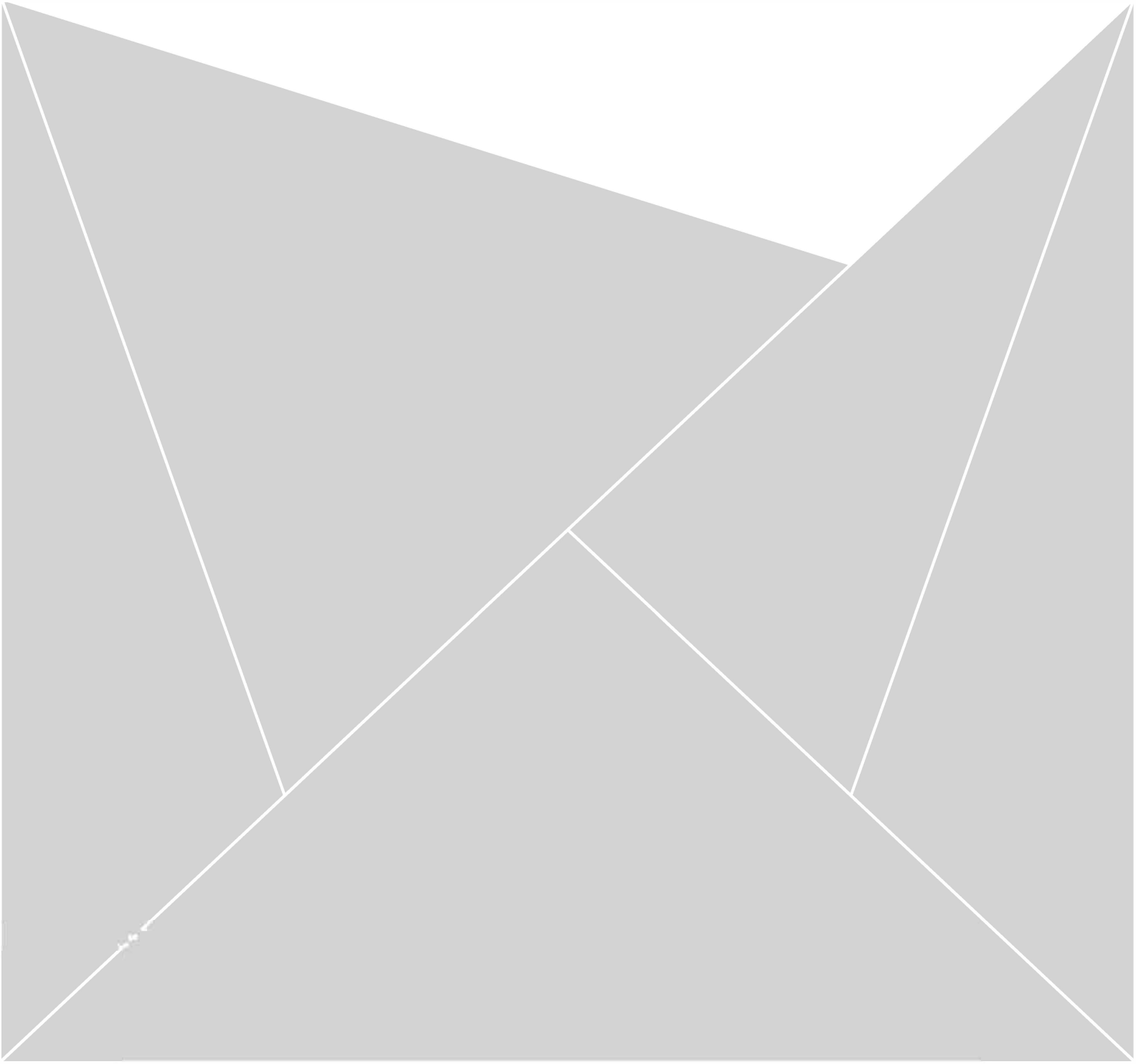
Qoltec®



USER MANUAL

ON-LINE RACK UPS POWER SUPPLY

POWER FACTOR 1.0

52285, 52286, 52287

EN

INTRODUCTION

Thank you for your trust and for choosing our UNINTERRUPTIBLE POWER SUPPLY (UPS). We are confident that the product will meet your expectations. This manual will help you become familiar with the device, simplify the configuration process, and assist you in resolving any issues that may arise during operation. If you encounter any problems, please read this manual carefully before contacting customer support.

