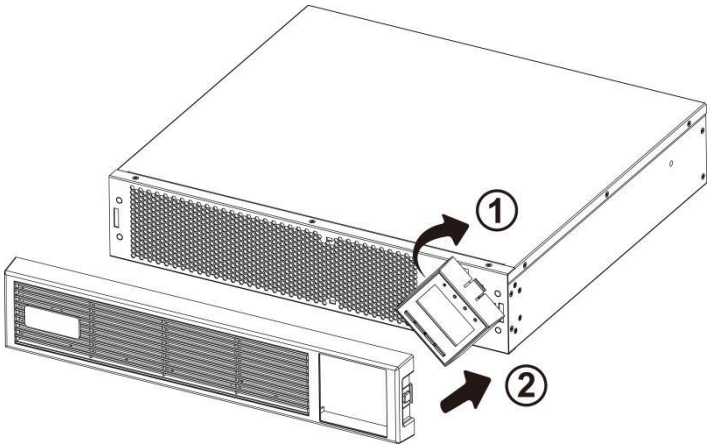
Step 1: Assemble the tower-type fixing bracket, as shown in the figure below.



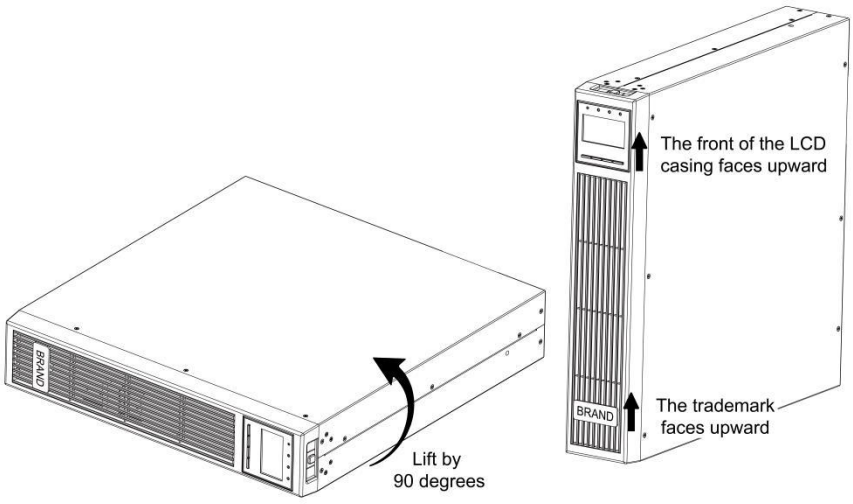
Step 2: Gently press the clasps on both sides of the front panel to remove the front panel, as shown in the figure below.



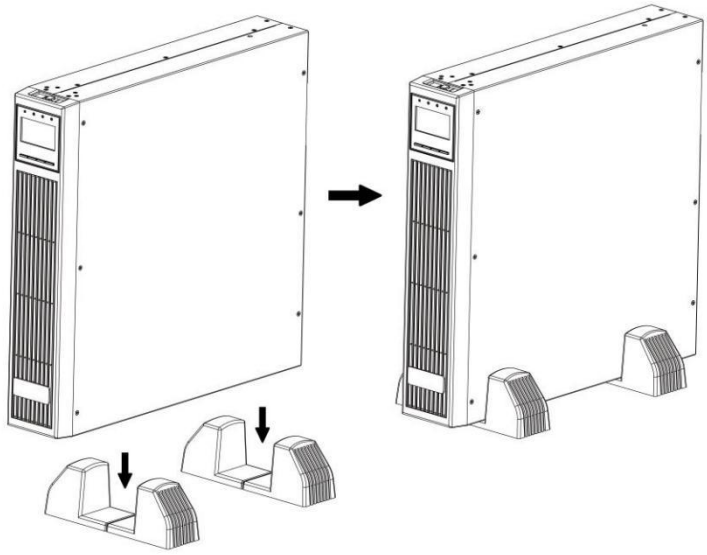
Step 3: Gently press the upper and lower clasps of the LCD box, remove the LCD box, rotate it 90 degrees clockwise, then snap it back into the UPS main unit. Next, reinstall the front panel onto the UPS main unit and ensure it is securely clasped in place, as shown in the figure below.



Step 4: Carefully lift the entire UPS unit, ensuring the symbols and text on the panel face upward, and rotate the logo upward (the logo can be directly rotated clockwise without removal), as shown in the figure below.



Step 5: Place the entire UPS into the tower-type fixing bracket, as shown in the figure below.

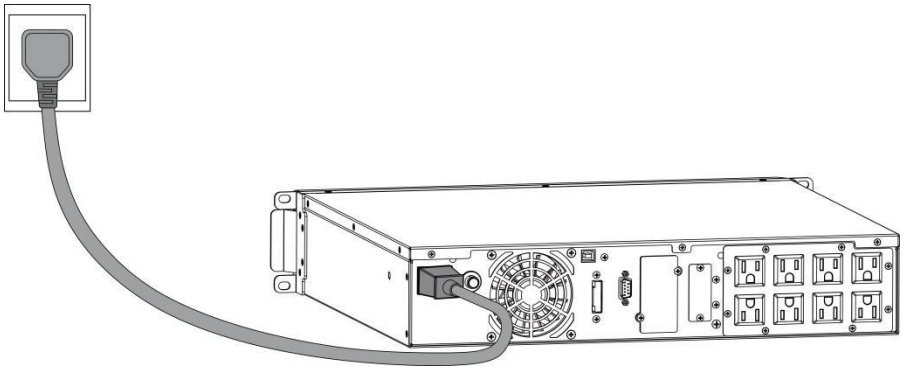


Note: It is recommended that at least two personnel operate in Steps 4 and 5 to ensure installation safety.

3.3 Wiring

3.3.1 UPS Input Wiring Methods

For the connection of the S7-01(L)RT UPS mains input power cable, please use a suitable socket equipped with an overcurrent protection device and ensure the socket capacity is appropriate. One end of the mains input cable shall be connected to the UPS input socket, and the other end to the mains socket. The specific connection method is shown in the figure below:



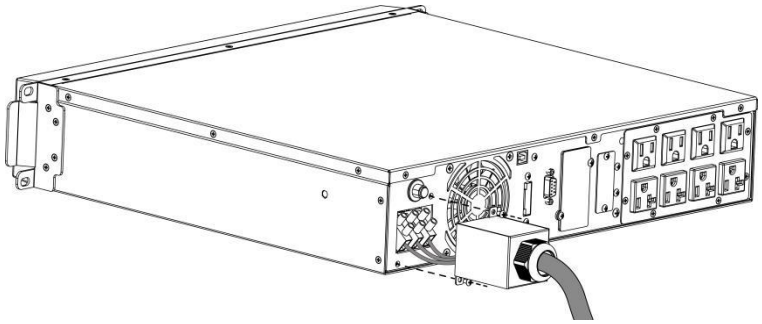
02(L)-03(L)RT with input terminal block model comes with terminal block for permanent.The specific connection method is shown in the figure below:

