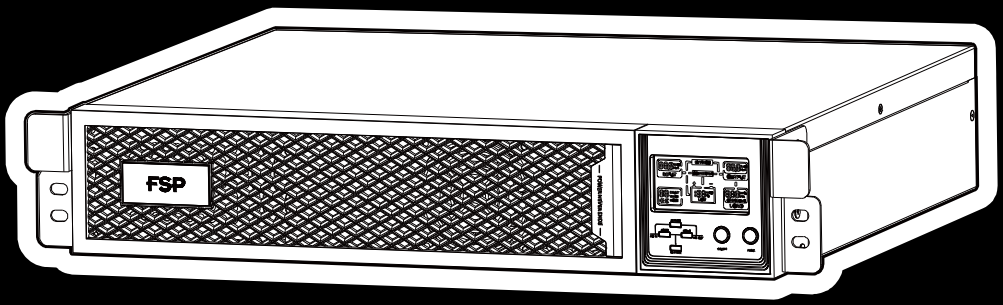

Champ RM+ 1KVA-3KVA
Rack On-Line UPS

Quick Installation Guide

This manual contains important safety instructions. Please read the safety and operating instructions carefully before operating the UPS. Adhere to all warnings on the unit and in this manual. Follow all operating and user instructions.

 WARNING

The battery can present a risk of electrical shock and high short circuit current. Following precautions should be observed before replacing the battery.

- Wear rubber gloves and boots.
- Remove rings, watches and other metal objects.
- Use tools with insulated handles.
- Do not lay tools or other metal objects on the batteries.
- If the battery is damaged in any way or shows signs of leakage, contact your local representative immediately.
- Do not dispose of batteries in a fire. The batteries may explode.
- Handle, transport and recycle batteries in accordance with local representative.

 WARNING

Although the UPS has been designed and manufactured to ensure personal safety, improper use can result in electrical shock or fire. To ensure safety, observe the following precautions:

- Turn off and unplug the UPS before cleaning it.
- Clean the UPS with a dry cloth. Do not use liquid or aerosol cleaners.
- Never block or insert any objects into the ventilation holes or other openings of the UPS.
- Do not place the UPS power cord where it might be damaged.
- Confirm the ground wire is connected correctly, whether the wiring and the polarity of the battery are correct before powering on.
- Leave enough space around the UPS to ventilation and maintenance.
- Use dry powder to extinguish fire. Liquid fire extinguisher is a risk of electric shock.
- When installing UPS, please consider the load-bearing capacity of the floor for UPS and batteries.

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1. Electromagnetic Compatibility

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

NOTICE:

Operated the UPS in an indoor enviroment only in an ambient temperature range of 0-40°C. Install it in a clean environment, free from moisture, flammable liquids, gases and corrosive substance.

This UPS contains no user-serviceable parts except the external battery pack. The UPS on/off push buttons do not electrically isolate internal parts. Under no circumstance attempt to gain access internally, due to the risk of electric shock or burn.

Do not continue to use the UPS if the panel indications are not in accordance with these operating instructions or performance changes, contact the local representative immediately.

Battery maintenance needs to be carried out under the operation or guidance of people with professional skills and preventive protection. Irrelevant personnel are not allowed to approach the battery. Correct battery installation is necessary. Dispose of batteries according to local laws and regulations.

DO NOT CONNECT equipment that could overload the UPS or DC current from the UPS, for example: electric drills, vacuum cleaners, laser printers, hair dryer or any appliance using half-wave rectification.

Do not place electronic data storage devices on top of the UPS chassis to avoid data loss or

errors.

Before cleaning the UPS, please turn off the UPS and isolate it from the power supply and load.

Use a soft cloth to wipe it. Do not use liquid or mist cleaners.

2. Introduction

This series UPS adopts double conversion online design, output pure sine wave, provides ideal, uninterrupted, high-quality power for computer equipment, communication systems and even industrial automation system. This manual is suitable for single phase type 1, 2, 3k.

This series UPS is equipped with an LCD display screen as standard, which provides comprehensive information display for easy use by customers. It also provides a variety of functional interfaces for easy operation by customers, as shown below:

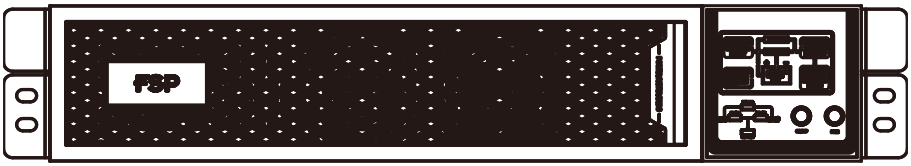
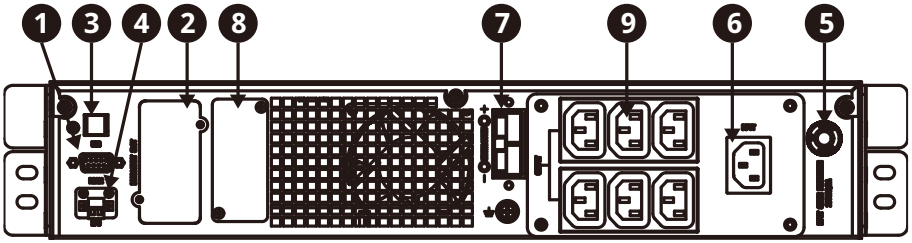
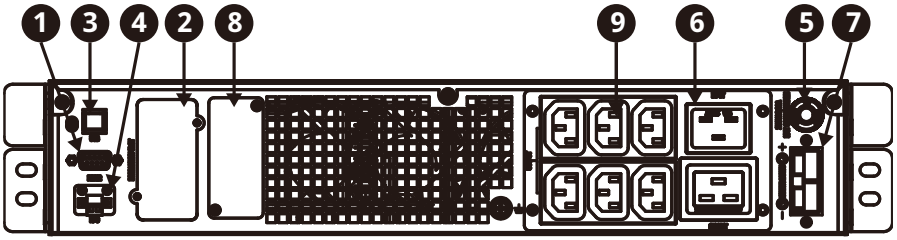


Figure 2-1 UPS Front View



1K UPS Rear View

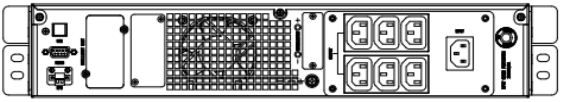
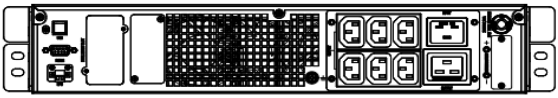
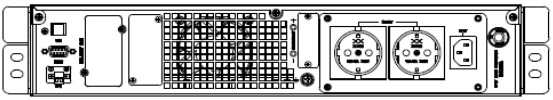
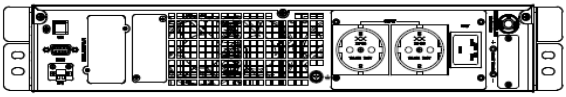