ABOUT THE PRODUCT

An on-line sine wave uninterruptible power supply (UPS) with a maintenance bypass switch that provides reliable, high-quality AC power for your precision equipment. It can be widely used for computer systems, communication systems, and industrial control equipment. Due to its on-line design, it differs from a standard backup UPS. It continuously regulates and filters the input voltage. When the mains power is interrupted, it supplies emergency power from the backup battery without any transfer time. In the event of an overload or inverter failure, the UPS will switch to bypass mode and operate from the mains supply. Once the overload condition is cleared, the UPS will automatically switch back to inverter power mode.

SAFETY PRECAUTIONS

Operational Safety

1. During operation, pay attention to all warning signs and follow the specified safety requirements.
2. Avoid using the device in direct sunlight, rain, or humid environments.
3. The equipment must not be installed near heat sources or similar devices, such as electric heaters or hot furnaces.
4. Ensure adequate clearance and ventilation around the UPS. Please refer to the installation instructions for details.
5. Use dry cleaning tools only when wiping or cleaning the UPS.
6. In case of fire, use a dry powder extinguisher properly. There is a risk of electric shock if a liquid extinguisher is used.

ELECTRICAL SAFETY

1. The battery lifespan decreases as the ambient temperature increases. Regular battery replacement ensures proper UPS operation and sufficient backup time.

2. Battery maintenance should only be performed by personnel knowledgeable about battery systems.

3. There is a risk of electric shock and short-circuiting the battery. To avoid injury caused by electric shock, observe the following precautions when replacing the battery:

A. Do not wear watches, rings, or similar metal objects.

B. Use insulated tools.

C. Do not place metal tools or similar metallic objects on the battery.

D. Before removing the battery terminal connector, disconnect any load connected to the battery.

4. Do not expose the battery to fire to avoid explosion and ensure personal safety.

5. Unqualified personnel should not open or damage the battery, as the electrolyte contains hazardous substances such as strong acid, which can cause serious injury to the skin and eyes. If you accidentally come into contact with the electrolyte, rinse immediately with plenty of water and seek medical attention.

6. Do not short-circuit the battery's positive and negative terminals, as this may cause electric shock or fire.

OPERATION AND MAINTENANCE

1. The operating environment and maintenance methods directly affect the lifespan and reliability of this product. Please do not use it in the following conditions:

a) Areas with high or low temperatures and humidity levels that exceed the technical specifications (temperature: 0 °C – 40 °C, relative humidity: 20% – 90%).
b) Locations subject to vibration or mechanical shock.
c) Areas containing metallic dust, chemicals, salt, or flammable gases.

2. If not used for an extended period, the UPS (without batteries) must be stored in a dry environment with a storage temperature range of -15 °C to +60 °C. Before starting the UPS, raise the ambient temperature to above 0 °C and maintain it for at least 2 hours.

SYMBOLS	MEANINGS
	CAUTION
	DANGER
	AC (ALTERNATING CURRENT)
	DC (DIRECT CURRENT)
	PROTECTIVE EARTH WIRE
	PROTECTIVE BONDING CONDUCTOR
	RECYKLING
	DO NOT DISPOSE OF WITH MIXED WASTE
	OVERLOAD
	BATTERY
	ON/OFF

INSTALLATION

Check the UPS for any visible damage that may have occurred during transportation. Do not turn on the device if any damage or missing parts are found—immediately notify the carrier and the seller.

Select the appropriate cable. Remove the terminal cover from the rear panel.

Connect the input and output wires to the corresponding input and output terminals.

Secure the wires firmly and pass them through the designated openings.

Bundle the input, output, and battery cables together, position them properly, and fasten securely.

Connecting an external battery for extended backup time

The nominal DC voltage of the external battery pack is 192VDC. Each battery set consists of 16 pieces of 12V batteries connected in series. For a longer backup time, multiple battery sets can be connected together.

A set of multiple batteries.

The battery connection procedure is very important — failure to follow it may result in the risk of electric shock. Therefore, it is essential to strictly follow the steps below:

1. Set the battery switch to the “OFF” position and connect the batteries in series properly.
2. Select the appropriate battery connection between the battery and the UPS.

(See Table 2.2) A DC circuit breaker must be installed between the battery and the UPS. The breaker’s capacity must not be lower than the value specified in the general standards.

Connection to the Computer Interface

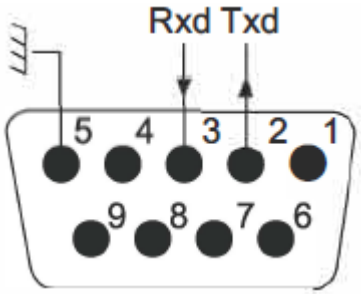
RS232: Using RS232 to connect the UPS to monitoring equipment

1. Use the RS232 communication cable to connect to the computer’s RS232 port first.
2. Then, use the other end of the RS232 cable to connect to the UPS’s RS232 port.

