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UNITI POWER SYMPHONY

SPY6KiRT(B) & SPY10KiRT(B)

USER MANUAL

A RACKMOUNTABLE UNINTERRUPTIBLE POWER SUPPLY PROVIDING UNITY POWER AND TRUE ONLINE DOUBLE CONVERSION

Please visit www.unitipower.com for assistance

THE UNITI POWER SYMPHONY 6kVA – 10kVA

SAFETY INSTRUCTIONS

KEEP THESE INSTRUCTIONS IN A SAFE PLACE

This manual contains important instructions that should be followed during the installation and maintenance of the UPS and batteries.

UPS models operate at an optimal temperature of 20-25C

SPECIAL SYMBOLS

RISK OF ELECTRIC SHOCK – observe the warning associated with the risk of electric shock symbol

Important instructions that must always be followed

EU separate collection and lead content mark for lead-acid batteries. This indicates that the battery must not be disposed of with the ‘normal’ household waste but separately collected and recycled

EU separate collection mark for waste electrical and electronic equipment (WEEE). This indicates that the item must not be disposed of with the ‘normal’ household waste but separately collected and recycled

Information, advice, help

Refer to the user manual

SAFETY OF PERSONS

- RISK OF VOLTAGE BACKFEED. The system has its own power source (the battery). Isolate the UPS and check for hazardous voltage upstream and downstream during lockout-tagout operation. Terminal blocks may be energized even if the system is disconnected from the AC power source.
- Dangerous voltage levels are present within the system. It should be opened exclusively by qualified service personnel.
- The system must be properly grounded.
- The battery supplied with the system contains small amounts of toxic materials. To avoid accidents, the directives listed below must be observed:

- Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.

- When replacing batteries, replace with the same type and number of batteries or battery packs.

- Do not dispose of batteries in a fire. The batteries may explode.

- Batteries constitute a danger (electrical shock, burns). The short-circuit current may be very high.

- Precautions must be taken for all handling:

- Wear rubber gloves and boots.

- Do not lay tools or metal parts on top of batteries.

- Disconnect charging source prior to connecting or disconnecting battery terminals.

- Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

PRODUCT SAFETY

- The UPS connection instructions and operation described in the manual must be followed in the indicated order
- UPS enclosure IP rating IP20
- **CAUTION:** To reduce the risk of fire, the unit connects only to a circuit provided with a branch circuit overcurrent protection of 20A rating, The upstream circuit breaker must be easily accessible
- For PERMANENTLY CONNECTED EQUIPMENT, a readily accessible disconnect device shall be incorporated externally into the equipment
- For PLUGGABLE EQUIPMENT, the socket outlet shall be installed near the equipment and shall be easily accessible
- Check that the indications on the rating plate correspond to your AC powered system and to the actual electrical consumption of all the equipment to be connected to the system
- Never install the system near liquids or in an excessively damp environment
- Never let a foreign body penetrate the system
- Never block the ventilation grates of the system
- Never expose the system to direct sunlight or source of heat
- If the system must be stored before installation, storage must be in a dry place
- The admissible storage temperature range is -25C to +55C without batteries, 0C to +40C with batteries – it is advised that the batteries are stored below 25C
- This UPS can be used in TN-S/IT/TN-C/TT power systems
- This UPS may be installed with a maximum of 6 external battery modules

SPECIAL PRECAUTIONS

- The unit is heavy: wear safety shoes and suitable lifting equipment
- All handling operations will require at least two people (unpacking, lifting, installation in rack system)
- Before and after the installation, if the UPS remains de-energised for a long period, the UPS must be energised for a period of 24 hours, at least once every 6 months (for a normal storage temperature of less than 25C). This charges the battery, thus avoiding possible irreversible damage
- For three-phase AC input installation, this equipment complies with IEC 61000-3-12 provided that the short-circuit power Ssc is greater than or equal to 3.63MW at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to 3.63MW.
- During the replacement of the battery module, it is imperative to use the same type and number of elements as the original battery module provided with the UPS to maintain an identical level of performance and safety.

This is a category C3 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

Contents

1. INTRODUCTION

Thank you for selecting UNITI to protect your electrical equipment.

We recommend that you take the time to read this manual and take full advantage of the many features of the UPS (uninterruptible power supply).

Before installing the UPS, please read the safety instructions. Then follow the indications in this manual.

1.1 PRODUCT FEATURES

The UPS protects your sensitive equipment from the most common power problems including power failures, power sags, power surges, brownouts, line noise, high voltage spikes, frequency variations, switching transients, and harmonic distortion.

Special characteristics:

- Double converter with pure sine waveform output
- Full digital control
- Output PF = 1
- High charger capability, the charger current is up to 12Amps
- Smart charging method to expand battery lifetime
- EBM quantity auto detection
- Communication ports: RPO, Dry in, Dry out, intelligent slot, USB, RS232
- IoT: Ethernet(default) and Wireless (optional)
- Dot-matrix LCD, it supports multi-language
- ECO Mode
- Start-able without battery

1.2 ENVIRONMENTAL PROTECTION

Products are developed according to an eco-design approach

Substances

This product does not contain CFCs, HCFCs or asbestos

Packing

To improve waste treatment and facilitate recycling, separate the various packing components.

- The cardboard we use comprises over 50% of recycled cardboard
- Sacks and bags are made of polyethene
- Packing materials are recyclable

Follow all local regulations for the disposal of packing materials

Product

The product is mainly made up of recyclable materials.

Dismantling and disassembly must take place in compliance with all local regulations concerning waste. At the end of its service life, the product must be transported to recycling centres, re-use and treatment facilities for waste electrical and electronic equipment (WEEE).

Battery

The product contains lead-acid batteries that must be processed according to applicable local regulations concerning batteries.

The battery may be removed to comply with regulations and in view of correct disposal.

2. PRODUCT OVERVIEW

2.1 WEIGHT AND DIMENSIONS

> The weight in this table is for reference only, please see the labels on the carton for details
>
> Dimension 'D' is chassis only, not including panel.

Description	Net Weights (KG)	Dimensions: D x W x H (mm)
SPY6KiRT	15.8	540 x 438 x 86.3(2U)
SPY10KiRT	26.2	540 x 438 x 86.3(2U)
EBM2409RT3U	60.5	559 x 438 x 129(3U)

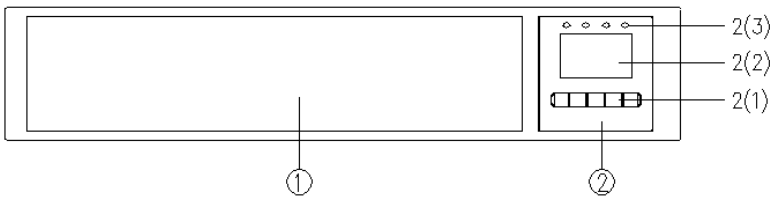
Optional accessories:

Type	Description	Remark
RT MBP	For 6/10kVA rackmount	SPY6KiRT & SPY10KiRT
Intelligent card	Dry contact card (AS400)	See chapter 6.5
	NMC card	
	MODBUS card (CMC)	
EMP	Temperature and humidity sensors	
WLAN	WLAN module	Wireless connection for IoT
COMM cable	RS232 cable	For RS232 communication
Parallel kit	For parallel system installation	See chapter 4
Battery cable	Battery cable (16 batt) for UPS connection with users own EBM	1.8m length See chapter 3.4.3
	Battery cable (20 batt) for UPS connection with users own EBM	
Rail kit	Rail kit for installing UPS into rack	See chapter 3.3.2
Gland kit	Glad kit for both models	

