



FOREWORD

Summary

Thank you for purchasing this UPS series.

This series is an intelligent, single-phase in/single-phase out, high-frequency online UPS designed by our R&D team with years of experience in UPS development. It features excellent electrical performance, intelligent monitoring and network capabilities, a smart and compact design, and full compliance with EMC and safety standards.

Please read this manual carefully before installation.

This manual provides technical guidance for the operation of the equipment.

For disposal:

Please contact the nearest authorized hazardous waste disposal facility when disposing of the product or its components.

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The information in this document is subject to change without notice.

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1. Safety



Important Safety Instructions – Save These Instructions

Dangerous voltage and high temperatures exist inside the UPS. During installation, operation, and maintenance, please follow local safety guidelines and applicable laws. Failure to do so may result in personal injury or equipment damage. The safety instructions in this manual are intended to supplement local safety regulations. Our company assumes no liability for damages caused by disregarding safety instructions.

1.1 Safety Notes

1. Even when not connected to utility power, 208/220/230/240VAC voltage may still be present at the UPS terminals.
2. For personal safety, ensure the UPS is properly grounded before starting operation.
3. Do not open or damage the battery. The electrolyte is highly toxic and harmful to the body.
4. Please avoid short circuits between the battery's anode and cathode—this may cause sparks or fire.
5. Do not disassemble the UPS cover; doing so may expose you to electric shock.
6. Check for high voltage before touching the battery.
7. The operating environment and storage conditions affect the lifetime and reliability of the UPS. Avoid prolonged operation under the following conditions:
 - Areas where humidity and temperature exceed specified limits (Temperature: 0–40°C, Relative Humidity: 5%–95%)
 - Direct sunlight or proximity to heat sources
 - Vibration-prone areas or places where the UPS may be subjected to impact
 - Areas with corrosive gases, flammable gases, or excessive dust
9. Ensure adequate ventilation. Poor ventilation may cause internal components to overheat, reducing the UPS's lifespan.
10. Installation and wiring must comply with local electrical laws and regulations.

1.2 Symbols Used in This Guide

Symbol	Description
 WARNING!	Risk of electric shock.
 CAUTION!	Read this information carefully to avoid equipment damage.

2. Main Features

2.1 Summary

This series of UPS is a single-phase input, single-phase output, high-frequency online UPS.

It effectively addresses most power supply issues such as blackouts, over-voltage, under-voltage, sudden voltage drops, voltage sags, high-voltage pulses, voltage fluctuations, surges, inrush currents, harmonic distortion (THD), noise interference, and frequency fluctuations.

This UPS is suitable for a wide range of applications, including computer devices, automation equipment, communication systems, and light industrial machinery.

2.2 Functions and Features

Integrated Solution for Data Centers

The UPS can be integrated with a battery cabinet, making it an excellent choice for data center environments.

Digital Control

This series is controlled by a Digital Signal Processor (DSP), which enhances reliability, performance, self-protection, self-diagnostics, and system response.

- **Configurable Battery Setup**

The UPS supports flexible battery configurations—from 16 to 20 blocks. You can choose between 16, 18, or 20 battery blocks based on your specific requirements.

- **Configurable Charging Current**

Using the configuration tool, users can set battery capacity and adjust the charging current accordingly. The system can automatically and seamlessly switch between constant voltage mode, constant current mode, and floating mode.

- **Intelligent Charging Method**

This series adopts an advanced three-stage charging system:

Stage 1: Constant Current Charging – Provides high current to charge up to 90% capacity.

Stage 2: Constant Voltage Charging – Ensures the batteries are fully charged while revitalizing them.

Stage 3: Floating Charge Mode – Maintains charge and extends battery life.

This method maximizes battery life and ensures rapid, efficient charging.

- **LCD Display**

With combined LCD and LED indicators, users can easily view the UPS status and key operational parameters such as input/output voltage, frequency, load percentage, battery level, and ambient temperature.

- **Intelligent Monitoring Function**

Through an optional SNMP card, the UPS can be remotely monitored and controlled.

- **EPO (Emergency Power Off) Function**

The UPS can be completely shut down when the EPO function is triggered, ensuring safety during emergencies.

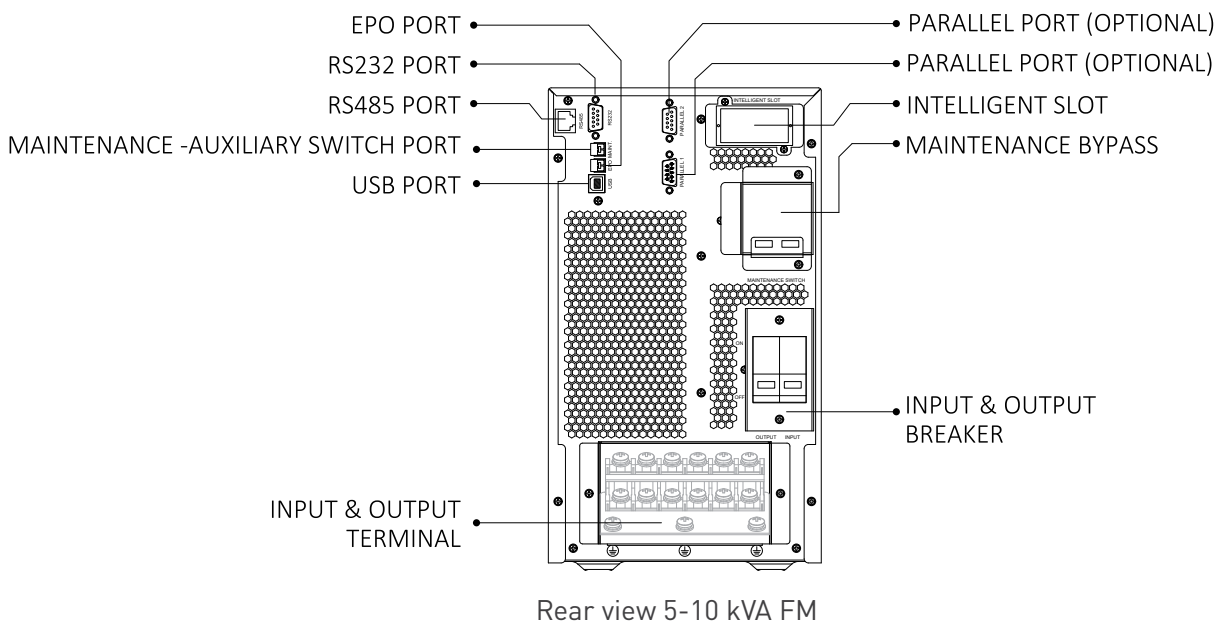
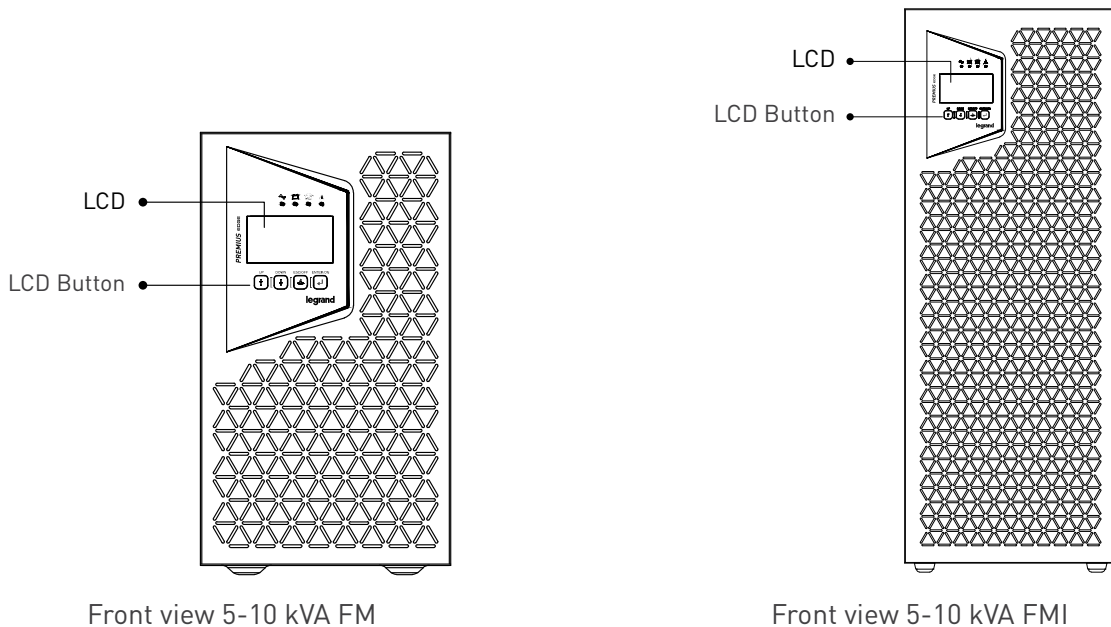
3. Installation

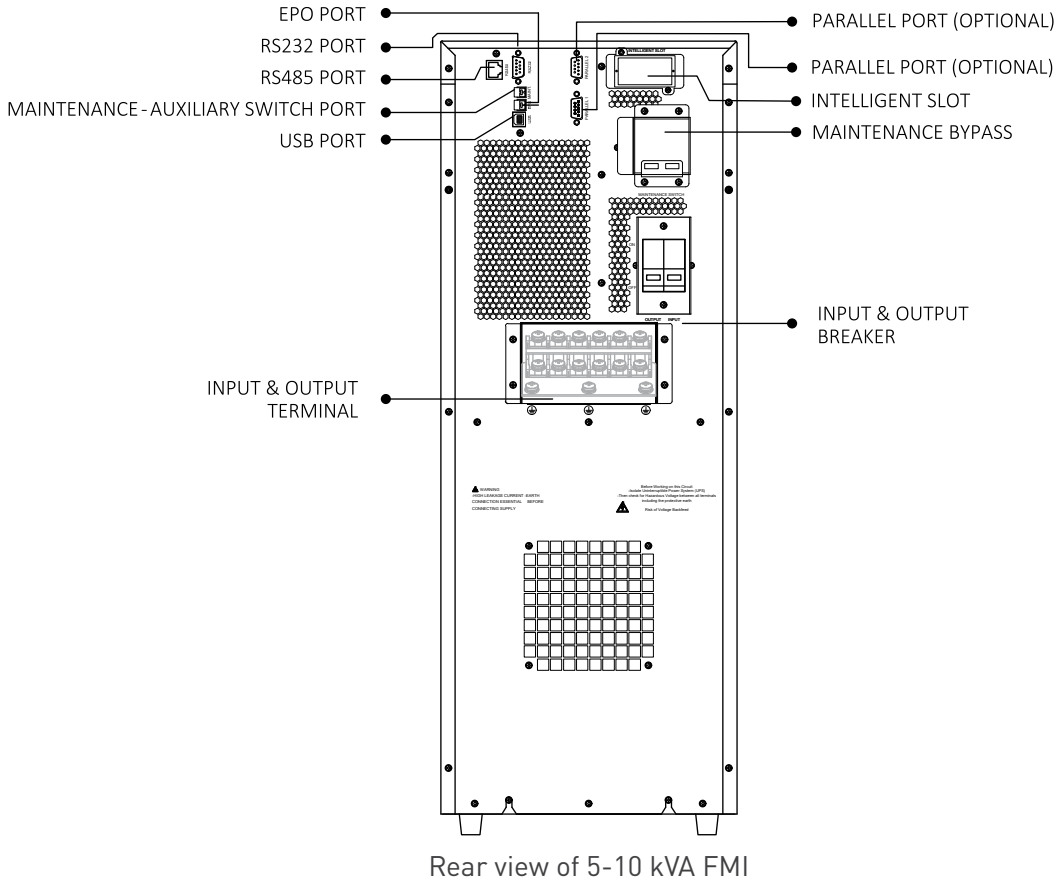
3.1 UPS Models

Rating	Model
6 kVA FM	PREMIUS EDGE 6 kVA FM
6 kVA FMI	PREMIUS EDGE 6 kVA FMI
10 kVA FM	PREMIUS EDGE 10 kVA FM
10 kVA FMI	PREMIUS EDGE 10 kVA FMI

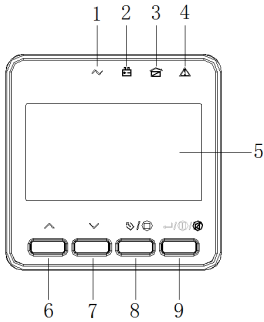
Rating	Model
5 kVA FM	PREMIUS EDGE 5 kVA FM
5 kVA FMI	PREMIUS EDGE 5 kVA FMI
7.5 kVA FM	PREMIUS EDGE 7.5 kVA FM
7.5 kVA FMI	PREMIUS EDGE 7.5 kVA FMI

3.2 Cabinet Outlook





3.3 LCD control panel



- (1) INVERTER LED
- (2) BATTERY LED
- (3) BYPASS LED
- (4) ALARM LED
- (5) LCD display
- (6) UP button
- (7) DOWN button
- (8) ESC /OFF button
- (9) ENTER/ON button

LCD control panel introduction

3.4 Installation notes

Note: For ease of operation and maintenance, ensure a clearance of at least **100 cm in front** and **80 cm at the rear** of the cabinet during installation.