1) Fix the cable gland to the input terminal block cover;

2) Select appropriate input cables. Use **AWG12** wires for 02(L)RT and **AWG10** cables for 03(L)RT for wiring,then pass the input cable through the cable gland cover and fix it to the terminal block;

3) Fix the terminal block to the back panel;

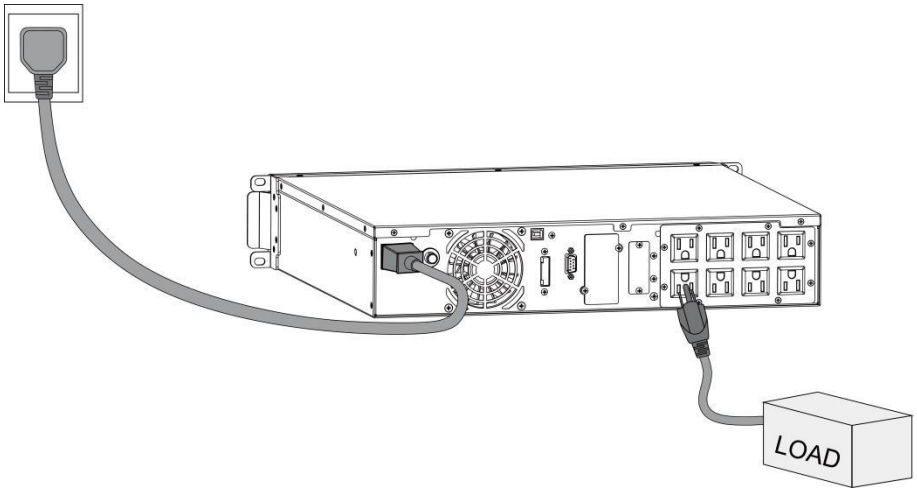
4) After wiring, please check if the connected cables are secure.



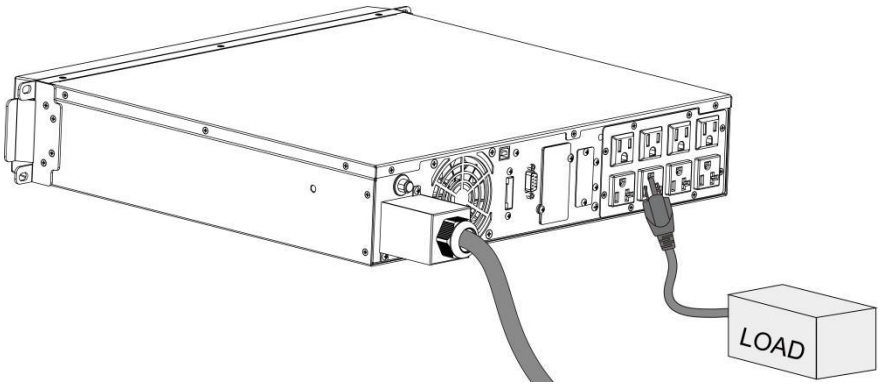
Installation of product with input terminal block

3.3.2 UPS Output Wiring Methods

The S7-01(L)RT, S7-02(L)RT, and S7-03(L)RT UPS models can all use socket output. Simply plug the load power cords into the UPS output sockets. Meanwhile, the total output power shall not exceed 1kVA/0.9KW, 2kVA/1.8KW, and 3kVA/2.7KW respectively for each model. The specific wiring is shown in the figure below:



Output Wiring Method for S7-01(L) RT



Output Wiring Method for S7-02(L) RT/S7-03(L) RT

3.3.3 UPS External Battery Wiring

Connection of external battery is **ABSOLUTELY CRITICAL**. Any mistake may result in serious injure of electric shock or fire, damage of product,below steps must be strictly followed:

1) The external battery box must match the UPS rated battery voltage: 36VDC for S7-01LRT, and 72VDC for S7-02L/03LRT.

2) The external battery bank must have a cut-off device, like circuit breaker or switch with fuses.

3) **TURN OFF** the cut-off device, make sure no harmful voltage can be touched on the connector.

4) Choose Wire with sufficient current rated, prepared well the terminal.

5) **CHECK THE POLARITY** of battery bank, fix wires of correct polarity to the battery bank with proper color and clear label for distinguish the polarity.

6) Securely Plug / Fix the other end of the cable to UPS.

7) Check the polarity of the wiring and fastness of the connection.

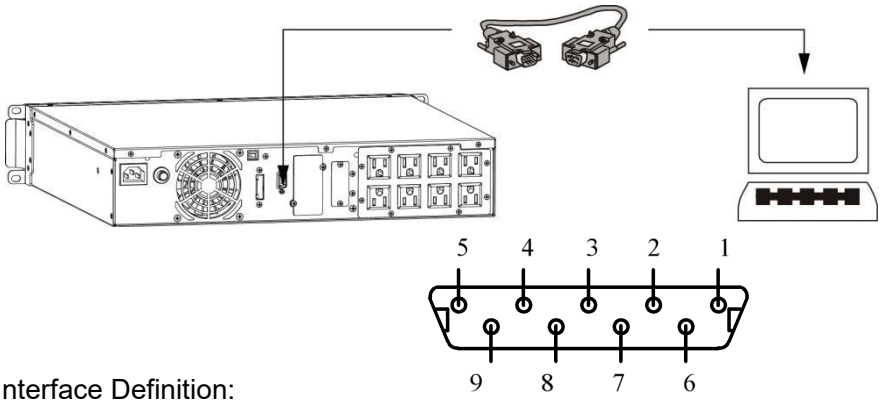
8) Powered the UPS by turning on the cutoff device device.

3.3.4 Connect to the computer interface

Computer interface: The standard RS232 interface. Use the RS232 communication cable to connect the UPS and the monitoring equipment.

1) Connect one end of the RS232 communication cable to the serial port of the computer.

2) Connect the other end of the RS232 communication cable to the computer interface of the UPS.

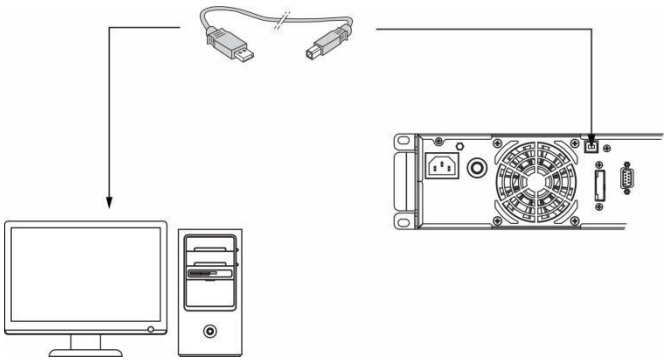


RS232 Interface Definition:

PIN	
2	The TXD (Transmit Data) of the UPS signal - sending end is connected to the RXD (Receive Data) of the host computer signal - receiving end.
3	The RXD (Receive Data) of the UPS signal-receiving end is connected to the TXD (Transmit Data) of the host computer signal-sending end.
5	The signal ground wire is connected to the signal ground wire of the host computer.