2.2 PRESENTATION

SPY6KiRT & SPY10KiRT

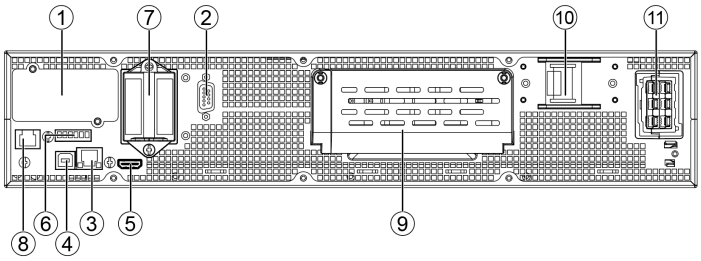
Front view



1. Ventilation area
2. LCD module, including 2(1)---button, 2(2)---LCD screen, 2(3)---LED indicator

Rear view

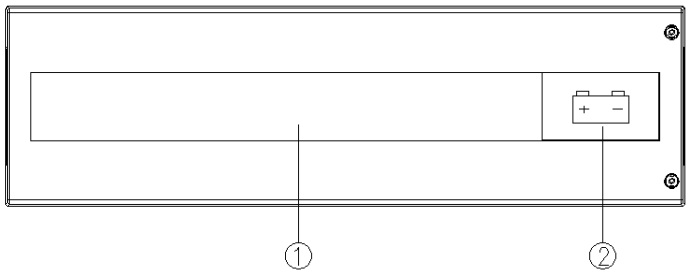
1. Intelligent slot
2. RS232
3. Ethernet port (RJ45, for IoT function)
4. USB
5. Wireless (HDMI, for IoT function)
6. RPO & Dry in / out
7. Parallel slot
8. RJ45 (for EBM detection / rack MBP detection)
9. AC input / output port (terminal block)
10. Input breaker (optional)
11. External battery port



EBM

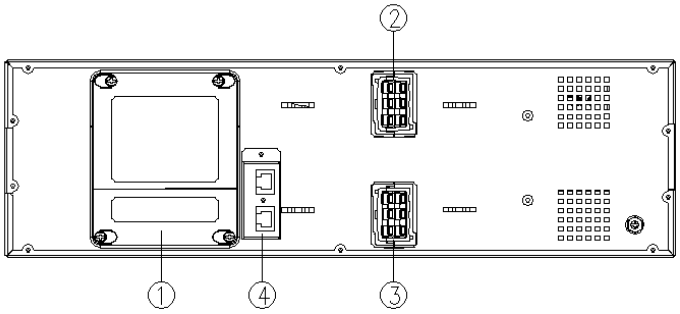
Front view

1. EBM label area
2. EBM label



Rear view

1. Fuse board cover (replace EBM fuse)
2. EBM port 1
3. EBM port 2
4. EBM detection Box (RJ45 port)



3. INSTALLATION

It is recommended to move the equipment to the installation site by using a pallet jack or truck before unpacking.

The system may be installed only by a qualified electrician in accordance with applicable safet regulations.

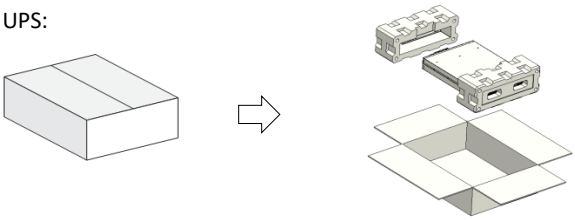
Boxes may be heavy, please install with at least two people.

3.1 UNPACKING & INSPECTING

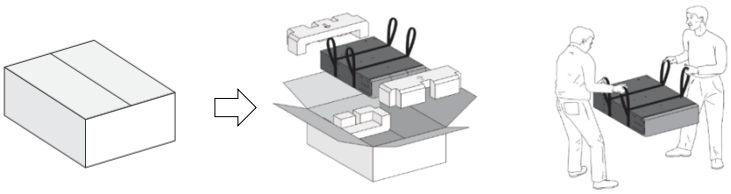
Unpacking the unit in a low-temperature environment may cause condensation occurred in and on the cabinet. Do not install the unit until the inside and outside of the unit are absolutely dry (hazard of electric shock).

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

UPS:



EBM:



Note:

The cabinet is heavy, please see spec weight provided on the carton/label.

Do not lift the unit's front panel and rear panel.

Discard or recycle the packaging in a responsible manner or store it for future use.

Packing materials must be disposed in compliance with all local regulations concerning waste.

3.2 CHECKING THE ACCESSORY KIT

Description	UPS	EBM
Battery Cable	o	√
EBM detection cable		√
USB cable	√	
RS232 cable	o	
Parallel cable	o	
Tower foot	√	
Extension plate of tower foot		√
Rack ear	√	√
Rack rail kit	o	o
Quick start (EBM)		√
User manual (UPS)	√	

Note: √ -- standard configuration; o – Optional, default is not configured

3.3 INSTALLATION (UPS)

These UPS support 2 installation modes: rack installation and tower installation

Always keep 500mm of space behind the UPS rear panel for ventilation.

Do not carry the front / rear panel of the module during installation

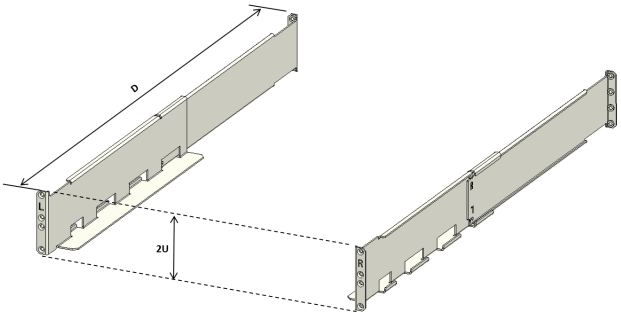
Rack installation

The procedure is suitable for 19-inch rack cabinet installation, it is recommended that the depth of the cabinet be no less than 800mm.

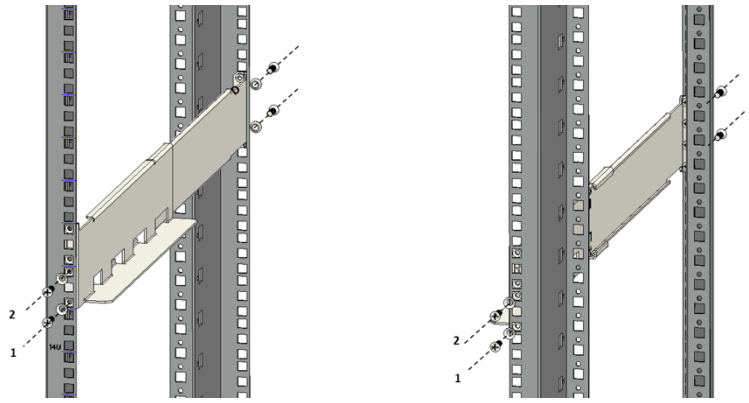
UPS model

Identify the final position and keep 2U space for installation

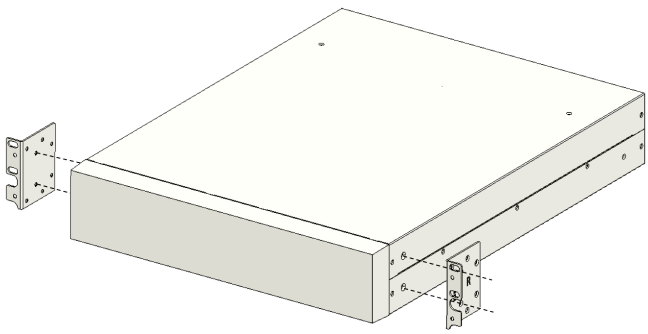
1. Install the rail kit (if configured). This rail kit is 2U & with screw holes (M5), the depth of the rail kit is 443-773mm.