- Place the UPS in a **clean and stable environment**, avoiding vibration, dust, humidity, flammable gases, and corrosive liquids. To prevent high room temperatures, it is recommended to install an **exhaust fan system**. Optional air filters are available if the UPS is operated in a dusty environment.
- The ambient temperature around the UPS should be maintained between **0 °C** and **40 °C**. If the temperature exceeds **40 °C**, the rated load capacity must be **reduced by 10% for every 4 °C increase**. The maximum operating temperature must not exceed **50 °C**.
- If the UPS is dismantled or transported in low temperatures, condensation may occur. **Do not install or operate** the UPS until both the **internal and external components are completely dry**, to avoid the risk of electric shock.

- Batteries must be installed in an environment that meets the specified temperature requirements, as temperature is a key factor in battery life and performance. Ideally, the battery temperature should be maintained between **15 °C** and **25 °C**. Keep batteries away from **heat sources** or **main air ventilation outlets**, etc.



WARNING!

Typical battery performance data is based on an operating temperature between **20 °C** and **25 °C**.

Operating above this range will **shorten battery life**, while operating below this range will **reduce battery capacity**.

- If the equipment is not installed immediately, it must be **stored in a clean, dry room**, protected from excessive humidity and heat sources.



CAUTION!

Unused batteries must be recharged **every 6 months** by temporarily connecting the UPS to a suitable AC power supply and activating it for the time required to fully recharge the batteries

- The maximum altitude at which the UPS can operate at **full load** is **1000 meters**. If installed at higher altitudes, the load capacity must be **reduced** according to the following table:

Altitude (m)	1000	2000	2500	3000
Load Coefficient	100%	90%	85%	80%

(Load coefficient = Max load at given altitude ÷ Nominal power of the UPS)

- Since the UPS relies on forced air cooling, it must be installed in a well-ventilated area. There are multiple ventilation holes on the front and rear panels—ensure they are not obstructed by any objects.

3.5 External Protective Devices

For safety reasons, it is necessary to install an external circuit breaker at the A.C. input supply and the battery connection. This chapter outlines guidelines for qualified installers, who must be knowledgeable about local wiring practices relevant to the equipment being installed.

- External Battery**

The UPS and its associated batteries are protected against over-current by a DC-compatible thermo-magnetic circuit breaker (or a set of fuses) located close to the battery.

- UPS Output**

Any external distribution board used for load distribution must be fitted with protective devices to prevent the risk of UPS overload.

- Over-current**

A protection device must be installed at the distribution panel where the main power supply enters. This device should match the current capacity of the power cables and account for the overload capacity of the system.

3.6 Power Cables

The cable design must comply with the voltage and current ratings provided in this section. Please follow local wiring standards and take into account environmental factors such as temperature and physical support media.



WARNING!

Before starting the system, ensure you are familiar with the location and operation of all external isolators connected to the UPS input/bypass supply from the mains distribution panel. These supplies must be electrically isolated, and appropriate warning signage should be displayed to prevent accidental operation.



CAUTION!

To maintain compliance with EMC directives applicable to products sold in Europe, the output cord attached to the UPS must not exceed 10 meters in length.

3.6.1 Recommended cross-sectional areas for power cables

UPS cabinet	Cable Dimension			
	AC Input (mm ²)	AC Output (mm ²)	DC Input (mm ²)	Grounding (mm ²)
5/6kVA	6	6	6	6
7.5/10kVA	10	10	10	10

- When selecting, connecting, and routing power cables, follow local safety regulations and standards.
- If external conditions—such as cable layout or ambient temperature—change, perform verification in accordance with local regulations.
- The nominal battery discharge current refers to the current of twenty 12V batteries connected in a standard 240V configuration.
- The battery cable specifications are selected based on a default setup of 16 batteries and are compatible with configurations using 16, 18, or 20 batteries.

3.6.2 Power cable connector requirements

Model	Connector	Connection Mode	Bolt Type	Bolt Hole Diameter	Torque
5/6kVA	Input connector	Crimped OT terminals	M4	4.5 mm	3 N•m
	Output connector	Crimped OT terminals	M4	4.5 mm	3 N•m
	Battery connector	Crimped OT terminals	M4	4.5 mm	3 N•m
	Grounding connector	Crimped OT terminals	M4	4.5 mm	3 N•m
7.5/10kVA	Input connector	Crimped OT terminals	M5	5 mm	5 N•m
	Output connector	Crimped OT terminals	M5	5 mm	5 N•m
	Battery connector	Crimped OT terminals	M5	5 mm	5 N•m
	Grounding connector	Crimped OT terminals	M5	5 mm	5 N•m

3.6.3 Recommended input front-end and output back-end circuit breakers

Model	Input circuit breaker	Maintenance circuit breaker	Output circuit breaker	Battery circuit breaker
5/6kVA	40A 1P	50A 1P	40A 1P	50A 2P
7.5/10kVA	63A 1P	63A 1P	63A 1P	63A 2P



Connect each cabinet to the main ground system using a protective earth cable. Ensure the grounding connection follows the shortest possible route.



Failure to follow adequate earthing procedures carries the risk of electromagnetic interference, electric shock, and fire hazards.

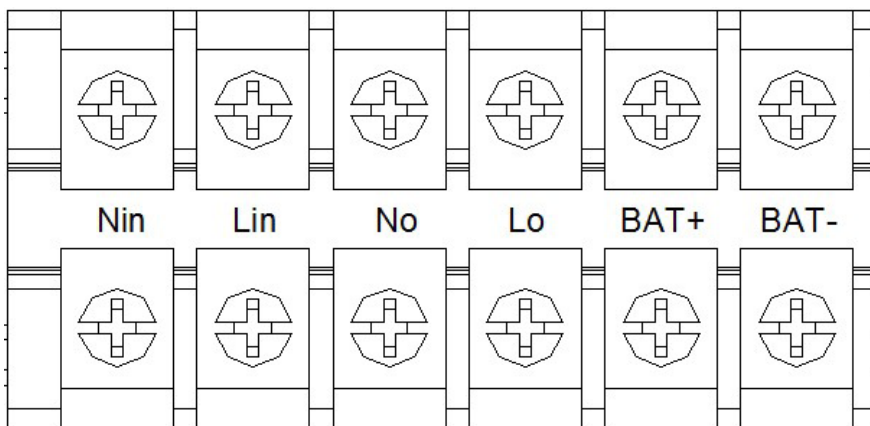
3.7 Power cable connect

Once the equipment has been properly positioned and secured, connect the power cables as described in the following procedure.

Ensure that the UPS is completely isolated from all external power sources and that all power isolators are in the open position. Electrically verify this isolation, and display appropriate warning signs to prevent inadvertent operation.

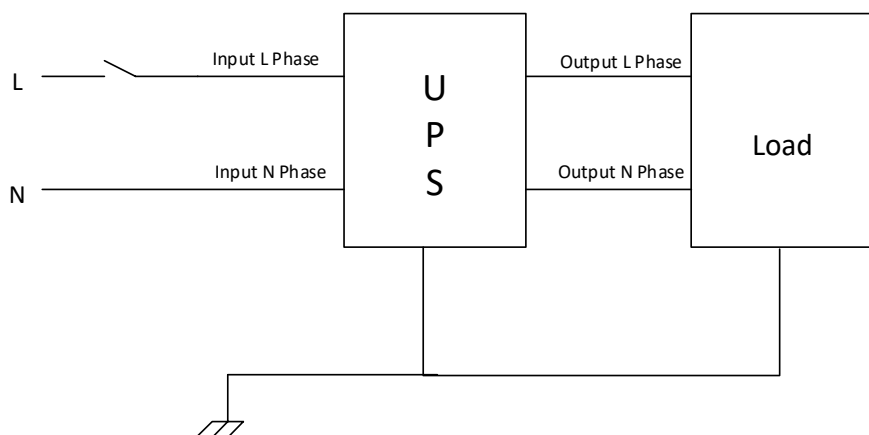
Open the UPS rear panel and remove the terminal cover to facilitate easy wiring.

3.7.1 Input connection



Lin	Primary input Phase L
Lo	Output Phase L
BAT+	Positive terminal of the batteries string
Nin	Primary input Phase N
No	Output Phase N
BAT-	Negative terminal of the batteries string
	Grounding

Choose appropriate power cable. (Refer to the table above) and pay attention to the diameter of the connection terminal of the cable that should be greater than or equal to that of the connection poles.





WARNING!

To ensure safety, if the load equipment is not prepared to receive power upon the commissioning engineer's arrival, ensure that the system output cables are safely isolated at their terminations.

Connect the safety earth and any required bonding earth cables to the copper earth screw located on the equipment's floor, beneath the power connections. Ensure all UPS cabinets are properly grounded.



CAUTION!

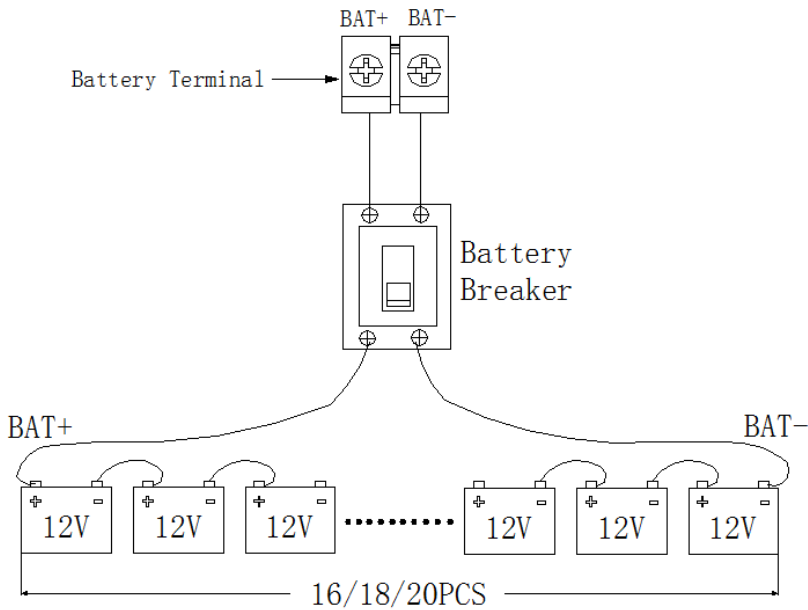
The earthing and neutral bonding arrangement must be in accordance with local and national codes of practice.

3.8 Battery connection

3.8.1 External battery connection

The UPS adopts positive and negative battery framework, total 20(optional 16/18) in series. The user can choose the capacity and the numbers of the batteries according to their desire.

External battery connections for PREMIUS units:



NOTE!

The BAT+ of the UPS connect poles is connected to the anode of the positive battery, the BAT- is connected to the cathode of the negative battery.

The battery quantity should be 16pcs or 18pcs or 20pcs. When connecting 16/18/20 batteries, please re-set desired battery quantity and its capacity after UPS starts at AC mode. Charger current could be adjusted automatically according to battery capacity selected. All related settings can be done through LCD panel or monitoring software



CAUTION!

Ensure correct polarity battery string series connection. I.e. inter-tier and inter block connections are from (+) to (-) terminals.

Don't mix batteries with different capacity or different brands, or even mix up new and old batteries, either.



WARNING!