USB: Using USB to connect the UPS to monitoring equipment

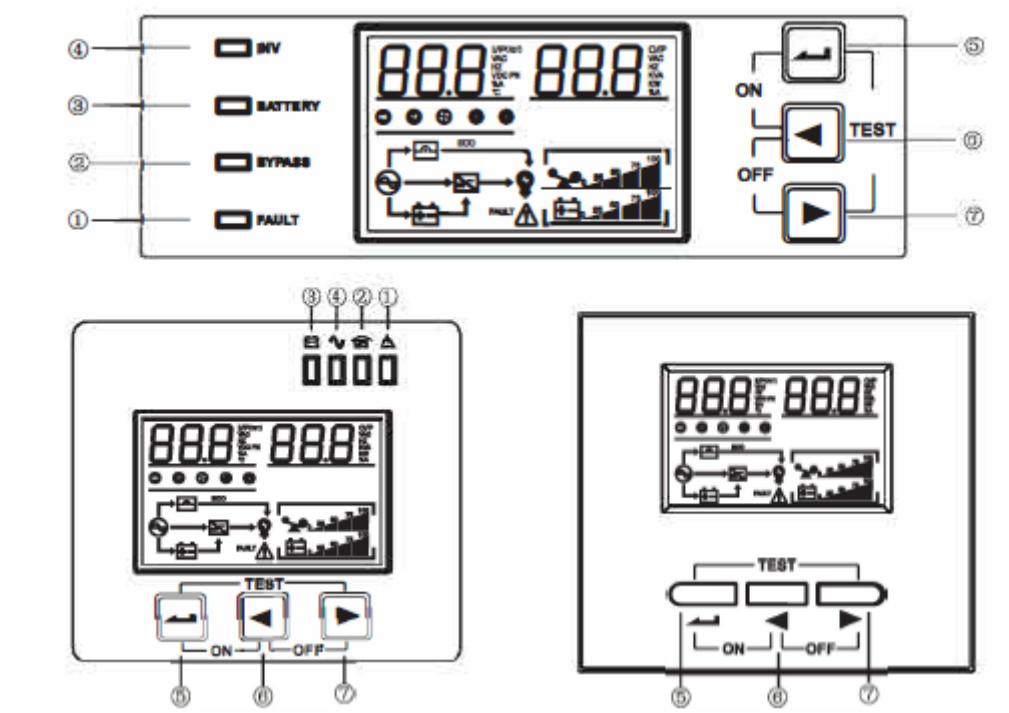
1. Use the USB communication cable to connect to the computer’s USB port first.
2. Then, use the other end of the USB cable to connect to the UPS’s USB port.

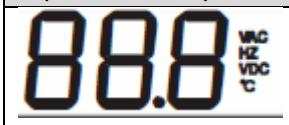
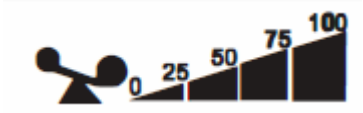
RS232 Interface on the UPS

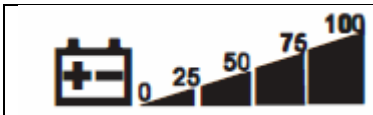


CONTROL PANEL

Panel Display



Display	Function
Error Message	
Error	Error
	Warnings
	Error code
Warnings	
	Mute Function
Input and Output Voltage, DC Voltage, Internal UPS Temperature	
	VAC : Input and output voltage VDC : Direct current voltage °C : Internal temperature of the UPS HZ : Frequency
Load Information	
	This section displays the load level (0–25%, 26–50%, 51–75%, 76–100%) and shows an overload icon in case of an overload condition.
Battery Information	

	Battery capacity (0–25%, 26–50%, 51–75%, 76–100%) is displayed separately, and a battery icon appears when the battery is low or not connected.
OTHER	
	AC
	BATTERY
	BYPASS
	INVERTER
	OPERATING PERFORMANCE
	Fan Status: The LED indicator will remain on when the fan is operating normally and will also light up if the fan is damaged.
	Settings Icon: The icon lights up when entering the settings menu and does not appear in other modes.
	ECO Function: The icon lights up when the ECO function is enabled; otherwise, the icon is not displayed.
	Maintenance Icon: The icon lights up when the maintenance switch is turned on; in all other cases, the icon is not displayed.

WSKAŹNIK LED

1. Fault Indicator (RED): The LED lights up red when a UPS alarm occurs and remains steadily on during a fault condition.
2. Bypass Indicator (YELLOW): The LED remains steadily on when the UPS operates in bypass or ECO mode. When the UPS is in standby mode and the frequency conversion is off or an abnormal bypass occurs, the LED indicates the status.