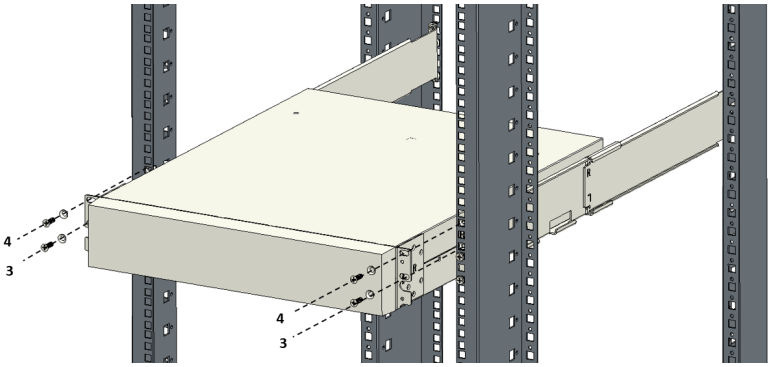
Fasten the rail kit to the cabinet with 8pcs M5 screws + washers (as below)



2. Install ‘rack ear’ to the unit with M4 screws (flat head)



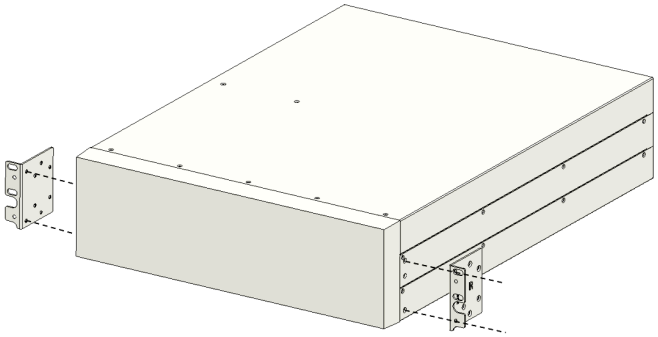
3. screws are tightened



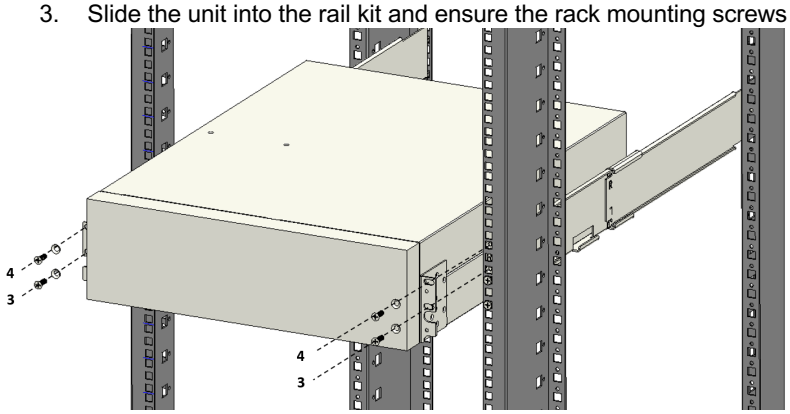
EBM model

Identify the final position and keep 3U space for installation. It is recommended to install below the UPS

1. Install the rail kit (if configured): same as UPS as above
2. Install ‘rack ear’ to the unit by the M4 screws (flat head)

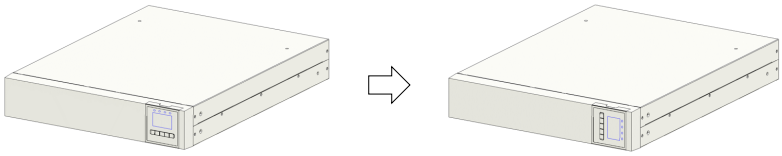


3. Slide the unit into the rail kit and ensure the rack mounting screws are tightened

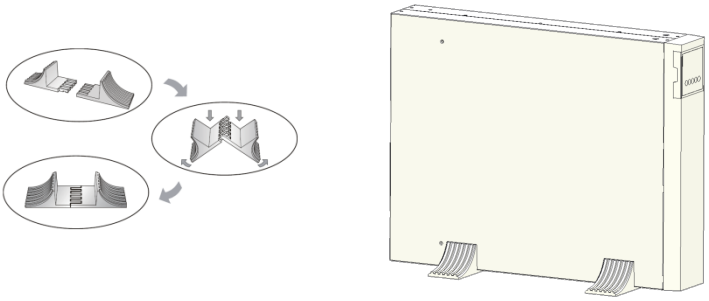


Tower Installation

1. Rotate the LCD screen to the tower position

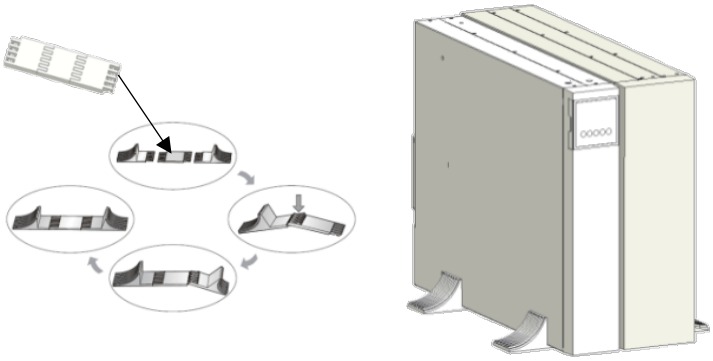


2. Set up the tower foot, then place the unit on to the tower foot.



EBM

1. Set up the ‘extension plate as below and install the tower foot from UPS.
2. place the UPS & EBM into the tower foot individually: place EBM module to the right of the UPS and align with the front panel



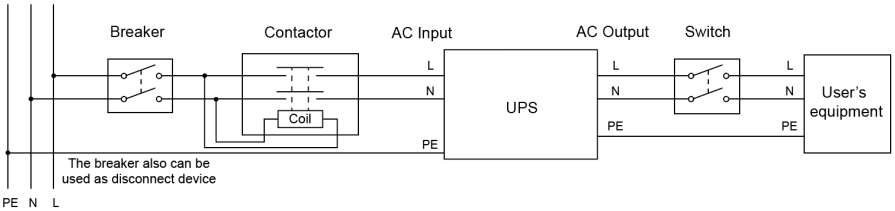
3.4 POWER CABLES CONNECTION

This chapter introduces how to wire AC IN/OUT cable to UPS in different modes, and connect UPS to EBM

3.4.1 INPUT/OUTPUT WIRING SPECIFICATIONS

Before wring UPS, upstream breaker and backfeed contactor should be configured to avoid power backfeed to UPS. “Backfeed voltage danger” warning label should be added in backfeed contactor or device. Before operating, UPS input should cut off, and check all terminals voltage to avoid voltage dangerous. Backfeed contactor rating current should be larger than UPS rating input current.

Below figures show the wiring system of UPS input and output



The rated current of the utility power switch must be greater than the UPS input current, otherwise the utility power switch may be burnt!

Recommended upstream protection and downstream switch:

UPS power rating	Upstream circuit breaker	Backfeed contactor	Downstream switch
6kVA	D curve – 63A	63A	40A
10kVA	D curve – 80A	80A	63A

Read the safety instructions regarding backfeed protection requirements. Recommended cable minimum cross-sectional:

Model	6kVA	10kVA
Protective earthing conductor	10mm^2	10mm^2
Input L, N cable	6mm^2	10mm^2
Output L, N cable	6mm^2	10mm^2
Battery cable	6mm^2	10mm^2

The length of the output cable is recommended not to exceed 10 meters, otherwise, it may cause radio interference. If a length of over 10m of output cable is required, please contact the distributor/vendor for details.

3.4.2 WIRING FOR AC CABLE (AC SOURCE TO UPS)

High leakage current:

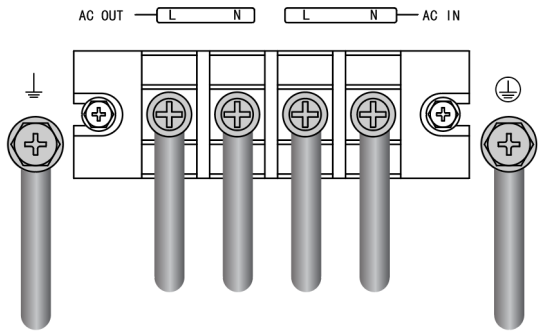
Earth connection is essential before connecting supply

This type of connection must be carried out by a qualified electrical person

Before carrying out any connection, check that the upstream protection devices (normal AC source and bypass AC source are open “O’ (off)

Always connect the ground wire first.