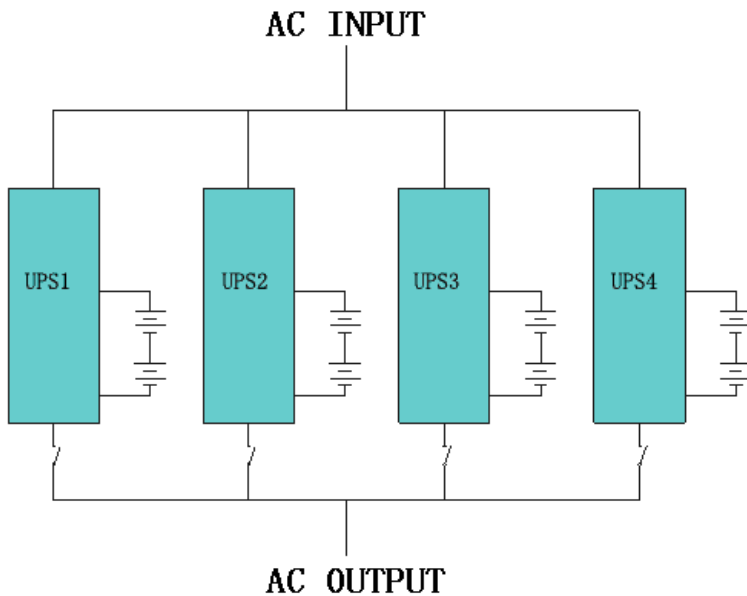
Ensure correct polarity of string end connections to the Battery Circuit Breaker and from the Battery Circuit Breaker to the UPS terminals i.e. (+) to (+) / (-) to (-) but disconnect one or more battery cell links in each tier. Do not reconnect these links and do not close the battery circuit breaker unless authorized by the commissioning engineer.

3.9 UPS parallel Installation

The following sections introduce the installation procedures specified to the parallel system.

3.9.1 Cabinet installation

Connect all the UPS needed to be put into parallel system as below picture.



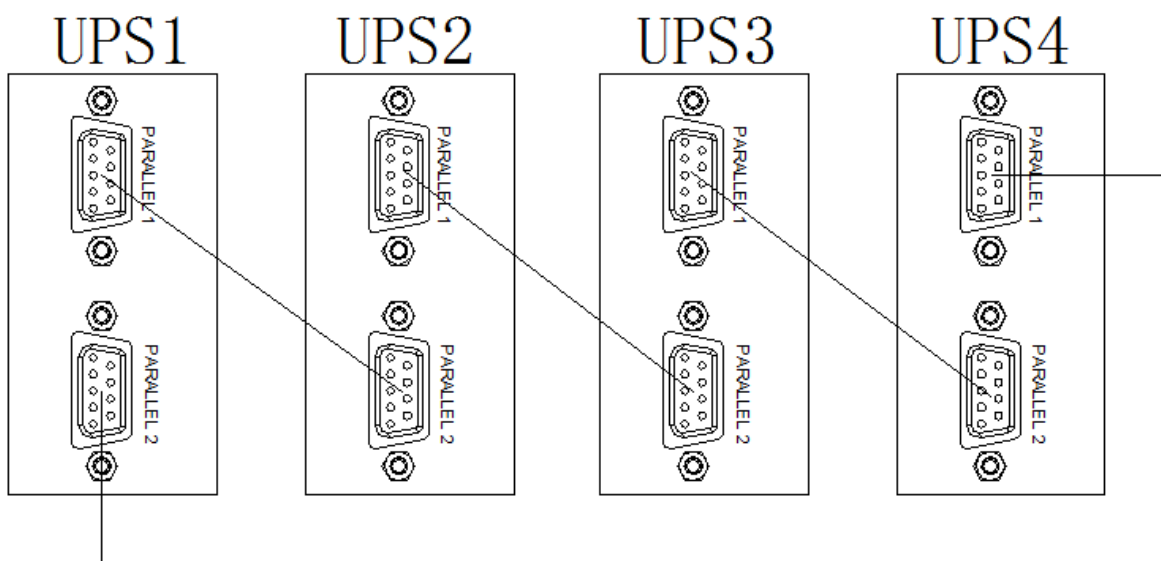
WARNING!

Make sure the L, N lines are correct, and grounding is well connected. Each battery groups of UPS only be connected separately.

Make sure each UPS input breaker is in "off" position and there is no output from each UPS connected.

3.9.2 Parallel cable installation

Shielded and double insulated control cables available must be interconnected in a ring configuration between UPS units as shown below. The ring configuration ensures high reliability of the control.



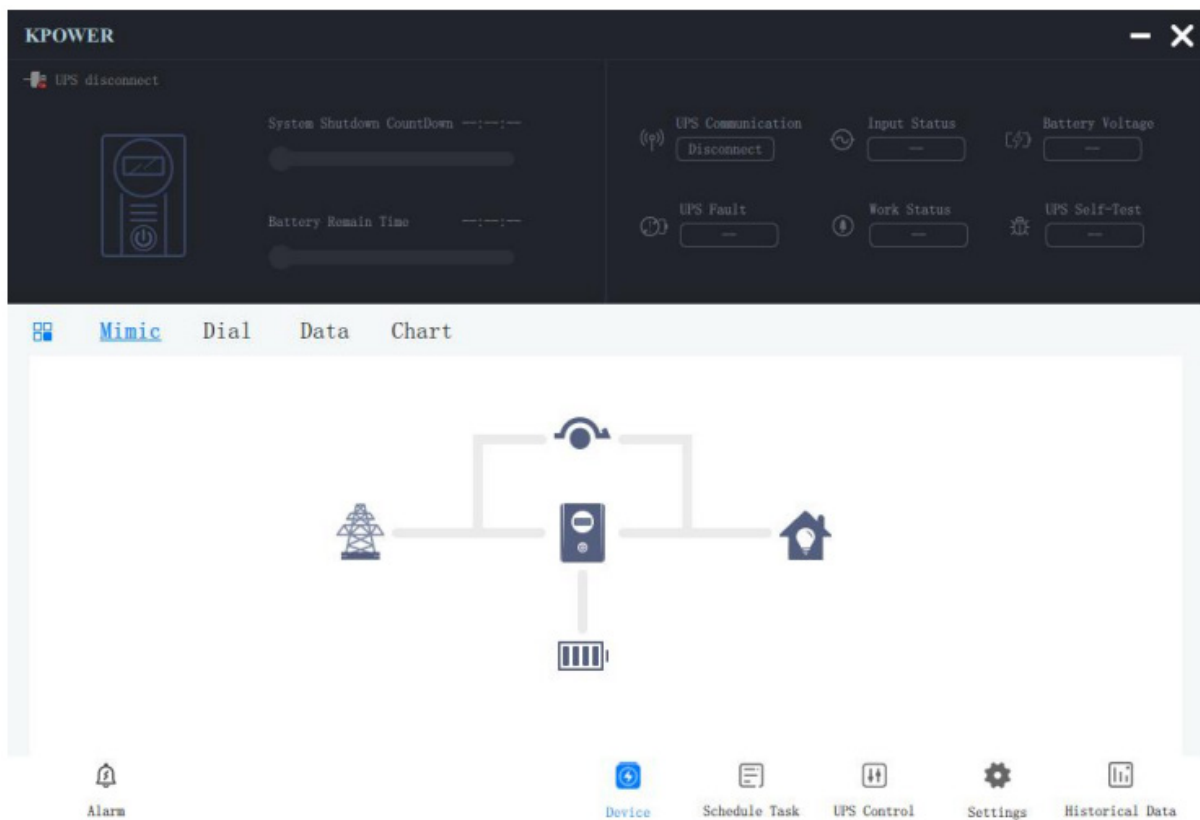
3.9.3 Requirement for the parallel system

A group of paralleled UPS systems behaves as one large UPS unit, offering the added benefit of increased reliability. To ensure equal utilization of all UPS units and compliance with relevant wiring standards, please follow the requirements below:

1. All UPS units must be of the same rating and connected to the same bypass source.
2. The outputs of all UPS units must be connected to a common output bus.
3. The length and specifications of the power cables—including both bypass input cables and UPS output cables—must be identical. This ensures proper load sharing during bypass mode operation.

3.10 Computer access

- Download the Kpower software and User Manual (QR code) from the website.
- One end of a USB cable connects to the computer, the other end connects to the USB port on the UPS.
- Open the software Kpower.
- KPower adopts a flat design concept, the software concentrates all functions in the same window, the interface is simple and easy to operate. The main interface of the KPower program is shown as follows:



- The device page is the main interface of the KPower software. The upper left corner of the page displays the communication connection status with the UPS. When the communication connection is successful, the interface will display that the UPS is connected.

KPOWER

UPS Connected

System Shutdown Countdown --:--:--

Battery Remain Time 02:00:00

UPS Communication	Input Status	Battery Voltage
Connected	Fault	Normal
UPS Fault	Work Status	UPS Self-Test
Normal	Online	No

Mimic Dial Data Chart

Alarm

Device Schedule Task UPS Control Settings Historical Data

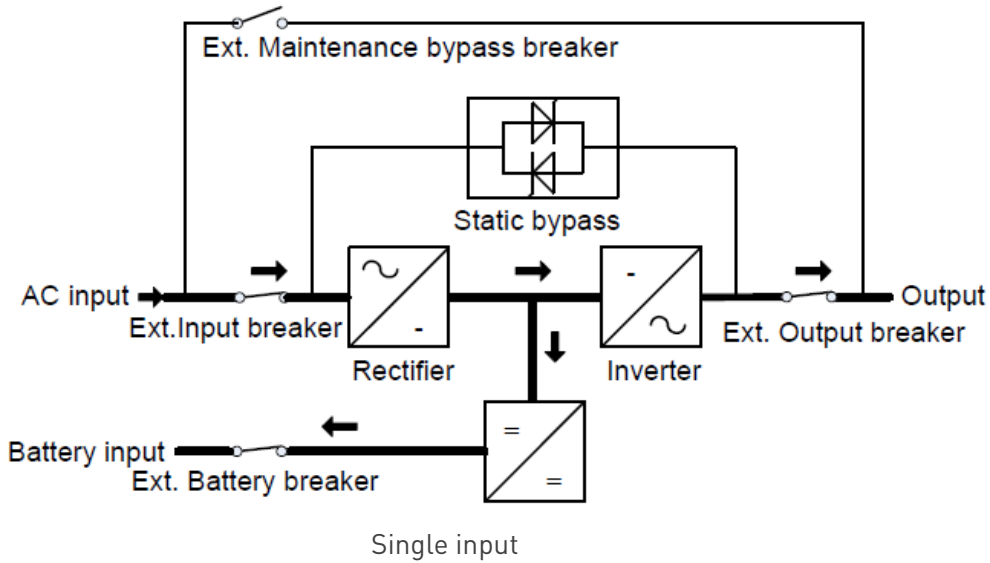
4. Operation

4.1 Operation Modes

The UPS is a double-conversion online UPS that may operate in the following alternative modes:

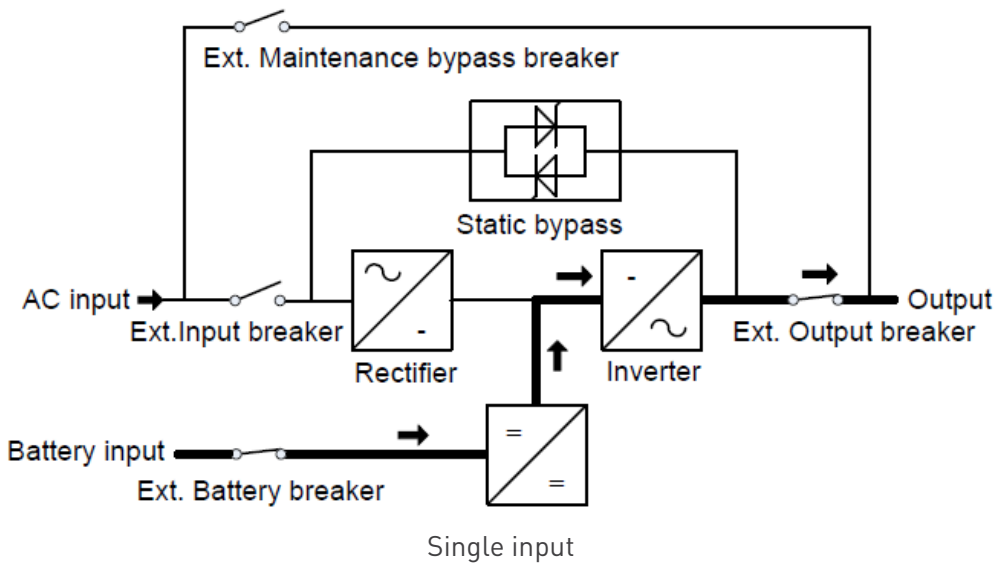
Normal mode

The rectifier/charger derives power from the AC Mains and supplies DC power to the inverter while floating and boost charging the batteries simultaneously. Then, the inverter converts the DC power to AC and supplies to the load.