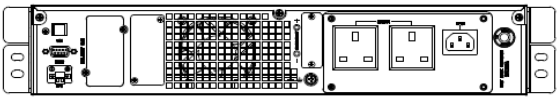
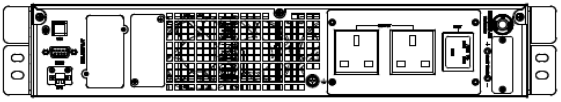
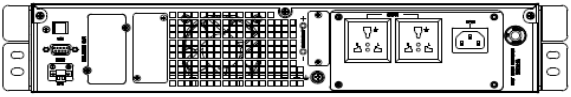
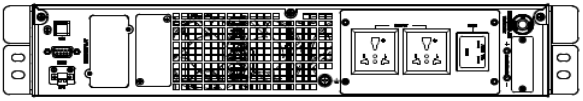
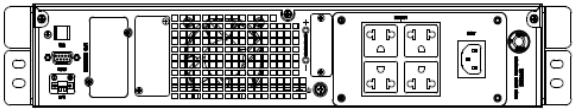
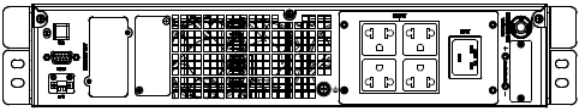
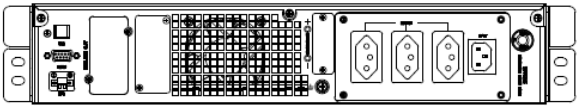
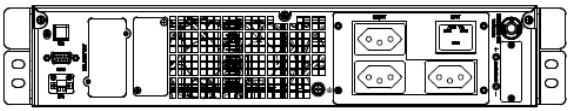
2K/3K UPS Rear View

Figure 2-2 UPS Rear View

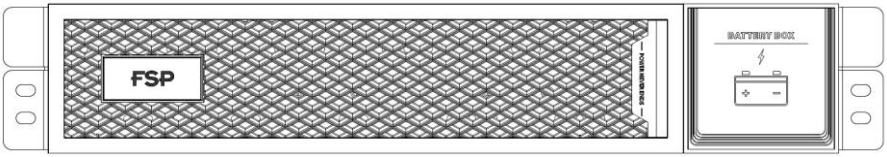
❶	RS-232communication port. DB9 type.
❷	Intelligent slot. NMP card, AS400 card, RS485, External battery temperature sensor, RJ45 network port surge protection and Li-ion battery dry contact for optional.
❸	USB port. B type.
❹	EPO. Emergency Power Off.
❺	Input overcurrent protector.
❻	Input socket. 1KVA: IEC C14, 2K/3K: IEC C20.
❼	External battery port. Optional for standard model.
❽	Expand slot. RS485, External battery temperature sensor, RJ45 network port surge protection and Li-ion battery dry contact for optional.
❾	Output Socket.

Output Socket:

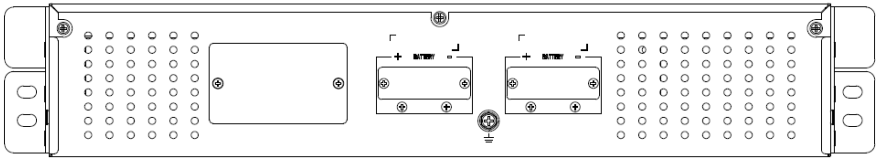
IEC Type	Champ RM+ 1K Champ RM+ 1KL	
	Champ RM+ 2K, Champ RM+ 2KL Champ RM+ 3K, Champ RM+ 3KL	
Schuko Type	Champ RM+ 1K Champ RM+ 1KL	
	Champ RM+ 2K, Champ RM+ 2KL Champ RM+ 3K, Champ RM+ 3KL	

UK Type	Champ RM+ 1K Champ RM+ 1KL	
	Champ RM+ 2K, Champ RM+ 2KL Champ RM+ 3K, Champ RM+ 3KL	
Universal Type	Champ RM+ 1K Champ RM+ 1KL	
	Champ RM+ 2K, Champ RM+ 2KL Champ RM+ 3K, Champ RM+ 3KL	
NEMA Type	Champ RM+ 1K Champ RM+ 1KL	
	Champ RM+ 2K, Champ RM+ 2KL Champ RM+ 3K, Champ RM+ 3KL	
Brazil Type	Champ RM+ 1K Champ RM+ 1KL	
	Champ RM+ 2K, Champ RM+ 2KL Champ RM+ 3K, Champ RM+ 3KL	

In addition, for customers with long discharge time requirements, specially developed battery cabinet, as shown below:



Battery Cabinet Front View



Battery Cabinet Rear View

3. System Description

The system block diagram is shown in Figure 3-1:

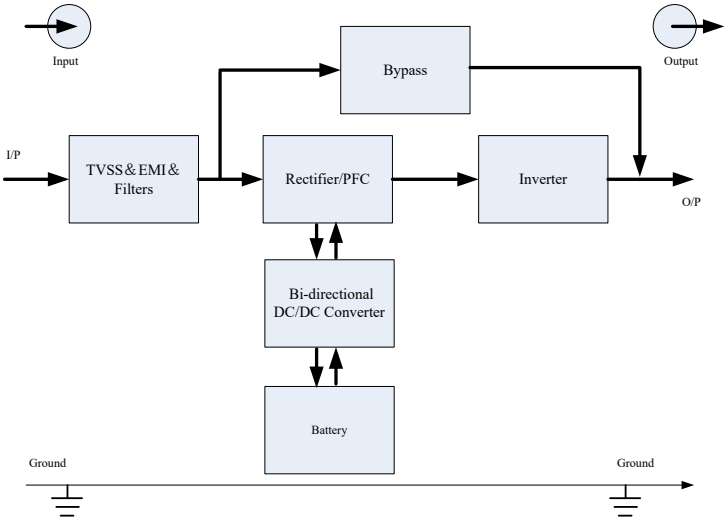


Figure 3-1 System Diagram

3.1 Transient Voltage Surge Suppression (TVSS) and EMI/FRI Filters

This series UPS provide surge protection and filter for electromagnetic conduction and radiation, keeping the sensitive equipment protected from the interference of utility power and correcting the power factor.

3.2 Rectifier

This series UPS rectifier adopts boost (Vienna topology) topology that improves the reliability and reduces rectifier switching losses.

3.3 Battery Charger

This series UPS provides two kinds of charging current chargers, the standard model charging current 1A, long backup model charging current 1-12A can be set.

3.4 Inverter

This series UPS uses two-level high frequency PWM control, providing pure sine wave, ideal power supply to connected load.

3.5 DC-to-DC Converter

The DC/DC converter uses the battery to provide energy for the inverter and boosts the battery voltage to the bus voltage required by the inverter.

3.6 Dynamic Bypass

This series UPS provides a dynamic bypass in parallel with the mains to provide energy to the load in some special cases, for example overload, over temperature or any other failure condition. UPS automatically transfers the connected load to bypass. At this time, the bypass indicator yellow light is on, accompanied by a buzzer alarm.

NOTICE: The bypass power path does NOT protect the connected equipment from disturbances in the utility supply.