1. Remove the cover of the terminal block
2. Connect the AC cable to the terminal blocks:

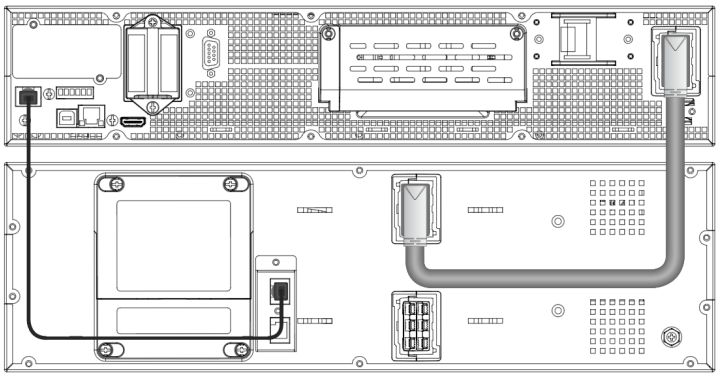


For cables well fixed, it is recommended to tie these cables to the convex of the rear panel.

3.4.3 WIRING WITH EXTERNAL BATTERY MODULE (EBM) (DC SOURCE TO UPS)

1. Be sure to disconnect the battery cable from the EBM before connecting the battery terminals of the UPS
2. Make sure the UPS is completely off before connecting or disconnecting the EBM

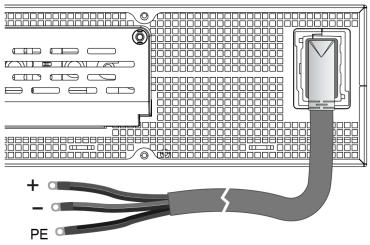
3. Before connecting the EBM, make sure that the EBM specification is compatible with UPS configuration.
4. Do not reverse the polarity of the external battery.
   Connect with configured EBM:
   Connect EBM to UPS with **battery cable** and **EBM detection cable**.



Note: Extend runtime with up to 6 EBMs per UPS.

Connect with the user's own EBM:

Connect EBM to UPS with the **battery cable** (optional configuration)



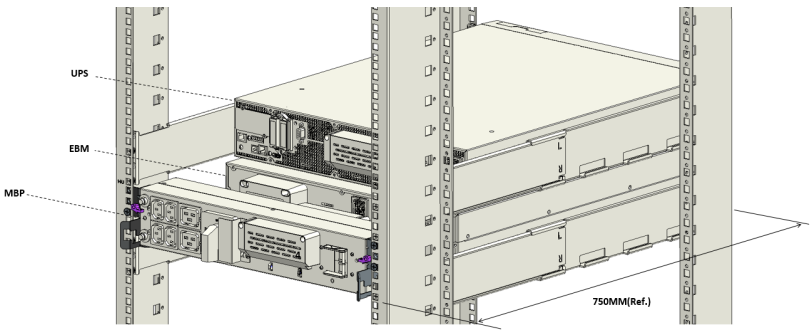
Note:

1. If an additional battery cable is needed for installation, it must follow cable specifications and the maximum length of battery cable is 10 meters.
2. If a length of battery cable over 10 meters is required, please contact the distributor or vendor for details.

3.4.4 WIRING WITH MBP

BBP is the rackmountable UPS system's optional module, the UPS can be used with the MBP to implement the maintenance bypass switching function to ensure that the output of the system is not affected during UPS maintenance.

See the User Manual of RT MBP for details.

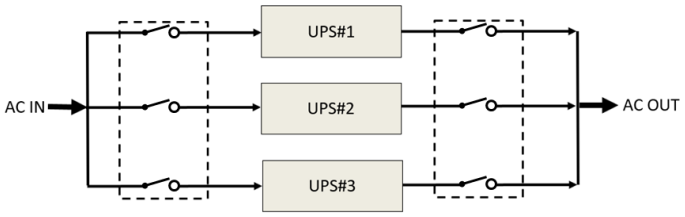


4. PARALLEL SYSTEM INSTALLATION AND OPERATION (OPTIONAL)

If your UPS is configured with a parallel function, up to 3 UPS can be connected in parallel to configure a sharing and redundant output power.

In parallel, the mechanical installation for each module is the same as the single system. For details, please refer to chapter 3.3.

Parallel system AC cable diagram:



4.1 WIRING FOR AC CABLE

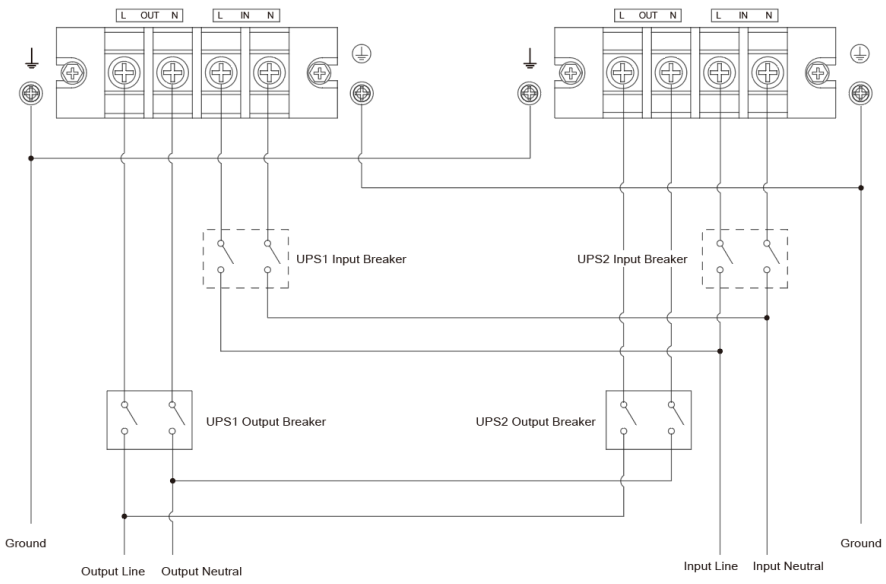
1. Wiring length requirement

When the distance between the load and the parallel UPS is less than 10 meters, the length difference between the input/output lines of the UPS systems in parallel must be less than 20%

When the distance between the load and the parallel UPS is greater than 20 meters, the length difference between the input/output lines of the UPS systems in parallel must be less than 5%.

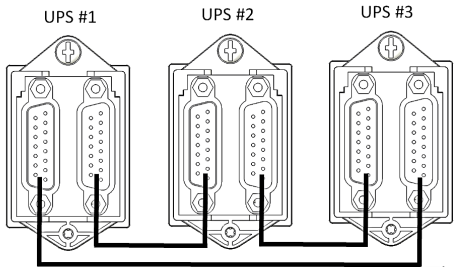
2. In the parallel system, common battery application is not supported. Independent EBM connect to each UPS, please refer to chapter 3.4.3.
3. Professional installation is required, please set the parallel system in a restricted area.

Parallel system:

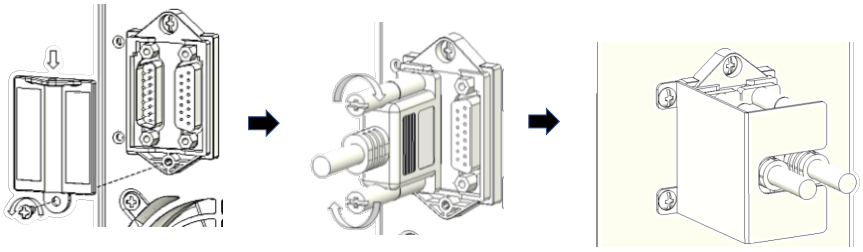


4.2 WIRING FOR PARALLEL SIGNAL CABLE

Parallel signal cable connection diagram:



Remove the cover of the **parallel box**, then connect each UPS one by one with the **parallel cable**, make sure the cable is screwed to parallel port tightly.