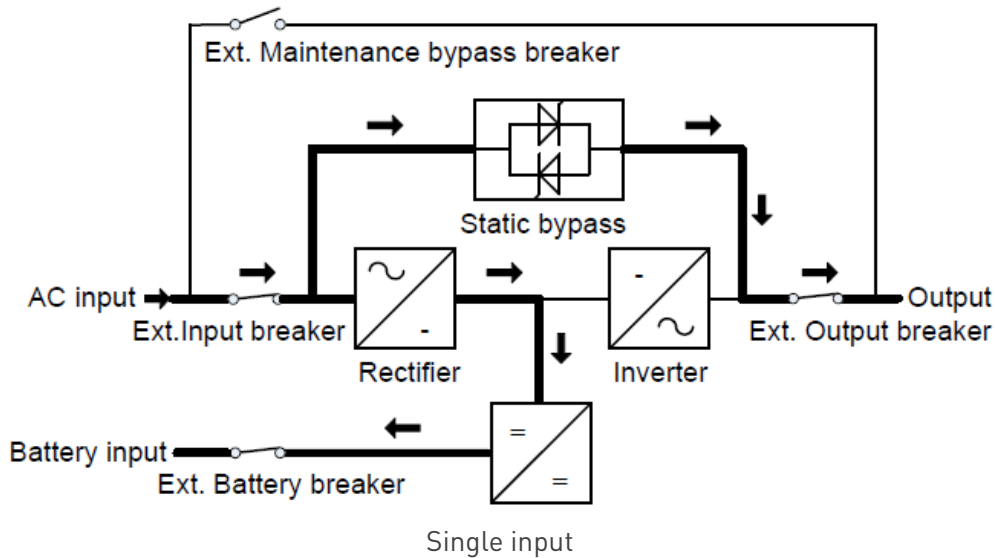
Battery mode (Stored Energy Mode)

If the AC mains input power fails, the inverter, which obtains power from the battery, supplies the critical AC load. There is no power interruption to the critical load. The UPS will automatically return to Normal Mode when AC recovers.



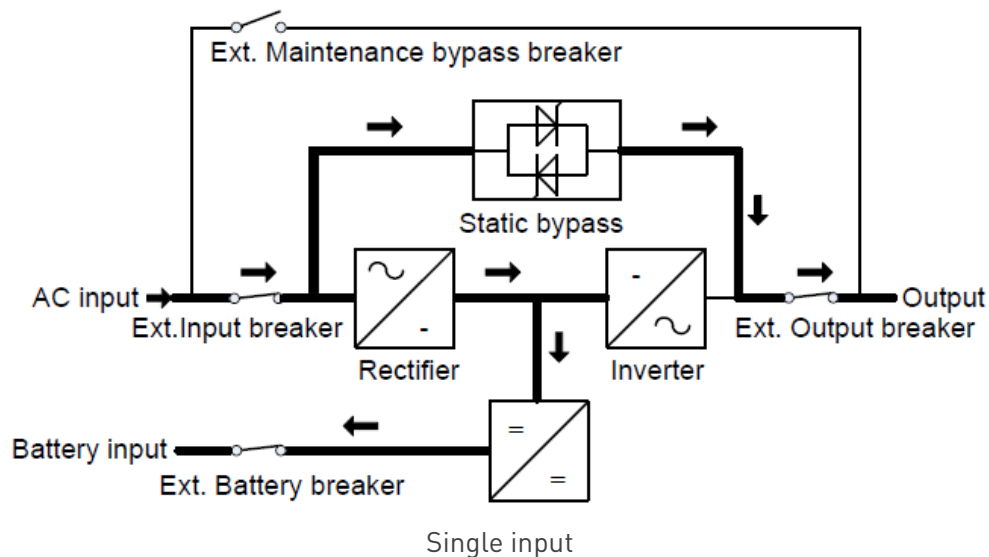
Bypass mode

If the inverter fails or an overload occurs, the static transfer switch activates to transfer the load from the inverter supply to the bypass supply without any interruption to the critical load. However, if the inverter output is not synchronized with the bypass AC source, the static switch will transfer the load to the bypass with a brief power interruption to the critical AC load. This is done to prevent the paralleling of unsynchronized AC sources. The duration of this interruption is programmable but typically set to be less than one electrical cycle—i.e., less than 15 ms (for 50 Hz systems) or less than 13.33 ms (for 60 Hz systems).



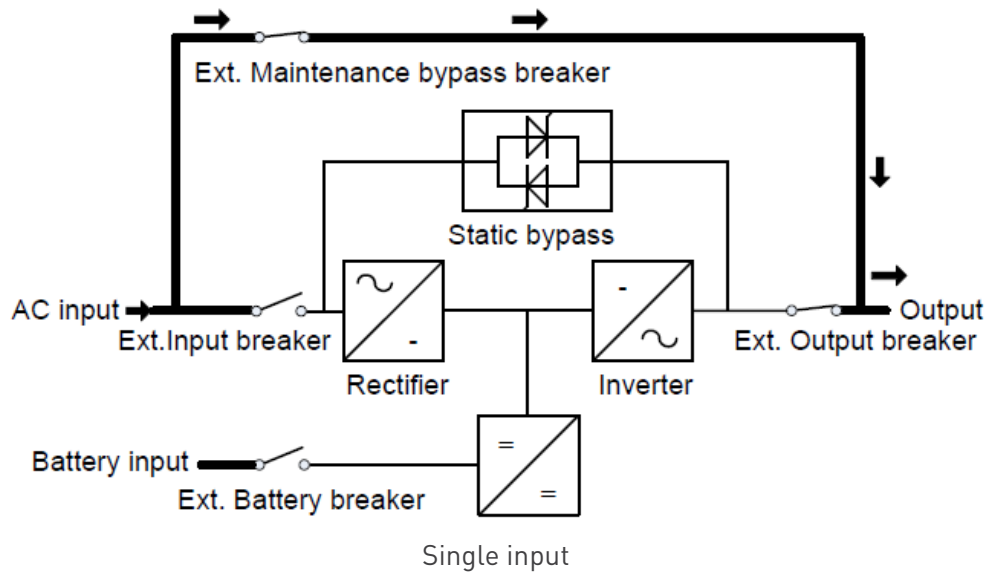
ECO Mode

When the UPS is at AC Mode and the requirement to the load is not critical, the UPS can be set at ECO mode to increase the efficiency of the power supplied. At ECO mode, the UPS works at Line-interactive mode, so the UPS will transfer to bypass supply. When the AC is out of set window, the UPS will transfer from bypass to Inverter and supplies power from the battery, and then the LCD shows all related information on the screen.



Maintenance mode (Manual Bypass)

A manual bypass switch is available to ensure continuity of supply to the critical load when the UPS is out of order or in repair and this manual bypass switch bears for equivalent rated load.



4.2 Turn On/Off UPS

4.2.1 Restart Procedure



Ensure proper grounding is completed before proceeding.

CAUTION!

- Set the **Battery Breaker** to the "ON" position according to the user manual.



Ensure the load is safely connected to the UPS output. If the load is not ready to receive power, isolate it safely from the UPS output terminals.

CAUTION!

- Turn **ON the OUTPUT breaker**.
- Turn **ON the INPUT breaker**.

If the rectifier input is within the voltage range, the rectifier will start within 30 seconds, followed by the inverter. If the rectifier fails to start, the Bypass LED will light up. Once the inverter starts, the UPS transfers from bypass mode to inverter mode; the Bypass LED turns off, and the Inverter LED lights up.

Regardless of the UPS status, all conditions will be displayed on the LCD screen.

4.2.2 Test Procedure



The UPS operates normally. It may take up to 60 seconds to fully boost the system and complete the self-test.

CAUTION!

- Switch **OFF the INPUT breaker** to simulate utility failure. The rectifier will shut down, and the battery will supply power to the inverter without interruption. **The Battery LEDs** should turn on.
- Turn **ON the INPUT breaker** to simulate utility recovery. The rectifier will automatically restart after 20 seconds, and the inverter will continue to supply the load.

It is recommended to use dummy loads for testing. The UPS can be tested at full load capacity.

4.2.3 Maintenance Bypass

To supply power directly from the mains, activate the **internal mechanical bypass switch**.



CAUTION!

When the internal mechanical bypass is active, the load is **not protected** by the UPS, and power is **not conditioned**.

- Switching to Mechanical Bypass.



CAUTION!

If the UPS is operating normally and can be controlled via the display, follow steps 1–6. Otherwise, begin from step 5.

1. Open the cover of the MAINTENANCE breaker – the UPS will automatically switch to bypass mode.
2. Turn **ON the MAINTENANCE breaker**.
3. Switch **OFF the BATTERY breaker**.
4. Switch **OFF the INPUT breaker**.
5. Switch **OFF the OUTPUT breaker**.

At this point, the input source will supply power to the load through the **MAINTENANCE breaker**.

- Switching Back to Normal Operation



CAUTION!

Do not switch the UPS back to normal operation until all internal UPS faults have been cleared.

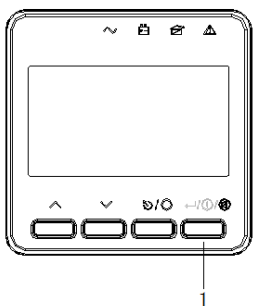
1. Turn **ON the OUTPUT breaker**.
2. Turn **ON the INPUT breaker**.
3. Turn **ON the BATTERY breaker**
 - The UPS will now draw power from the **static bypass** instead of the mechanical bypass. The **Bypass LED** will light up.
4. Switch **OFF the MAINTENANCE breaker** – the load is now powered by the **UPS static bypass**.
5. Close the cover of the **MAINTENANCE breaker**.
 - The rectifier will start within 30 seconds. If the inverter is working normally, the UPS will automatically switch from bypass mode to **normal mode**.

4.2.4 Cold Start Procedure



CAUTION!

The UPS can perform a **cold start** when there is an input AC utility failure, provided the battery is in good condition. Follow these steps:



1. Turn **ON the BATTERY breaker**.
 - The battery will supply auxiliary power.
2. Turn **ON the OUTPUT breaker**.
3. Press the **Cold Start button** (refer to position 1 in the diagram below).

When battery is normal, rectifier starts operation, 30s later, inverter starts and operates and battery LED is on.

4.2.5 Shut Down Procedure



CAUTION!

This procedure must be followed to completely shut down the UPS **and the connected load**. Once all power switches, isolators, and circuit breakers are opened, **there will be no output from the UPS**.

- Switch **OFF** the **BATTERY** breaker.
- Switch **OFF** the **INPUT** breaker.
- Switch **OFF** the **OUTPUT** breaker.

→ The UPS will now shut down.

- To **fully isolate the UPS from the AC input**, turn **OFF all utility input switches**, including those for both the **rectifier** and the **bypass**.

- The **primary input distribution panel** is often located away from the UPS installation area.

→ A **warning label** should be posted to alert service personnel that the **UPS circuit is under maintenance**.

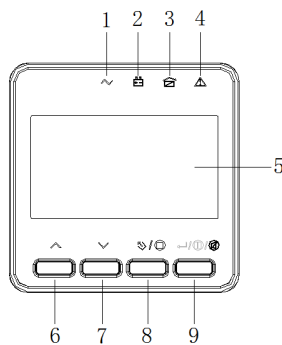


WARNING!

Wait approximately **40 minutes** to ensure the **internal DC bus capacitors** have fully discharged before proceeding with any service or inspection.

4.3 The LCD Display

4.3.1 LCD Display Information



- (1) INVERTER LED
- (3) BYPASS LED
- (5) LCD display
- (7) DOWN button
- (9) ENTER/ON button

- (2) BATTERY LED
- (4) ALARM LED
- (6) UP button
- (8) ESC /OFF button

Overview of the operating panel of the UPS

LED indicator light

Button	Function
	Yellow: UPS alarm information Red: UPS fault information
	Blue: UPS in bypass mode
	Yellow: UPS in battery mode
	Green: UPS works normally

Attention: These lights will display different indications in different operating modes.



The display provides more functions than those described in this manual.

CAUTION!