The UPS can be connected to the standard RS232 interface of the host computer by using the original communication cable or the standard RS232 straight-through cable.

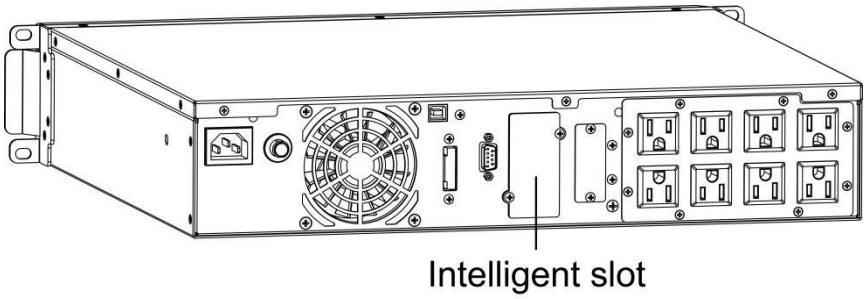
3.3.5 USB ports



USB interface: Connect the UPS and monitoring equipment via a communication cable. When connecting the UPS to some operating systems, it may be necessary to install USB drivers.

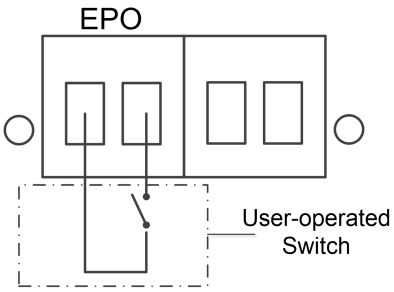
3.3.6 Smart Card(Optional)

The smart card is an optional accessory for the UPS. Users can purchase the original smart card components by themselves and install them into the card slot.



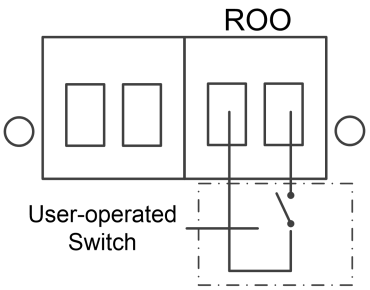
Intelligent Slot: Any one of the SNMP card, 485 communication card and dry contact card can be optionally installed.

3.3.7 EPO (Emergency Power Off) Switch Interface



The EPO (Emergency Power Off) interface option is an emergency shutdown switch interface used to connect an external emergency - stop switch. The emergency - stop switch interface is a two - pole interface without positive or negative distinction. It is connected to an external user - operated switch, and the open - circuit or closed - state of this switch represents the triggered emergency - stop state. After the EPO switch is enabled, by default, the open - circuit of the switch triggers the emergency - stop, that is, once the switch is open - circuited, the machine output is immediately cut off. If necessary, it can also be set so that the closed - circuit of the switch triggers the emergency - stop. The open - circuit trigger or closed - circuit trigger can be set through the LCD screen. See the LCD setting menu for details.

3.3.8 ROO Remote Power On/Off Interface



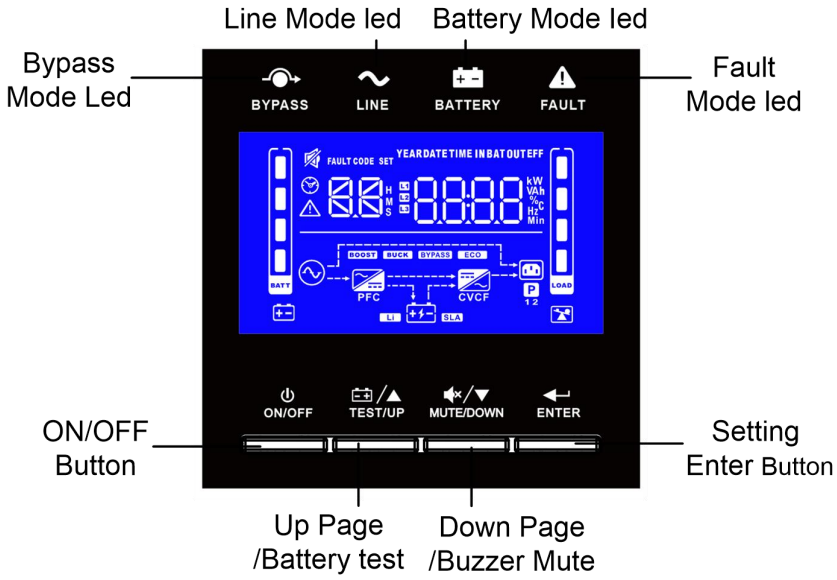
Remote power on/off ROO interface option, used for remotely controlling the on/off of the UPS. By connecting external devices (such as network controllers, timers or other remote control systems), users can perform the on/off operation of the UPS from a location far away from it. The

remote power on/off interface is a two-pole interface, with no positive or negative distinction. It is connected to an external user switch. The open or closed state of this switch indicates whether the power is on or off. After ROO is enabled, by default, the machine turns on when the switch is open and turns off when the switch is closed. If necessary, it can also be set to turn on the machine when this switch is closed. Open-circuit triggering or closed-circuit triggering can be set through the LCD screen. See the LCD setting menu for details.

Note: The ROO switch can only be used to control the machine's power on and off when there is a stable power supply or the machine is powered by an activation turntable. If the power supply is interrupted, a shutdown command will be sent. After the machine shuts down, if no further action is taken within about 30 seconds, it will completely cut off the power, enter sleep mode, and stop accepting power on and off commands. The machine can only be reactivated by the ROO switch once the power supply is restored or the activation button on the front panel is pressed to turn on the machine.