3. Battery Indicator (YELLOW): The LED remains steadily on when the UPS operates in battery mode or auto battery test mode, and an alarm will sound when the battery is low.
4. Inverter Indicator (GREEN): The LED remains steadily on when the UPS operates in inverter mode, such as in AC mode, battery mode, auto battery test mode, ECO mode, or frequency conversion mode.

Button Function

BUTTON	Operation Description
UPS Power-On Combination (↵ + ◀)	AC Mode: Press and hold both power buttons simultaneously for more than 1 second to start the UPS. Battery Mode: First, press ↵ the confirm button to turn on the display. Then press and hold both power buttons simultaneously for more than 1 second to start the UPS.
UPS Power-Off Combination (◀ + ▶)	AC Mode: Press and hold both power-off buttons simultaneously for more than 1 second to turn off the inverter output. The system will switch to bypass mode. Battery Mode: Press and hold both power-off buttons simultaneously for more than 1 second to turn off the inverter output. After 1 minute, the system will shut down and the display will turn off.

Self-Test and Mute Function Combination (↵ + ►)	Testing: In AC mode, press and hold both test/mute buttons simultaneously for more than 2 seconds to perform a battery test. Muting: In battery, alarm, or test mode, press and hold both test/mute buttons simultaneously for more than 2 seconds to silence the alarm. Press and hold the same buttons again for more than 2 seconds to restore the alarm sound.
Function Confirmation/Sales Key (↵)	Function Setting: Press and hold for more than 2 seconds to enter the function settings page. Select the desired options, then press and hold again for more than 2 seconds to return to the main page. Confirmation: On the function settings page, press and hold the confirmation button for 1–2 seconds to confirm the selected settings.
Page Scrolling/Query (◄ , ►)	Page Scrolling: ◄ or ► for 1 to 2 seconds to navigate to the previous or next page. Query Mode: Press and hold ► for more than 2 seconds to enter query mode. The display will cycle through the content of each page every 2 seconds. Press and hold ► again for more than 2 seconds to return to the main page.

UPS OPERATING STATUS TABLE WITH LED INDICATOR AND AUDIBLE ALARM

BEEPING:

SIGNAL	DESCRIPTION
CONTINUOUS BEEPING	ERROR
BEEPING EVERY SECOND	LOW BATTERY VOLTAGE IN DC MODE
	OVERLOAD

BEEPING EVERY TWO MINUTES	BYPASS MODE
BEEPING EVERY FOUR SECONDS	OTHER BEEPING SIGNALS

UPS OPERATING STATUS LED INDICATOR TABLE:

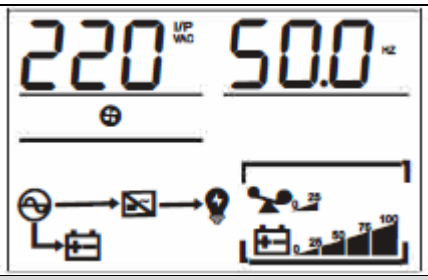
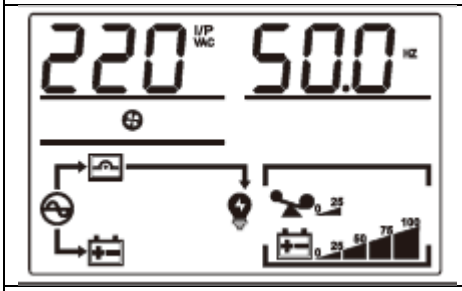
OPERATING mODE	**Panel Display**				**SIGNAL**
	Inverter LED	**Battery LED Indicator**	**Bypass LED Indicator**	**Fault LED Indicator**	
AC MODE					
NORMAL OPERATION	●				N/V
WARNINGS	●			★	Beeping Every Second / Beeping Every Four Seconds
BATTERY MODE					
Warnings Except Low Battery Voltage	●			★	Beeping Every Four Seconds
Low Battery Voltage Warning				★	Beeping Every Second
BYPASS MODE					
NORMAL OPERATION			●		Beep every two minutes
WARNINGS			●	★	Beep every second/Beep every four seconds
ECO MODE					
NORMAL OPERATION	●				n/V
WARNINGS	●			★	Beep every second/Beep every four seconds
OTHER MODE					

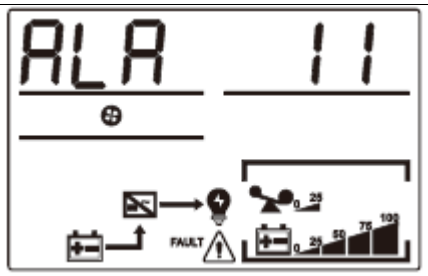
BATTERY SELF-TEST MODE / START-UP PROCESS	★	★	★	★	Beeping Every Four Seconds
ERROR MODE				●	Continuous Sound