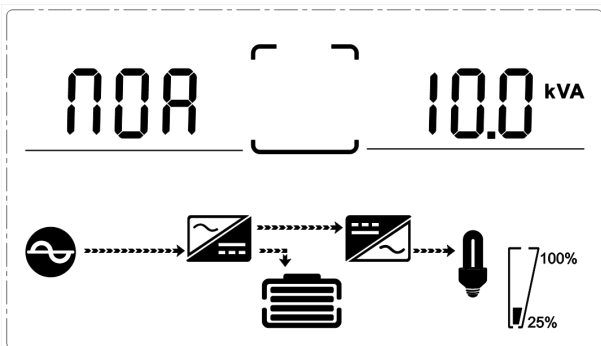
NOTICE! The display provides more functions than those described in this manual. There are 9 interfaces available in the LCD display:

ITEM	Interface Description	Content Displayed
1	Input	Voltage & Frequency
2	Output	Voltage & Frequency
3	Battery	Voltage & Current
5	Temperature	PFC/Internal temperature and ambient temperature
6	Load	Load
7	Bus voltage	Bus voltage \pm
8	Software version	DSP version of inverter software
9	Model	Model

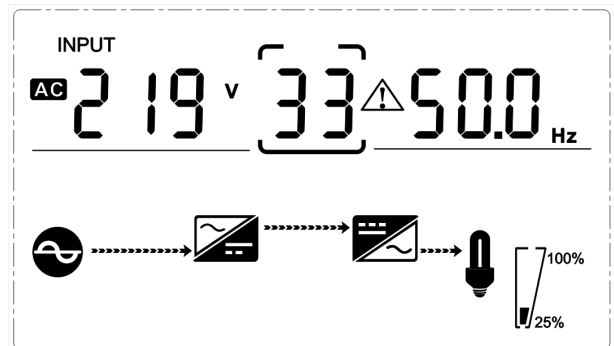
When the UPS is connecting with the Utility or Battery at cold start mode, it shows as drawing below:

1) Operational Status and mode, when the UPS at single mode, it shows "NOR" or "ECO" or "CF".

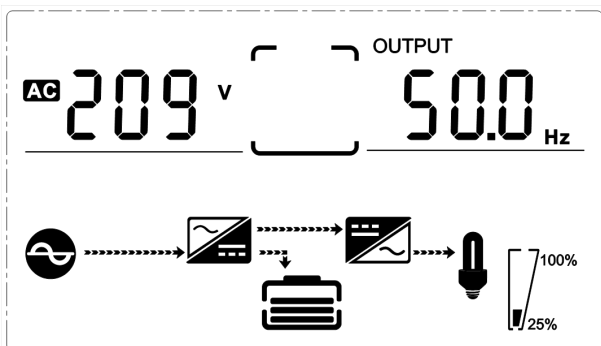
2) Press "DOWN" button, the UPS goes to next page as shown below.



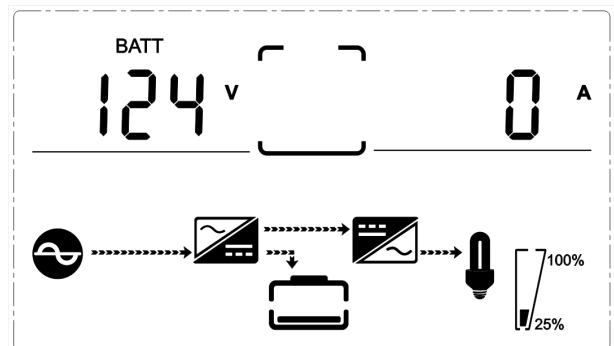
(1) Operational Status and mode



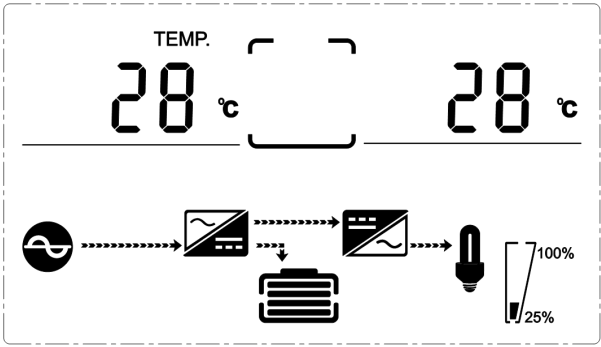
(2) Input voltage



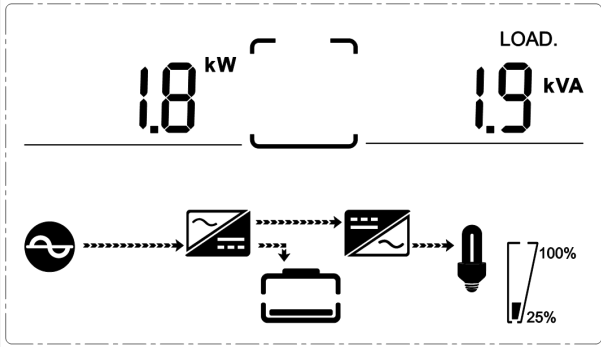
(3) Output voltage



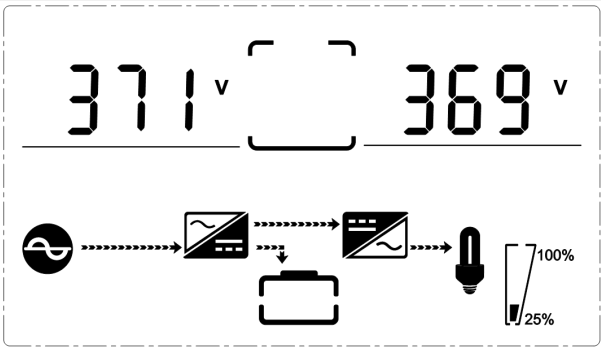
(4) Bat voltage



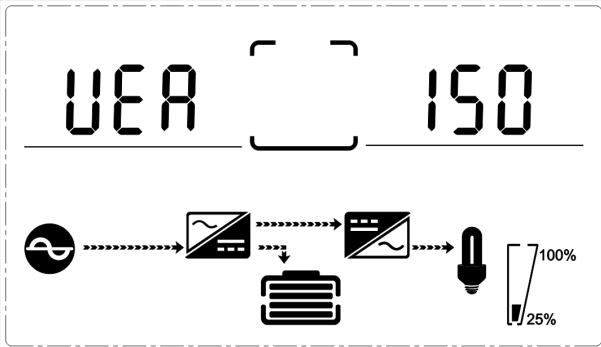
[5] Ambient temperature (left), Radiator temperature (right)



[6] Load



[7] Bus voltage



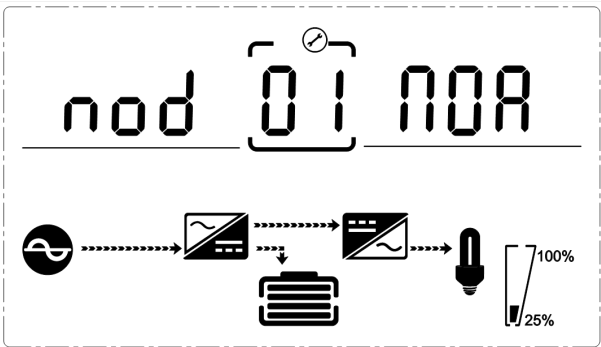
[8] Software version

4.3.2 Parameters setting

The setting function is controlled by 4 buttons (ENTER/ON, ESC/OFF, UP, DOWN): ENTER /ON---goes into the setting page and value adjustment; UP & DOWN ---for choosing different pages.

After the UPS turn ON, press buttons UP & DOWN for 3 seconds and then goes into the setting interface page. Press UP or DOWN to select the required setting interface, press enter / on to enter the value adjustment state, press up or down to adjust the value and press on to confirm, keep pressing the down button until the setting interface is exited and saved.

4.3.2.1 Mode setting

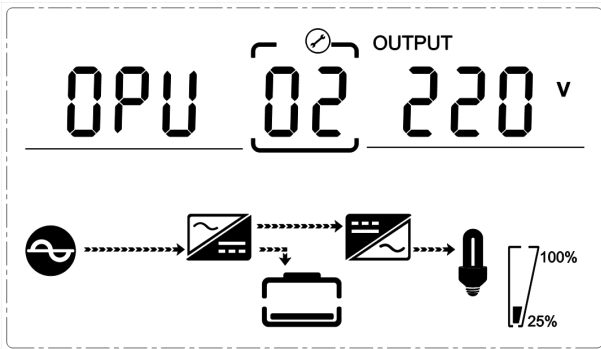


Mode setting (Note: Inside the broken-line is the flashing part.)

After ENTERing the setting menu, it's mode setting defaulted, and the mode setting line flashing as in above picture.

- Use button ENTER /ON to choose different mode. There are 5 different modes for setting: NOR, ECO, PAL, GEN, CF.
- Press UP & DOWN to exit the mode setting (save the mode setting), and goes to output voltage setting or Battery self-test setting.

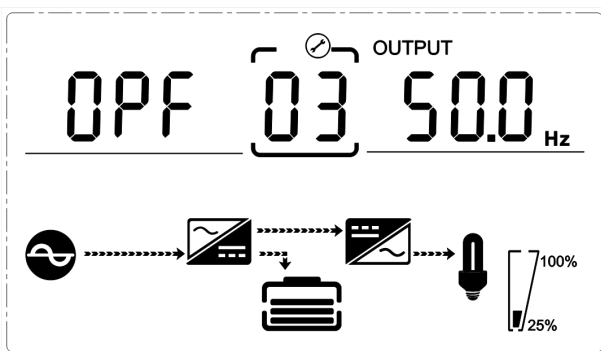
4.3.2.2 Output voltage class setting



Output voltage setting

(Note: Inside the broken-line is the flashing part.)

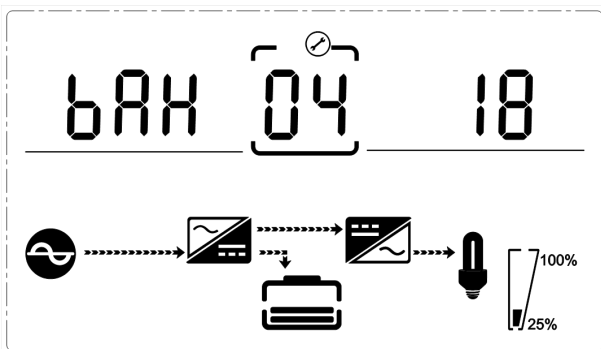
4.3.2.3 Output frequency setting



Frequency setting

(Note: Inside the broken-line is the flashing part.)

4.3.2.4 Battery capacity setting



Battery capacity setting

(Note: Inside the broken-line is the flashing part.)

When under the mode setting press DOWN or when under frequency setting press UP, it goes to the output voltage setting. The output voltage line flashes as in above picture.

- Use button ENTER/ON to choose the different output voltage. There are 4 different voltages---208, 220, 230, 240.
- Press UP & DOWN button to exit the output voltage setting (save the output voltage setting) and goes to mode setting or frequency setting.

NOTE: When powered by inverter, it is necessary to turn off the inverter before setting voltage and frequency level.

When under the output voltage setting press DOWN or when under battery capacity setting press UP, it goes to the frequency setting. The frequency line flashes as in above picture.

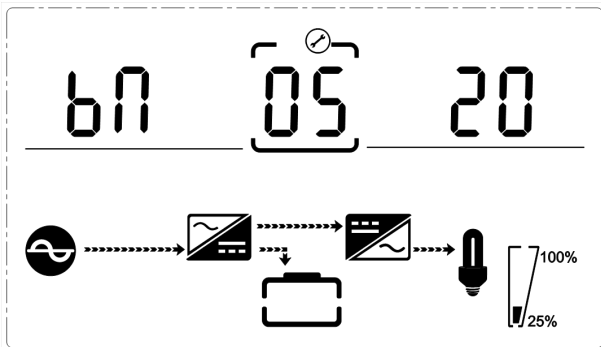
- Use button ENTER/ON to choose the different frequency. There are 2 different frequency --- 50/60Hz.
- Press UP & DOWN button to exit the frequency setting (save the frequency setting) and goes to output voltage setting or battery capacity setting.

Note: When powered by inverter, it is necessary to turn off the inverter before setting voltage and frequency level.

When under the frequency setting press DOWN or when under battery quantity setting press UP, it goes to the battery capacity setting. The battery capacity line flashes as in above picture.

- Use button ENTER/ON to choose the different battery capacity. Battery capacity range is 7-100Ah. (Note: long-press of UP or DOWN can adjust battery capacity quickly)
- Press UP & DOWN button to exit the battery capacity setting (save the capacity setting) and goes to frequency setting or battery quantity setting.