4. Product Specification & Performance

4.1 Model Description

Model No.	Type
Champ RM+ 1K	Standard model
Champ RM+ 2K	
Champ RM+ 3K	
Champ RM+ 1KL	Long backup model
Champ RM+ 2KL	
Champ RM+ 3KL	

Note: "L" Model: Long backup time, without "L" Model: Standard backup time

4.2 Product Specification and Performance

Model		Champ RM+ 1KL	Champ RM+ 1K	Champ RM+ 2KL	Champ RM+ 2K	Champ RM+ 3KL	Champ RM+ 3K
Power Rating		1kVA/ 1kW		2kVA/ 2kW		3kVA/ 3kW	3kVA/ 2.7kW
Frequency(Hz)		50		50		50	50
Input	Voltage	110Vac~300Vac					
	Current	5.5A Max		11A Max		17A Max	
Battery	Voltage	36VDC/ 48VDC	36VDC	72VDC/ 96VDC	72VDC	96VDC	72VDC
	Current	40A Max		40A Max		50A Max	
Output	Voltage	220V					
	Current	4.5A		9A		13.6A	
Dimension (WxDxH) mm		440*377*86	440*427*86	440*427*86	440*577*86	440*427*86	440*577*86
Weight (kg)		5.5	12.8	7	21.9	7.3	24.9

4.3 Electrical Performance

Input					
Model			Voltage	Frequency	PF
Champ RM 1K-3K/1KL-3KL			Single-phase 220VAC	50/60±5Hz(default),±10Hz/±3Hz/±1Hz(settable)	>0.99 (Full load)
Output					
Voltage Regulation	Power Factor	Frequency tolerance	Distortion	Overload capacity	Crest ratio
±1%	1	±0.3	THDu<2%@Full Linear Load THDu<5%@Full non-linear load	102%~110%: transfers to Bypass mode after 30 minutes 110%~125%: transfers to Bypass mode after 10 minutes 125%~150%: transfers to Bypass mode after 30s	3:1 maximum

4.4 Operating Environment

Temperature	Humidity	Altitude
0°C-40°C	<95%, non-condensing	<1000m, within 1000m to 3000m,1% power derating for every 100m rise

5. Installation

The installation and wiring of the UPS must be carried out by a qualified electrician according to the requirements of this manual.

NOTICE: UPS operation in sustained temperature outside the range of 15-25℃ (59°-77℉) reduces battery life.

5.1 Unpacking and Inspection

1) Unpack the packaging and check that the packaging is correct. The correct packaging should contain the following items
   - 1 UPS
   - 1 User manual
   - 1 Input power cable
   - 1 pair Rack mount mounting lugs
   - 1 External battery cable (Only the long backup model is equipped)
2) Inspect the appearance of the UPS to see if there is any damage during transportation. Do not turn on the unit and notify the carrier and dealer immediately if there is any damage or lacking of some parts.

5.2 Mechanical Installation

There are two installation methods: Tower and Rack, depends on available space and usage considerations. Users can choose the suitable installation method based on actual conditions.

5.2.1 Notes for installation

- The UPS must be installed in a horizontal occasion location with good ventilation, far away from water, inflammable gas and corrosive agents.
- At least 0.3m of space must be left in front and behind the UPS to facilitate air circulation.
- Condensation may occur during transportation at relatively low temperatures. Please wait until the outside and inside of the UPS are completely dry before operating it, otherwise there is a risk of electric shock.

5.2.2 Installation of Tower type

Users can choose from a variety of installation combinations: single UPS, single UPS with one or more battery cabinet. The installation methods of various installation combinations are exactly the same.

The installation method is as follows:

1) Take out the support base, as shown in Figure 5-1.

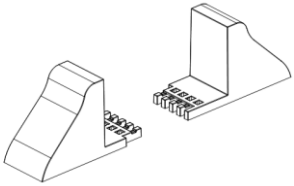


Figure 5-1 Support base

2) If you choose to connect an external battery cabinet to the UPS to provide additional battery runtime, assemble the middle base and support base together using the connecting buckles, as shown in Figure 5-2.

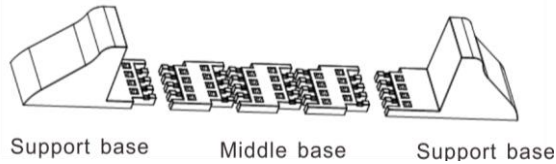


Figure 5-2 Installing the support base with the middle base

3) Adjust the direction of the UPS operation display panel and LOGO.

① Gently remove the left plastic panel of the UPS. As shown in Figure 5-3

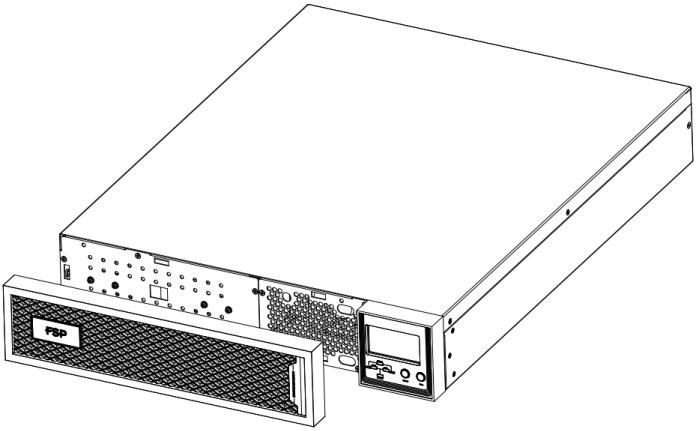
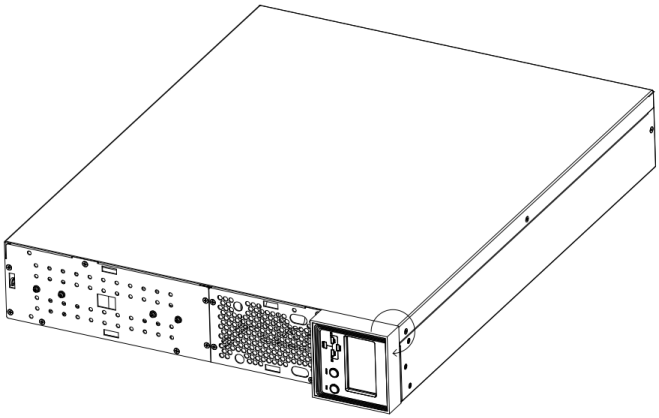


Figure 5-3 Remove the left plastic panel

② Gently pull out the display panel, rotate it 90 degrees clockwise, and then press it back into place, as shown in Figure 5-4.



Rotate 90° clockwise

Figure 5-4 Rotating the display panel

③ Install the left and right plastic panels back to the UPS. At this point, the UPS operation display panel and LOGO have been rotated 90 degrees clockwise to provide users with a vertical view.

4) Place the UPS (and battery cabinet) on the support base. Each UPS requires two sets of support bases, as shown in Figure 5-6.

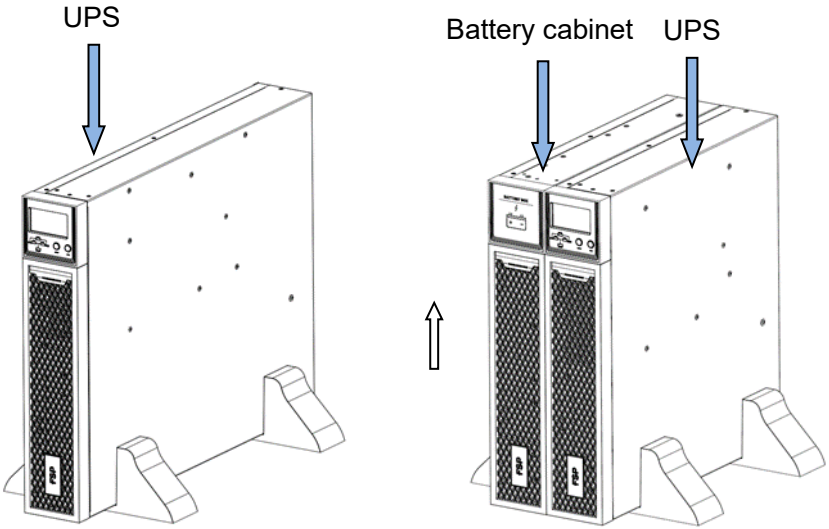


Figure 5-6 Tower installation

5.2.3 Installation of Rack type

1. Users can choose from a variety of installation combinations: single UPS, single UPS with one or more battery cabinet. The installation methods of various installation combinations are exactly the same.

2. Since the battery cabinet is heavy, it must be installed first. Two or more people are required to install it at the same time, and start from the bottom battery cabinet.