Chapter 4 Operation Guide

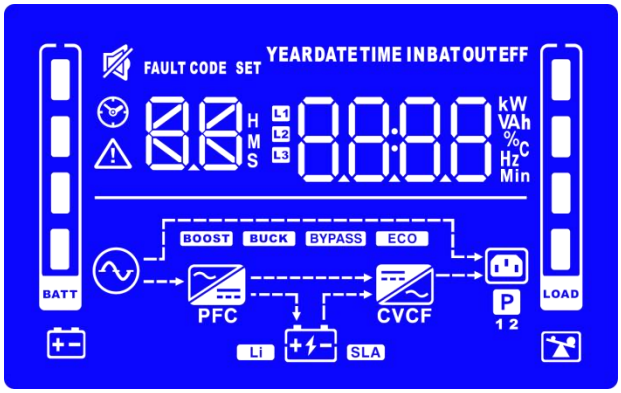
4.1 Operation Display Panel



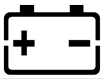
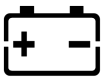
Button	Function
ON/OFF Button ⏻ **ON/OFF**	● Power-on Function: When in shutdown state or bypass standby state, long press the on/off button for 3 seconds, the buzzer emits a beep, and the device starts up when you release the button. ● Power-off Function: When the UPS is in mains power mode or battery inverter output mode, long press the on/off button for 3 seconds, the buzzer emits a beep, and the device shuts down when you release the button.
Up Page/Battery Self-test Button **TEST/UP**	● In normal operation mode, short-press the up page key to switch the LCD digital display content, which can show information such as input voltage, output voltage, battery voltage, output frequency, input frequency, etc. ● In setup mode, short-press the up page key to change the setup parameters, such as output voltage, output frequency, etc. ● Battery Self-Test Function: In mains power mode, press and hold the up page key for more than 4 seconds to initiate and perform the battery self-test.
Down Page/Buzzer Muting function Button **MUTE/DOWN**	● In normal operation mode, short-press the down page key to switch the LCD digital display content, switching information such as input voltage, output voltage, battery voltage, output frequency, input frequency, etc.; ● In setup mode, short-press the down page key to change the setup parameters, such as output voltage, output frequency, etc.; ● Mute Function in Battery Mode: Press the down page key for 4 seconds to eliminate the alarm sound in battery mode, and press and hold the function key for more than 4 seconds to restore the alarm (the mute function of the function key can only eliminate regular alarm sounds in battery mode and is ineffective for eliminating any other fault alarm sounds of the UPS).

Setting Enter Button ↵ **ENTER**	● In bypass or standby mode, press and hold the setup confirmation key for 2 seconds, and the device enters setup mode, allowing settings for output voltage, frequency, battery cell count selection, bypass output disable/enable, emergency shutdown function disable/enable, and ECO mode disable/enable; ● After changing the device settings, short-press the setup confirmation key to confirm the changes; ● After changing the device settings, first cut off the mains power, wait for the device to completely shut down, and then restart it for the changes to take effect.

4.2 LCD Display

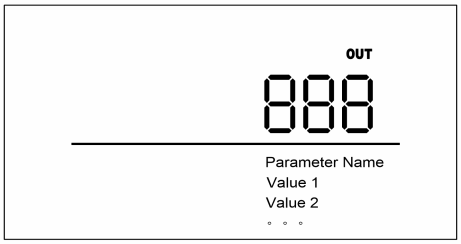


icon	functional description
Input,Battery, Output & Load Information	
INBATOUT  	Indicate the input voltage, input frequency,battery voltage, battery capacity,output voltage, output frequency and load percent
Fault Information	
FAULT CODE 	Indicates the warning and fault codes. Warning: ⚠ flashing FAULT CODE Fault: ⚠ lighting with fault code
Load Information	
	Indicates overload.
 	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.

Battery information	
	Indicate battery level by 0-24%, 25-49%, 50-74% and 75-100%
	Icon flashes indicates battery low.
	Icon flashes indicates battery not connected.
	indicates battery charging.
Mode Operation Information	
	Indicates working in mains mode.
ECO	Indicates working in economy mode.
BYPASS	Indicates working in bypass mode
CVCF	Display operating in constant voltage and constant frequency mode.
	Indicates working in battery mode
Silent Mode	
	Indicates that the UPS has been enabled in silent mode

4.3 Parameter Settings

On bypass/standby mode, long press the Enter Key for 2 seconds, the UPS enter Parameter Setup mode, and the LCD display as follow :



Parameter name indicate the parameter item to set.

The value is the target setting value

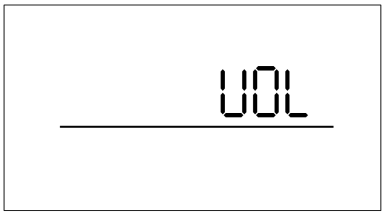
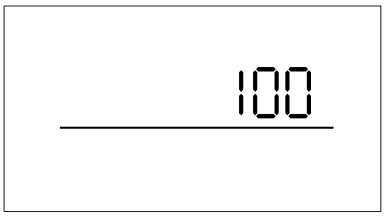
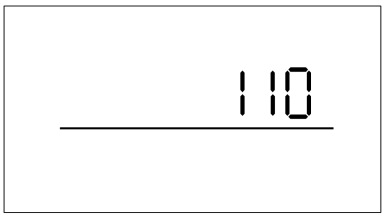
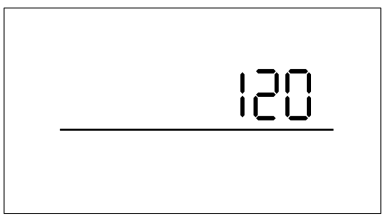
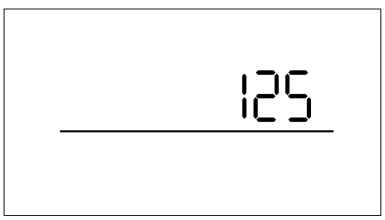
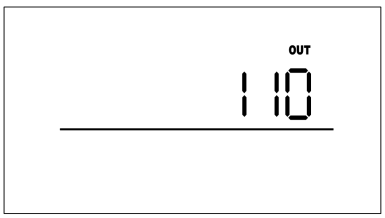
Use "Upward"or "Downward"to choose the item to set and setting value

Parameter Settings are divided into two types: temporary saving and permanent saving. The details are as follows:

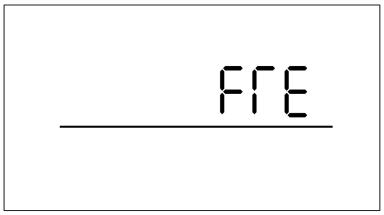
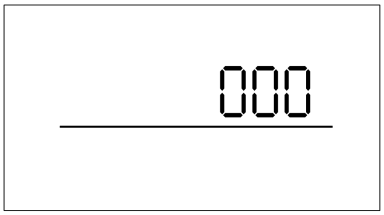
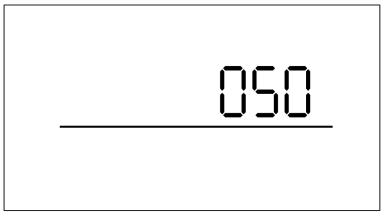
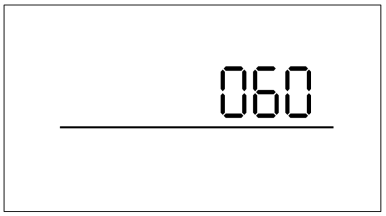
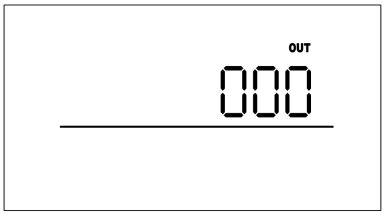
1) Temporary saving refers to the situation where, in bypass mode or standby mode, after entering the Settings interface to set parameters and exiting the Settings interface to directly enable inversion, the parameters become the set parameters. At this time, the parameters are temporarily saved. If the UPS is not connected to the battery at this time and the AC mains power input is cut off, the UPS will directly shut down the screen, and the set parameters will not be saved (when the power is restored, the set parameters will not take effect and remain the parameters before setting). If the AC mains power input is cut off and the battery is unplugged or turned off at the same time, the UPS screen will go out directly and the set parameters will not be saved.