★ FLASHING

● Steadily on

UPS OPERATING STATUS TABLE ON LCD DISPLAY

AC MODE	
LCD DISPLAY CONTENT	Command
	The UPS can provide stable AC output when the input AC voltage is within the acceptable range. In AC mode, the battery will also be charged by the UPS.
BATTERY MODE	
LCD DISPLAY CONTENT	Command
	When the AC input goes beyond the permissible range or is disconnected, the UPS will switch to battery mode. The batteries will supply power to the output, and the UPS will emit a beeping sound every 4 seconds.
BYPASS MODE	
LCD DISPLAY CONTENT	Command
	When the AC input remains stable, the UPS enters bypass mode and shuts down the inverter. The UPS will switch to bypass mode and emit a beeping sound every 2 minutes.
Error Interpretation	
LCD DISPLAY CONTENT	Command

	When the UPS experiences a fault, the LCD display will show fault information.

PARAMETER QUERY

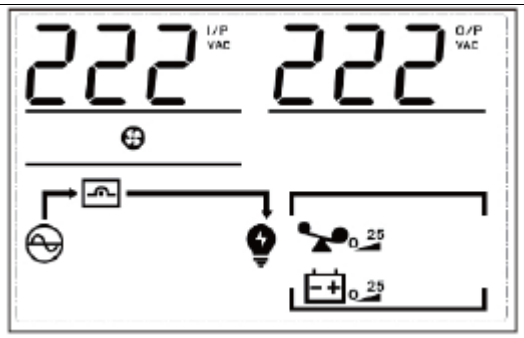
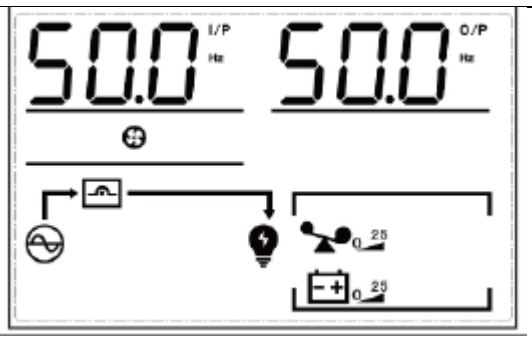
Normally, the LCD display can show a total of 8 pages. Press the ◄ or ► query buttons for 0.1–2 seconds to navigate through different pages displaying all information such as input, battery, output, charging, software version, temperature, etc.

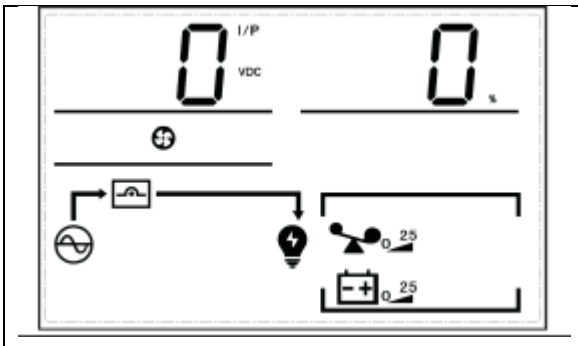
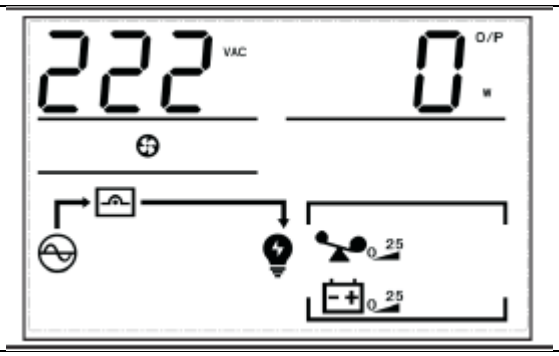
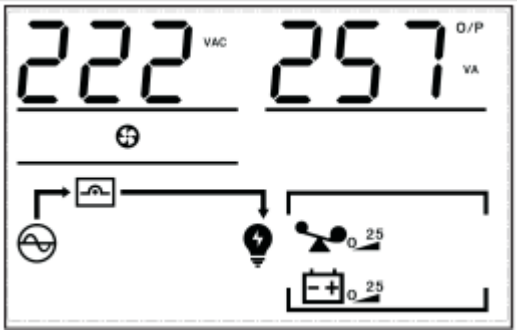
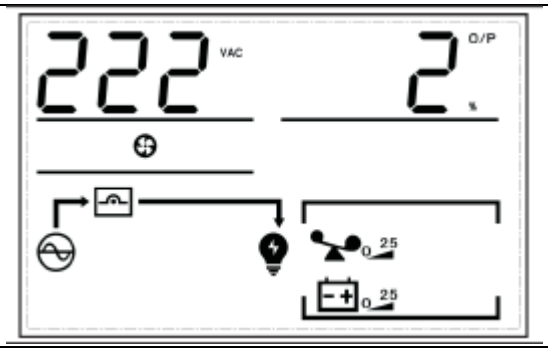
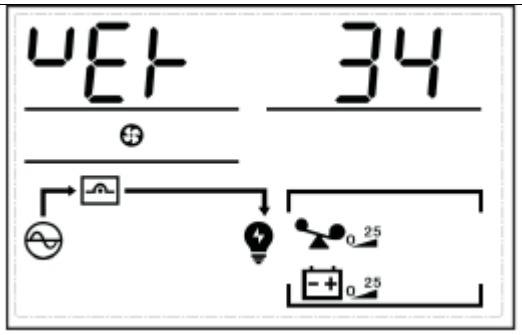
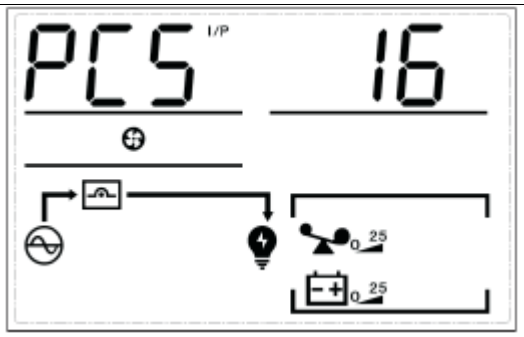
If an alarm condition occurs, the display will add one extra page to show alarm information.