Rack installation is to fix the UPS and battery cabinet on the rack through the mounting ears.

The installation method is as follows:

1) Take out the mounting ears (2 pieces) and M4×8 screws (6 pieces) from the accessories, and fix the mounting ears to the cabinet with the screws through the installation holes, as shown in Figure 5-7.

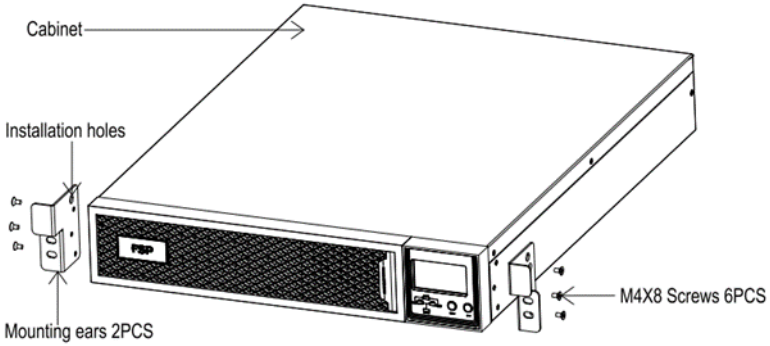


Figure 5-7 Install the mounting ears

2) Place the cabinet on the guide rails of the rack (Prohibit move the cabinet by the mounting ears), push the cabinet in until it cannot be pushed in anymore, and fix the cabinet to the rack through the installation holes 2 on the mounting ears, as shown in Figure 5-8.

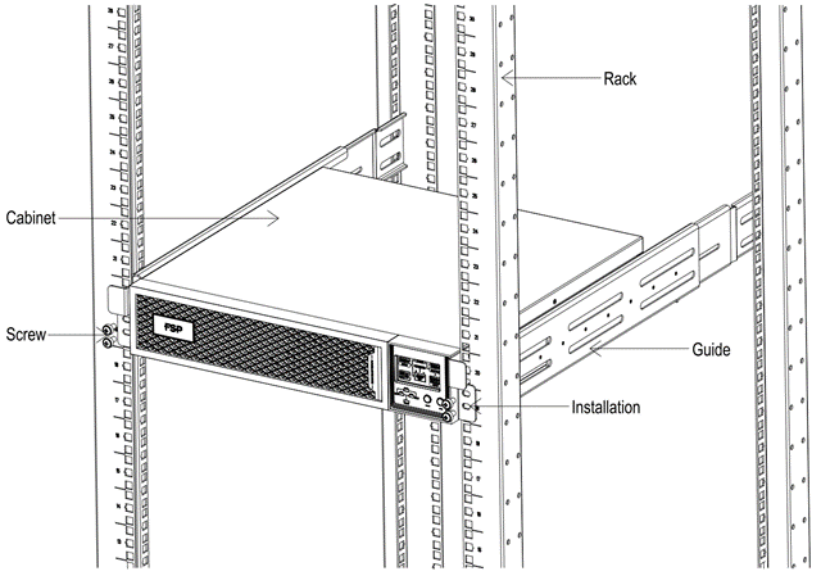


Figure 5-8 Install the cabinet

5.3 External Battery Cable Connection

1) The standard battery pack voltage is 36VDC/1kVA, 72VDC/2kVA, and 96VDC/3kVA, which are respectively composed of 3, 6, and 8Pcs 12VDC single-cell batteries of the same voltage and model connected in series.
2) A DC breaker must be connected between the battery and the UPS, and the breaker must be open before connecting the battery cable.
3) The battery connection cable should be the same type as the input and output power cables.

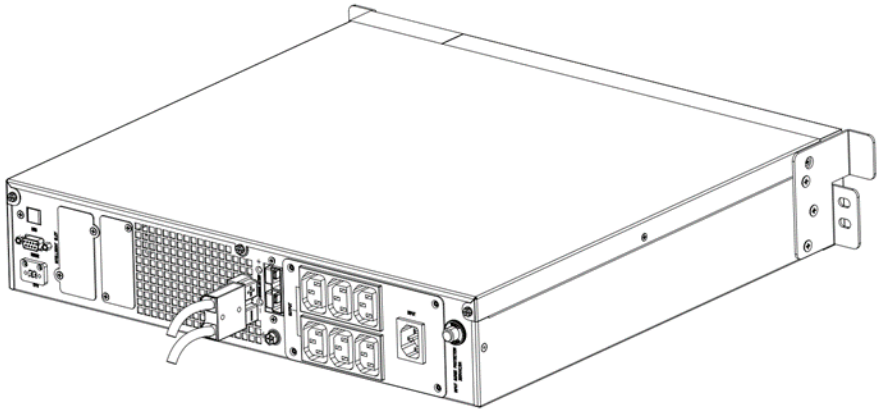


Figure 5-9 Battery port

4) The accessories delivered with the machine include a battery connection cable. One end of the cable is a plug for connecting to the UPS, and the other end is two open wires (red and black) for connecting to the battery pack.

5) Connect the red wire to the battery "+" pole and the black wire to the battery "-" pole. Please ensure that the connection is firm.

6) Insert the battery plug into the battery socket on the rear panel of the UPS.

7) Do not attempt to connect any load before connecting the battery cable. After the battery cable is connected, turn on the battery breaker, then turn on the input breaker, and the UPS will start and charge the battery.

Note: All battery cables have been connected and confirmed before inserting the battery plug into the battery socket. Otherwise, electrical breakdown may occur.

6. LCD Operation & Instructions

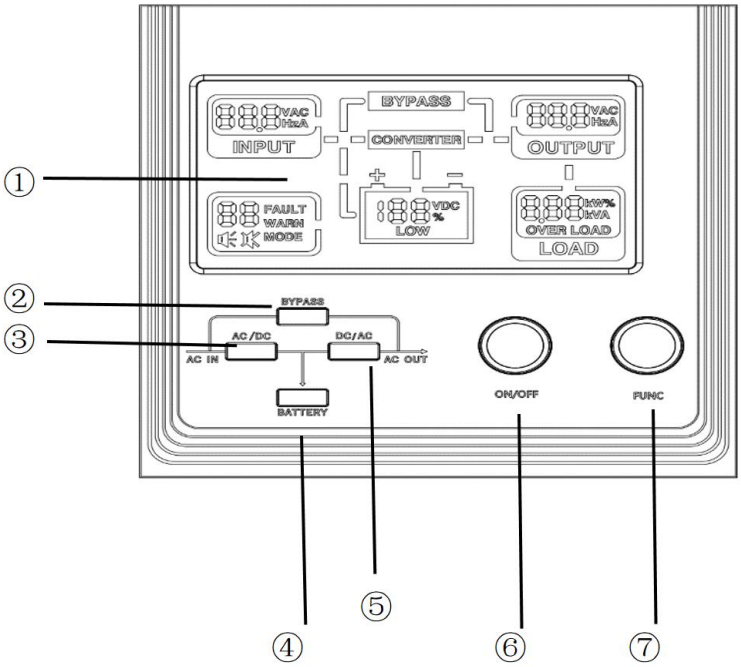


Figure 6-1 1-3K UPS LCD Screen

6.1 Description of Panel

Control button	Description
6 ON/OFF	1. Press ON/OFF for 2.5s to start UPS when utility is normal. NOTE: *It only bases on default setting (manual start)* 2. Press ON/OFF for 2.5s to power on the auxiliary power, press again to start from battery when there is buzzer alarms. 3. Press ON/OFF for 2.5s to shutdown inverter and transfer to bypass when UPS is in normal mode.