It is recommended to lock the **parallel cable** as above for preventing the parallel ports suffering an unexpected pulling force and causing the parallel system fault.

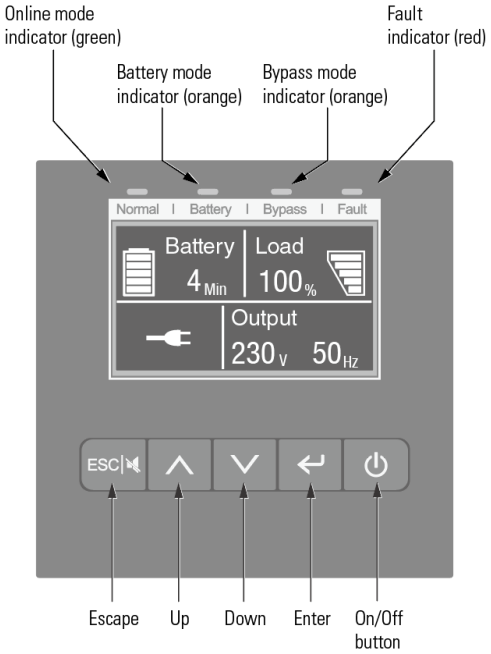
4.3 PARALLEL SYSTEM OPERATION

1. Turn on the input breakers for the parallel UPS
2. Pressing the ⏻ button continuously of one UPS in the system, then the system will start to turn on and enter line mode.
3. Regulate the output voltage of each UPS separately, and check if the output voltage difference is less than 0.5V among the parallel system. If the difference is more than 0.5V, the UPS need to be regulated.
4. If the output voltage difference is less than 0.5V, press the ⏻ button continuously on one of the UPS, the system will turn off. Turn off the input breakers for the UPS to shut down. The switch on the output breakers for all the UPS
5. Turn on the input breakers for the parallel UPS. Press the ⏻ button continuously on one of the UPS systems, then the system will start to turn on and enter line mode. The system will work normally in parallel.

5. OPERATION

5.1 LCD PANEL

The UPS has a five-button graphical LCD screen. It provides useful information about the UPS itself, load status, events, measurements and settings.



The LED:

Indicator	Status	Description
Normal Green	on	The UPS is operating normally in Online or High Efficiency Mode
Battery Orange	on	The UPS is in Battery Mode
Bypass Orange	on	The UPS is in Bypass Mode
Fault Red	on	The UPS has an active alarm or fault. See Chapter 8.1 Troubleshooting for additional information.

The following table shows the indicator status and description:

The button	Function	Illustration
	Power on	Press the button for >100ms & <1s to perform a cold start function (without mains)
	Turn on	When mains power is present, press the button for >1s to turn on the UPS
	Turn off	Press the button >3s to turn off the UPS
	Scroll up	Press to scroll up the menu
	Scroll down	Press to scroll down the menu
	Enter menu	Select / Confirm the highlighted option
	Exit the present menu	Press to exit current menu to main menu or the higher-level menu without changing a setting
	Mute buzzer	Press the button to mute the buzzer temporarily, once new working or fault is active, buzzer with work again

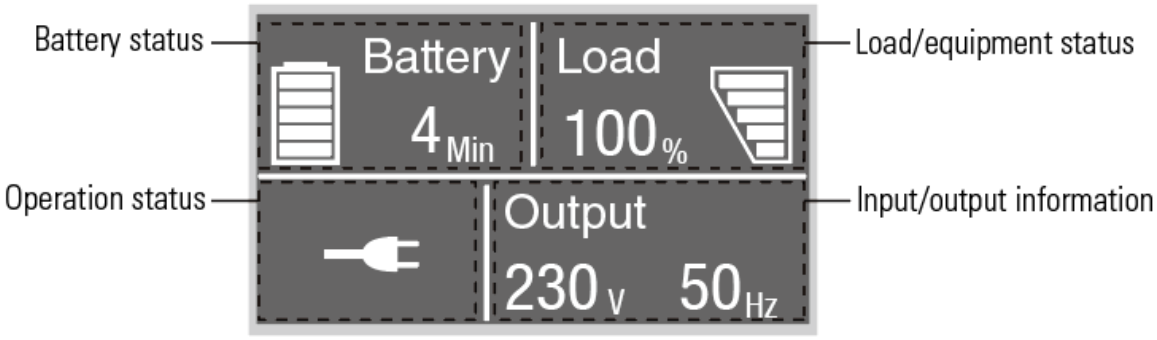
The Buzzer:

The buzzer	General meaning
1 beep every 2 minutes	Load supplied on bypass
1 beep every 4 seconds	Load supplies on battery if battery low, beep every second
1 beep every second	General warning active
2 beeps every second	Overload warning
Continuous	Fault active

Backlight:

After 10 minutes of inactivity, the LCD backlight will automatically dim. Press any button to restore the screen.

5.2 LCD DESCRIPTION



Operation status	Cause	Description
	Standby mode	The UPS is off without an output
	Online mode	The UPS is operating normally and protecting the critical load
1 beep every 4 seconds	Battery mode	An input failure has occurred, and the UPS is powering the equipment for shutdown, if possible
1 beep every 1 seconds	Battery mode with battery low	This warning is approximate, and the actual time to shutdown may vary significantly
	High efficiency mode	Once mains is lost or outside UPS parameters, the UPS will transfer to online mode or battery mode and the load is supplied continuously.
	Converter mode	The UPS would free run with fixed output frequency (50Hz or 60Hz) The load should be derated to 60% in converter mode.
	Bypass mode	An overload or fault has occurred, or a command has been received, and the UPS is in bypass mode.
	Battery test	UPS is undertaking a battery test

	Battery fail	The UPS detects low battery voltage, or the battery has been disconnected
	Overload	Too much load attached to UPS output. Remove any unnecessary items to reduce the total load on the UPS
	Fault mode	A serious fault has occurred which requires urgent attention
	Parallel mode	UPS is working in parallel mode

5.3 DISPLAY FUNCTIONS

When starting the UPS, the display is in the default UPS status summary screen.

Main menu	Submenu	Display information or menu function
UPS status		UPS mode, IoT status, date/time, battery status and current alarms (if any)
Event log		Display the events and faults stored
Measurements		[Load] W VA P%, [Input/Output] V, [[Battery] % min V EBM, [DC Bus] V, [Temperature] ℃
Control	Load segment	Load segment outlets on/off
	Start battery test (single mode) Single battery test (parallel mode)	Starts a manual battery test
	Parallel UPS battery test (parallel mode)	Starts a manual battery test in parallel mode
	Single UPS turn off (parallel mode)	Operate this machine to exit parallel connection
	Reset fault list	Clear active fault
	Reset event list	Clear events and faults
	Reset com card / Reset IoT	Reset IoT and Modbus TCP function inside UPS
	Restore factory settings	Restore to default factory settings
Settings		Refer to User settings
Identification		[Model name], [Serial number], [firmware version], [comm card firmware], [IP/MAC address]