4.3.2.5 Battery quantity setting



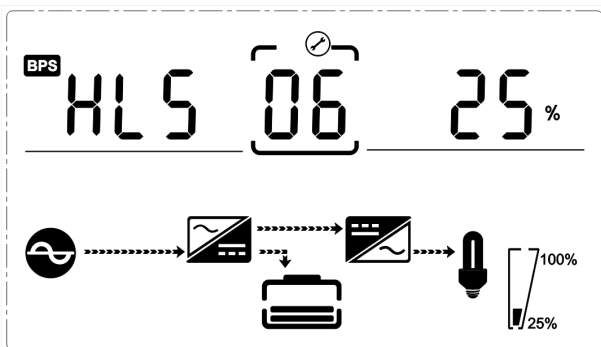
Battery quantity setting

(Note: Inside the broken-line is the flashing part.)

When under the battery capacity setting press DOWN or when under bypass voltage upper limit setting press UP, it goes to the battery quantity setting. The battery quantity line flashes as in above picture.

- Use button ENTER/ON to choose the different battery quantity. Battery quantity range is 16, 18, 20
- Press UP & DOWN button to exit the battery quantity setting (save the battery quantity setting) and goes to battery capacity setting or bypass voltage upper limit setting.

4.3.2.6 Bypass Volt-Hi setting



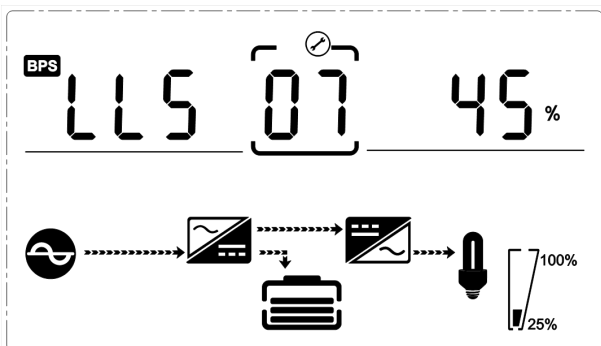
Bypass voltage upper limit setting

(Note: Inside the broken-line is the flashing part.)

When under the battery quantity setting press DOWN or when under bypass voltage lower setting press UP, it goes to the bypass upper limit setting. The bypass upper limit line flashes as in above picture.

- Use button ENTER/ON to set the different bypass voltage upper limit. The bypass voltage upper limit range is 10%, 15%, 25%.
- Press UP & DOWN button to exit the bypass voltage upper limit setting (save the bypass voltage upper limit setting) and goes to battery quantity setting or bypass voltage lower limit setting.

4.3.2.7 Bypass Volt-Lo setting



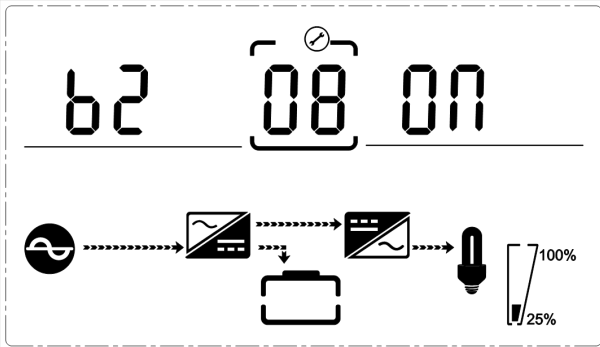
Bypass voltage lower limit setting

(Note: Inside the broken-line is the flashing part.)

When under the bypass voltage upper limit setting press DOWN or when under Buzzers mute setting press UP, it goes to the bypass lower limit setting. The bypass lower limit line flashes as in above picture.

- Use button ENTER/ON (to set the different bypass voltage lower limit. The bypass voltage lower limit range is 10%, 20%, 30%, 45%.
- Press UP & DOWN button to exit the bypass voltage lower limit setting (save the bypass voltage lower limit setting) and goes to bypass upper limit setting or Buzzers mute setting.

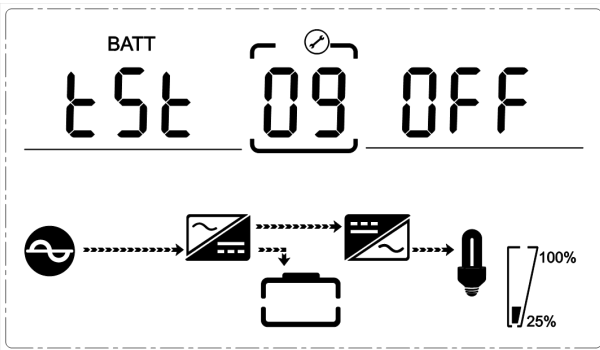
4.3.2.8 Buzzer Mute Setting



Buzzers mute setting
(Note: flashing part in dashed box)

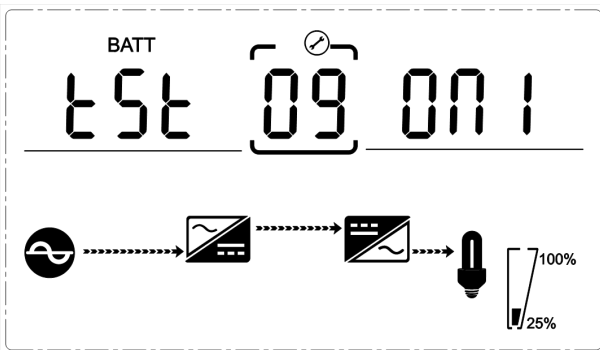
Press DOWN under bypass voltage lower limit setting or press UP under the Battery self-test setting can ENTER the buzzer setting. Now the setting status is flashing as the Figure shows (note: on=mute; off= no mute). When press, it shows the mute cycle setting, the selection includes ON and OFF. (Press the up button or down button can exit the mute setting (save the mute setting status) and switch to bypass voltage lower limit setting or Battery self-test setting (note: when in stand-alone mode, press down button to exit and save the settings, then the settings is completed for stand-alone unit).

4.3.2.9 Battery Test Setting

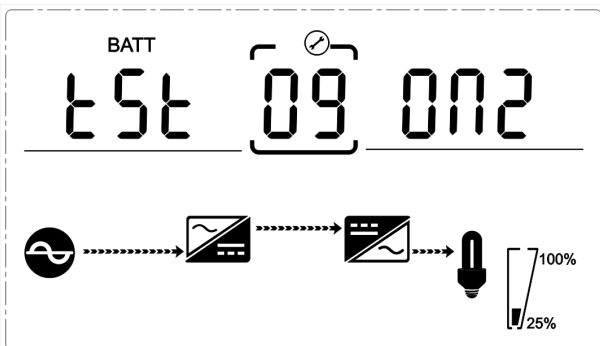


Battery self-test setting

This page is the introduction to the Battery self-test setting. The default Settings is "OFF" when the UPS has no need of the battery self-test function. When turn to "ON", batteries can do the self-test automatically per 30 days. Three kinds of Battery Self-test Time can be chosen as below.

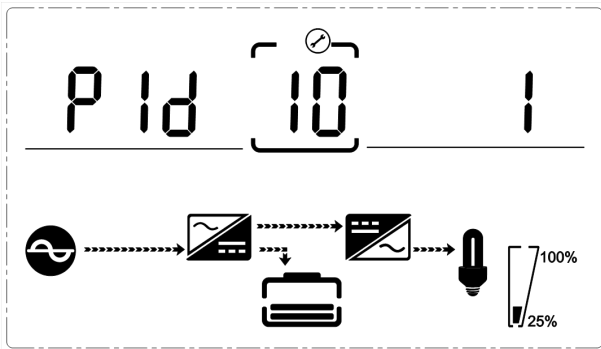


When choosing On 1, UPS can transfer to Battery Mode automatically per 30 days. And the Battery Self-test Time is 10 seconds.



When choosing On 2, UPS can transfer to Battery Mode automatically per 30 days. And the Battery Self-test Time is 10 minutes.

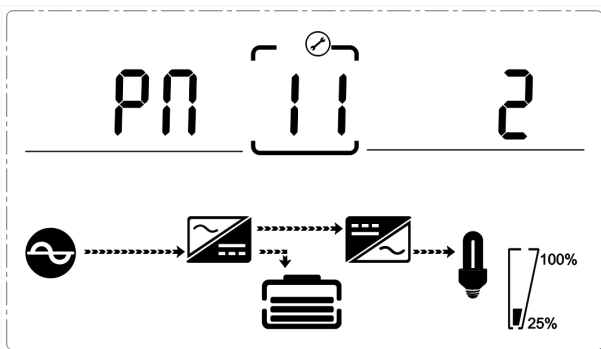
4.3.2.10 Parallel ID setting



Parallel ID setting

(Note: Inside the broken-line is the flashing part.)

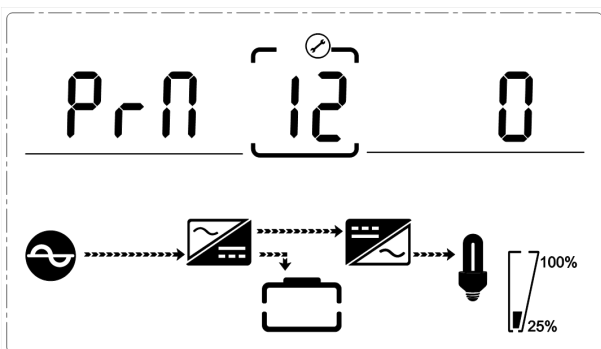
4.3.2.11 Parallel quantity setting



Parallel quantity setting

(Note: Inside the broken-line is the flashing part.)

4.3.2.12 Parallel redundancy quantity setting



Parallel redundancy quantity setting

(Note: Inside the broken-line is the flashing part.)

When under the Battery self-test setting press DOWN or when under parallel quantity setting press UP, it goes to the parallel ID setting. The parallel ID flashes as in above picture.

- Use button ENTER/ON to set the different parallel ID. The parallel ID range is 1~4.
- Press ESC/OFF button to exit the parallel ID setting (save the parallel ID setting) and goes to Battery self-test setting or parallel quantity setting.

NOTICE! Parallel cable cannot be connected when setting the parallel parameters.

When under the parallel ID setting press DOWN or when under parallel redundancy quantity setting press UP, it goes to the parallel quantity setting. The parallel quantity flashes as in above picture.

- Use button ENTER/ON to set the parallel quantity. The parallel quantity range is 2~4.
- Press ESC/OFF button to exit the parallel quantity setting (save the parallel quantity setting) and goes to parallel ID setting or parallel redundancy quantity setting.

When under the parallel quantity setting press DOWN, it goes to the parallel redundancy quantity setting. The parallel redundancy quantity flashes as in above picture.

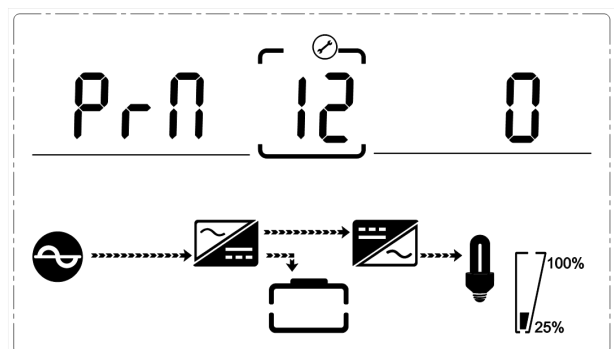
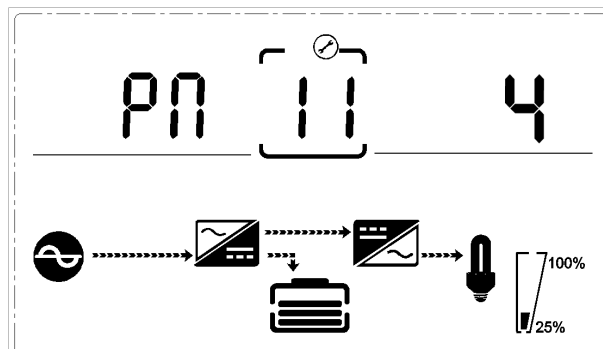
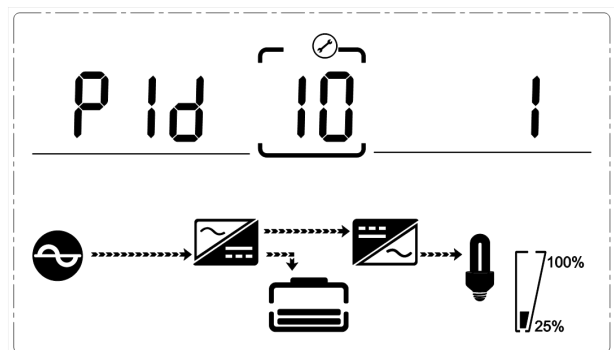
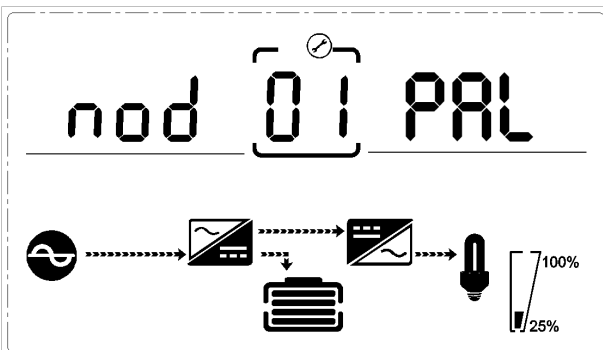
- Use button ENTER/ON to set the parallel redundancy quantity. The parallel redundancy quantity range is 0~3
- Press UP& DOWN to go to Parallel redundancy quantity setting, or ESC/OFF button to exit the mode setting. Then UPS LCD panel setting is accomplished.