If the UPS encounters a fault, the default display will automatically switch to the fault code page.

On the default home screen, error or alarm information will be displayed. When the UPS operates normally, the default home screen will show output voltage and frequency information.

Press and hold ► (bottom right) for more than 2 seconds to enter query mode. The LCD display will automatically scroll through the pages every 2 seconds. Press and hold ► again for more than 2 seconds to exit query mode.

LCD DISPLAY 1: UPS INPUT AND OUTPUT VOLTAGE	LCD DISPLAY 2: UPS INPUT AND OUTPUT FREQUENCY
	
LCD DISPLAY 3: BATTERY VOLTAGE AND CAPACITY	LCD DISPLAY 4: OUTPUT VOLTAGE AND ACTIVE OUTPUT POWER

	
LCD DISPLAY 5: OUTPUT VOLTAGE AND APPARENT OUTPUT POWER	DISPLAY 6: OUTPUT VOLTAGE AND LOAD PERCENTAGE
	
LCD DISPLAY 7: UPS SYSTEM SOFTWARE VERSION	LCD DISPLAY 8: NUMBER OF CONNECTED BATTERIES
	

FUNCTION SETTINGS

01: OUTPUT VOLTAGE

LCD	SETTINGS
	1. Press the function setting button (⏎) within 2 seconds to enter the settings page, then navigate to the voltage setting page. The word and value for voltage will start flashing when the page is active.

	2. Press the confirmation (⏎) for 0,5~2 seconds, to enter the output voltage setting (OPU) page. The “OPU” indicator will light up, and the digits to the left of “OPU” will remain displayed. Press the ◄ lub ► page buttons for 0,5 ~ 2 seconds to select a different output voltage value. The available voltage options are 208V, 220V, 230V, and 240V.,The default output voltage is 220V. The setting is saved automatically after selection.
	1. Select the desired voltage value and press the confirmation (⏎) 0,5 ~ 2 seconds to complete the OPU setting. The number to the left of “OPU” will remain steadily lit and stop flashing. 2. Press and hold the function setting buton (⏎) for more than 2 seconds to exit the settings page and return to the main screen. (Alternatively, if no operation is performed for more than 30 seconds, the page will automatically return to the main screen.) Note: When the output voltage is set to 208V, the output power must be reduced to 90%.

02-1: Expert Mode (EP)

LCD	SETTING

 	Enable Expert Mode, then return to the function settings page. The function settings will display additional items such as the number of batteries, EPO, charging current, and other selectable options. When Expert Mode is disabled, the function settings page will only show general options. Note: Expert Mode is disabled by default. After setting it to ON, reconnecting the AC power may reset EP to OFF.