2) Permanent saving refers to the situation where, in bypass mode or standby mode, after entering the Settings interface to set parameters and exiting the Settings interface, if there is a battery DC input simultaneously in bypass mode or standby mode of the mains power, the AC mains power input is cut off. After waiting for about 60 seconds, the UPS screen goes out and the set parameters are saved. At this time, when the UPS is turned on again, the set parameters take effect.

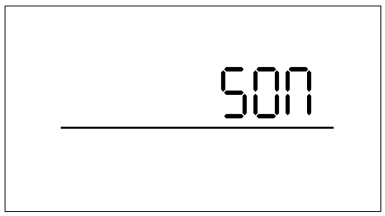
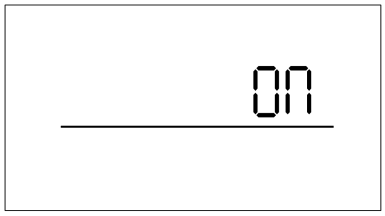
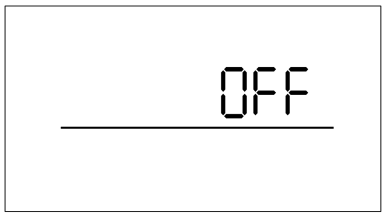
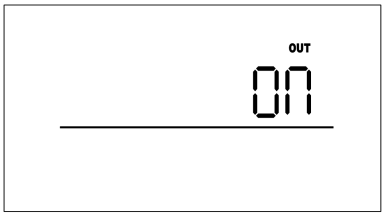
- **01: Output Voltage**

Display	Value
    	**Parameter Item: Output Voltage** **100:** means output voltage will be 100Vac **110:** means output voltage will be 110Vac **120:** means output voltage will be 120Vac **125:** means output voltage will be 125Vac Use "UP Page" or "Down Page" Button to find desired voltage value, then Use "ENTER" button to activate the value, once the value is active, there is “OUT" icon shown above the value. Example: 

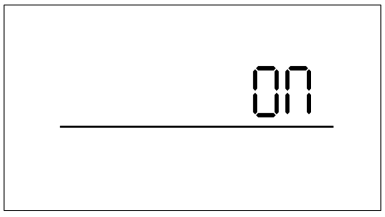
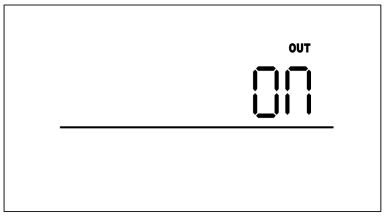
02: Output Frequency

Display	Value
   	**Parameter Item: Output Frequency** **000**: Auto adaptive, the UPS will automatically detect the mains frequency to determined it output frequency when it wake up by mains power on **050:** Set the system frequency to 50Hz. **060:** Set the system frequency to 50Hz. Use "UP Page" or "Down Page" Button to find desired frequency value, then Use "ENTER" button to activate the value, once the value is active, there is “OUT" icon shown behind the value. Example:  Note: 1) Set the system frequency to 50Hz/60Hz on the panel, with the input frequency within a certain range and the output frequency following the input frequency; But beyond the range, the output frequency is fixed at the system frequency of 50Hz/60Hz, and the rated power will be automatically reduced to 60% of the standard value 2)The customer requires a fixed frequency output, which can be sent via the serial port with instruction MT1. To restore normal mode, instruction MT0 can be sent; However, it should be noted that fixed frequency output and bypass output will be prohibited, and the rated power will automatically decrease to 60% of the standard value, so careful selection should be made.

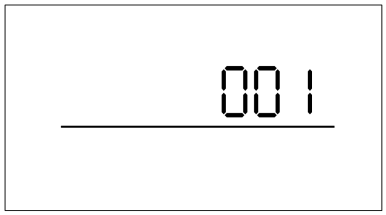
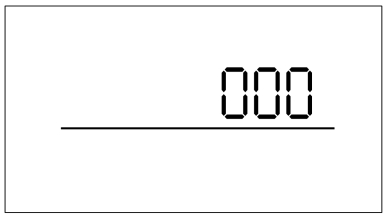
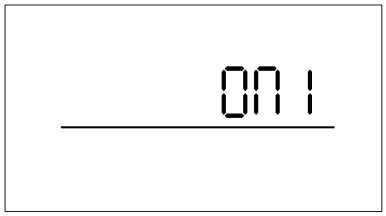
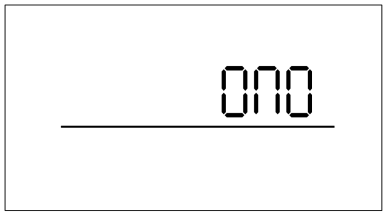
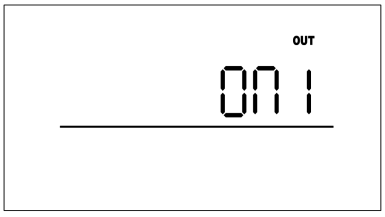
- **03: Auto turn on upon mains power on**

Display	Value
  	**Auto turn ON Function setting** **ON:** Enable auto turn on function, when the UPS wake by AC mains apply , the UPS will automatically turn on and run in line mode **OFF:** Disable auto turn on function, the UPS will stay on standby mode /bypass mode until manual turn on operation Use "UP Page" or "Down Page" Button to find desired value, then Use "ENTER" button to activate the value, once the value is active, there is “OUT" icon shown above the value. Example: 

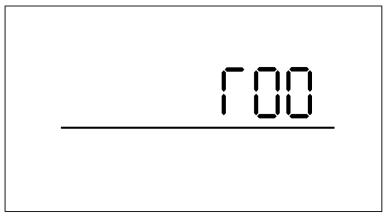
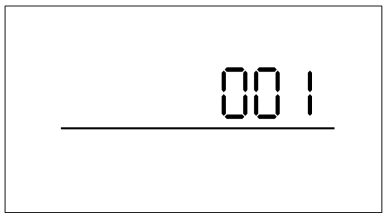
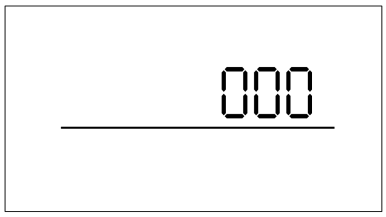
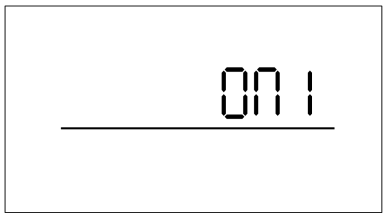
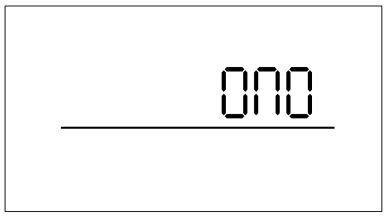
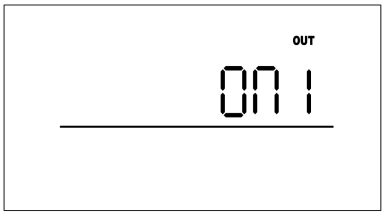
- **04: ECO MODE**