4.4 Parallel parameters setting

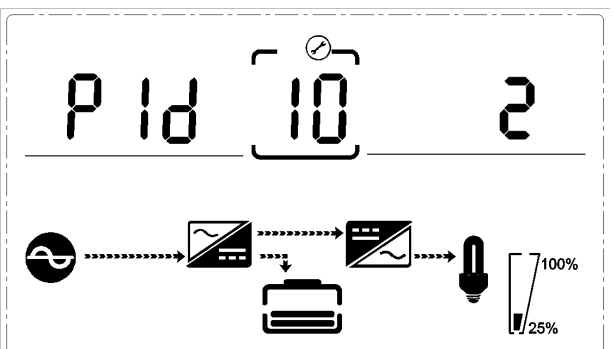
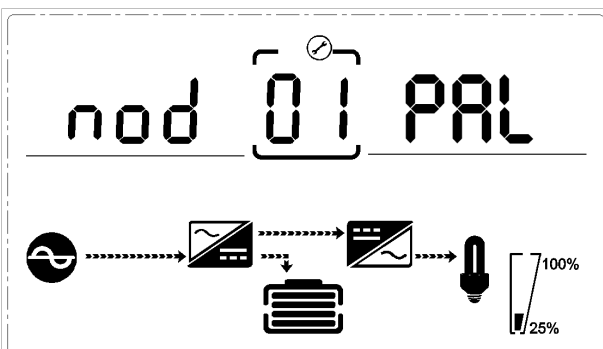
Parallel system should be commissioning when the stand-alone are all intact.

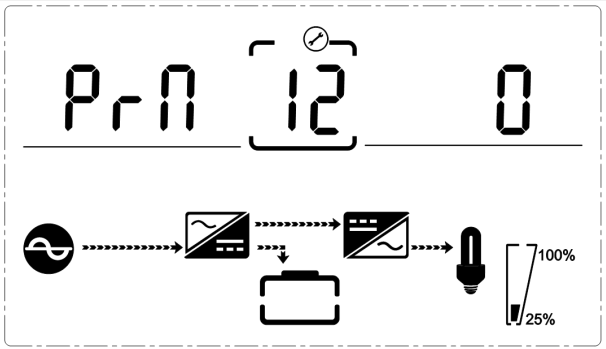
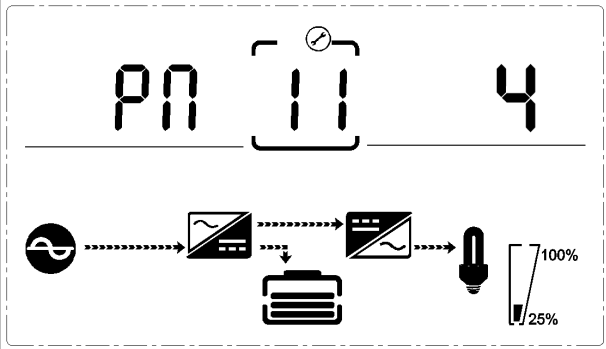
Take 4 units in parallel for example.

- 1) Confirm the input/output wires connection and input phase sequence are correct; switch OFF the battery breaker of each UPS and measure the battery voltage of all battery group are normal.
- 2) Connect the parallel cable, it should be formed loop connection.
- 3) Switch ON the input breaker of unit 1, and access LCD setting interface to setting the Working Mode, Parallel ID, Parallel Number, Parallel redundant Number. The setting interface is shown as below, require setting the in-series number and capacity of battery. The output voltage level and Bypass protection range are default setting.

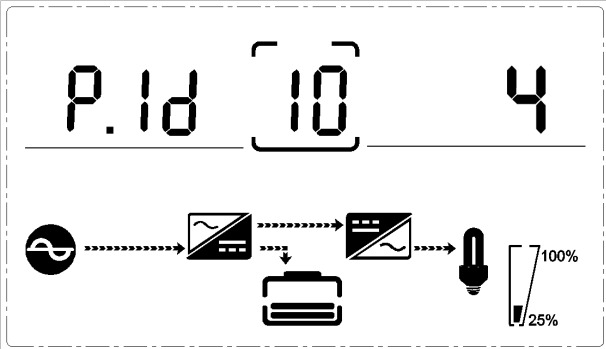
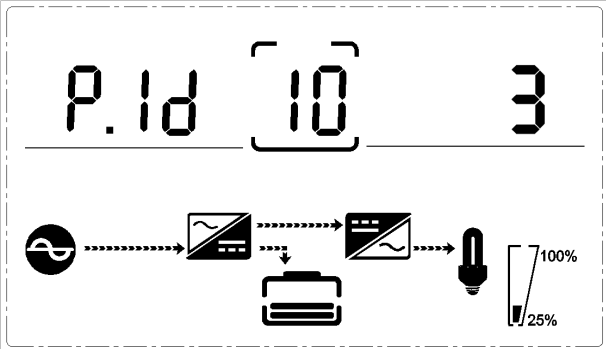
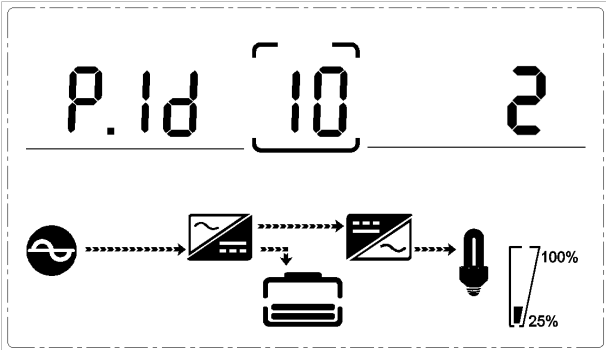
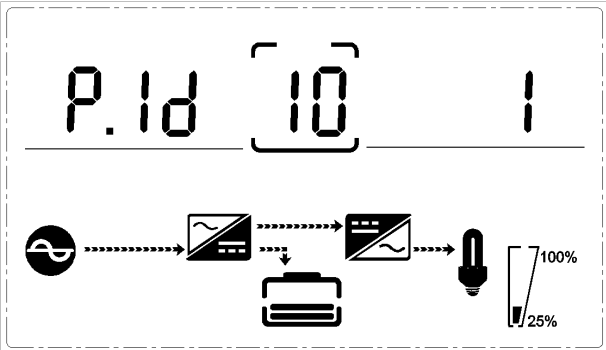


- 4) Turn off the input breaker of Unit 1, and make sure the UPS is off. Turn on the input breaker of Unit 2, access the LCD setting interface, setting the parallel working mode, ID (NO.2), parallel 4 units, redundant number .The other setting are the same as UPS 1 operation.





- 5) For Unit 3 and Unit 4 UPS, the operation setting is all the same as Unit 1 and 2.
- 6) Turn on Input/output breaker of all the paralleled UPS, then confirm all the setting are correct. Each UPS has their own different ID.
- 7) There is only one master in parallel systems. UPS has a dot behind parallel mode is the master. You can turn on all the UPS after confirming all the settings are correct.



- 8) Turn on all the battery breaker and confirm the parameter (V/I) are normal.
- 9) Connect the Load, and check whether the output current is balanced.
Switch ON and off the utility breaker to test all the UPS converter system from Utility to battery and restored function are working fine.

4.5 Display Troubleshooting

This section lists the alarm messages that the UPS might display. This section is listed with each alarm message to help you troubleshoot problems.

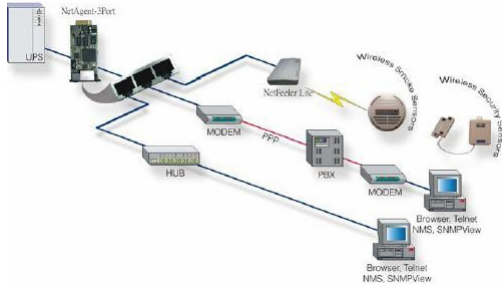
Alarm Information

Item	UPS Alarm Warning	Buzz	LED
1	Rectifier Fault	Beep continuously	Fault LED lit
2	Inverter fault (Including Inverter bridge is shorted)	Beep continuously	Fault LED lit
3	Inverter Thyristor short	Beep continuously	Fault LED lit
4	Inverter Thyristor broken	Beep continuously	Fault LED lit
5	Bypass Thyristor short	Beep continuously	Fault LED lit
6	Bypass Thyristor broken	Beep continuously	Fault LED lit
7	Fuse broken	Beep continuously	Fault LED lit
8	Parallel relay fault	Beep continuously	Fault LED lit
9	Fan fault	Beep continuously	Fault LED lit
10	Reserve	Beep continuously	Fault LED lit
11	Auxiliary power fault	Beep continuously	Fault LED lit
12	Initialization fault	Beep continuously	Fault LED lit
13	P-Battery Charger fault	Beep continuously	Fault LED lit
14	N-Battery Charger fault	Beep continuously	Fault LED lit
15	DC Bus over voltage	Beep continuously	Fault LED lit
16	DC Bus below voltage	Beep continuously	Fault LED lit
17	DC bus unbalance	Beep continuously	Fault LED lit
18	Soft start failed	Beep continuously	Fault LED lit
19	Rectifier Over Temperature	Twice per second	Fault LED lit
20	Inverter Over temperature	Twice per second	Fault LED lit
21	Reserve	Twice per second	Fault LED lit
22	Battery reverse	Twice per second	Fault LED lit
23	Cable connection error	Twice per second	Fault LED lit
24	CAN comm. Fault	Twice per second	Fault LED lit
25	Parallel load sharing fault	Twice per second	Fault LED lit
26	Battery over voltage	Once per second	Fault LED blinking

Item	UPS Alarm Warning	Buzz	LED
27	Mains Site Wiring Fault	Once per second	Fault LED blinking
28	Bypass Site Wiring Fault	Once per second	Fault LED blinking
29	Output Short-circuit	Once per second	Fault LED blinking
30	Rectifier over current	Once per second	Fault LED blinking
31	Bypass over current	Once per second	BPS LED blinking
32	Overload	Once per second	INV or BPS blinking
33	No battery	Once per second	BATTERY blinking
34	Battery under voltage	Once per second	BATTERY blinking
35	Battery low pre-warning	Once per second	BATTERY blinking
36	Overload Delay	Once per second	Bypass LED blinking
37	DC component over limit.	Once per 2 seconds	INV blinking
38	Parallel Overload	Once per 2 seconds	INV blinking
39	Mains volt. Abnormal	Once per 2 seconds	BATTERY LED lit
40	Mains freq. abnormal	Once per 2 seconds	BATTERY LED lit
41	Bypass Not Available		BPS blinking
42	Bypass unable to trace		BPS blinking
43	Inverter on invalid		
44	Reserve		
45	EPO active	Beep continuously	Fault LED lit
46	PDU active		Bypass LED lit

4.6 Options

SNMP card: SNMP / mini SNMP optional



Typical topology of the UPS Network Management

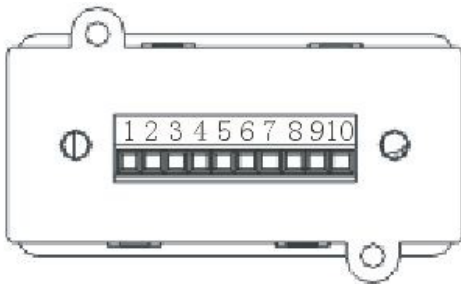
- Loosen the 2 torque screws (on each side of the card).
- Carefully pull out the card. Reverse the procedure for re-installation

The slot called SNMP supports the MEGAtec protocol. SNMP card port is also a tool to remotely monitor and manage any UPS system

SNMP card supports the Modem Dial-in (PPP) function to enable the remote control via the internet when the network is unavailable.