02-2 : Punkt wyłączenia niskiego napięcia akumulatora / Napięcie końcowe rozładowania (EOD)

LCD	SETTING
 	The EOD (End of Discharge) setting options are Def, 9.8V, 9.9V, 10V, 10.2V, and 10.5V. By default, EOD is set to Def (the EOD changes according to the load condition: 10.5V when load <25%, 10.2V when 25% ⩽ load <50%, 10V when load ⩾50%).

02-3: Economical Operating Mode (ECO)

LCD	SETTING

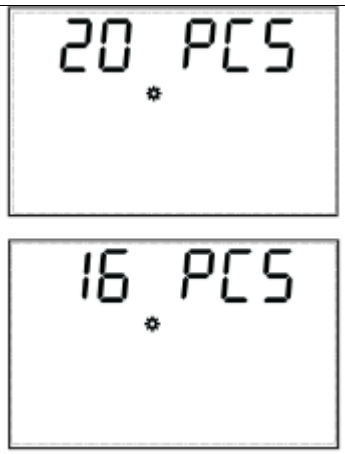
 	ECO mode is disabled by default. It can be set to ON to improve system operating efficiency. Note: For models with PF < 1, ECO mode is disabled by default and cannot be enabled.

02-4: Emergency Power Off (EPO)

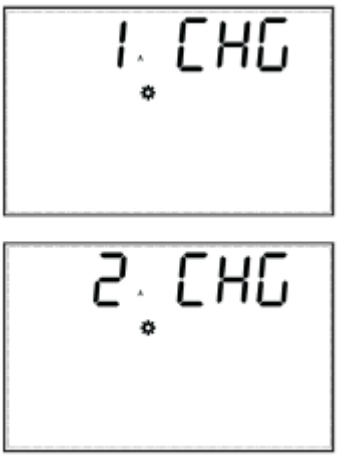
LCD	SETTING
 	When EP is set to ON, the EPO option appears on the Function Settings page, allowing you to configure Emergency Power Off. By default, the EPO function considers the EPO terminal plug as active (OFF). You can choose to set the EPO terminal as active (ON). Note: When EPO is activated, all outputs are immediately shut down.

02-5: Number of Batteries (PCS)

LCD	SETTING

	When EP is set to ON, the PCS option appears on the Function Settings page. Navigate to the password page and enter the password (default password is 135) to set the number of batteries. The system's default number of batteries is 16, and it can be set to 16, 18, or 20.

02-6: Charger Current (CHG)

LCD	SETTING
	When EP is set to ON, the CHG option appears on the Function Settings page, allowing you to set the charger current from 1–12A. The default is 1A. Note: If the UPS has built-in batteries, the default charger current is 1A and cannot be changed.

02-7: Neutral Input and Reverse Voltage Alarm Function

LCD	SETTING
	Input Neutral and Live cable reverse alarm mode closed by default, can choose to open to improve the safety of the system. Notice: Factory settings default closed, please open if you need.

Warning/Error Code and Solution

Warning Code and Solution

When the symbol “to” appears on the UPS LCD display, the UPS is in an alarm state. Press the page navigation button to go to the error status page, observe the alarm code, and take appropriate action according to the table below.

Alarm Code	Indication	Possible Causes	Remedy / Solution
1	Battery Not Connected		1. Check the battery connection. 2. Replace the battery.
2	Low Battery Voltage	The battery voltage is below the low voltage warning point. The battery discharge has fallen below the alarm threshold.	After allowing the battery to rest for a period, it can be reconnected. The built-in charger can be used to recharge the battery.
4	Input Neutral and Live Wires Are Reversed	1. The INPUT neutral and live wires are reversed. 2. The INPUT grounding is not connected. 3. The OUTPUT grounding is not connected.	1. Reverse the neutral and live wires. 2. Ensure proper grounding connection for INPUT and OUTPUT (B3: C14).
8	Battery Overvoltage	The UPS has detected high battery voltage.	Check whether the battery quantity setting matches the actual number of batteries.
9	Charger Failure	Charger Equipment Fault	Contact the Supplier

10	Overtemperature Alarm	1. Fan failure 2. Rear panel UPS air vent is blocked 3. Overload 4. Faulty NTC sensor or incorrect connection 5. Damaged IGBT power device	1. Check the rectifier fan. 2. Remove any obstruction from the UPS rear panel. 3. Check the load. 4. If the above measures do not resolve the issue, contact the supplier.
12	Fan Failure	1. The fan wiring is loose 2. Faulty fan equipment.	Check the fan and its connections.
13	AC Fuse Blown / Open	Blown Fuse	CONTACT THE MANUFACTURER
14	EEPROM Memory Fault	EEPROM Circuit Damage	CONTACT THE MANUFACTURER
21	Load	Exceeds the rated power	Check the load
22	Three Consecutive Overload Trips	3 times consecutive overload locks	UPS Shutdown and Restart
23	EPO Activation (Emergency Power Off)	Press EPO button	1. Release the EPO button 2. Check the wiring harness connected to the EPO button
24	Maintenance Switch Operation	The maintenance switch is pressed	Release the maintenance switch.