	4. Press ON/OFF for 2.5s to shutdown UPS completely when UPS is in battery mode, wait for about 10s will be powered off. 5. In the parameter setting state, ON/OFF key is a " confirmation key".
7 FUNC	1. Press FUNC button to transfer in different menus. 2. Press FUNC button for 3 seconds to mute off. 3. Press FUNC and ON/OFF together for 2.5 seconds to set rated parameters when auxiliary power is on.
Indicators	**Description**
3 AC/DC	Rectifier indicator: green--rectifier is working. green flicker--rectifier is starting. dark—rectifier is not working.
5 DC/AC	Inverter indicator: green--inverter is working. green flicker--inverter is starting or the inverter is waiting (ECO mode), along with inverter alarm. dark—inverter is not working.
2 BYPASS	Bypass indicator: yellow—bypass is working. yellow flicker—Bypass alarms. dark—bypass is not working.
4 BATTERY	Battery indicator: yellow—battery discharge. yellow flicker—battery isn't connected, low or charger is failed. dark—battery is connected and full.

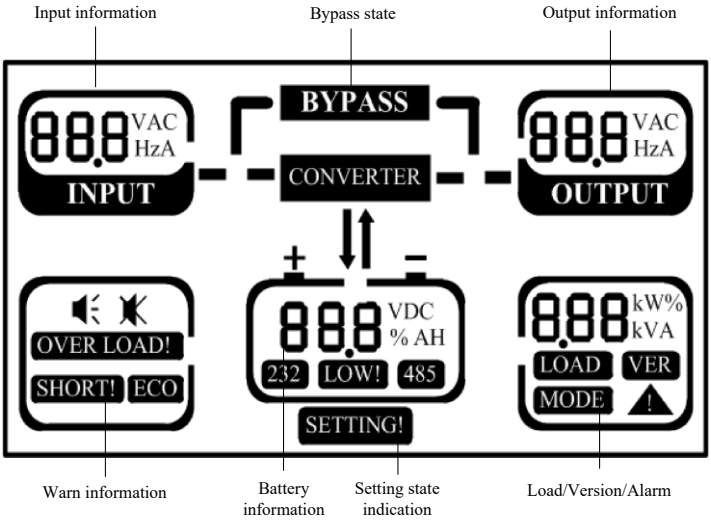


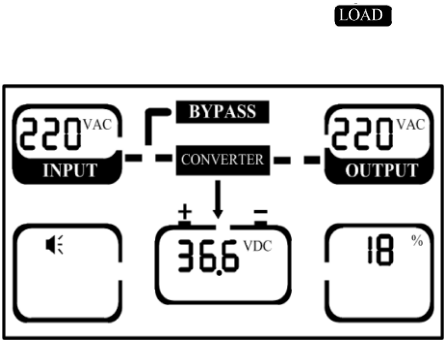
Figure 6-2 LCD main menu

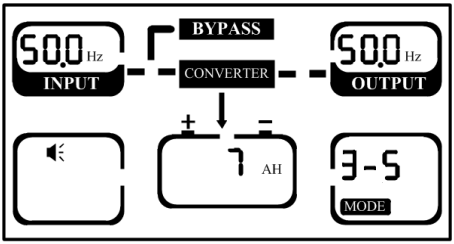
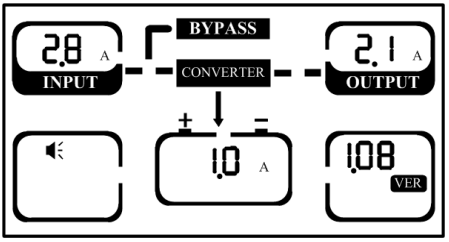
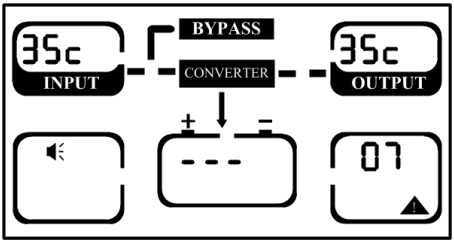
6.2 Description of Main Menu

Menu	Menu information
Input information	Input voltage (VAC) / frequency (Hz) / current (A)
Output information	Output voltage (VAC) / frequency (Hz) / current(A)
Warn information	: mute on/mute off (press and hold “FUNC” to mute off) OVER LOAD!: system output overload SHORT: output short-circuit ECO: working in the ECO mode
Battery information	Battery voltage (VDC) Battery voltage charging/discharging current (A) Battery Capacity (AH) LOW!: Battery low warning
Load / Version/ Alarm code	LOAD: Display load information Active load (KW) Apparent load (KVA) Load percentage (%)

	VER: system monitoring version MODE: S-Single mode, E-ECO mode ⚠: Display system alarm code, the detail list is shown in "chapter 9 Trouble shooting"
Others	BYPASS: working in bypass mode SETTING: LCD is on the setting page

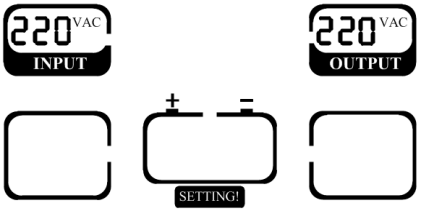
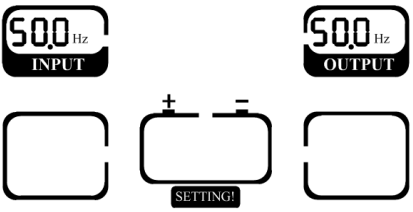
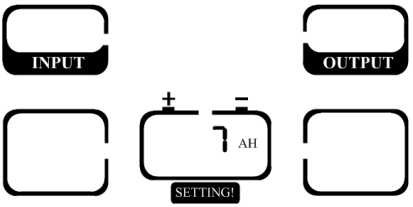
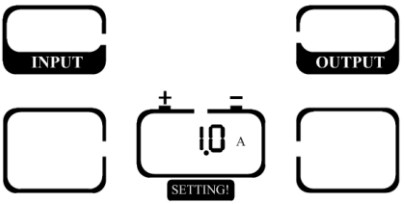
To view the LCD menu, press "FUNC" to turn the page:

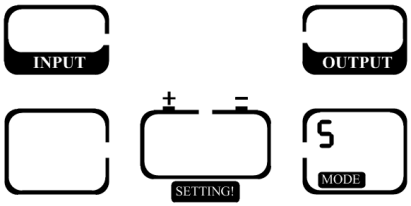
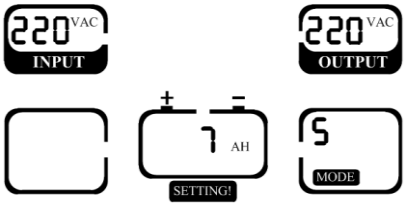
Page	Description
	First page: INPUT voltage: 230VAC OUTPUT voltage: 230VAC Battery voltage: 36.6VDC LOAD percentage: 18% Active load, apparent load, load percentage will display in turn in 1s Press and hold "FUNC" to mute off on this page

	Second page: INPUT frequency: 50Hz OUTPUT frequency: 50Hz Battery capacity: 7AH (settable) MODE: 3-S 3KW Single UPS Front position 1/2/3: Model power 1/2/3KW Rear position S/L: Standard/Long backup type
	Third page: INPUT current: 2.8A OUTPUT current: 2.1A Battery current: 1A (↑ discharging ↓ charging) VER software version: V1.08
	Fourth page: INPUT: Rectifier temperature 35℃ OUTPUT: Inverter temperature 35℃ External environment temperature: 30℃ (When the external temperature sensor is not option, it will display ”---“) ⚠ Alarm code: 07 Press and hold “FUNC” to operate fault clear on this page

6.3 Parameter Settings

When you set the system rated parameters through the LCD, press the "ON/OFF" and "FUNC" keys simultaneously for two seconds while the LCD is working, the system enters the parameter display interface, press "FUNC" to enter the function code input page, and enter the function Code (233) to enter the setting page. The "SETTING" will be displayed in the middle of the bottom, and all 4 LED indicators are flashing.