Display	Value
  	**Economic (ECO) Mode Enable /Disable setting** **ON:** Enable Economy (ECO) mode **OFF:** Disable Economy (ECO) mode Use "UP Page" or "Down Page" Button to find desired value, then Use "ENTER" button to activate the value, once the value is active, there is “OUT" icon shown above the value. Example: 

- **05: EPO Setting**

Display	Value
    	**Emergency Power OFF (EPO) switch response setting** **001:** Enable EPO **000:** Disable EPO **0n1:** Enable EPO, activated for EPO switch open **0n0:** Enable EPO, activated for EPO switch close Use "UP Page" or "Down Page" Button to find desired value, then Use "ENTER" button to activate the value, once the value is active, there is “OUT" icon shown above the value Example: 

- **06: ROO Setting**

Display	Value
    	**Remote On OFF (ROO) switch response setting** **001:** Enable ROO **000:** Disable ROO **0n1:** ROO activated (Turn on UPS) for ROO switch open and the switch close will turn the UPS OFF **0n0:** ROO activated (Turn on UPS) for ROO switch close and the switch open will turn the UPS OFF Use "UP Page" or "Down Page" Button to find desired value, then Use "ENTER" button to activate the value, once the value is active, there is “OUT" icon shown above the value Example: 

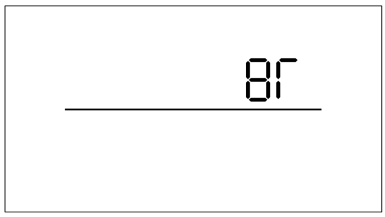
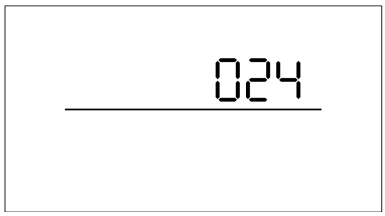
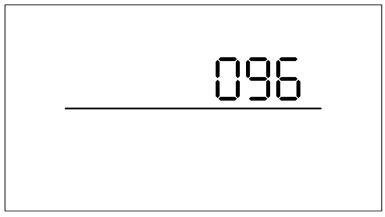
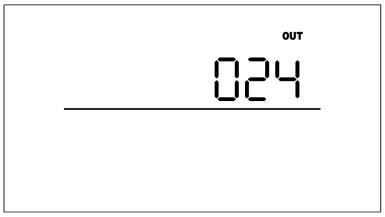
EPO and ROO function is default OFF (EPO=000 ROO=000),

When turn on EPO FUNCTION EPO=001, the default activating logic level is NO(ON0), i.e. the switch open will active EPO.

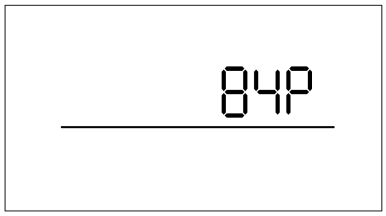
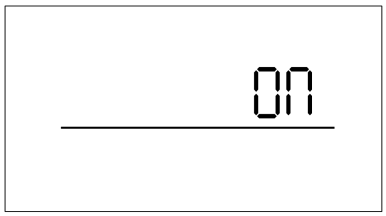
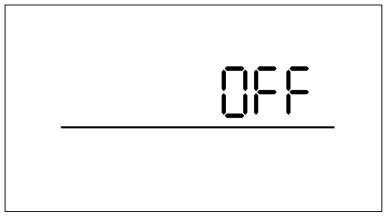
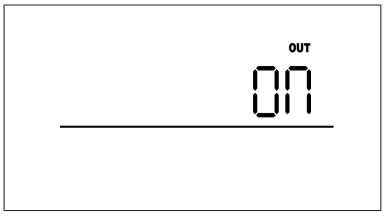
When turn on ROO FUNCTION ROO=001, the default activating logic level is NO(ON0), i.e. The switch open will turn the UPS off, and the switch close will turn the UPS on, please note that, only when ac mains on, the ROO switch ON /OFF can control the UPS turn ON and off back and forth, under battery mode, once the ROO control the UPS to turn off , the product will shutdown completely and not respond to the switch any more until the UPS is powered on by mains again.

The product comes with a shortcircuit jumper wire, to ensure when EPO and ROO function enable, the product will work normally until the jumper is remove/open Intentionally.

- **07: Baud Rate Setting (optional)**

Display	Value
   	**Communication baud rate Settings** **024: Choose the baud rate of 2400** **048: Choose the baud rate of 4800** **096: Choose the baud rate of 9600** Use "UP Page" or "Down Page" Button to find desired value, then Use "ENTER" button to activate the value, once the value is active, there is “OUT" icon shown above the value Example: 

- **08: Bypass Setting**

Display	Value
  	Entity Bypass setting, this item it to set bypass output when UPS is not on inverter output mode(line mode / battery mode), if the setting is disable bypass output is turn OFF when UPS is not on inverter output mode(line mode / battery mode) , on the contrary, if the setting is enable, the bypass output is turn ON when UPS is not on inverter output mode(line mode / battery mode) if only mains input is normal, please note the UPS should be turn on if the load need to be protected by the UPS when this setting is enable. **ON: Enable bypass mode** **OFF:Disable bypass mode** Use "UP Page" or "Down Page" Button to find desired value, then Use "ENTER" button to activate the value. Once the value is active, there is “OUT" icon shown above the value Example: 

Note:

The available parameter can be set might change according to product model, consultant with your distributor if necessary.

4.4 UPS Working mode

4.4.1 Normal mode

Turn on the UPS, if the mains supply is normal, UPS will work in Normal mode (Line mode) and converse and filter the mains input for clean and stable AC output . The indicators display will show the operating mode. .

If loading level is over 100% rated capacity, the buzzer beeps to remind you overloaded that you must reduce unnecessary load until the UPS loading level is less than 100%.

If the battery indicator blinks cyclically, it shows the UPS disconnect from battery or the battery con diction is abnormal. Please check the battery connection and battery condition for prevent UPS output unexpected interruption upon mains supply power losses.

If the buzzer sounds once a minute and the city light flashes at the same time, at this point, it is necessary to check whether the input frequency exceeds the phase-locked range or the CVCF mode is set. If the city lights are flashing and the battery lights are on, at this time, it is necessary to check whether it is beyond the input range of the city power or the input frequency range.

**Note for connecting to the generator**

- Start the generator, connect the output power to the UPS input (the UPS is no load), then start the UPS after the UPS and connect the load one by one. Non-professionals do not use the terminal as the load wiring to avoid electric shock.
- It is recommended to choose the generator at 2 times the capacity of the UPS.

4.4.2 Battery mode

When mains utility power is abnormal condition , such as blackout or fluctuation in voltage, frequency as well as waveform , UPS will automatically switch to run in battery mode, in which the battery work as energy source, and maintain the stable AC power supply at the output side of the UPS product.

In the Battery mode, UPS will beep once every 4s. the user can mute the buzzer beep by the down page(mute) button.