ERROR CODE AND SOLUTION

When the "FAULT" indicator remains lit and the "Li" symbol appears on the UPS LCD display, the UPS is in a fault condition. The UPS automatically switches to the fault status page (see section 3.5), where you can view the error code and take appropriate action according to the table below.

Error Code	Indication	Possible Causes	Solution
1	Bus Soft Start Assist Failure	1. Abnormal AC input 2. Fault in the bus soft-start circuit.	Check the main power; if everything is normal, contact the supplier
2	Bus Overvoltage	1. Abnormal AC input. 2. Software processing error. 3. Bus capacitance fault.	Check the main power; if everything is normal, contact the supplier.
3	Bus Undervoltage	1. Mains power supply is too low. 2. Software processing error. 3. BUS capacitor failure.	Check the mains power; if no abnormalities are found, contact the supplier.
7	Overtemperature	1. Fan failure 2. Air channel on the rear panel of the UPS is blocked. 3. Overload. 4. NTC hardware fault or incorrect wiring. 5. Damaged IGBT power device.	1. Check the rectifier fan. 2. Remove any obstructions from the UPS rear panel air channel. 3. Check the load. 4. If none of the above resolves the issue, contact the supplier.
8	Battery Relay Short Circuit	Damaged relay hardware (RL1/RL3).	Please contact the supplier.
9	Bus Relay Soft Start Failure	1. Abnormal mains power. 2. The bus startup circuit is faulty or operating abnormally.	Check the mains power; if no abnormalities are found, contact the supplier.
17	Inverter Soft Start Failure	1. Some inverter components are damaged.	Please contact the supplier

		2. Control board failure.	
18	Inverter Output Overvoltage	1. Some inverter components are damaged. 2. Control board failure.	Please contact the supplier
19	Inverter Output Undervoltage	1. Some inverter components are damaged 2. Control board failure	Please contact the supplier
20	Internal Short Circuit	1. Some inverter components are damaged.	1. Check whether there is a short circuit at the UPS output. 2. Check that the loads are short-circuited. 3. If there are no irregularities, contact your supplier.
26	Negative power protection (output with AC input error)	1. Bypass feedback to inverter. 2. Abnormal overload.	Check the goods, and if there are no irregularities, contact the supplier.
33	Inv relay or open SCR circuit	Relay RL8 is damaged.	Please contact the supplier
34	Inv relay or SCR SHORT circuit		
35	Bypass relay or open SCR circuit	Relay RL4/RL6 is damaged.	Please contact the supplier
36	Bypass relay or SCR short circuit		
39	Charger short circuit	1. Charger output short circuit. 2. Faulty charger hardware.	Please contact the supplier
66	Overload Error	1. Excessive overload 2. A reduction in voltage results in a reduction in the rated power of the system.	1. Check that the load is within the specified range. 2. Check that the pressure has been reduced.

67	Overcharging or reversed battery connection.	1. Hardware error 2. Incorrect number of batteries 3. Incorrect wiring	1. Check that the battery wiring or battery number meets the requirements. 2. If there are no irregularities, contact your supplier.
68	Unknown Device Model	Software Version Error	1. Restart the machine 2. If there are no irregularities, contact your supplier.
72	Excessive charger current	1. Hardware error 2. Faulty battery	1. Check that the battery wiring or battery number meets the requirements. 2. If there are no irregularities, contact your supplier;
73	No bootstrap	Software version error	1. Restart the machine; 2. If there are no irregularities, contact your supplier

MAINTENANCE

Maintenance is an important part of keeping your power supply in good working order. Dust, dirt and other contaminants should be removed from the surface regularly. This can be done with a dry cloth, avoiding the use of chemicals. Ensure that the ventilation is free of obstructions to ensure adequate cooling. Blocked ventilation openings can lead to overheating of the device. Check regularly that cables and connectors are securely connected and undamaged. Poor connections can lead to loss of performance. In the event of technical problems, it is advisable to use maintenance services.

DISPOSAL

The equipment can be disposed of in accordance with the regulations on electrical and electronic equipment (WEEE). It is best to take it to an electronic waste collection point or

to the manufacturer, who often offers recycling programmes. Ensure that batteries or other components containing hazardous materials are removed before disposal.

WARRANTY AND TECHNICAL SUPPORT

If you encounter any issues with the charger, please contact the manufacturer or an authorised service centre. Retain your proof of purchase in case you need to make a warranty claim.