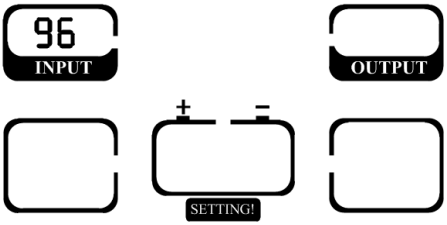
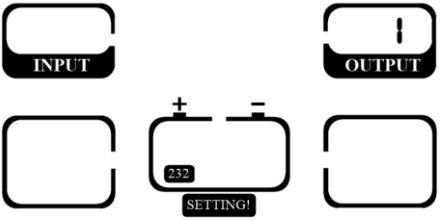
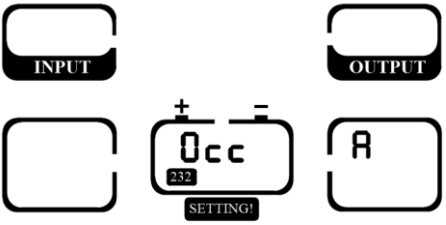
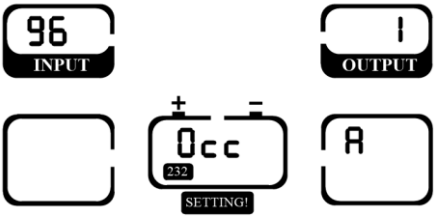
Rated voltage setting	Rated voltage settable: 200VAC/208VAC/ 220VAC/230VAC/240VAC. Select the parameter by pressing the "FUNC" button, after selection, confirm the setting with "ON/OFF" and enter the next setting	
Rated frequency setting	Rated frequency settable: 50Hz/60Hz. Select the parameter by pressing the "FUNC" button, after selection, confirm the setting with "ON/OFF" and enter the next setting	
Rated capacity setting	Rated frequency settable: 7AH/9AH/12AH/24AH/36AH/48AH/ 100AH/200AH. Select the parameter by pressing the "FUNC" button, after selection, confirm the setting with "ON/OFF" and enter the next setting	
Charging current setting	Charging current settable: Standard type: 1A (Unsettable) Long backup type: 1-12A Select the parameter by pressing the "FUNC" button, after selection, confirm the setting with "ON/OFF" and enter the next setting	

System mode setting	S-single mode E- ECO mode Select the parameter by pressing the "FUNC" button, after selection, confirm the setting with "ON/OFF" and enter the next setting	
Setting complete	After all the above parameters are set, all the rated setting parameters will be displayed, confirm the settings and press "ON/OFF" to exit. Press "FUNC" to reset. The rated voltage and rated frequency settings will take effect after the machine is powered on again, and other settings will take effect immediately.	

Note: When the rated voltage is 200VAC or 208VAC, the output power factor will be automatically reduced to 0.9. If you need to set other more parameters, please connect to the background software.

6.4 Communication Protocol Settings

When you set the system rated parameters through the LCD, press the "ON/OFF" and "FUNC" keys simultaneously for two seconds while the LCD is working, the system enters the parameter display interface, press "FUNC" to enter the function code input page, and enter the function Code (232) or (485) to enter the Communication Protocol Setting page. The "SETTING" will be displayed in the middle of the bottom, and all 4 LED indicators are flashing.

Baud Rate Setting	Baud rate is 12/24/48/96/122 /192, which is corresponding to 1200/2400/4800/9600/12200 /19200. Select the parameter by pressing the "FUNC" button, after selection and confirm the setting with "ON/OFF" and enter the next setting.	
Address setting	Communication address can be selected from 1 to 32. Select the parameter by pressing the "FUNC" button, after selection and confirm the setting with "ON/OFF" and enter the next setting.	
Protocol setting	The communication protocol can be 0cc or 1cc, corresponding to the ASCII/RTU protocol. Note: RS485 communication protocol optional 2cc is lithium battery BMS communication protocol	
Setting complete	After all the above parameters are set, all the rated setting parameters will be displayed, confirm the settings and press "ON/OFF" to exit. Press "FUNC" to reset. The rated voltage and rated frequency settings will take effect after the machine is	

	powered on again, and other settings will take effect immediately.	

7. Operation & Working

7.1 Operation

7.1.1 Turn on the UPS in normal mode

1) After you make sure that the power supply connections is correct, and then close the battery breaker (this step only for long backup time model), after that turn on the input breaker, at this time the fans rotate, and UPS is on.
2) Press the "ON/OFF" button for 2 seconds and the machine will start automatically.

Note: This step will be different if the UPS is not powered on by default.

3) Wait about 30 seconds, the UPS turn into normal inverter mode. If the utility power is abnormal, the UPS will operate in Battery mode.

7.1.2 Turn on the UPS from battery without utility power

1) After you make sure that the power supply connections is correct, and then close the battery breaker (this step only for long backup time model)
2) Press ON/OFF for about 2 seconds, the fans rotate, and auxiliary power is on.
3) Pressing the ON/OFF button continuously for more than 2.5 seconds when buzzer is beeping. Battery LED is yellow then the inverter indicator starts flashing green. Wait about 20 seconds, the UPS inverter is on. The UPS operates in battery discharge mode.

7.1.3 Turn off the UPS in normal mode

1) Remove the load and press ON/OFF button for 3 seconds in condition of normal mode, UPS will shut down the inverter or transfer to bypass mode.
2) If it's an external battery model, open the input and battery breaker, UPS will shut down completely.
3) If it's an internal battery model, after opening the input breaker, press ON/OFF button for 2.5s seconds and UPS will shut down completely after a few seconds.

7.1.4 Turn off the UPS in battery mode

1) Press ON/OFF button for 3 seconds, UPS will shuts down the inverter and completely power off after a few seconds.
2) For external battery model, open the battery breaker after powering off the UPS.

Note:

Disconnect the load before shutting down the UPS. And turning off the load before turning up, wait for the machine to be fully turned on, then add the load one by one.

7.2 Operation Mode

7.2.1 Normal Mode

When UPS operating in the normal mode, the LED of rectifier and inverter are steady green, and bypass indicator LED is off, battery LED is yellow, the load is powered by inverter. If the battery isn't full enough, the UPS will charge the battery at the same time.

7.2.2 Battery Mode

The UPS will transfer to the battery discharging mode when the utility is abnormal, which means that the load is powered by the battery stored energy through inverter. When the battery backup time is approaching, the UPS will alarm. And UPS will shut down the inverter when the battery voltage reaches to the end of discharge point, in case over-discharge. After a certain time, if the utility is not yet normal, the system will shut down all the power supply.

Note: Do not touch the port; it still has strong power at this time.

8. Battery Repair, Maintenance & Disposal

8.1 Battery Repair & Maintenance

This series UPS adopts a minimum maintenance design, the battery adopts maintenance-free, sealed, valve-regulated lead-acid battery. When the utility power is normal, regardless of whether the UPS is in inverter power supply, the UPS will charge the battery and provide overcharge and over-discharge protection.