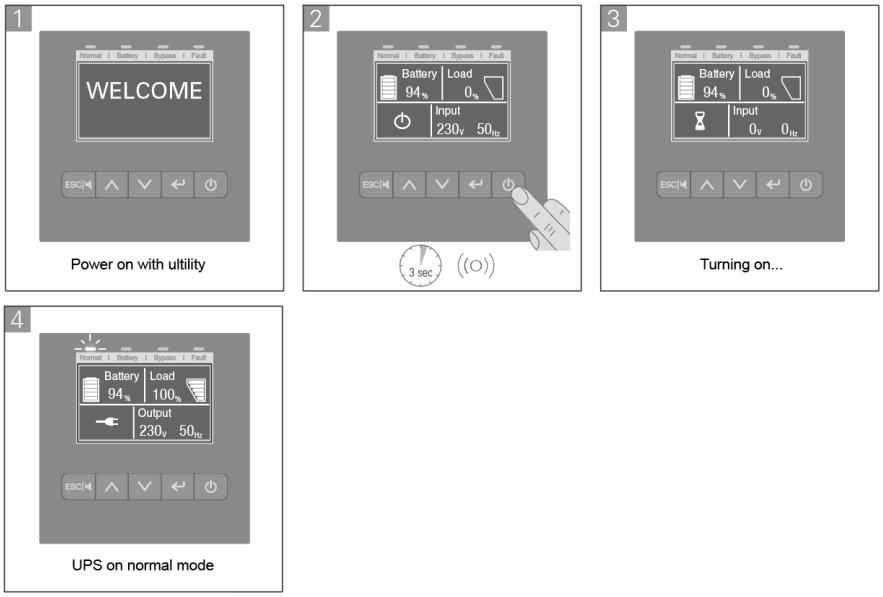
5.4 USER SETTINGS

Submenu	Available settings	Default settings
Password	Can be changed by user	4732
Change language	English, Italiano, Français, Deutsch, Español, Русский, Polski, 简体中文	English
User password	[enabled, ****], [disabled]	Enabled
Audible alarms	[enabled], [disabled]	Enabled
Output voltage	[220V], [230V], [240V]	[230V]

Output frequency	[autosensing], [converter 50Hz, 60Hz]	Autosensing
High efficiency mode	[disabled], [enabled]	Disabled
Auto bypass	[disabled], [enabled]	Disabled
Start / restart	Cold start: [disabled], [enabled] Auto restart: [disabled], [enabled]	Enabled Enabled
Site wiring fault	[enabled], [disabled]	disabled
Overload pre-alarm	[50% - 105%]	105%
External battery	[Auto detection]. [manual EBM: 0-4], [Manual Ah: 7-144Ah]	Auto detection 0 EBM
Charger current	2-12A	4A
Dry in signal	[disabled], [remote on], [remote off], [forced bypass]	Disabled
Dry out signal	Load powered], [On bat], [Low bat], [Bat open], [Bypass], [UPS OK]	Bypass
Ambient temperature alarm	[enabled], [disabled]	Enabled
Battery time remaining	[enabled], [disabled]	Enabled
Date and time	Dd/mm/yyyy hh:mm	01/01/2020 00:00
LCD contrast	[0-100%]	[50%]
IoT enable	[Yes], [No]	No
Modbus TCP	[enabled], [disabled]	Disabled

Note: If the utility power is IT system, the site wiring fault function should be disabled.

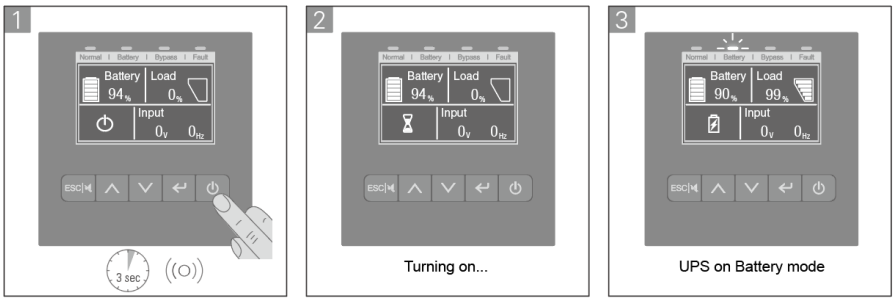
5.5 STARTING THE UPS WITH UTILITY POWER



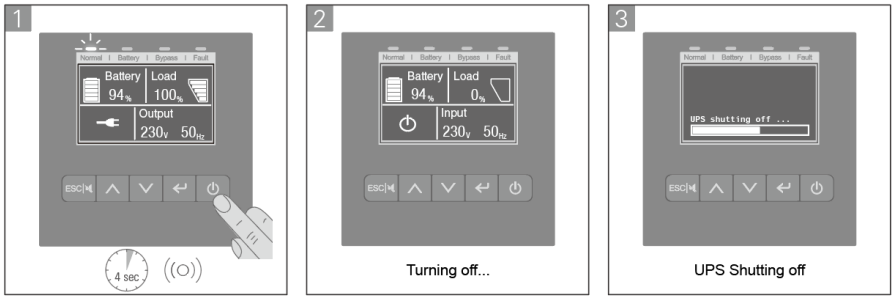
5.6 STARTING THE UPS ON BATTERY

Before using this feature, the UPS must have been powered by utility power with output enabled at least once.

Battery start can be disabled. Refer to the Chapter *4.4 User setting*



5.7 UPS SHUTDOWN



6. Communication

6.1 RS232 AND USB

1. Connect a communication cable to the serial or USB port on a computer
2. Connect the other end of the communication cable to the RS232 o USB communication port on the UPS

6.2 UPS REMOTE CONTROL FUNCTIONS

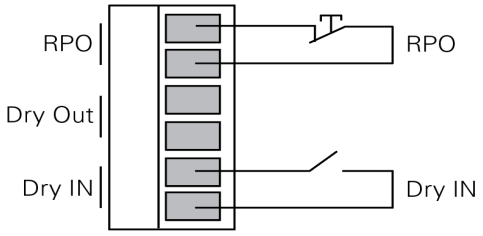
Remote power off (RPO)

When the RPO is activated, the UPS will cut off the output immediately, and continue to alarm.

RPO	Comments
Connector type	16 AWG Maximum wires
External breaker specification	60VDC/30VAC 20mA max

Dry in

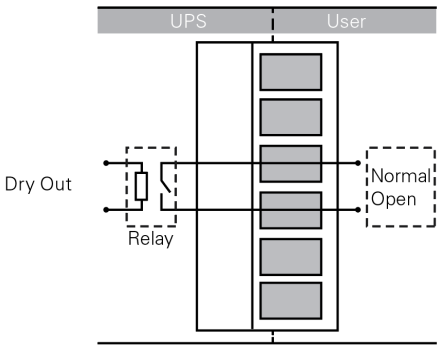
Dry in function can be configured (see Settings > Dry in)



Dry out	Comments
Connector type	16 AWG Maximum wires
External breaker specification	60VDC/30VAC 20mA max

Dry out

Dry out is the relay out, dry out function can be configured (see Settings > Dry out)



Dry out	Comments
Connector type	16 AWG Maximum wires
Inner relay specification	24VDC/1A

6.3 IOT

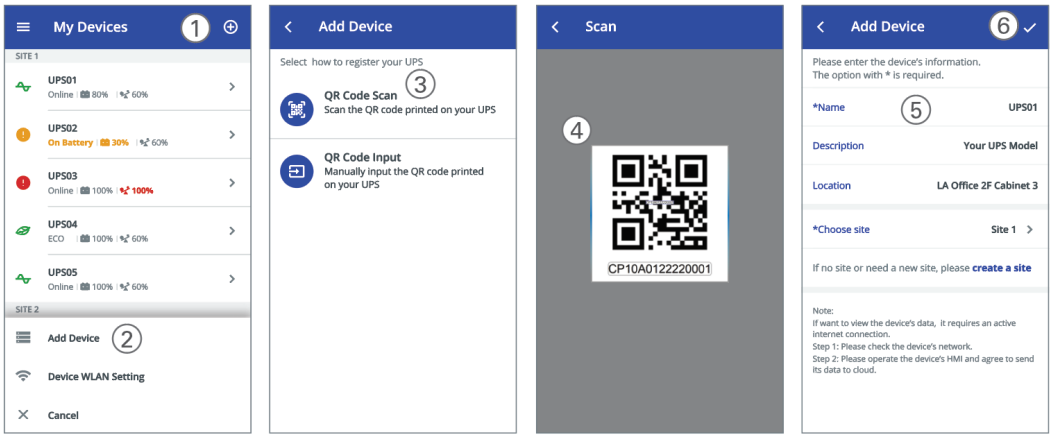
The built-in ethernet port and WLAN (optional accessory) ports enable market leading and easy to use IoT solutions for:

- A mobile application which allows users to remotely monitor UPS(s) and keep appraised about critical UPS events
- Remote report UPS faults and status (contact with your service provider for more details) from APP or registered APP account (email address)
- Automatic UPS and battery warranty expiry alerts from APP or registered APP account (email address)

IoT Connection

Wired connection

1. Connect UPS and router or switch with a network cable
   Please use Cat6 shielded network cable
   Make sure your IT settings can access the public network and Microsoft Azure cloud.
2. Enable the IoT function on the LCD (see Settings > IoT)
3. Search the “winPower View” from the Google Play store or Apple App store and download and install it on your device.
4. Open the app, register an account, log in and follow the instructions of the app.
5. Tap ⊕ on the upper right corner, scan the SN barcode on the UPS label to add the device



For more detailed information and Q&A about the IoT and APP, please refer to the HELP menu in the APP.