If the battery capacity is very low, the UPS will beep once every 1S. It is alarm to take off the load as soon as possible.

Backup function can be tested through battery self test via Up Page (battery test) button.

4.4.3 Bypass mode

The ups work on bypass mode when the UPS start up or abnormal situation occurs to the converters and can not work properly. The mains power is fed to the load through the bypass circuit

in such mode without protection. Please note that when UPS running in bypass mode, UPS has no backup function either, because load power is supplied by the utility power directly.

4.5 Operation

4.5.1 Turn on UPS

Note: For machines with built-in batteries, although the batteries are fully charged at the factory, power may be lost during transportation and storage. It is recommended to charge the batteries for 10 hours before the first use of the UPS or consult the battery manufacturer for advice to ensure sufficient backup time. For machines with external batteries, the batteries must be connected for 2-3 seconds before connecting to the mains power to perform the startup operation.

Turning on with utility power

Connect the mains input to the UPS, press and hold the ON/OFF button for more than 3 seconds until the buzzer beeps. the UPS begins to conduct self-test, seconds later, utility power icon and the Inverter icon shown and the UPS begins to output supply and operate under the Normal mode .If the utility power is abnormal, the UPS will work under the Battery mode.

Turning on without utility power

With no mains input to feed the UPS, press and hold the ON/OFF for than 3 seconds, the UPS response with a buzzer beep. In the turn on process, the UPS has the same operation as if it is connected to utility power that the utility power icon will not shown, instead the battery icon shown.

4.5.2 Turn off UPS

The operation of powering down contains: Power down under Normal mode and Battery mode

Turn off UPS under the Normal mode

Press and hold the ON/OFF button for more than 3 second to turn off UPS. If bypass mode is enable, the bypass indicator will be turned on to indicate that UPS is working in bypass mode. In order to cut off the output of the UPS, simply cut off the utility power. Finally, not any display is shown on the front panel and no output is available from the UPS outlets.

Turn off UPS under the Battery mode

Press and hold the “ON/OFF” for 3second to turn off the UPS. The UPS cut off UPS output supply , and the UPS totally turn off after approximately 1minute .

4.5.3 Enter Setting Mode

When UPS Work on Bypass or Standby Mode, Press the Setting Enter Button for 5 seconds, the UPS enter setting mode, accept setting of output voltage, frequency, battery number, bypass enable/disable, ECO mode enable /disable ,EPO function ON/OFF.

Use Up page and down Page to change the setting . and short press the setting for confirm the change.

After setting , turn off the mains power supply , wait the UPS turn off under battery mode until display if total off , turn on the UPS again to activate the setting change.

4.5.4 Battery Self-test

During the operation of the UPS, the battery status is automatically detected every 30 minutes.

In Normal mode, press the Up Page Button for more than 4 seconds until the buzzer beeps. he UPS switch to battery test mode, to check the status of the battery , the UPS exit the battery test mode if the battery abnormal and present alarm with the battery icon flashing. If test mode end up with normal, the UPS switch to normal mode automatically

4.5.5 Buzzer Mute

When UPS is on battery or bypass mode, UPS will warn with warning tone (Battery mode four seconds one tone; Bypass mode two minutes. You can disable or enable the buzzer tone manually.

In the battery and bypass mode, push Down Page button for about 4 seconds until you here a buzzer beep. The buzzer alarm can be muted. Press the button for 4seconds again to recover the buzzer alarm function.

The Buzzer Muting is valid only in battery mode, and invalid for any other UPS alarm.

Chapter 5 Fault Troubleshooting

When your UPS encounters abnormal conditions, please first check the troubleshooting table for issues. If the problem persists, please contact local supplier. When you need to report the fault to our customer service personnel, please be sure to record and inform the following information: UPS model, machine batch number, date of the incident, a complete description of the problem, including panel indicator light display, buzzing sounds, power status, load capacity, and if it is a long-life unit, also provide battery configuration.

5.1 LCD Warning and Fault Code

Fault code	Description	Possible cause and solution
01	UPS start up not success	Battery Low
		UPS Internal failure, Contact distributor for service
02	Internal DC BUS over-voltage protection	Half-wave rectifier load (hair dryer, half-wave solenoid valve, energy re-generated type load)motor, huge transformer, capacitor with residue charge, remove this kind of load and turn on the UPS again.
		Over mains voltage, turn on the UPS again.
		UPS Internal failure, Contact distributor for service
03	Internal DC BUS under-voltage protection	Battery Low or overload
		UPS Internal failure, Contact distributor for service
10	UPS Output Short-Circuit	Remove short-circuit equipment from UPS
22	UPS Over Load	Reduce loading capacity below UPS rating
23	UPS Over Temperature	Make sure UPS should work in ambient of -10-45°C, if the ambient temperature can't meet this spec. Try reduce loading
		Check ventilation inlet of the UPS ON from panel and outlet on the rear panel is not blocked
		UPS Internal failure, Contact distributor for service
29	UPS Input rectifier protection	Low input voltage and overload
		UPS Internal failure, Contact distributor for service
57	Battery UN-connected	Check battery input wiring and battery cutoff device such as circuit breaker etc.
59	Charger Fail	UPS Internal failure, Contact distributor for service
60	EPO activated	Reset the External EPO switch, if no EPO switch install, turn off EPO function via the operating panel.
Battery Icon Flashing		Battery not connected or battery low
		Charger failure, Contact distributor for service
UPS not working in normal line mode, With normal mains input		Make sure Input circuit breaker is ON
		Turn on the UPS via ON/OFF button
Backup time is not as long as expected		Battery low, recharge the battery long enough time
		Overload, reduce the loading
		Battery aged, contact distributor for service
UPS not turn ON after pressing ON/OFF button		Press the ON/OFF button long enough time, 3seconds, and hear a buzzer beep for acknowledge the correct TURN ON operation
		Battery low or not connected
		UPS Internal failure, Contact distributor for service

Chapter 6 Maintenance and Repair

6.1 Routine Maintenance

- Keep the environment clean to avoid dust or chemical contamination of the UPS.
- Check the terminal blocks of the input and output cables once every six months. Examine them carefully and measure whether the contact is good.
- Regularly check the working condition of the fans to prevent sundries from blocking the air outlets. If any fan is damaged, it should be replaced in a timely manner.
- Regularly check the working status of the UPS.
- If the mains power is normal, the UPS should work in the mains power mode; if the mains power is abnormal, the UPS should work in the battery mode. And there should be no fault indication in either of the two working states.
- Regularly check the operating mode switching of the UPS.
- Disconnect the mains power input to simulate a mains power failure, and the UPS should switch to the battery - powered mode and operate normally; then connect the mains power input again, and the UPS should switch back to the mains power mode and work normally.
- Regularly check the indicator light display of the UPS.

During the above two inspection processes, check whether the indicator light display of the UPS is consistent with its actual operating mode.

6.2 Battery Maintenance

- Batteries are an important part of the UPS system. The lifespan of batteries depends on the ambient temperature and the number of discharge cycles. Using them at high temperatures or subjecting them to deep discharges will shorten their service life.
- The standard built-in batteries are sealed maintenance-free lead-acid storage batteries.