- If the battery has not worked for a long time, it needs to be charged every 4 to 6 months.
- If the battery works in hot areas, it needs to be charged and discharged once in 2 months, and the charging time is not less than 12 hours per charge.
- The life of the battery can reach 3 to 5 years normally, if it works in a harsh environment, the battery life will be greatly shortened, and needs to be replaced early.
- Battery replacement needs to be carried out by qualified personnel.
- Use the same voltage, model and number of batteries to replace then old battery.
- Batteries cannot be replaced only partially. All batteries need to be replaced at once under the guidance of the manufacturer.

8.2 Battery Disposal and Replacement Procedures

8.2.1 Battery disposal procedure

1) Before disposing of batteries, please remove jewelry, watches and other metal objects.
2) Wear rubber gloves and boots, use tools with insulated handles.
3) If it is necessary to replace battery cables, please purchase the original materials from the authorized distributors or service centers, so as to avoid cable overheating or voltage breakdown due to insufficient capacity.
4) Do not place batteries near heat sources.
5) Do not open or mutilate batteries, released electrolyte is highly poisonous and harmful to the skin and eyes.
6) Do not short the positive and negative of the battery electrode, otherwise, it may result in electric shock or fire.
7) Ensure that the battery has no voltage before operation. If the circuit is not disconnected,

there may be hazardous voltage between the battery terminals and the ground.

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

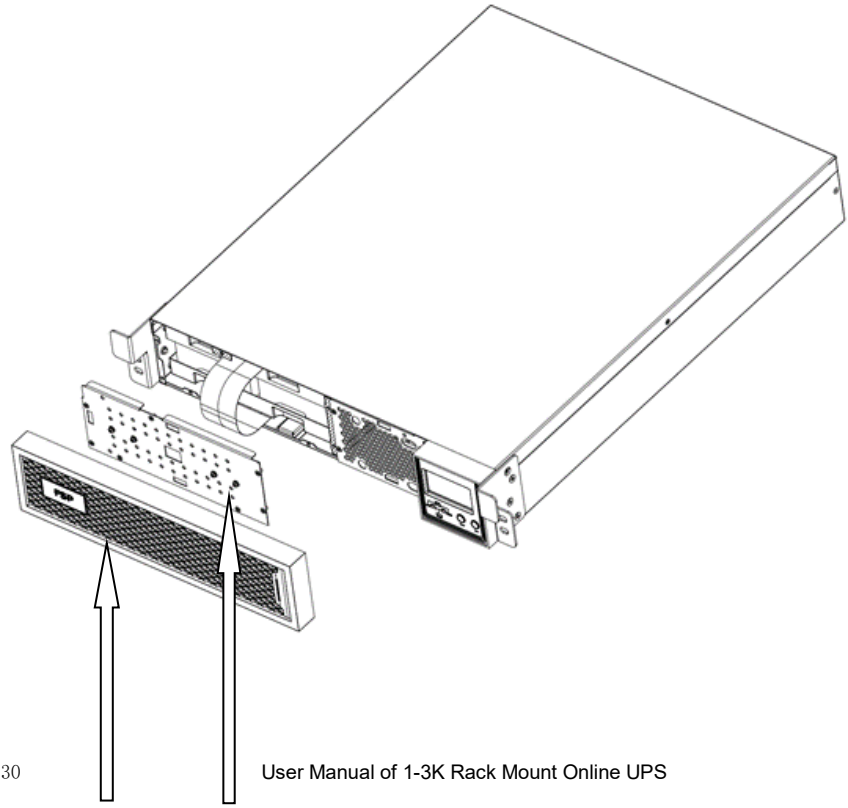
9) Batteries contain hazardous voltage and current. Battery maintenance such as the battery replacement must be carried out by qualified personnel who are knowledgeable about batteries. No other persons should handle the batteries.

8.2.2 Replace internal battery box

Battery box Replacement Procedures

1) Press and hold the ON/OFF button to power off the UPS. Replace the battery when the screen is off.

2) Gently remove the front plastic panel from the UPS, loosen and remove the screws from the battery door, and collect the accessories for assembly. As shown in Figure 8-1.



Plastic panel

Battery door

Figure 8-1 Remove the front plastic panel and battery door

3) Gently pull out the battery cable to disconnect the battery connection cable, as shown in

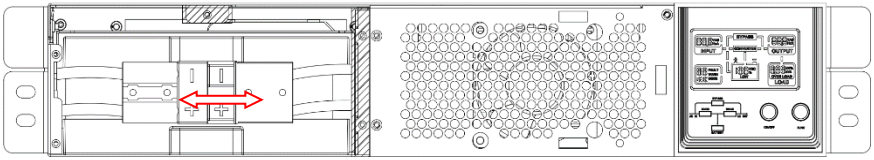
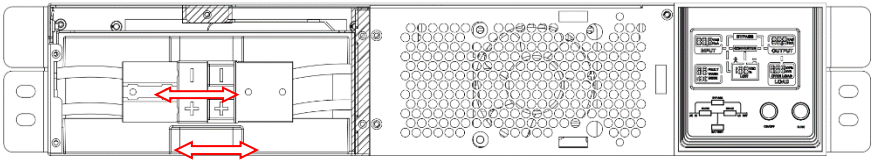


Figure 8-2.

Champ RM+1K Front view



Champ RM+2K 3K Front view

Figure 8-2 Disconnecting the battery cable (front view)

4) Hold the battery handle and pull the internal battery box out of the UPS. As shown in Figure 8-3.

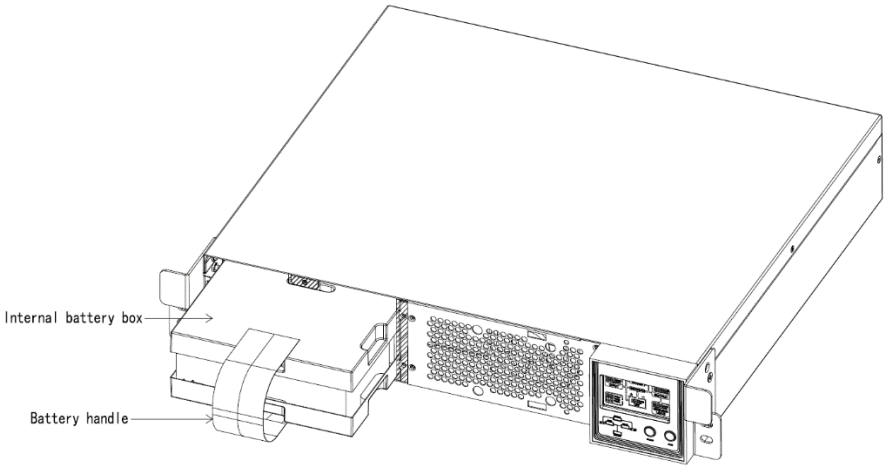


Figure 8-3 Pull out the Internal battery box

5) Unpack the new internal battery box, being careful not to damage it. Compare the old and new internal battery boxes to make sure they are identical. If they are identical, proceed to step 6; otherwise, stop and contact your local dealer.
6) Align and push in the new internal battery compartment.
7) Reconnect the battery plug and battery socket, and gently push the battery cable and internal battery box into the UPS.
8) Reattach the battery door using the 3 screws.
9) Reinstall the front plastic panel of the UPS.