In addition to the features of a standard SNMP card, SNMP card has the option to add NetFeeler Lite to detect temperature, humidity, smoke and security sensors. Thus, making SNMP card a versatile management tool. SNMP card also supports multiple languages and is setup for web-based auto language detection.

Relay card



A 10-pin terminal is supported to offer the signals of Bypass, Utility Failure, Inverter On, Battery Low, UPS fault, UPS Alarm, and UPS Shutdown.

The relay communication card contains six dry contact outputs and one dry input. The inputs and outputs are factory programmed according to functions listed in the table

Table: Relay Contacts (communication card)

Table: Relay Contacts (communication card)

Pin	Function Description	Input or Output
1	Utility Failure	Output
2	Battery Low	
3		
4	Bypass On	
5	UPS Fault	
6	Inverter On	
7	Summary Alarm	
8	common	Input (5~12V)
9	Remote Shutdown +	

APPENDIX 1 – SPECIFICATION FOR FM UPS

GENERAL				
Capacity	5 kVA / 5 kW	6 kVA / 6 kW	7.5 kVA / 7.5 kW	10 kVA / 10 kW
Topology	Double conversion on-Line			
Cooling	Fan cooled			
Dimension W x D x H (mm)	190 x 485 x 336mm			
Net weight (kgs)	15		16	
Installation type	Tower			
INPUT				
Nominal voltage	208 / 220 / 230 (Default) / 240 Vac			
Input voltage range	110 - 300 Vac (110 - 300 Vac @ 50% load / 160 - 300 Vac @ 100% load)			
Frequency range	40 - 70 Hz			
Power factor	> 0.99			
Input connection	Terminal (L + N + G)			
OUTPUT				
Output power	5kW	6kW	7.5kW	10kW
Power factor	1.0			
Output waveform	Pure sinewave			
Output voltage	208 / 220 / 230 (Default) / 240 Vac			
Voltage regulation	± 1%			
Output voltage regulation (Dynamic)	± 5%			
Harmonic distortion (THDv)	< 1% (Full linear load)			
	< 3% (Full nonlinear load)			
Output frequency	50/60 Hz ± 10% (Line mode); 50/60 Hz (Default) ± 0.1% (Battery mode)			
Overload capability (Online mode)	105% ~ 110%: UPS transfer to bypass after 60 minutes when the utility is normal			
	111% ~ 125%: UPS transfer to bypass after 10 minutes when the utility is normal			
	126% ~ 150%: UPS transfer to bypass after 1 minute when the utility is normal			
	> 150%: UPS transfer to bypass after 0.5 second when the utility is normal			
Overload capability (Battery mode)	105% ~ 110%: UPS after 10 minute shut down			
	110% ~ 125%: UPS after 1 minute shut down			
	126% ~ 150%: UPS after 10 second shut down			
	> 150%: UPS after 0.5 second shut down			
Overload capability (Bypass mode)	105% ~ 130%: only overload alarm			
	130% ~ 150%: UPS after 10 minute shut down			
	150% ~ 200%: UPS after 1 minute shut down			
	>200%: after 0.5 second shut down			
Current crest ratio	Breaker 40 A		Breaker 63 A	
Output connection	Terminal (L + N + G)			
BYPASS				
Voltage range	208 / 220 Vac max. voltage: + 25% (optional + 10%, + 15%, + 20%)			
	230 Vac max. voltage: + 20% (optional + 10%, + 15%)			
	240 Vac max. voltage: + 15% (optional + 10%)			
	Min. voltage: - 45% (optional - 10%, - 20%, - 30%)			
Frequency range	Frequency protection range: ± 10%			
ECO range	Rated voltage ± 10%			
BATTERY				
Capacity (Standard unit)	12 V / 7 Ah - / 12V / 100 Ah			
DC voltage	192 / 216 / 240 Vdc			
Charge current (Max)	10 A			

COMMUNICATION SECTION AND USER INTERFACE

Control panel LCD (English - Language) + LED	2.4 inch color screen
Communication interface	USB, RS232, RS485 port, Intelligent slot, Parallel port (Optional), SNMP card (Optional), Relay card (optional)
Emergency power off (EPO)	Yes

ENVIRONMENT

Operating temperature	0 °C ~ 40 °C
Storage temperature	- 25 °C ~ 55 °C (Without batteries)
Humidity range	0 ~ 95% RH (Non -condensing)
Operating altitude	0 ~ 1000 meters normally operate; 1000~3000 meters derating
Protection class	IP20
Noise level at 1M distance	≤ 45 dB
	≤ 50 dB

STANDARDS

Safety	EN IEC 62040 - 1 : 2019 + A11 : 2021
EMC	IEC 62040 - 2 : 2016, EN IEC 62040 - 2 : 2018

OTHERS

Generator compatible	Yes
Short circuit	Hold whole system
Overheat	Line mode: Switch to bypass; Backup mode: Shut down UPS immediately
Low battery voltage	Alarm and switch OFF
EPO	Shut down UPS immediately
Audible & visual alarms	Line failure, battery low, overload, system fault

APPENDIX 1 – SPECIFICATION FOR FMI UPS

GENERAL				
Capacity	5 kVA / 5 kW	6 kVA / 6 kW	7.5 kVA / 7.5 kW	10 kVA / 10 kW
Topology	Double conversion on-line			
Cooling	Fan cooled			
Dimension W x D x H (mm)	260 x 485 x 690 mm			
Net weight (kgs)	59	62	72	81
Installation type	Tower			
INPUT				
Nominal voltage	208 / 220 / 230 (Default) / 240 Vac			
Input voltage range	110 - 300 Vac (110 - 300 Vac @ 50% load / 170 - 300 Vac @ 100% load)			
Frequency range	40 - 70 Hz			
Power factor	> 0.94	> 0.99	> 0.94	> 0.99
Input connection	Terminal (L + N + G)			
OUTPUT				
Output power	5 kW	6 kW	7.5 kW	10 kW
Power factor	1.0			
Output waveform	Pure sinewave			
Output voltage	208 / 220 / 230 (Default) / 240 Vac			
Voltage regulation	± 1%			
Output voltage regulation (dynamic)	± 5%			
Harmonic distortion (THDv)	< 1% (Full linear load)			
	< 3% (Full nonlinear load)			
Output frequency	50 / 60 Hz ± 10% (Line mode); 50 / 60 Hz (default) ± 0.1% (Battery mode)			
Overload capability (Online mode)	105% ~ 110%: UPS transfer to bypass after 60 minutes when the utility is normal			
	111% ~ 125%: UPS transfer to bypass after 10 minutes when the utility is normal			
	126% ~ 150%: UPS transfer to bypass after 1 minute when the utility is normal			
	> 150%: UPS transfer to bypass after 0.5 second when the utility is normal			
Overload capability (Battery mode)	105% ~ 110%: UPS after 10 minute shut down			
	110% ~ 125%: UPS after 1 minute shut down			
	126% ~ 150%: UPS after 10 second shut down			
	> 150%: UPS after 0.5 second shut down			
Overload capability (Bypass mode)	105% ~ 130%: Only overload alarm			
	130% ~ 150%: UPS after 10 minute shut down			
	150% ~ 200%: UPS after 1 minute shut down			
	> 200%: After 0.5 second shut down			
Current crest ratio	Breaker 40 A		Breaker 63 A	
Output connection	Terminal (L + N + G)			
BYPASS				
Voltage range	208 / 220 Vac max. voltage: + 25% (Optional + 10%, + 15%, + 20%)			
	230 Vac max. voltage: + 20% (Optional + 10%, + 15%)			
	240 Vac max. voltage: + 15% (Optional +10%)			
	Min. voltage: - 45% (Optional - 10%, - 20%, - 30%)			
Frequency range	Frequency protection range: ± 10%			
ECO range	Rated voltage ± 10%			
BATTERY				
Capacity (standard unit)	12 V / 7 Ah - / 12 V / 100 Ah			
DC voltage	192 / 216 / 240 Vdc			
Charge current (max)	10 A			

COMMUNICATION SECTION AND USER INTERFACE

Control panel LCD (English-language) +LED	2.4 inch. color screen
Communication interface	USB, RS232, RS485 port, Intelligent slot, Parallel port (Optional), SNMP card (Optional), Relay card (Optional)
Emergency power OFF (EPO)	Yes

ENVIRONMENT

Operating temperature	0 °C ~ 40 °C
Storage temperature	- 25 °C ~ 55 °C (Without batteries)
Humidity range	0 ~ 95% RH (Non - condensing)
Operating altitude	0 ~ 1000 meters normally operate; 1000 ~ 3000 meters derating
Protection class	IP20
Noise level at 1M distance	≤ 45 dB
	≤ 50 dB

STANDARDS

Safety	EN IEC 62040 - 1 : 2019 + A11 : 2021
EMC	IEC 62040 - 2 : 2016, EN IEC 62040 - 2 : 2018

OTHERS

Generator compatible	Yes
Short circuit	Hold whole system
Overheat	Line mode: Switch to bypass; Backup mode: shut down ups immediately
Low battery voltage	Alarm and switch OFF
EPO	Shut down UPS immediately
Audible & visual alarms	Line failure, Battery low, Overload, System fault

APPENDIX 2 PROBLEMS AND SOLUTION

In case the UPS cannot work normally, it might be wrong in installation, wiring or operation. Please check these aspects first. If all these aspects are checked without any problem, please consult with local agent right away and provide below information.

1. Product model name and serial number.
2. Try to describe the fault with more details, such as LCD display info, LED lights status, etc.

Read the user manual carefully, it can help a lot for using this UPS in the right way. Some FAQ (frequently asked questions) may help you to troubleshoot your problem easily.

Problem	Possible reason	Solution
1. Utility is connected but the UPS cannot be powered ON.	<ul style="list-style-type: none"> • Input power supply is not connected; • Input voltage low; • The input switch of the UPS is not switched ON. 	<ul style="list-style-type: none"> • Measure if the UPS input voltage/ frequency is within the window. • Check if UPS input is switched ON.
2. Utility normal but Utility LED does not light on, and the UPS operates at battery mode	<ul style="list-style-type: none"> • The input breakers of the UPS are not switched on; • input cable is not well connected 	<ul style="list-style-type: none"> • Switch ON the input breaker; • Make sure the input cable is well connected.
3. The UPS does not indicate any failure, but output do not have voltage	<ul style="list-style-type: none"> • Output cable does not well connected; • Output breaker do not Switch ON. 	<ul style="list-style-type: none"> • Make sure the output cable is well connected; • Switch ON the output breaker.
4. Utility LED is flashing	<ul style="list-style-type: none"> • Utility voltage exceeds UPS input range. 	<ul style="list-style-type: none"> • If the UPS operates at battery mode, please pay attention to the remaining backup time needed for your system.
5. Battery LED is flashing but no charge voltage and current	<ul style="list-style-type: none"> • Battery breaker does not Switch ON, or batteries are damaged, or battery is reversely connected. • Battery number and capacity are not set correctly. 	<ul style="list-style-type: none"> • Switch ON the battery breaker. If batteries are damaged, need to replace whole group batteries, Connect the battery cables correctly; • Go to LCD setting of the battery number and capacity, set the correct data.
6. Buzzer beeps every 0.5 seconds and LCD display "output overload"	<ul style="list-style-type: none"> • Overload 	<ul style="list-style-type: none"> • Remove some load
7. The UPS only works on bypass mode	<ul style="list-style-type: none"> • The UPS is set to ECO mode, or the transfer times to bypass mode are limited. 	<ul style="list-style-type: none"> • Set the UPS working mode to UPS type(non-parallel) or to reset the times of transferring to bypass or re-start the UPS
8. Cannot Cold-start	<ul style="list-style-type: none"> • Battery switch is not properly closed. • Battery fuse is blown. • Or Battery low. • Battery quantity set wrong. 	<ul style="list-style-type: none"> • Close the battery switch. • Replace the fuse. • Recharge the battery. • Power ON the UPS with AC to set the battery quantity & quantity.



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