Wireless network connection

The wireless module is optional, please contact your local distributor for details.

6.4 MODBUS TCP

Built-in ethernet port offers Modbus TCP feature to facilitate remote monitoring of the UPS into your own software. Contact your service provider for protocol details.

6.5 INTELLIGENT CARDS (OPTIONAL)

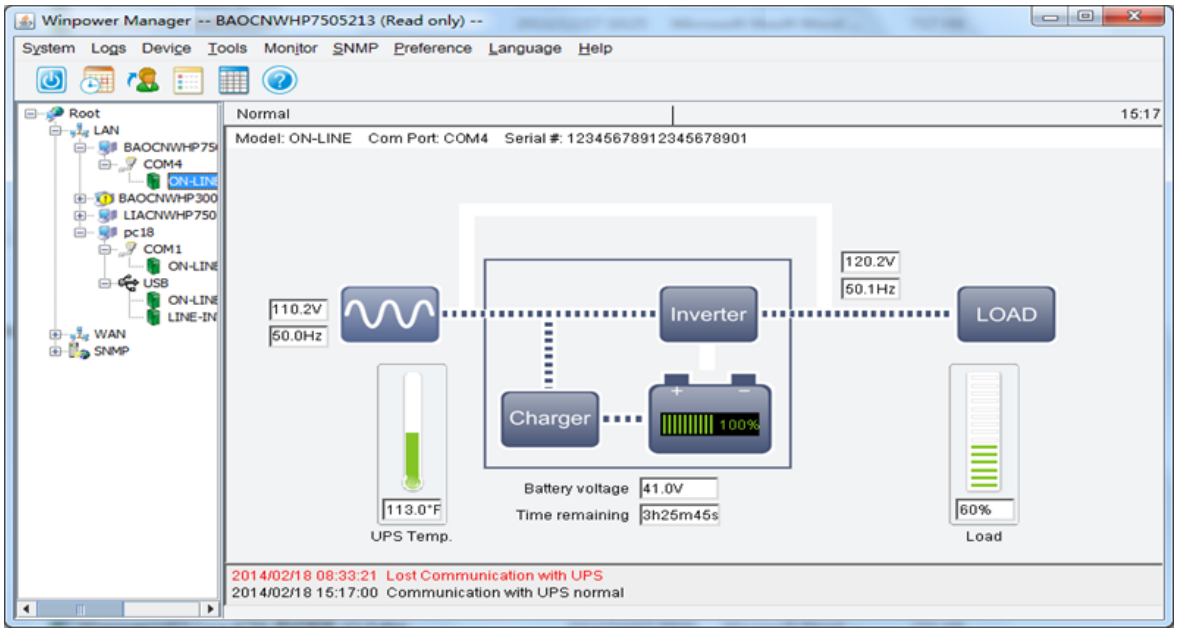
Intelligent cards allow the UPS to communicate with different types of devices in variety of networking environments. The UPS could use the following connectivity cards, please contact your local distributor for details.

- **SPYNMC** – Ideal monitoring solution enables user to monitor and control the status of a UPS on a web browser via the internet
- **SPYREL** – Provides voltage-free dry contact signals for programmable controller and management systems

6.6 UPS MANAGEMENT SOFTWARE

6.6.1 WINPOWER

WinPower provides user-friendly interface to monitor and control your UPS. This unique software provides safe auto shutdown for a multitude of smart devices when power fails for an extended period of time. With this software, users can monitor and control any UPS on the same LAN.



Installation procedure:

1. Go to the website:

   http://www.ups-software-download.com/content/ups-download-software/download.html

2. Choose the operating system relevant to your needs and follow the instructions described on the website to download the software.

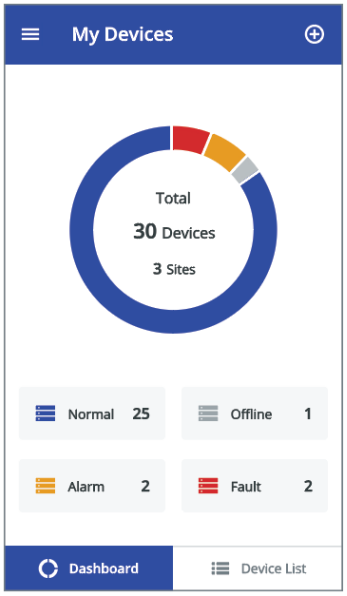
3. When downloading all required files from the internet, enter the serial No: **511C1-01220-0100-478DF2A** to install the software.

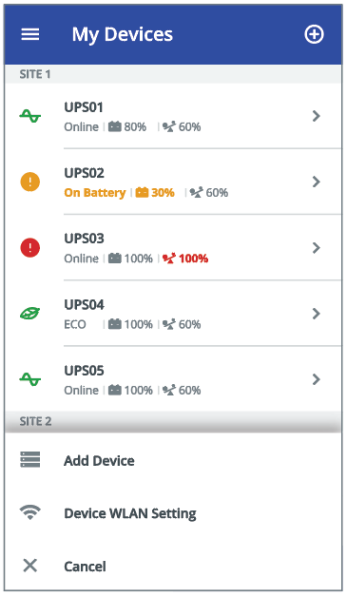
When you finish the installation process, restart your computer. The WinPower software will appear as a green plug icon located in the system tray, near the clock.

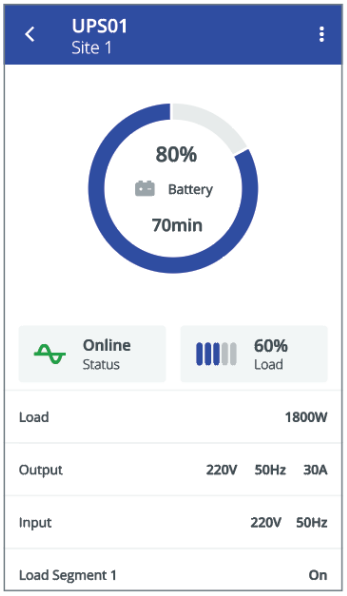
6.6.2 WinPower View App

WinPower View is a mobile application which allows you to centralize monitoring of UPS(s) connected to cloud. Please download it from the Google Play store or Apple APP store.

Please refer to the chapter 5.3 for IoT connection.







7. UPS MAINTENANCE

7.1 EQUIPMENT CARE

For the best preventive maintenance, keep the area around the equipment clean and dust free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner.

For full battery life, keep the equipment at an ambient temperature of 20°C (68°F).

The batteries are rated for a 3-5-year service life. The length of service life varies, depending on several factors, including the frequency of usage and ambient temperature. Batteries used beyond expected service life will often have severely reduced runtimes. Replace batteries at least every 4 years to keep units running at peak performance.

7.2 TRANSPORTING THE UPS

Please transport the UPS in the original packaging only. If the UPS requires any type of transportation, verify that the UPS is disconnected, turned off and the batteries are disconnected.

7.3 STORING THE EQUIPMENT

If you store the equipment for a long period prior to usage, we recommend the user recharges the battery at least every 6 months by connecting the UPS to utility power. Batteries are to be charged for 72 hours after long-term storage.