9. Trouble Shooting

If your UPS has an abnormal condition, please check and troubleshoot according to the following table, press the "FUNC" button to obtain the fault code and alarm code, each code representing a different fault. If the problem is still there, please contact the dealer or our customer service directly. The list of faults code is as follows:

Code	Event	Alarm or fault cause	Solutions
7	Warn: Battery not connected	Battery not connected or battery damage	Check battery connections. Check battery breaker (external) or whether the battery fuse is disconnected. Check whether the battery is damaged.
10	Warn: EPO	Emergency power off	Please check: Whether the EPO terminal on the back panel is properly plugged in and whether the shorting piece is loose. Whether there is a remote EPO button and have the trigger order.
12	Warn: Insufficient capacity	Exceeds the normal operating voltage range of the utility and the load rate exceeds the derating standard	Check whether the voltage of utility (Normal range: 176V-276V) is out of range or load rate exceeds the derating standard (<50% load @276VAC~300VAC, 100%~50% load derating linearly@176VAC~110VAC)
16	Warn: Input voltage abnormal	Utility is failed or abnormal	Check whether the utility supply is normal. Check the voltage of utility (Normal range: 176V-276V) or frequency is out of UPS operating range
		Input surge protector operation	If utility is normal but rectifier is not working, please check whether the input surge protector is protected.
18	Warn: Input phase sequence reverse/PE not grounded	Input phase sequence reverse	Please check whether the input neutral and live wires are connected reversely.
		protective ground PE	Check whether the input PE line is

		line not connected	connected to the UPS rear panel. If the PE line is connected, please contact our customer service in time. If the PE line is not connected, please turn off the UPS and reconnect the ground wire.
20	Warn: Bypass voltage abnormal	Bypass voltage is out of operating range or no bypass voltage	Check whether the utility is indeed over operating range.
22	Warn: Output relay failed	Output relay failed	Please contact with distributer or service center.
24	Warn: Bypass over load	Load is on bypass and overload	Remove some loads to ensure that total loads is less than 95% of rated capacity.
26	Warn: Bypass overload timeout	Load is on bypass and overload. Overload time is longer than the time limit. At that time UPS will shut down output	Remove some loads and restart UPS again. When UPS is working normally, turn on loads one by one.
30	Warn: Transfer times over limit in 1 hour	Transfer times between inverter and bypass is over 5 times in recent 1 hour. UPS will work in bypass mode.	Check if output is overload or some loads are shorted. Remove the shorted loads and restart the UPS or wait for the system starting inverter automatically.
32	Warn: output shorted	Output shorted	Turn off the UPS, remove all loads, check that the load has no fails or internal short, and restart the UPS. If fails, please contact your distributer.
34	Warn: End of battery discharge	If there still isn't normal utility after battery discharge to the end of discharge point, UPS output will be shut down.	Please save your data when UPS alarm "utility fail"

38	Warn: Battery test failed	Battery low or load is too low	Please make sure that the battery voltage is higher than the set battery voltage and that the UPS load ratio is greater than 30%
47	Fault: Rectifier fault	Bus over voltage or under voltage, rectifier soft-start failed, input fuse is blow up	Please contact with distributer or service center.
49	Fault: Inverter fault	Inverter over voltage, inverter under voltage	Please contact with distributer or service center.
51	Fault: UPS over temperature	Environment temperature is higher than permitted point, ventilation is blocked	Please ensure there is nothing blocking ventilation and environmental temp must be 0~40°C.
53	Fault: Fan fault	One or more fans are fault, fan wires are loosen	Please contact with distributer or service center.
55	Warn: Inverter overload	Loads work in main and inverter overload	Remove some loads to ensure that total loads is under the rated capacity.
57	Warn: Inverter overload timeout	Inverter overload timeout, UPS will transfer to bypass mode if bypass is available	Remove loads to under 95%, UPS will transfer to inverter automatically.
59	Fault: Inverter over temperature	Environment temperature is higher than permitted point, ventilation is blocked	Please ensure there is nothing blocking ventilation and environmental temperature must be 0~40°C.
65	Fault: Battery low	UPS works in battery and battery voltage is low	Keep your data until the utility is recover or the battery is shut down due to low voltage.
71	Fault: Charger fault	The battery charger fault	Please contact with distributer or service center.
74	Warn: Manual shutdown	UPS shuts down output or transfer to	/

		bypass mode	
87	Fault: Model error	Model identification error	Please contact with distributer or service center.
100	Auxiliary power error	Auxiliary power error	Please contact with distributer or service center.
/	Battery discharge time reduction	The battery is undercharged	Keep the UPS connect to utility for more than 10 hours to allow the battery to recharge.
		UPS overload	Check load capacity and remove non-critical equipment.
		Battery aging	Replace the battery. Please contact the distributer or service center to obtain the accessories required for battery replacement.
95	Warn: Lithium battery relay fault	Lithium battery charging relay fault	Please contact with distributer or service center.
97	Warning: Lithium battery communication fault	Lithium battery communication connection have problem	Check the lithium battery communication cable connection.

Notice: When you need to report a fault to customer service, please be sure to record and inform the following information:

◆***Nameplate information, record the UPS model and series number (UPS NO.)***

◆***The date of the failure, fault condition status***

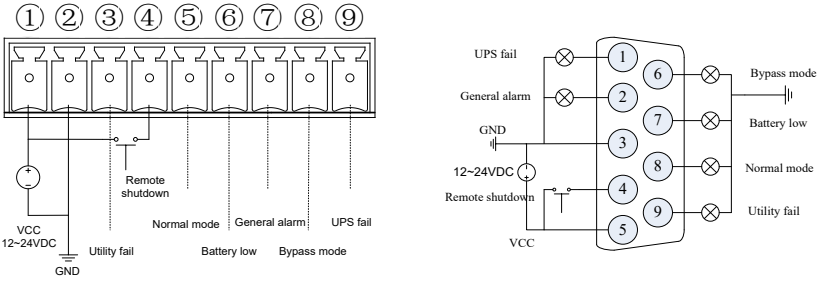
◆***Complete description (indicators display, buzzer beeps, power condition, load capacity), configuration of batter if it is a long backup time model***

Annex A. Dry Contact

Dry contact

There are two types of interfaces available: pluggable and non-pluggable.

The functions are listed as Figure-10



Phoenix port **DB9 port**

Figure-10 Wiring diagram of Intelligent slot

Description of phoenix port:

Function	Description
UPS fail	Low electric level: UPS failure
General alarm	Low electric level: UPS abnormal
GND	/
Remote shutdown	Normal utility: UPS turns off rectifier and inverter; Battery mode: Turns off the UPS High electric level: Remote shutdown
Power supply	12VDC~24VDC
Bypass mode	High electric level: UPS works in bypass mode.
Battery low	Low electric level: Battery voltage is low
Normal mode	High electric level: UPS works in normal mode
Utility fail	Low electric level: Utility is failure

EPO

EPO (emergency power off) is optional function to shutdown UPS completely at emergency condition. This function can be activated through a remote contact provided by the customers. It requires opening between NO and +24V normally. EPO is activated when shorting the NO and +24V.

Description of Input Port for Remote EPO:

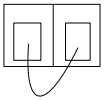


Figure 9　Short to active the EPO

RS485

RS485 communication port will be used when optional lithium battery model communication, the default baud rate is 9600bps.

RS485 port definition	
RJ45 PIN	Definition
1、8	RS485-B
2、7	RS485-A

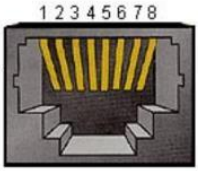
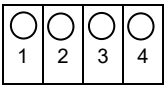


Figure-11 RS485 port definition

Lithium battery dry contact

When choosing a lithium battery model, use the lithium battery dry contact interface.



Dry contact interface definition:

Interface definition	Description
1: BAT_CHG_BMS_DRV	Low electric level trigger battery charge disable enable
2: GND	Ground signal
3: BAT_DISCHG_BMS_DRV	Low electric level trigger battery discharge disable enable
4: GND	Ground signal