When the UPS is connected to the mains power, regardless of whether it is turned on or not, it will always charge the batteries and provide overcharge and over-discharge protection functions.

- When using batteries, try to keep the ambient temperature between 15 and 25 °C as much as possible.
- If the UPS is not used for a long time, it is recommended to charge it once every 3 to 4 months.
- During normal use, the batteries should be charged and discharged once every 4 to 6 months. Charge them after discharging until the UPS is turned off. When used in high-temperature areas, the batteries should be charged and discharged once every 2 months. For standard UPS, the charging time should be no less than 10 hours each time.
- It is not advisable to replace individual batteries. When replacing them, follow the instructions of the battery supplier.
- Under normal circumstances, the service life of batteries is 3 to 5 years. If their condition is found to be poor, they must be replaced earlier. Battery replacement must be carried out by professional personnel.

Chapter 7 Specifications

7.1 Single phase input Specification

<table>
<tr><th colspan="2">MODEL</th><th>S7-01RT</th><th>S7-01LRT</th><th>S7-02RT</th><th>S7-02LRT</th><th>S7-03RT</th><th>S7-03LRT</th></tr>
<tr><td>Capacity</td><td>VA/W</td><td colspan="2">1kVA/0.9KW</td><td colspan="2">2kVA/1.8KW</td><td colspan="2">3kVA/2.7KW</td></tr>
<tr><td colspan="2">Topology</td><td colspan="6">Double Conversion Online UPS</td></tr>
<tr><td colspan="2">Phase</td><td colspan="6">Single phase input / single phase output</td></tr>
<tr><td rowspan="4">AC Input</td><td>Wiring</td><td colspan="6">(L/ N) +PE</td></tr>
<tr><td>Voltage range</td><td colspan="6">55~145VAC</td></tr>
<tr><td>Frequency range</td><td colspan="6">40Hz-70Hz</td></tr>
<tr><td>Input power factor</td><td colspan="6">≥0.99</td></tr>
<tr><td rowspan="8">AC Output</td><td>Wiring</td><td colspan="6">(L/ N) +PE</td></tr>
<tr><td>Rated voltage</td><td colspan="6">100/110/120/125VAC</td></tr>
<tr><td>Voltage Regulation</td><td colspan="6">±1%</td></tr>
<tr><td>Output frequency</td><td colspan="6">50/60±4Hz (Sync mode) / 50/60Hz±0.1 (Free Run)</td></tr>
<tr><td>Waveform</td><td colspan="6">pure sine wave</td></tr>
<tr><td rowspan="2">Distortion (THDV%)</td><td colspan="6"><2% (linear load)</td></tr>
<tr><td colspan="6"><8% (nonlinear load)</td></tr>
<tr><td rowspan="3">Overload capacity</td><td colspan="6">1min@105%~130% rated load</td></tr>
<tr><td colspan="6">10sec@131%~150% rated load</td></tr>
<tr><td colspan="6">0.2sec@> 150% rated load</td></tr>
<tr><td>Transfer time</td><td colspan="6">Battery <-> Line Mode :0ms</td></tr>
<tr><td rowspan="2">Efficiency</td><td>AC/AC mode</td><td colspan="2">88%</td><td colspan="2">89%</td><td colspan="2">90%</td></tr>
<tr><td>DC/AC mode</td><td colspan="2">86%</td><td colspan="2">87%</td><td colspan="2">88%</td></tr>
<tr><td rowspan="4">Battery Input</td><td>Rated Battery Voltage</td><td>24VDC Internal</td><td>36VDC External</td><td>48VDC Internal</td><td>72VDC External</td><td>72VDC Internal</td><td>72VDC External</td></tr>
<tr><td>Battery capacity</td><td>12V/7AHx 2pcs</td><td rowspan="2">External Battery Depends</td><td>12V/7AHx 4pcs</td><td rowspan="2">External Battery Depends</td><td>12V/7AHx 6pcs</td><td rowspan="2">External Battery Depends</td></tr>
<tr><td>Backup time</td><td>> 6 min@Half Load</td><td>> 6 min@Half Load</td><td>> 6 min@Half Load</td></tr>
<tr><td>Charging current</td><td colspan="6">Standard Model with Internal Battery:1A Long Backup Time Model :4</td></tr>
<tr><td>Battery charger time</td><td colspan="6">Charger to 90% battery capacity in 5 hours(standard)</td></tr>
<tr><td colspan="2">Chassis Style</td><td colspan="6">Rack-Tower Transformable</td></tr>
<tr><td rowspan="3">HMI</td><td>LCD Display</td><td colspan="6">Input Mains Voltage, Frequency, Load level, Operation Mode, Health Status</td></tr>
<tr><td>Standards Communication Port</td><td colspan="6">1.RS232 2.USB PORT 3.EPO/ROO 4.Intelligent card slot</td></tr>
<tr><td>Optional extension card</td><td colspan="6">SNMP Card / MODBUS Card / Relay Card</td></tr>
<tr><td colspan="2">Acoustics noise</td><td colspan="6"><55dB @1 meters</td></tr>
</table>

7.2 Size and weight

Model	W × H × L (mm)	Weight (kg)	Remark
S7-01RT	440mm×88mm(2U)×428mm	11.6	Internal 2 x 7AH batteries
S7-02RT	440mm×88mm(2U)×428mm	15.8	Internal 4 x 7AH batteries
S7-03RT	440mm×88mm(2U)×588mm	22.7	Internal 6 x 7AH batteries
S7-01LRT	440mm×88mm(2U)×428mm	7.2	Long Backup Time Model
S7-02LRT	440mm×88mm(2U)×428mm	7.9	
S7-03LRT	440mm×88mm(2U)×428mm	8.7	

7.3 Application environment

ITEM	Normal range
Ambient temperature	-10ºC~ +40ºC
Environment humidity	0%~97%, no condensing
Altitude	No derating for lower than1000m: Over 1000m:1% derating forevery100m rise，Max. 3000M
Storage temperature	-15ºC~+45ºC

7.4 Safety and electromagnetic interference

ITEM	Standard	Level
ESD	IEC61000-4-2	LEVEL4
RS	IEC61000-4-3	LEVEL3
EFT	IEC61000-4-4	LEVEL4
SURGE	IEC61000-4-5	LEVEL4
SAFETY	IEC62040-1	

Version change registration

Revision date	Release version	Change content
2025-09	**00**	The first edition of the user manual was released

Warranty

Products to be offered warranty from the date of purchase within the warranty period.

- Serial number of the product or sales contract is credentials to the warranty.
- In case of UPS fault, please contact local service center and dealer. The transportation charges shall be borne by the buyer.

As a user, any problem you have the following service:

- Online Service via email or website
- Local distributor replace or repair service

This limited warranty does not apply to conditions as follows:

- Damage or loss resulted from force majeure or external causes;
- Warranty period expired;
- The product serial number is missed or modified;
- Disassemble or modifications to the product without authorization;
- Man-made damage