If batteries are not recharged over a 6-month period, do not use them. Contact your service representative.

7.4 REPLACING BATTERIES

DO NOT DISCONNECT the batteries while the UPS is in Battery mode.

Consider all warnings, cautions, and notes before replacing batteries.

- Servicing should be performed by qualified service personnel only, with knowledge of batteries and the required precautions. Keep unauthorised personnel away from batteries.

7.5 RECYCLE

Contact your local recycling or hazardous waste centre for information on the correct disposal of the used equipment.

Do not dispose of the batteries in the fire. Which may cause battery explosion. The batteries must be rightly disposed of according to local regulation.

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

Do not discard the batteries in the bin.
This product contains sealed lead acid batteries and must be disposed of as it's explained in this manual.
For more information, contact your local recycling centres, and re-use and treatment facilities.

The crossed-out wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with unseparated household waste but must be collected separately. The product should be handed in for recycling in accordance with the local environmental regulations for waste disposal.

By separating waste electrical and electronic equipment, you will help reduce the volume of waste sent for incineration or land-fills and minimize any potential negative impact on human health and environment.

8. TROUBLESHOOTING

The UPS is designed for durable, automatic operation and alert you whenever potential operating problems may occur. Usually, the alarms shown by the control panel do not mean that the output power is affected. Instead, they are preventive alarms intended to alert the user.

Events are silent status information that are recorded into the Event log. Example = "Battery charging".

Alarms are recorded into the Event log and displayed on the LCD status screen with the logo blinking. Some alarms may be announced by a beep every 1 second. Example = "Battery low".

Faults are announced by a continuous beep and red LED, recorded into the Event log. Example = Out. short circuit.

Use the following troubleshooting chart to determine the UPS alarm condition.

8.1 TYPICAL ALARMS AND FAULTS:

To check the UPS status and event log:

1. Press ↵ on the menu of 'event log'
2. Scroll through the listed events and faults.
3. The following table describes typical conditions

Conditions	Possible cause	Action
On maintenance bypass	Maintenance bypass switch is open	Check the maintenance bypass status
Site wiring alarm	Phase and neutral conductor at input of UPS system are reversed	Reverse mains power wiring
No battery	Battery not connected correctly	Do the battery test to confirm. Check the battery bank is properly connected to the UPS. Check the battery breaker is turned on and fuse is ok.
Battery low	Battery voltage is low	When audible alarm sounding ever second, battery is almost empty.
Battery end of life	The batteries have reached the end of their life	Consult dealer if batteries are replaceable
Power overload	Power requirements exceed UPS capacity	Check the loads and remove some non-critical loads Check if some loads have failed
Overload pre-alarm	The load exceeds the present value	Check the loads or reset the pre-alarm value
Fan lock	Fan abnormal	Check If the fan is running normally or fan detection cable disconnected
UPS temp. alarm	Inside temperature of the UPS is too high	Check the ventilation of the UPS and check the ambient temperature
FAULT		

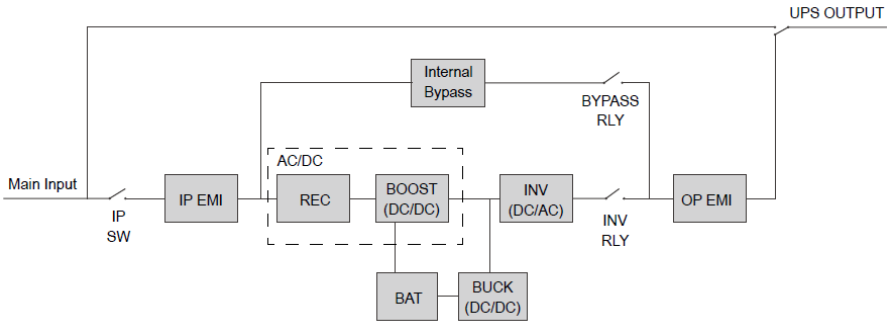
Problem displayed	Possible cause	Remedy
Inverter overload	Overload	Check the loads and remove some non - critical loads. Check if some leads have failed.
Bypass overload	Overload	Check the loads and remove some non - critical loads. Check if some leads have failed.
Out. Short circuit	Abnormally low impedance placed on its output and considers it a short circuit	Remove all the loads. Turn off the UPS. Check if the UPS output and loads is short circuit. Ensure short circuit is removed before turning on again.
UPS temp. fault	Inside temperature of UPS is too high	Check the ventilation of the UPS and check the ambient temperature
DC bus + or – too high	UPS internal fault, the + or – DC BUS voltage is too high	UPS internal fault, the + or – DC BUS voltage is too low
DC bus + or – too low	UPS internal fault, the + or – DC BUS voltage is too low	Consult dealer
DC bus unbalanced	UPS internal fault, the + or – DC BUS voltage is too low	Consult dealer
DC bus short circuit	UPS internal fault	Consult dealer
Max inverter volt	UPS internal fault, the inverter voltage is too high	Consult dealer
Min inverter fault	UPS internal fault, the inverter voltage is too low	Consult dealer
ELSE CASES		
Problem Displayed	**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
Green LED is not on even though the power supply is available	Invertor not switched on	Press on-switch to turn on the UPS
Emergency supply period shorter than nominal value	Batteries are not fully charged/battery defect	Charge the batteries for at least 12 hours and then check capacity.

8.2 SILENCING THE ALARM

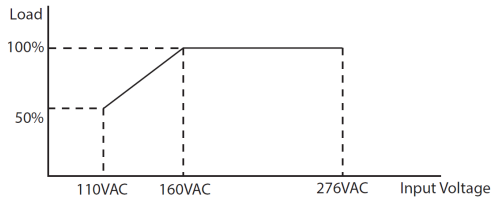
Press the ESC (Escape) button 3s on the front panel display to silence the alarm. Check the alarm condition and perform the applicable action to resolve the condition. If the alarm status changes or press the ESC button 3s on the front panel display, the alarm beeps again, overriding the previous alarm silencing.

9. SPECIFICATIONS

9.1 UPS BLOCK DIAGRAM



9.2 UPS SPECIFICATION

Model name		SPY6KiRT	SPY10KiRT
Power rating	VA/Watt	6KVA / 6KW	10KVA / 10KW
Rated frequency		50/60Hz	
Input	Voltage range	 110Vac – 276Vac	
	Rated voltage	220 / 230 / 240Vac	
	Frequency range	40Hz-70Hz (45Hz-55Hz, 54Hz-66Hz @ load>60%)	
	Rated current		
	Frequency	≤60% rated load: 40-70Hz ＞60% rated load: 45-55Hz (50Hz system)/54-66Hz (60Hz system)	
Charging current	Range		
	Default		
Output	Rated voltage	220 / 230 / 240Vac	
	Overload on normal mode	105%-125% Load, 10 minutes transfer to Bypass; 125%-150% Load, 30 seconds transfer to Bypass; >150% Load, 0.5 seconds transfer to Bypass	
	Short-circuit current on normal mode	54A for 200ms max	113A for 200ms max
Transfer time <-> battery		0ms	
Transfer time <-> battery		0ms	
Battery	Battery voltage	192/240VDC selectable	
	Battery number	16/20PCS selectable	
Environment	Ambient temperature	0°C ~ 50°C (Derating 50% above 40°C)	
	Relative humidity	0 ~ 95%(no condensing)	
	Operating altitude	<3000m (Derating use above 1km, the load should de-rating 1% every up 100m)	
	Storage temperature (with battery)	-15°C ~ 40°C	
	Storage temperature (without battery)	-25°C ~ 55°C	
Criterion	Safety	IEC/EN 62040-1	

	EMC	IEC/EN 62040-2
	Performance	IEC/EN 62040-3

(1) In CVCF mode, UPS needs to be de-rated to 60% capacity (rated output power and maximum charging current).
(2) @220VAC input phase voltage, rated output power and maximum charging.